THE IMPACT OF CAPITAL ADEQUACY AND OPERATING EFFICIENCY ON PERFORMANCE OF NEPALESE MANUFACTURING COMPANIES

A Dissertation submitted to the Office of the Dean, Faculty of Management in partial fulfillment of requirement for the Master's Degree

By

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CERTIFICATION OF AUTHORSHIP

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled "**The Impact of Capital Adequacy and Operating Efficiency on Performance of Nepalese Manufacturing Companies**". The work of this dissertation has not been submitted previously for the purpose of conferral of any degree 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 declared that all information sources and literature used are cited in the reference section of the dissertation.

Sangeeta Chaulagain

REPORT OF RESEARCH COMMITTEE

Ms. Sangeeta Chaulagain has defended research proposal entitled "**The Impact of Capital Adequacy and Operating Efficiency on Performance of Nepalese Manufacturing Companies**", successfully. The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestions and guidance of supervisor Asso.Prof.Dr.Jitendra Pd.Upadhyay and submit the thesis for evaluation and viva voce examination.

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APPROVAL SHEET

We have examined the dissertation entitled "**The Impact of Capital Adequacy and Operating Efficiency on Performance of Nepalese Manufacturing Companies**" presented by Sangeeta Chaulagain for the degree of Masters of Business Studies. We hereby certify that the dissertation is acceptable for the award of degree.

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Any remaining errors are mine.

Sangeeta Chaulagain

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ABBREVIATIONS

ANOVA	:	Analysis of Variance
ATR	:	Assets Turnover Ratio
BNCLB	:	Bottlers Nepal Company Limited (Balaju)
CAR	:	Capital Adequacy ratio
HDCL	:	Himalayan Distillery Company limited
NRB	:	Nepal Rastra Bank
OESR	:	Operating expenses to Revenue
ROA	:	Return on Assets
ROE	:	Return on Equity ratio
SD	:	Standard Deviation
SPSS	:	Statistical Package for the Social Sciences
TDTA	:	Total Debt to Total Assets
UNCL	:	Unilever Nepal Company limited

ABSTRACT

This study examines the impact of capital adequacy and operating efficiency on the financial performance of Nepalese manufacturing companies. Capital adequacy reflects a company's financial stability and ability to absorb losses, while operating efficiency indicates how effectively a firm utilizes its resources to generate income. The study employs a quantitative research design using secondary data collected from selected manufacturing firms listed on the Nepal Stock Exchange (NEPSE) over a ten-year period. Key indicators such as equity-to-asset ratio and debt-to-equity ratio are used to measure capital adequacy, whereas operating expense ratio and asset turnover ratio represent operating efficiency. Performance is evaluated using return on assets (ROA) and return on equity (ROE). The findings reveal that both capital adequacy and operating efficiency significantly influence the performance of manufacturing companies in Nepal. Specifically, higher capital adequacy leads to improved financial stability and profitability, while increased operational efficiency enhances overall financial outcomes. These results suggest that maintaining strong capital positions and focusing on operational improvements are crucial for sustainable growth. The study offers practical insights for corporate managers, investors, and policymakers in enhancing the performance of manufacturing firms and strengthening the overall industrial sector of Nepal.

Keywords: *Capital Adequacy, Asset Turnover, Operating Expenses, Debt to Total Assets and Profitability*

CHAPTER- I

INTRODUCTION

1.1 Background of the Study

Manufacturing companies are business enterprises involved in transforming raw materials into finished goods for market consumption. This transformation process typically requires significant resources, including land, factories, machinery, transportation, and supportive infrastructure. The manufacturing sector in Nepal operates in a competitive environment shaped by market dynamics and prevailing economic conditions. As a result, firms face constant pressure to enhance both financial and operational performance to achieve strategic objectives and maintain market relevance.

The Capital Adequacy Ratio (CAR) is one of the most crucial financial indicators used to assess the stability and health of a company's finances. CAR supports long-term sustainability by reflecting a company's financial health and capacity to withstand unforeseen losses. It is a vital metric for evaluating a company's resilience to financial shocks and plays a crucial role in directing investor choices, especially when equity funding is involved. According to Sheeba (2017), CAR is an essential instrument for risk management and is crucial in defending the interests of stakeholders in times of uncertainty.

Operational Efficiency (OE) has a major impact on both present profitability and future performance, in addition to capital adequacy. Optimizing processes to maximum output with minimal input is a primary goal of corporate management. Cost reduction, enhanced asset utilization, shortened cash conversion cycles, and efficient operational cash flow management are all included in OE. When taken as a whole, these metrics show how well a company uses its resources and how it might obtain a competitive advantage. Shawk (2008) asserts that OE is the outcome of the successful integration of people, procedures, and technology with the goal of increasing productivity and lowering operating costs.

Achieving and sustaining high operational efficiency is crucial for long-term success and sustainable growth in the fiercely competitive manufacturing sector. OE is frequently

used as a stand-in for a company's competitiveness and capacity to provide goods and services at a reasonable cost without sacrificing quality. Profitability, which shows a company's capacity to make enough money to pay its debts, compensate stakeholders, and fund future growth, is another crucial aspect of business performance. Profitability affects a company's strategic direction in addition to reflecting its financial health. According to Dewi and Wirajaya (2013), a company's value and long-term survival are mostly determined by its profitability.

Financial ratios are commonly used to evaluate profitability, and Return on Assets (ROA) is a commonly used indicator. ROA gauges how well a business makes use of all of its assets to produce profits. According to Sofyan (2019), a greater ROA is a good measure of a company's overall success since it shows improved asset utilization and a stronger potential to generate profits.

Even though operational effectiveness and capital sufficiency are crucial factors in determining profitability, there is still a dearth of research that focuses only on Nepal's manufacturing industry. Thus, by investigating the effects of operating efficiency and capital sufficiency on the financial performance of Nepalese manufacturing enterprises, this study aims to close that gap. The conclusions are intended to help investors, legislators, and industry stakeholders improve the financial sustainability and competitiveness of the sector.

1.2 Problem Statement

A problem statement is a succinct explanation of the discrepancy between the intended result and the existing state of a system, process, or performance area. Knowing what the issue is, who it impacts, where and when it happens, and why it needs to be addressed are all helpful. The first stage in creating workable solutions is having a thorough understanding of the issue, which starts with a well stated problem statement.

Adequate capital is a crucial factor in determining the financial stability and long-term viability of Nepalese manufacturing firms. A company's capacity to handle operational risks, finance expansion, and withstand financial shocks can all be hampered by a lack of capital. Despite its significance, maintaining sufficient capital levels can be difficult for many manufacturing companies, which has a direct effect on their stability and performance.

Similarly, **operating efficiency**—the ability to use resources effectively to generate income—is another essential factor influencing profitability and competitiveness. Inefficiencies in operations can lead to increased costs, reduced productivity, and ultimately lower financial returns. Given the dynamic and competitive nature of the manufacturing sector, firms must continuously assess and improve their operational practices.

Despite the recognized importance of these factors, there is limited empirical research exploring how capital adequacy and operating efficiency collectively impact the financial performance of manufacturing companies in Nepal. This creates a knowledge gap that hinders informed decision-making by corporate leaders, investors, and policymaker

- What is the present state of the Nepali manufacturing company's capital sufficiency, total turnover ratio, total debt to total assets ratio, operational expenses to sales revenue ratio, and profitability?

- How do the manufacturing company's operational expenses to sales revenue ratio, total turnover ratio, total debt to total assets ratio, and capital sufficiency relate to its profitability?
- Does the manufacturing company's profitability depend on factors like capital adequacy, the ratios of total turnover, total debt to total assets, and operational expenses to sales revenue?

1.3 Objectives of Study

- To assess the profitability of Nepal's manufacturing companies by looking at their current capital adequacy, total turnover, total debt to total assets, and operating expenses to sales revenue ratios.
- To examine the connection between the manufacturing company's profitability and the ratios of capital adequacy, total turnover, total debt to total assets, and operational expenses to sales revenue.
- To investigate how the manufacturing company's profitability is affected by capital sufficiency, the ratios of total turnover, total debt to total assets, and operating expenses to sales revenue.

1.4 Hypothesis of the Study

H1: The return on equity ratio is positively impacted by the capital adequacy ratio.
H2: The return on equity ratio is positively impacted by the assets turnover ratio.
H3: The return on equity ratio is positively impacted by the ratio of total debt to total assets.
H4: The return on equity ratio is positively impacted by operating expenses relative to revenue.
H5: The capital adequacy ratio has a favorable impact on return on assets.
H6: The return on assets is positively impacted by the assets turnover ratio.
H7: The ratio of total debt to total assets has a favorable impact on return on assets.
H8: Operating expenses have a beneficial impact on return on assets when compared to revenue.

1.5 Rationale of the Study

Capital adequacy is a crucial determinant of financial stability and long-term sustainability for all types of organizations. Maintaining sufficient capital relative to total assets strengthens a company's financial position and enhances its capacity to generate sustainable returns. A robust capital base enables firms to absorb potential losses, meet operational requirements, and invest in future growth opportunities—ultimately contributing to improved profitability.

Similarly, operating efficiency plays a vital role in shaping a company’s overall performance. It reflects the organization's ability to minimize operational costs while effectively utilizing its resources—people, processes, and technology—to achieve its strategic objectives. According to Shawk (2008), a well-balanced integration of these elements enhances the productivity of goods or services. Operating efficiency is commonly measured through the ratio of operating expenses to operating income, which offers valuable insight into how efficiently a company manages its resources. This ratio helps identify operational strengths and weaknesses and reveals the firm's ability to generate income from its core operations.

This study is particularly important as it examines the impact of capital adequacy and operating efficiency on the profitability of Nepalese manufacturing companies. It seeks to assess whether these variables have a positive or negative relationship with profitability,

and whether those relationships are statistically significant. By exploring the strength and direction of these associations, the study aims to offer meaningful insights for corporate managers, investors, and policymakers. The findings can inform strategies to enhance financial management, streamline operational practices, and shape effective policy interventions—thereby improving the overall performance and competitiveness of Nepal's manufacturing sector.

1.6 Limitations of the Study

The study has following limitations;

- Only ten years data were used for the research.
- Data are taken from the website of the company; it means all data are secondary data for studies.
- Only three sample companies are selected for studies.
- This studies is based on historical data.
- Only capital adequacy, total turnover ratio, total debt to total assets ratio and operating expenses to sales revenue ratio with return on equity are variable taken under studies.
- Financial analysis is based on ratio calculation.
- Statistical tools like descriptive statistic, correlation and multiple regressions are used for data analysis.
- Excel is the tools for data presentation, different statistical calculation and analysis.

CHAPTER- II

LITERATURE REVIEW

2.1 Theoretical Review

This section outlines the theoretical foundation of the key variables used in the study—capital adequacy, operational efficiency, asset turnover ratio, total debt to total assets, operating expenses, and **gross sales**—to provide insight into how these financial indicators relate to the performance of manufacturing firms.

Capital Adequacy

It serves as a financial buffer against unexpected losses and reflects an institution's resilience during periods of financial distress. In the banking context, Usman et al. (2019) emphasize that institutions with a satisfactory Capital Adequacy Ratio (CAR) are better positioned to navigate economic downturns, thereby ensuring depositor protection and long-term sustainability.

Agbeja et al. (2015) define capital adequacy as the amount of equity and supplementary capital a firm maintains to absorb potential losses from risky assets. Although traditionally discussed in relation to the banking sector, capital adequacy is increasingly recognized as critical for non-financial firms, including manufacturing companies. A strong CAR contributes to a firm's solvency and its ability to finance growth, manage risks, and withstand financial shocks.

Operational Efficiency

It indicates how effectively a company utilizes its resources—people, processes, and technology—to maximize productivity and minimize costs. According to Shawk (2008), OE results from the strategic alignment of operational components aimed at boosting productivity and reducing unnecessary expenditures.

In the manufacturing sector, OE is particularly significant due to high competition and cost pressures. Firms with efficient operations benefit from reduced waste, shorter production cycles, and improved profit margins, thereby enhancing competitiveness and ensuring long-term viability.

Asset Turnover Ratio

The asset turnover ratio calculates how well a business makes use of its resources to produce income. Net sales are divided by total assets to arrive at this figure. While a low ratio could point to inefficiency or underutilization of resources, a high asset turnover ratio shows that a business is successfully using its assets to promote sales.
In capital-intensive sectors like manufacturing, where large investments in infrastructure and machines necessitate effective management to guarantee positive returns, this statistic is particularly pertinent.

Total Debt to Total Assets Ratio

One important measure of financial leverage is the ratio of total debt to total assets (TD/TA). It shows the percentage of a business's assets that are funded by debt as opposed to equity. A lower ratio denotes a more cautious and stable capital structure, whereas a higher ratio implies greater financial risk and reliance on borrowed money. This ratio sheds light on a company's long-term financial stability and solvency. Excessive leverage may make the business more financially vulnerable during recessions, but moderate debt levels can encourage growth and boost returns.

Operating Expenses

These include wages, rent, utilities, administrative costs, and other routine expenses. High operating expenses can erode profit margins, making their efficient management crucial for financial performance.
Companies often aim to reduce OPEX without sacrificing output quality. Effective control of these expenses can improve operating margins and enhance overall financial sustainability.

Gross Sales

This figure offers an overall view of sales performance and market demand for a company’s products.
Although gross sales alone do not indicate profitability, they are fundamental for understanding revenue generation. When analyzed alongside expenses and other performance metrics, gross sales help assess a company’s operational success and potential for growth.

2.2 Empirical Review

2.2.1 Articles Review on International Context

Numerous international studies have explored the relationship between capital adequacy, operational efficiency, and financial performance—particularly in banking and manufacturing sectors. These studies offer comparative insights that serve as a foundation for understanding the dynamics within the Nepalese manufacturing context.

A. Studies on Capital Adequacy and Financial Performance

Omah (2023) examined the influence of value analysis on return on assets (ROA) in Nigerian manufacturing companies using Spearman rank-order correlation. The study identified a significant relationship between value analysis and both pre-tax profit and ROA, highlighting the importance of capital optimization through value engineering.

Akinrinola et al. (2023) used panel least squares regression to examine how capital structure affected the financial performance of 14 publicly traded Nigerian industrial companies between 2011 and 2020. The results showed that while long-term debt to total assets significantly impacted performance, there was a negative correlation between financial performance and the overall debt-to-equity ratio.

Using OLS regression, Aruwa and Naburgi (2022) examined how capital sufficiency affected the financial performance of Nigerian listed banks from 1997 to 2011. According to their research, capital adequacy had a negligible impact on profitability, indicating that other outside factors can have a greater impact.

Melani et al. (2019) assessed food and beverage manufacturing firms in Indonesia and found that capital adequacy ratio (CAR) significantly influenced ROA, although liquidity had no significant impact.

Reddy (2013) evaluated the financial performance of Andhra Pradesh State Financial Corporation and emphasized improving CAR, asset quality, and operating profit to enhance institutional performance and profitability.

Shawk (2008), referenced in several studies, defines operational efficiency (OE) as the integration of people, processes, and technology to maximize productivity and minimize operational costs—crucial for manufacturing competitiveness.

Gill et al. (2014) examined Indian manufacturing firms and found that improvements in operational efficiency had a positive effect on future firm performance.

Olarewaju (2016) studied Nigerian banks from 2004 to 2013 using fixed-effect regression and found that the debt-to-equity ratio, core capital, and risk significantly impacted operational efficiency.

Hamdi and Zarai (2013) analyzed earnings management in Islamic banks (2000–2009) and found that efficient earnings management practices enhanced future profitability.

Hameed et al. (2022) applied the PATROL model to assess banking performance, focusing on parameters such as capital adequacy, profitability, credit risk, regulation, and liquidity. The model proved useful for managerial decision-making and identifying operational strengths and weaknesses.

Kasmawati and Munika (2021) evaluated the effect of CAR, loan-to-deposit ratio (LDR), and BOPO (operating expense to operating income) on ROA in Indonesian banks. Their results showed a significant and positive effect of all variables on profitability.

Sukmadewi (2020) found similar results in Indonesian banks, where CAR, LDR, BOPO, NPL, and NIM were all significantly and positively associated with ROA.

Iqbal and Anwar (2021) studied Islamic manufacturing firms and found that while CAR had no significant effect on ROA, OER (Operational Efficiency Ratio) and NPF (Non-Performing Financing) had significant negative effects on performance.

Pramesti et al. (2021) analyzed capital structure and sales growth in Indonesian firms and found that capital structure positively influenced profitability and firm value, while sales growth negatively impacted profitability.

Ali and Oudat (2021), in their review on accounting information systems, noted gaps in the cost-effectiveness of these systems in developing countries and emphasized the need for targeted empirical research in this area.

Ghorpade and Lad (2020) used the CAMEL model to evaluate public sector banks in India. Their five-year analysis found that the Bank of Maharashtra performed best, underscoring the model's utility in financial performance assessments.

Mouneswari et al. (2019), through a literature review of Indian manufacturing and banking sectors, stressed the need for deeper inquiry into structural efficiency and the developmental role of nationalized banks

2.2.2 Reviews of Thesis and Article in Nepalese Context

In a research of joint venture finance in Nepal, Pokhrel (2018) examined changes in deposits and loans, asset usage, and the makeup of assets and liabilities. According to the results, NABIL and HBL both did a good job of collecting all deposits, indicating their

potential for profitability through successful deposit mobilization into the productive sector. Additionally, the examination of cash and bank balance balances showed that HBL, NABIL, and EBL had performed well, highlighting their readiness to satisfy customer withdrawal requests.

Subedi (2018) analyzed the relationship between total cost and deposits, particularly focusing on staff expenses, interest expenses, and operating expenses. The study found fluctuating total costs alongside an increasing trend in net profit for EBL. Staff expenses showed a consistent upward trend each fiscal year, and a positive correlation was observed between staff expenses and net profit, suggesting that higher staff investment could lead to improved profitability.

Using return on assets (ROA) and net interest margin (NIM) as dependent variables, Pradhan and Parajuli (2017) examined the effects of capital adequacy and the cost-income ratio on the performance of manufacturing firms in Nepal. They found that ROA was positively impacted by bank size. However, ROA was negatively impacted by the capital adequacy, cost-income ratio, equity capital to assets ratio, and liquidity ratio, suggesting that operational inefficiencies and excessive capital reserves may impede financial performance.

Malla (2015) conducted a study on liquidity management in selected finance companies, examining deposit and investment positions and the relationship among deposits, investments, loans, advances, and net profits.

Shakya (2014) analyzed the financial performance of selected joint venture banks, namely NGBL and HBL, with a focus on liquidity ratios. The study found that HBL was more efficient in managing liquidity and operated with higher leverage than NGBL. Additionally, HBL demonstrated stronger performance in capital adequacy, activity, and profitability ratios, highlighting its overall financial strength.

Shrestha (2012) evaluated the investment policies and strategies of various banks. Dangi (2004) performed a comparative analysis of the financial performance of SCBNL, NABIL, and HBL. The study identified unsatisfactory liquidity positions and high leverage across all three banks, resulting in low coverage ratios due to the excessive use of debt financing. SCBNL was noted for its superior asset mobilization and higher earning power, while HBL excelled in lending activities. The study recommended enhancing the quality of current asset structures and increasing the equity base to improve overall financial performance.

2.3 Research Gap

Despite the critical importance of capital adequacy and operating efficiency in determining firm performance, especially within the manufacturing sector, there remains a significant lack of focused empirical research in the context of Nepalese manufacturing companies. Most existing studies related to capital adequacy have primarily concentrated on the banking and financial sectors, largely due to regulatory requirements and compliance frameworks. However, limited attention has been paid to how capital adequacy influences the operational and financial performance of manufacturing firms in Nepal.

Similarly, although operating efficiency has been widely recognized as a key determinant of firm profitability in global literature, its impact within the Nepalese manufacturing context remains underexplored. Nepalese manufacturing firms face distinct structural challenges such as limited access to modern technology, inefficient supply chains, and resource constraints—factors that may affect how operating efficiency translates into performance outcomes.

Moreover, the combined effect of capital adequacy and operating efficiency on firm performance has not been comprehensively examined in the context of Nepal's manufacturing sector. The lack of integrated analysis leaves a gap in understanding how these two factors interact to shape profitability and sustainability in this vital segment of the economy.

It is crucial to look at these relationships in a context-specific way because of the manufacturing sector's vital significance for Nepal's economic growth. By empirically examining the impact of operating efficiency and capital adequacy on the performance of manufacturing firms in Nepal, this study aims to close this gap. The results are intended to give corporate executives and legislators useful information to improve the sector's operational efficiency and financial management.

Furthermore, only one dependent variable and four independent variables have been considered in this study. Eight years of secondary data have been analyzed using a descriptive research design.

Previous research has largely focused on the banking sector, and in the few cases where the manufacturing sector was studied, the sample was typically limited to a single company, with short observation periods of around five years. Many studies have relied on simple regression techniques with limited variable inclusion. Future research could benefit from incorporating a larger dataset, more extensive timeframes, and a broader range of dependent and independent variables to generate more robust and generalizable findings.

CHAPTER- III

RESEARCH METHODOLOGY

3.1 Research Design

Both descriptive and causal-comparative research methodologies are used in this study to examine the variables affecting dividend policy. The primary determinants of dividend policy are identified and described using the descriptive study design, which offers thorough details on these elements. To better understand how these variables interact and affect dividend policy results, the study also uses an analytical technique to look at the direction and intensity of correlations between the independent and dependent variables.

3.2 Population and Sample

This study employs purposive sampling due to the availability of consistent financial data on the official NEPSE website over the past ten years. As of mid-2024, there are 18 manufacturing companies listed on NEPSE. From these, three manufacturing companies were selected as the sample for the research period spanning fiscal years 2072 to 2081 (2015/16 to 2024/25). The selection criteria included consistent financial reporting, active trading status, and their significance within Nepal's manufacturing and consumer goods sectors. This purposive approach ensures the reliability and relevance of data used for the analysis.Table 2

Sample of the Manufacturing

S.N.	Manufacturing company's
1.	Unilever Nepal Company limited (UNCL)
2.	Bottlers Nepal Company Limited (Balaju) (BNCLB)
3.	Himalayan Distillery Company limited (HDCL)

3.3 Nature and Sources of Data

On the other hand, secondary data refer to data that have already been collected and published by other sources, which the researcher uses for analysis.

Research studies typically rely on various sources of data, which can be broadly classified into published and unpublished sources.

Published sources include materials such as academic articles, annual reports, newspapers, tax reports, government policies, and other publicly accessible documents.

Unpublished sources consist of internal organizational documents like decision-making records, meeting minutes, vouchers, and other confidential materials related to management or board of directors' decisions.

For this study, secondary data obtained from published sources such as annual financial reports of manufacturing companies and official stock exchange records are primarily used. These sources provide reliable and comprehensive data for the analysis of capital adequacy, operational efficiency, and firm performance.

3.4 Instrument of Data Collection

The instruments and techniques used for data collecting are referred to as instruments in research. The primary source of secondary data for this study was the official websites of the relevant manufacturing firms and banks. These organizations' published yearly reports, the Nepal Rastra Bank's (NRB) Economic Report, particularly the Banking and Financial Statistics, and other pertinent published statistical data are important sources. To obtain more information, casual conversations and procedural observations were also carried out. On the other hand, depending on the study's goals and nature, primary data collecting uses a variety of tools, including questionnaires, observations, interviews, laboratory experiments, quasi-experiments, and measuring scales.

These tools enable the collection of firsthand information directly from respondents or experimental settings.

Since this study relies mainly on secondary data, instruments focus on extracting, organizing, and analyzing information from existing credible sources.

3.5 Methods of Analysis

For the achievement of the objectives of the study various financial and statistical tools / methods have been used. They are namely following.

3.5.2 Statistical Analysis

Descriptive Statistics Analysis

Descriptive statistics on the factors examined in the study are presented in this section. The mean, standard deviation, maximum, and minimum values corresponding to the variables under investigation are the descriptive statistics employed in this investigation.

Average (Mean):

Where,

$\sum$ = Sum of all the variable

X n = Variables

Standard Deviation

The variance that adds to the similarity of the data is quantified by the standard deviation. A higher standard deviation will result in more fluctuations in the study data. A lower standard deviation will result in less variation in the study data. The research's data changes less than what is considered more predictable, and it fluctuates less when it fluctuates more than what is anticipated for the following study. The standard deviation, which may be higher or lower, serves as the basis for the calculated trend of the study data's reliability.

Standard Deviation S.D (б) = $\sqrt{\tau}(\ -\bar{})^2$

Where,

$\bar{}$ = Mean

n = Variable involved

Correlation Analysis

Correlation Coefficient (r) = $\frac{n\sum XY - \sum X \sum Y}{\sqrt{[(n\sum x^2 - (\sum X)^2)\,(n\sum Y^2 - (\sum Y)^2)]}}$

Where,

N = number of X and Y

$\sum$XY = Sum of the product series X and Y

$\sum X$ = Sum of the series X

$\sum Y$ = Sum of the series Y

$\sum X^2$ = Sum of the square series X

$\sum Y^2$ = Sum of the square of the series Y

Multiple Regression Analysis

Multiple regression analysis is a statistical method used to investigate the relationship between numerous independent variables, or predictors, and a single dependent variable, or criterion. Predicting the impact of changes in the independent variables on the dependent variable is the primary objective of multiple regression analysis. Essentially, it assesses how accurately numerous regressions forecast outcomes. Additionally, the multiple determination, commonly referred to as R-squared, gives details on the percentage of the dependent variable's variability that can be explained by the regression equation. The formulation of the multiple regression equation utilized in this investigation is expressed as follows:

Model 1

$$ROE = \beta_0+\beta_1\times CAR+\beta_2\times ATR+\beta_3\times TDTA+\beta_4\times OESR+e$$

Model 2

$$ROA = \beta_0+\beta_1\times CAR+\beta_2\times ATR+\beta_3\times TDTA+\beta_4\times OESR+e$$

3.6 Research Framework

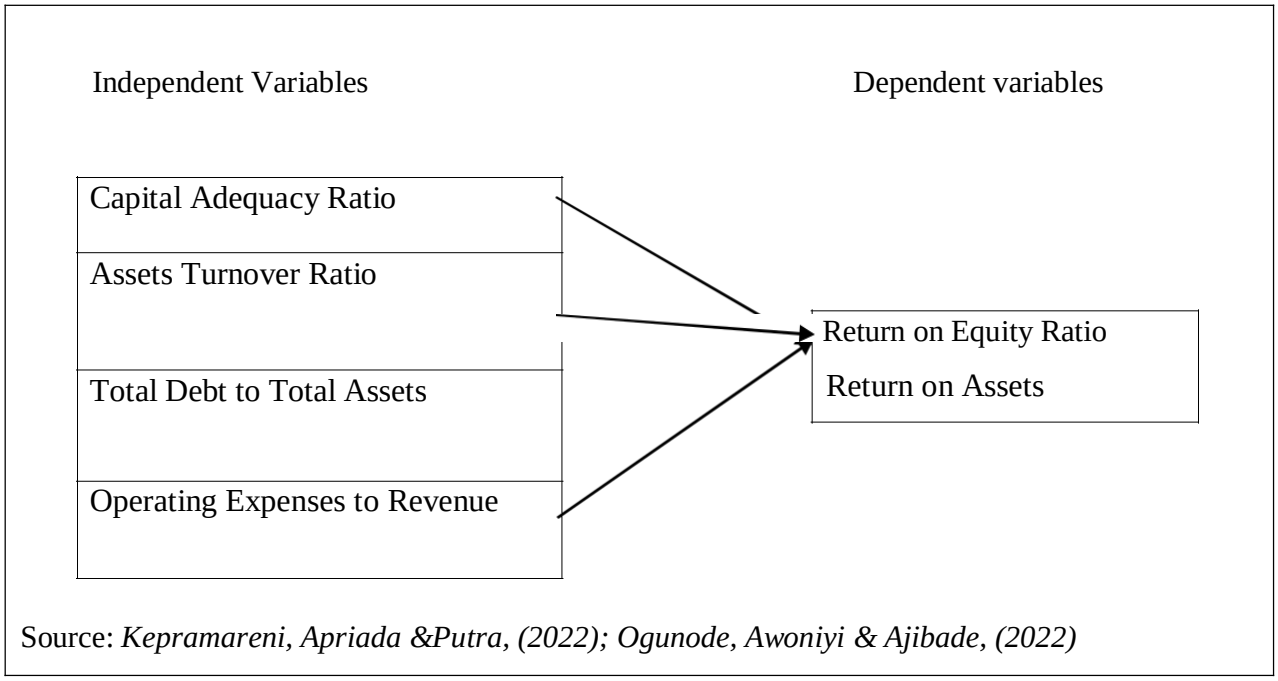

Figure 1: Conceptual Framework

3.7 Definitions of Variables

Capital Adequacy

A key determinant of a company's long-term viability and financial stability is capital adequacy. It shows how much equity capital and reserves a business has to cover possible losses and guard against insolvency. Although it has historically been prioritized in the banking industry, capital adequacy is just as important for manufacturing companies since it affects their ability to grow, manage risk, and remain resilient in a market that is highly competitive. In essence, it is the financial safety net that a business keeps to sustain its operations and assets in the face of uncertainty.

Asset Turnover Ratio

The asset turnover ratio calculates how well a business uses its resources to produce income from sales. It is computed by taking the average total assets over a given time period and dividing that by the total sales. More efficient use of assets is indicated by a larger asset turnover ratio, which means the business makes more money per unit of invested assets. On

the other hand, a smaller ratio can indicate inefficiencies or underutilization in asset management.

Total Debt to Total Assets Ratio

By comparing a company's total debt to its total assets, this leverage ratio shows how much of a business is financed by debt as opposed to equity. Greater financial leverage is implied by a higher debt-to-assets ratio, which may raise risk but also enhance rewards. This ratio is used by creditors and investors to evaluate a company's risk profile, debt servicing ability, and financial structure.

Operating Expenses (OPEX)

All expenditures incurred during regular business operations, such as rent, utilities, salaries, and administrative fees, are included in operating expenses. Although these expenditures are required to keep the organization running, effective operating expense management is essential because high costs can reduce profitability. The financial performance of a business can be greatly improved by recognizing and managing OPEX.

Gross Sales

The total revenue from sales before deductions for things like returns, discounts, and allowances is known as gross sales. It is the starting point for figuring out net sales and profit margins and is the raw sales figure for a specific time period. For revenue analysis and performance evaluation in general, a precise grasp of gross sales is necessary.

Return on Equity (ROE)

ROE evaluates a business's capacity to make money off of the equity held by its shareholders. It is computed as a percentage by dividing net income by average shareholders' equity. A greater ROE is a sign of good financial health since it shows that equity capital is managed and used effectively to produce earnings. For a thorough analysis, ROE should be assessed in conjunction with other financial statistics and industry benchmarks.

Return on Assets (ROA)

ROA measures how well a business generates net income from all of its assets. ROA is a measure of asset utilization efficiency that is computed as a percentage by dividing net income by average total assets. Better operational efficiency and profitability are indicated by a greater ROA, which shows that the business makes more money per unit of asset.

CHAPTER-IV

RESULT AND DISCUSSION

The report's primary section is this chapter. Here, the researcher completed his analysis and, using the goals of the study, came up with a solution to the issue. In the first section of the study, the results are analyzed using regression, correlation, and descriptive statistics in accordance with the goals. The discussion of the findings is the subject of the second section of the study. Comparing the results of the new study with those of earlier studies was part of the conversation.

4.1 Result

4.1.1 Descriptive Statistics Analysis

The analysis of descriptive statistics is carried out in order to fulfill the first research objective.

Table 3

Descriptive Statistics Analysis

	N	Minimum	Maximum	Mean	Std. Deviation
Return on Equity	30	1.17	35.93	14.48	9.93
Return on Assets	30	-4.38	45.08	18.52	13.29
Capital Adequacy	30	36.80	89.10	57.07	13.14
Assets Turnover	30	.56	19.13	3.10	4.73
Total Debt to Total Assets	30	10.87	100.00	48.44	20.94
Operating expenses to Revenue	30	.59	10.99	4.62	3.518
Valid N (list wise)	30				

Source: *Appendixes*

The Return on Equity (ROE) ranges from 1.17% to 35.93%, with an average of 14.48%, indicating variability in profitability across the firms.

Return on Assets (ROA) exhibits a wide range from negative values (-4.38%) to a high of 45.08%, with a mean of 18.52%, reflecting differences in asset utilization efficiency.
Capital Adequacy shows a mean value of 57.07%, with a range between 36.80% and 89.10%, indicating generally strong equity buffers among the sampled firms.
The Asset Turnover Ratio has an average of 3.10, with a wide spread suggesting diverse levels of asset utilization efficiency.
Total Debt to Total Assets averages 48.44%, but ranges broadly from 10.87% to full asset financing through debt (100%), reflecting differing leverage strategies.
Operating Expenses to Revenue averages 4.62%, with variation indicating differences in operational cost management.

4.1.2 Correlation Analysis

By showing how two sets of data co-vary and demonstrating the strength of their association, correlation analysis helps to reveal the direction and size of the relationship between them. The link is explained using the Pearson correlation coefficient, which has values between -1 and +1. The two variables move perfectly in opposing directions when the correlation coefficient is exactly -1, which denotes a perfect negative correlation. On the other hand, a complete positive correlation, which denotes a close and positive relationship between the variables, is shown by a correlation coefficient of +1.

Table 4

Correlation of the Variables

	1	2	3	4	5
Return on Equity	1	-.219	.384*	-.063	.537**
Return on Assets		.856**	-.091	-.443*	-.473**
Capital Adequacy		1	-.161	-.675**	-.275
Assets Turnover			1	.158	-.397*
Total Debt to Total Assets				1	-.083
Operating Expenses To Revenue					1

Source: *Appendix*

Return on Equity (ROE) shows a strong positive correlation with Return on Assets (ROA) ($r = 0.856$, $p < 0.01$), indicating that firms with higher asset profitability also tend to generate higher equity returns.

ROE is moderately positively correlated with Asset Turnover Ratio ($r = 0.384$, $p < 0.05$) and Operating Expenses to Revenue ($r = 0.537$, $p < 0.01$), suggesting that efficient asset utilization and operational expenses relate to higher equity returns.

Operating Expenses to Revenue is negatively correlated with **Asset Turnover** ($r = -0.397$, $p < 0.05$), indicating that higher operating costs relative to revenue may be linked to less efficient asset use.

These correlations highlight the complex relationships between capital structure, operational efficiency, and firm performance in Nepalese manufacturing companies.

4.1.3 Multiple Regression Analysis

Multiple regression analysis is a statistical method for examining the relationship between several independent (predictor) variables and a single dependent (criterion) variable. Multiple regression analysis's primary objective is to forecast changes in the dependent variable based on changes in the independent variables. It assesses how accurately a number of predictors can forecast changes in the dependent variable. Additionally, the coefficient of determination, or R-squared, indicates the proportion of the dependent variable's variability that can be explained by the regression equation. Return on equity and return on assets are the two models used in regression analysis.

Multiple Regression Analysis Based on Return on Equity

The research's dependent variable is return on equity. The model description, ANOVA, and coefficient are computed below. The dependent variable of the study is based on a multiple regression equation.

Table 5

Model Summary of Model One

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

1	.853[a]	.728	.685	5.568

a. Predictors: (Constant), Operating expenses to Revenue, Total Debt to Total Assets, Assets Turnover , Capital Adequacy

Source: *Appendix*

Table 6

ANOVA of Model One

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2080.524	4	519.631	16.757	.000[b]
	Residual	775.227	25	31.009		
	Total	2853.751	29			

a. Dependent Variable: Return on Equity

b. Predictors: (Constant), Operating expenses to Revenue, Total Debt to Total Assets, Assets Turnover , Capital Adequacy

Source: Appendixes

Table 7

Coefficient of Model One

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-6.283	11.335		-.554	.584
	Capital Adequacy	.092	.125	.121	.730	.472
	Assets Turnover	1.574	.252	.752	6.244	.000
	Total Debt to Total Assets	-.013	.073	-.028	-.183	.856
	Operating expenses to Revenue	2.441	.375	.866	6.501	.000

a. Dependent Variable: Return on Equity

Source: Appendix

Multiple Regression Analysis Based on Return on Assets

Table 8

Model Summary of Model Two

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	.899[a]	.808	.777	6.28

a. Predictors: (Constant), Operating expenses to Revenue, Total Debt to Total Assets, Assets Turnover , Capital Adequacy

Source: *Appendixes*

Table 9

ANOVA of Model Two

Model		Sum of Squares	df	Mean Square	F	Sig.
2	Regression	4142.786	4	1035.696	26.260	.000[b]
	Residual	985.999	25	39.440		
	Total	5128.785	29			

a. Dependent Variable: Return on Assets

b. Predictors: (Constant), Operating expenses to Revenue, Total Debt to Total Assets, Assets Turnover , Capital Adequacy

Source: *Appendices*

Table 10

Coefficient of Model Two

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
2	(Constant)	-30.018	12.784		-2.348	.027
	Capital Adequacy	.871	.141	.861	6.157	.000
	Assets Turnover	-.209	.284	-.074	-.736	.469
	Total Debt to Total Assets	.082	.082	.129	.992	.330
	Operating expenses to Revenue	-.966	.423	-.256	-2.281	.031

a. Dependent Variable: Return on Assets

Source: *Appendixes*

Capital Adequacy has a strong positive and statistically significant effect on ROA (Beta = 0.861, $p < 0.001$). This indicates that higher capital adequacy is associated with better asset profitability among the manufacturing firms studied.

Operating Expenses to Revenue shows a significant negative impact on ROA (Beta = -0.256, $p = 0.031$), suggesting that higher operating costs relative to revenue reduce asset profitability.

Asset Turnover and **Total Debt to Total Assets** do not have statistically significant effects on ROA in this model ($p > 0.05$), implying that their direct influence on asset profitability is not confirmed in this sample.

The intercept (constant) is negative and significant, which represents the baseline level of ROA when all predictors are zero, although this is primarily a statistical artifact and less meaningful in practical terms.

Overall, the model indicates that maintaining strong capital adequacy and controlling operating expenses are key factors in enhancing the return on assets for Nepalese manufacturing firms.

4.2 Major Findings

Return on Equity (ROE) ranges from a minimum of 1.17% to a maximum of 35.93%, with a mean of 14.48% and a standard deviation of 9.93%.

Return on Assets (ROA) ranges from -4.38% to 45.08%, with a mean of 18.52% and a standard deviation of 13.29%.

Capital Adequacy varies between 36.80% and 89.10%, averaging 57.07% with a standard deviation of 13.14%.

Asset Turnover ranges from 0.56 to 19.13, with a mean of 3.10 and standard deviation of 4.73. Total Debt to Total Assets spans from 10.87% to 100%, with a mean of 48.44% and standard deviation of 20.94%. Operating Expenses to Revenue ranges between 0.59 and 10.99, averaging 4.62 with a standard deviation of 3.52.

The wide differences between minimum and maximum values, as well as the high standard deviations, suggest that these variables fluctuate significantly year-to-year and are inconsistent across the manufacturing firms studied.

Capital Adequacy and ROE: Negative but not significant correlation ($r = -0.219$, $p = 0.245 > 0.05$). Asset Turnover and ROE: Positive and significant correlation ($r = 0.384$, $p = 0.036 < 0.05$). Total Debt to Total Assets and ROE: Negative and not significant correlation ($r = -0.063$, $p = 0.741 > 0.05$). Operating Expenses to Revenue and ROE: Positive and highly significant correlation ($r = 0.537$, $p = 0.002 < 0.01$).

Capital Adequacy and ROA: Positive and highly significant correlation ($r = 0.856$, $p = 0.000 < 0.01$).

Asset Turnover and ROA: Negative and not significant correlation ($r = -0.091$, $p = 0.631 > 0.05$).

Total Debt to Total Assets and ROA: Negative and significant correlation ($r = -0.443$, $p = 0.014 < 0.05$).

Operating Expenses to Revenue and ROA: Negative and highly significant correlation ($r = -0.473$, $p = 0.008 < 0.01$).

4.3 Discussion

The objective of this research was to examine the present state and correlations between the following important financial variables in Nepalese manufacturing companies: capital adequacy, asset turnover ratio, total debt to total assets ratio, operating expenses to revenue ratio, and profitability metrics (return on equity (ROE) and return on assets (ROA)). Financial Ratio Variability and Fluctuation

All factors showed notable year-to-year variations, according to the analysis. Over the course of the observation period, there were significant fluctuations in ROE, ROA, capital adequacy, asset turnover, total debt to total assets, and operating expenses to revenue, all of which pointed to irregularities and instability in the financial performance of Nepalese manufacturing firms. These results are in line with earlier research by Pradhan & Parajuli (2017), Malla (2015), Pokhrel (2018), and Subedi (2018), which similarly found comparable volatility and anomalies in financial ratios among Nepalese companies.

Relationship Between Financial Ratios and Profitability

Correlation analysis was conducted to examine the relationships between financial indicators and profitability metrics:

Capital Adequacy and ROE: Exhibited a negative but statistically insignificant relationship, aligning with findings by Kepramareni, Apriada, & Putra (2022).

Capital Adequacy and ROA: Showed a strong positive and significant correlation, consistent with Pramesti, Yasa, & Ningsih (2021).

Asset Turnover and ROE: Positive and significant relationship, supporting the findings of Aruwa & Naburgi (2022).

Asset Turnover and ROA: Negative and insignificant relationship, echoing results from Akinrinola, Tomori, & Audu (2023).

Total Debt to Total Assets and ROE: Negative and insignificant correlation, as reported by Hameed, Jothr, & Ali (2022).

Total Debt to Total Assets and ROA: Negative and significant correlation, similar to findings by Iqbal & Anwar (2021).

Operating Expenses to Revenue and ROE: Positive and significant relationship, consistent with Kasmawati & Munika (2021).

Operating Expenses to Revenue and ROA: Negative and significant correlation, supporting the results of Ali & Oudat (2021).

These mixed correlations suggest that while some financial efficiency ratios are significantly related to profitability, others show no statistically significant association in the context of Nepalese manufacturing.

Impact of Financial Indicators on Profitability (Regression Results)

Multiple regression analyses revealed the following:

Capital Adequacy:

Positive but statistically insignificant effect on ROE, corroborating Omah (2023).

Positive and statistically significant effect on ROA, consistent with Mouneswari, Mamilla, & Reddy (2019).

Asset Turnover:

Positive and significant impact on ROE, supporting Sukmadewi (2020).

Negative and insignificant effect on ROA, aligned with Olarewaju (2016).

Total Debt to Total Assets:

Negative and insignificant impact on ROE, consistent with Ghorpade & Lad (2020).

Positive but insignificant effect on ROA, similar to Gill et al. (2014).

Operating Expenses to Revenue:

Positive and significant effect on ROE, in agreement with Melani, Suroso, & Musqori (2019).

Negative and significant impact on ROA, confirming Pradhan & Parajuli (2017).

Interpretation of Findings

The positive but insignificant effect of capital adequacy on ROE, contrasted with its significant impact on ROA, suggests that while capital strength improves asset efficiency, this does not always directly translate into higher shareholder returns in Nepalese manufacturing firms.

The positive impact of asset turnover on ROE indicates that efficient utilization of assets boosts shareholder profitability, even though its effect on asset-based returns (ROA) is unclear.

The lack of significant effect from total debt to total assets on profitability suggests that leverage or capital structure may not be a decisive factor in driving profitability within these manufacturing companies.

The positive relationship between operating expenses to revenue and ROE, paired with its negative impact on ROA, highlights a nuanced dynamic: managing operating costs may

enhance equity returns but, if costs become excessive relative to revenue, asset efficiency suffers.

CHAPTER- V

SUMMARY AND CONCLUSION

5.1 Summary

Manufacturing companies transform raw materials into sale-ready products by utilizing assets such as land, factories, machinery, and transportation. In evaluating their performance, the **Capital Adequacy Ratio (CAR)** plays a crucial role as it reflects a company's financial strength and its ability to support business growth and investment decisions, particularly for share-issuing companies.

Operational efficiency measures a company's capability to deliver products and services cost-effectively without compromising quality, achieved through an optimal blend of people, processes, and technology. Meanwhile, **profitability** indicates a firm's ability to generate earnings and meet stakeholder obligations, which influences its sustainability and future prospects.

This study looks into how Nepalese manufacturing enterprises perform in relation to operating efficiency and capital adequacy. Its goals are to investigate the current state of profitability, asset turnover ratio, operating expenses to sales revenue ratio, total debt to total assets ratio, and capital adequacy; to analyze the connections between these financial indicators and profitability; and to investigate the effects of these indicators on profitability.

Using a descriptive and causal comparative research design, the study analyzed secondary data from three manufacturing companies selected purposively from eighteen listed on NEPSE, covering ten years. Descriptive statistics, correlation, and regression analyses were conducted using SPSS and Excel.

Important conclusions show that there has been inconsistent financial performance in Nepalese manufacturing companies over the years, as seen by notable variations in ROE, ROA, capital sufficiency, asset turnover, total debt to total assets, and operating expenses to revenue ratios. Asset turnover and ROE, operating expenses to revenue and ROE, capital adequacy and ROA, total debt to total assets and ROA, and operating expenses to

revenue and ROA were found to be significantly correlated. On the other hand, ROE did not significantly correlate with capital adequacy or the ratio of total debt to total assets, while ROA was not significantly impacted by asset turnover.

In conclusion, asset turnover and operating expenses significantly impact ROE, while capital adequacy and operating expenses significantly influence ROA. Other variables showed mixed or insignificant effects on profitability. These insights are vital for managers and policymakers aiming to enhance the financial and operational performance of Nepalese manufacturing companies.

5.2 Conclusion

Examining the current state of capital sufficiency, asset turnover ratio, total debt to total assets ratio, operational expenses to sales revenue ratio, and profitability of manufacturing enterprises in Nepal was the primary goal of this study. These indicators, which include Return on Equity (ROE), Return on Assets (ROA), Capital Adequacy, Asset Turnover, Total Debt to Total Assets, and Operating Expenses to Revenue, exhibit significant variations and lack of consistency over time, according to the research. Consequently, it may be said that Nepalese manufacturing enterprises' profitability, operational effectiveness, and financial stability are all erratic and fluctuating.

Analyzing the connections between capital sufficiency, asset turnover ratio, operating expenses to sales revenue ratio, total debt to total assets ratio, and profitability was the second goal. Asset turnover and ROE, operating expenses to revenue and ROE, capital adequacy and ROA, total debt to total assets and ROA, and operating expenses to revenue and ROA were all found to have strong correlations with each other. Nevertheless, there was no significant correlation between ROE and capital sufficiency, ROE and asset turnover, or ROE and total debt to total assets. In conclusion, the profitability of manufacturing companies is significantly correlated with the ratios of total debt to total assets, operating expenses to revenue, capital sufficiency, and asset turnover.

Examining how these financial variables affect profitability was the third goal. According to the data, ROE is significantly impacted by asset turnover and operational expenses to revenue. However, ROE is not much impacted by capital sufficiency or the ratio of total debt to total assets. On the other hand, ROA is significantly impacted by capital adequacy and operational expenses to revenue, but not by asset turnover or total debt to total assets.

Therefore, it can be said that the profitability of manufacturing enterprises in Nepal is greatly influenced by capital adequacy, asset turnover ratio, and operational expenses to revenue.

5.3 Implications

Practical Implication

From a practical standpoint, the study provides valuable insights for company management, investors, regulators, and policymakers in Nepal's manufacturing industry:

Emphasis should be placed on improving operational efficiency (reducing operating costs relative to revenue) and optimizing asset utilization to enhance profitability.

Capital structure decisions should be approached cautiously, as higher capital adequacy does not always lead to better shareholder returns.

Investors should consider operating efficiency indicators and capital adequacy ratios as important metrics when evaluating investment opportunities in the manufacturing sector.

A firm with consistently high operating costs may face risks to long-term profitability, even if revenue is growing. Regulatory bodies such as Nepal Rastra Bank (NRB) and the Ministry of Industry should design policies that promote cost-efficiency and encourage capital sustainability in manufacturing enterprises. Programs that improve operational technology and financial literacy among manufacturing firms could yield long-term gains in sectoral performance. For Academics and Researchers: The study provides a model and dataset that can be replicated or expanded upon in future research across different time periods or sectors. It also highlights the need for more localized and sector-specific research in developing economies like Nepal.

Theoretical Implication

This study adds to the growing body of literature examining the financial determinants of firm performance, specifically within the context of Nepalese manufacturing companies. While much of the existing research focuses on the banking or service sectors, this research broadens the theoretical understanding of how capital adequacy and operating efficiency influence profitability in the manufacturing domain. It supports and extends the Trade-off Theory of Capital Structure, suggesting that while capital adequacy can contribute positively to performance (especially ROA), its impact on shareholder return (ROE) may be limited or context-dependent in non-financial sectors. The findings also align with Resource-Based

Theory, which emphasizes operational efficiency as a strategic resource that can significantly improve firm performance, particularly in resource-constrained environments like Nepal.

The results further validate profitability theories by confirming that internal efficiency factors (like asset turnover and cost control) have a more substantial effect on profitability than external financing decisions (like debt levels) in the manufacturing context.

This study thus offers a sector-specific theoretical insight that can be used as a foundation for future empirical models assessing firm performance in emerging markets.