

# Chapter I

## INTRODUCTION

### 1. General background

It has been considerable interest to accountants, financial economist, academician and researcher over the last few decades. The continual development of conceptually richer and more accurate forecasting models is of importance to regulators, practitioners and academicians. Financial failure forecasting is now widely used for range of purposes, including monitor the solvency of financial and other institutions by regulators. Financial failure has been viewed in various ways. One point of view is that it is technical insolvency; others consider it to be real insolvency where the liabilities of a firm exceed assets. Sometimes it is specified in the strictly legal sense of bankruptcy or liquidation while at other times a firm is taken to be in failure when it begins to incur cash losses leading to the erosion of funds. A firm is regarded as a failure firm when it is not likely to continue its operations or pay dividends to its shareholders or pay wages and salaries to its employees.

A general view of financial failure is that it results from a mismatch between the currently available liquid assets of a firm and its current obligations (John 1993).

Financial failure does not necessarily result in the collapse and dissolution of a firm. In an economic sense it could mean that a firm is losing money – its revenues do not cover its costs. It could also mean that its earnings rate is less than its cost of capital (Weston & Copeland 1992). A related definition would be that the present value of cash flows of the firm is less than its obligations. In still another case, it means the firm's actual cash flows are below its expected cash flows—its projections have not been met. Thus, financial failure may be viewed in varying ways. There are various reasons for any firm moving into financial failure (Pradhan 1986 & 1994). Some of these reasons are government policy, recessionary trends, natural calamities, scarcity of raw materials and power, lack of good management, poor implementation, marketing problems, shortage of working capital, labor trouble and so on. Before a healthy firm becomes really failure, it will first give signals and symptoms of financial distress. Signals of financial distress tend to start with short-term liquidity problems followed by operating losses, excessive use of external debt and inability to meet obligations. Gradually these signals will emerge into symptoms which may be reflected in continuous decline in market price of shares, shortage of cash, decline in liquidity, profitability, and turnover and other financial ratios, default in payment of materials, wages and salaries, interests and so on.

Business failure identification and early warnings of impending financial crisis are important not only to analysts and practitioners. Countries throughout the world have been concerned with individual entity performance assessment. Developing

countries and smaller economies, as well as the larger industrialized nations of the world, are vitally concerned with avoiding financial crises. Some policy makers in smaller nations are particularly concerned with financial panics resulting from failures of individual entities. From the late 1960s to the present day, numerous studies were devoted to assessing one's ability to combine publicly available data with statistical classification techniques in order to predict business failure.

Nepal is facing the economic problem in recent years, the political instability and conflicts caused operating loss directly or indirectly to number of small and large business. Only political reason may not be a reason of accompany, lack of efficient management, lack of resources, lack of visions, government policy, lack of technical knowledge, attitude of management ,lack of financial analysis and planning have placed a role in this aspect. Thus, the study helps to determine the financial characteristics, performance and position of failure and non-failure firms. The usefulness of ratio can only be tested with regard to some particular purpose. The purpose chosen here was the prediction of financial failure.

## **2. Statement of the problem**

The studies have been conducted from the development of statistical models of financial ratios that are useful in prediction of financial failure in developed country. Comparing the financial characteristics of different groups of firms with financial ratios has been a popular methodology in the finance literature. Multiple

discriminant analysis and multivariate analysis of variance are the two techniques commonly used in the studies to compare financial characteristic of different groups of firms.

Numbers of studies have been conducted to investigate the financial variables to compare the failure and non- failure companies in the context of developed countries. Winakor and smith (1935) examined 183 firms that failed in between 1923-1931 for ten years prior to bankruptcy. Twenty one ratios for each of the firm is computed and examined. Out of twenty one ratios, the ratio of the net working capital to total asset was found the most accurate and steady indicator of failure and the ratio of the failure firm were frequently below than mean value and showed deterioration as the date of failure near. The financial ratios of failed firm tented to have lower than the firm that are more successful (Ramser and Foster 1931).The financial ratio of failed firms were persistently differ from non failed firms at least three years prior to failure and it was found that the best predictors of failure are net worth to debt ratio and net profit to net worth ratio (Patrick 1932). Merwin (1942) study found that the ratios of discontinuing firms were consistently below the estimated normal and out of line with the high-low range established for surviving firms. Three ratios of net working capital to total asset, the current ratio and net worth to total debt ratio were sensitive predictors of failure up to as early as four to five years prior to discontinuance.

Beaver (1966, 1968) made the first pioneering attempt to prediction of failure. This study examined the predictive power of 30 different financial ratios and tried to predict industrial failure up to 5 years in advance. Beaver selected six ratios as the best predictors of failure which were cash flow to total asset, net income to total asset, current plus long term liabilities to total assets, working capital to total assets, current asset to current liabilities, and no credit interval ratio. Altman (1968), the first used discriminant analysis of financial ratios in the prediction of bankruptcy. He used a paired sample consisting of 33 failed and non failed manufacturing firms. At the beginning, he considers 22 financial ratios as predictor of failure. Only five out of them were finally considered as predictors, working capital to total asset, retained earning to total asset, earning before interest and tax to total asset, market value of equity to book value of total debt, and sales to total asset. Major criticism of almost studies is the limited attempt toward development of theory of prediction of failure. Edmister (1972), and Dambolena and Khounry (1980) attempted to predict failure by comparing financial characteristics of failure and healthy firms with financial ratios.

In the context of Nepal, limited study has been carried out in financial ratios as predictors of failure in Nepal. This attempt has been made to analyze financial ratios for prediction of failure using multiple discriminant analysis and other related approach. Hence this study is directed towards determining the financial ratios useful for prediction of failure in the context of Nepalese firms. This study deals

with the following issues.

- ) Which financial ratios seem to be the best predictors of failure in Nepal?
- ) Is there any significant difference in the behavior of financial ratios between failure and non- failure firms?
- ) How do the firm's financial characters namely risks, profitability, asset, liquidity difference between failure and non- failure firms?
- ) Is multiple discriminant analysis useful for predicting failure?
- ) Whether the findings of the study are similar to previous studies?

### **3. Objectives of the study**

The major objective of this study is to examine the financial ratios useful for predicting financial failure in the context of Nepal. The specific objectives of this study are as follows:

- ) To assess the differences in financial ratios of failure and non- failure firms.
- ) To determine how do financial ratios deteriorate when firms move toward the failure.
- ) To examine the profile analysis usefulness for predicting failure.
- ) To analyze multiple discriminant analysis useful for predicting failure.

#### **4. Organization of the study**

This study has been organized into five chapters.

The first chapter is introduction chapter that contains the general background, statement of problem, objective of study, and organization of the study.

The second chapter deals with the literature review part. This chapter includes conceptual framework, review related study and concluding remark of the review of the study.

The third chapter devoted to research methodology employed in this study. It deals with research design, nature and sources of data, selection of enterprises, methods of analysis and limitation of the study.

The fourth chapter concern with data presentation and analysis of secondary data.

Finally, the fifth chapter Summary and Conclusion is organized.

#### **5. Limitation of the study**

This study based on financial data obtained from the various published volume of Nepal stock Exchange official directory for sample companies and the annual report of sample companies. Thus, it possesses all the inherent limitation of financial data.

Non availability of required financial data for the period of the study has restricted the size of the sample to 18 only. Therefore limitations of the small sample are also very much prevalent in this study. No other sectors like finance, banking etc are consider in this study due to non-availability of failure firms in these industries. In addition, this study does not cover all enterprises listed in Nepal Stock Exchange.



## Chapter 2

### REVIEW OF LITERATURE

This review of literature provides basic groundwork of the study. This chapter deals with the theoretical framework and empirical evidences on prediction of failure in Nepal. At first the conceptual framework of predictive ability of financial ratios on corporate failure is presented. Then, the relevant empirical literatures and thesis on prediction of corporate failure and financial performance of companies are critically reviewed.

#### **1. Conceptual framework**

The term corporate failure has been defined in various ways. Corporate Failure can be viewed strictly in the legal sense of liquidation while it can be taken to financially distress when it begins loss, default in payment of loans, operating cash shortage etc. A firm is regarded bankrupt when it is not likely to continue its operation, or pay dividend to its shareholders or pay wages to its employees (John, 1993). Corporate failure does not necessary results in the collapse and dissolution of a firm. In other word it means losing money; its liabilities are being insufficient for collateral of obligations. Its accumulated loss is being exceeded the capital. Like many reasons of corporate Failure, there are many views and opinions about corporate failure.

Financial ratios have been extensively used by different interest groups such as credit lenders, credit rating agencies, investors and management of the respective company. However, financial ratios can be perceived important in decision-making process. Generally, ratios are used to reveal financial strengths and weakness of a firm. The use of financial ratios in the area of prediction of corporate failure has been increased after Beaver (1968) and Altman (1968) study.

A number of empirical studies have been conducted on the predictive power of financial ratios (Edmister, 1972; Deakin 1972; Ohlson, 1980). These studies attempted to predict the corporate Failure using financial ratios. While other studies tested the power of financial ratios to predict corporate bond rating. These studies found the best ratios with the best predictive power using regression and multiple discriminant analysis of financial ratios.

It is clear that many researchers, author; practitioners have used the concept of corporate Failure in different studies. This emergence of different concept has improved the more literature on the subject of corporate Failure over time. Instead of corporate Failure, this study has used Bankruptcy to refer the corporate Failure in Nepalese context. Thus, corporate failure, corporate bankruptcy, and financial distress have been used interchangeably in this study.

## **Concept of Financial Analysis through prediction of failure**

Financial analysis can be considered as a heart of financial failure prediction. This growth and development of any enterprises is directly influenced by the financial policies. The finance is interrelated to such field as accounting, social science, economics and allied subject. The accountant prepare the statement and gather the data, which are useful for financial manager to make financial decision, good financial decision always plays vital role about the profit of enterprises. Similarly, it is equally important to achieve the wealth maximization of owners.

Financial analysis is a quantitative analysis of the firm's efficiency. In other words, it is a way of studying financial position or condition of company. The company's financial plan & policy prepared and prepared and implemented by the management should judge on the ground of its financial performance. Conceptually the vocabulary "Financial performance" concerns with the management and analysis of financial operation of the firm though the means of profitability, liquidity, efficiency and utility of resources.

Traditional financial ratio analysis has focus on the number. The value of this approach is that quantitative relation can be used to diagnose strength and weakness is a firm's performance. But the world is becoming more dynamic & subject to rapid change. It is not enough to analyze operating performance. Financial analysis

must also include consideration of strategic and economic development to which the firm must relate for its long-term success. In addition to the categories of stakeholder must be bordered formally ratio analysis was performed from the point of view of the firm's owners and creditors in the present political & social environment the shareholders must be expanded to include employees, customers, social environmental consideration and other government regulatory interest (Weston & Copland, 1992:191).

Financial analysis involves the use of various financial statements-the first is the balance sheet, which represents a snapshot of the firm's financial position at a moment in time and next is the income statement that depicts a summary of the firm's profitability over time (*Vanhorn & Wachowicz, 1997:120*).

It is possible of identifying the financial strengths and weakness of the firm by properly establishing relationships between the items of the balance sheet and profit and loss account (*Pandey, 1994:096*).

It is also the analytical and judgmental process that helps answer questions that have been posed. Therefore, it is means to end, Apart from the specific analytical answers, the solutions to financial problems and issues and on the nature and reliability of the information available (*Helfert, 1992:02*).

Besides, it can be taken as the starting point for making plans, before using any sophisticated forecasting and planning procedures. Financial data can be used to analyze a firm's past performance and assess its present financial strength. Management of the firm would be particularly interested in knowing the financial strengths to make their best use and to spot out the financial weaknesses to take corrective actions.

The analysis makes an attempt to dissect the financial statements into their components on the basis of the purpose on one hand and between individual components and total of these items on the other. In course of studying and evaluating the financial position of the organization, a study of trends of various important factors over the past several years is also undertaken to have clear understanding of changing profitability and financial condition of the business organization (Srivastav, 1993:56).

Financial statement analysis involves a comparison of a firm's performance with that of other firms' in the same line of business, which is often, identified by the firm's industry classification (Weston, Besley & Brigham 1996:78).

With respect to the problems identified from the analysis, pertinent care should be made to distinguish between the cause and symptom of problem (Hampton, 1998:99).

The analysis of transactions determines the solvency of business and the measure of efficiency of operations as compared to similar concerns. The analysis reveals how far the dream and ambition of top management have been converted into reality during each financial year. The analysis, being a technique of x-raying the financial position as well as progress of a concern, it enables managers and investors take decision that will affect the company's future.

Financial analysis as a part of financial management is the main indicator of the success or failure of enterprises. There are different persons / Institutions that affects or are affected by the decision of enterprises. Stockholders such as owners, managers, creditors, employees, customers, Tax authorities etc are directly concerned/interested in financial information and analysis of enterprise position. Similarly financial analysts, trade unions, competitors etc are directly interested about the financial performance of enterprises. Though the type of analysis is very according to specific interested about the financial performance of enterprises. Though the type of analysis is very according to specific interest of the part involved, shareholders of the enterprises are concerned with the present and expected future earning as well as their variations with the earning of other enterprises. This shows that they concentrate their analysis on the profitability of the enterprises.

Management of enterprises is interested in all aspect of financial analysis financial control to adopt good financial management system and financial control of the

enterprise. Trade creditors are primarily interested in liquidity position of the enterprise to pay their claims. Long-term creditors are more interested in cash flow ability of the enterprise to service debt over long run. Thus, financial analysis is the process of identifying the financial strength and weakness of the enterprise by properly establishing the relationship between the items of balance sheet and profit and loss account. In sum, it is process of evaluating the relationship between component part of financial statement to obtain better understanding of an enterprise position and performance.

The profit earned by the company is main yard of valuing the financial performance. Over the long term adequate and reasonable earnings are essential to assure survival and growth to capital adequacy through profit retention, to assess market for both debt and equity and to provide funds for increased assistance to productive sectors (Needles, 1989). A company grades itself as successful company, if it generates maximum profit to justify fair rate of return on investment. Thus the company should manage its available financial resources effectively in the productively are so that profitability position of the company rise and profit margin and return on investment boost up.

### **Objectives of prediction of financial failure and financial performance analysis**

From the concept of financial failure prediction and financial performance analysis, it has been evident that one can explore various facts related to the past performance

of business and predict out the future potentials for achieving expected results. Various parties are involved in the business directly or indirectly. Therefore, objective of the analysis also differs from one party to other. However, major objectives of analysis, in broad sense, can be started as (Needles, 1989).

**a) Assessment of past performance, current position and future prediction**

Past performance is often good indicator of future performance. Therefore, an investor or creditor is interested in the past sales, expenses, net income, cash flow and return in investment. In addition, an analysis of current position will tell what assets the business owns and what liabilities must be paid. Besides, it will provide the information about various facts in relation to business such as:

- ) Earning capacity or the profitability of the concern.
- ) Operational efficiency of the concern as whole and of its various departments.
- ) Long term and short term solvency of the business for the benefit of debenture holders and trade creditors
- ) Real meaning and significance of financial data.

**b) Assessment of potential and related risks**

The past and present information are useful only to the extent they have bearing on the future decisions. An investor judges the potential earning capacity of a company



because that will affect the value of the investment or share and the amount of dividend the company will pay. The creditors judge the potential debt paying ability of the company. The potentials of existing company are easier to predict than of others. This means there is less risk of the investment or loan hinges on how easy it is to predict the future profitability and liquidity. Besides, the managers of business concerns will get information about the potential, such as:

- ) Possibility of development in the future though forecast and budget allocation.
- ) Financial stability of the business concern.
- ) Reforms needed for in the present policies and procedures that will help reduce weakness and strengthen performance.

### **Types of Financial Performance Analysis**

The nature of financial analysis differs depending on the purpose of analyst. Financial statement analysis can be categorized into different types on the basis of material use, objective of the analysis and the modulus operandi of analysis ( Jain & Narayan, 1989:B23-B25).

#### **a) On the Basis of Material Used**

On the basis of material available and used by analyst, financial analysis can either be external or internal. Persons who don't have access to the detailed records of the

company make an external analysis. They have to depend almost entirely on published financial statements. Investors, credit agencies, government agencies and research scholars make such type of analysis. Those persons who have access to the books of accounts and other related information to the business make an internal analysis. While conducting this analysis, the analyst is a part of enterprise. For example, analysis for managerial purpose is the internal type of analysis.

#### **b) On the Basis of Objective**

On the ground of the objective or purpose of study, financial analysis can either be long-term or short-term. Long-term analysis is made in order to study the long-term financial stability, solvency and liquidity as well as profitability and earning capacity of a business concern. This analysis helps for long-term financial planning which is essential for the continued success of a business. Short-term analysis is made to determine the short-term solvency, stability and liquidity as well as earning capacity of the business concern. This analysis helps for short-term financial planning which is essential for continuation of success of the business.

#### **c) On the Basis of Modulus Operandi of Analysis**

On the basis of modulus operandi of analysis it can either be horizontal or vertical. Horizontal analysis is conducted to review and analyze financial statements of a number of years and therefore, it is based on data taken from several years. Hence it

is also known as dynamic analysis.

Vertical analysis is conducted to review and analyze the financial statement of one particular year only. As it is based on data from one year, it is also called static analysis.

### **Method of Financial Performance Analysis**

An enterprise communicates financial information to users through financial statement and reports. Financial statements are summarized information of the firm's financial affairs, organized systematically. They are the means to present the firm's financial situation to owners, creditors and general public. The preparation of financial statement is the responsibility of top management. As investor and financial analysis to examine the firm's performance in use these statement under to make investment decisions. So concern authority should be prepared very carefully and contain as much as information as possible. Two basic financial statements are prepared for the purpose of external reporting to owner, investor and creditors are:

1. Balance Sheet (*or Statement of Financial Position*) 2. Profit and Loss Account (*or, Income Statement*).

For internal management purpose i.e. for the planning and controlling much information than contained in published financial statement is needed. The accountant or account officer prepares these financial statements at the end of firm's

income year. Balance sheet and income statement undoubtedly provides useful financial data regarding the operation of an enterprise but they fail to present all the useful financial data required for major investing and financial decision by the management. Therefore, another financial statement fund flow statement is also in use. It summarized the source from which funds have been applied. It is prepared to show additional useful information not covered by the traditional statements.

### **Major Steps in Financial Performance Analysis**

The basis for financial analysis is financial information obtained from balance sheet and profit and loss account. The analysis of financial statements is completed in three major steps (Srivastav,1993:56). The first involves the reorganization and rearrangement of the entire financial data as contained in the financial statements. This calls for regrouping them into few principal elements according to their resemblance and affinities. Thus the balance sheet and income statement are completely recast and presented in the condensed form entirely different from original shape. The next step is the establishment of significant relationship between the individual components of balance sheet and profit and loss account. This is done through the application of tools of financial analysis. Ultimately, significance of result obtained by means of financial tools is evaluated. This requires establishment of standard against which actual be compared.

## **Tools & Techniques of Financial Performance Analysis**

To evaluate the financial condition & performance of a company, the financial analyst needs certain yardsticks. The yardstick frequently used is a ratio or index relating two pieces of financial data to each other. Analysis & interpretation of various ratios should give experienced and skilled analyst a better understanding of the financial condition & performance of the firm, than they will obtain from analysis of the financial data alone (Vanhorn, 1999:691-692). The techniques of analysis are employed to ascertain or measure the relationship among the financial statement items of a single set of statement and changes that have taken place in these items as reflected in successive financial statement. The fundament of the analytical technique is to simplify or reduce the data under review to the understandable terms.

Out of the various techniques, selection of a technique or combination of the techniques depends on the purpose of analysis. Different techniques reveal different facts associated with the business, so some or all of the following major techniques can be used for the analysis depending on the purpose and availability of the materials demanded by the technique.

### **1. Funds Flow Analysis**

The statements of the changes in financial position prepared to determine only the

sources and uses of fund between two dates of balance sheets is known as funds flow statement. It is prepared to uncover the information that financial statement fail to describe clearly. It spells out the sources from which funds were derived and uses to which these funds were put. This statement is prepared to summarize the changes in assets & liabilities resulting from financial and investment transactions during the period as well as those changes occurred due to change in owner's equity. It is also aimed to depict the way in which the firm used its financial resources during the period. Method of preparing Funds flow statement depends essentially upon the sense in which the term 'fund' is used. There are concepts of fund: cash concept, total resources concept & working capital concept.

According to cash concept, the word 'fund' is synonymous with cash. Total resources concept represents the total assets and resources as fund. The term 'fund' refers only to working capital on working capital concept. However, the concept of fund as working capital has gained wide acceptance as compared to other concepts. Therefore, any transaction that increases the amount of working capital is taken as source of fund while conducting funds flow analysis. Transaction that decreases working capital is treated as application. But any transaction that affects current liabilities or current assets without any change in working capital is not taken as source or use. The utility of this technique stems from the fact that it enables shareholders, creditors and other interested persons to evaluate the use of funds. It also enables them to determine how these uses were financed.

In the light of information so supplied by statement, the outsider can decide whether or not to invest in the enterprise. It enables finance manager to detect the imbalances in the use of funds and undertaken remedial actions. It serves as control device to measure the deviation between actual use of fund and the estimated budget. An analyst can evaluate the financed pattern of concern (What portion of the growth was financed internally and what portion externally). In spite of the great significance of funds flow analysis to various parties associated with the business, it is not free from drawbacks. Its shortcomings can be listed as:

- ) This is not full proof as it depends on conventional financial statements.
- ) It cannot introduce any new items, which causes changes in financial status of the business.
- ) It is not much relevant technique as study of change in cash position is more useful rather than fund position.
- ) It is historical in nature, so, cannot estimate source and application of fund in near future.
- ) It does not reflect the structure and policy changes.

## **2. Cash Flow Analysis**

This statement is prepared to know clearly the various items of inflow and outflow of cash. Cash flow analysis is different from funds flow analysis in the sense, the analysis relates to the movement of cash rather than the inflow and outflow of

working capital.

It summarizes the causes of change in cash position between dates of two balance sheets. While preparing cash flow statement, only cash receipts from debtor against credit sales are recognized as the source of cash. Similarly, cash purchases and cash payment to suppliers for credit purpose is regarded as the use of cash. The same holds true for expenses and incomes outstanding and prepaid expenses are not to be considered under this analysis.

This type of analysis is useful for short-run planning of firm. The firm needs sufficient cash to pay debt maturing in near future, to pay interest and other expenses and to pay dividend to shareholders. The projection of cash flow for near future can be made to determine the availability of cash. This cash balance can be matched with the firm's need for cash during the period and accordingly, arrangement can be made to meet the deficit or invest the surplus cash temporarily.

Though it is more confidential than funds flow analysis for the decisions related to the near future, it is also not free from drawbacks. Its drawbacks can be listed as:

- ) It is not perfect evident as it depends on conventional statements.
- ) It is historical in nature.
- ) It does not reflect structural and policy changes.



### **3. Trend Analysis**

In finance analysis the direction of change over a period of years is crucial importance. Trend analysis of the ratio indicates the direction of change. The kind of analysis is particularly applicable to the items of profit and loss account. It is advisable that trend of sale and net income may be studied in the light of two factors. The rate of fixed companion secular trend in the growth of business and general price level; It might be found in practice that a number of firms would show a persistence growth over a period of years. But get a true trend of growth; sales figure should be adjusted by suitable index of general prices. In other words, sales figures should be deflected for raising price level, which the resulting figures are, graphed us will get a trend of growth devoid a price change. Another method of securing trend of growth and one which can used instead of the adjusted sales figures or as check on them is to tabulated and plot the output or physical volume of sale expressed in suitable units of measure. If the general price level is not considered while analyzing trend of growth, it can mislead management. They may because unduly optimistic period of prosperity and pessimistic in dull period.

This method is immensely helpful in making comparatively study of financial statements of several years. This method of analysis involves the computation of percentage relationship that each statement item bears to the same item in the base year. Base year for the purpose of comparison may be earliest year, the latest year or any intervening year under the study. This exhibits the direction to which the

concern is proceeding. Trend analysis facilitates the horizontal study of the data. But trend ratios are generally not computed for all of items in the statement, as the fundamental objective is to make comparison between items having same logical relationship to one another. Trend analyst reveals whether the current financial position of the company has improved over the past years or not. It shows which of the items have moved in a favorable direction and which of them in unfavorable direction. Though it is the important tool of analysis, it is bound by certain limitation. They are:

- ) Trend for a single balance sheet or income statement is seldom very informative.
- ) It does not give accurate result if accounting principles followed by the accountants is not consistent over the period of study.
- ) Price level change adversely affects the comparison.
- ) Selected base year for some of the items in the statement may not be typical.

#### **4. Ratio Analysis**

An arithmetic relationship between two figures is known as ratio. Two number used in the ratio are called the term of ratio. The first term is the antecedent and is the divided; the second is the consequent and is the divider. Ratio is computed by dividing one item of relationship with the other. Ratio simply means the relation of one quantity to another of the same kind is defined to be that pure (abstract)

number, integral, or fractional, which express the number of times the later is contained in the former.

Ratio analysis is a technique of analysis and interpretation of financial statement to evaluate the performance of an organization by creating ratios from the figure of different accounts consisting in balance sheet and income statement (P/L Account) is known as ratio analysis (Pandey, 994:436-437). Financial ratios are the basic tools of financial analysis. The operational and financial problem of a corporation can be ascertained by examining the behavior of these ratios. In financial analysis a ratio is used as an index or yardstick for evaluating the financial position and performance of an enterprise. A financial ratio is a relationship between two financial variables and a process of identifying the financial strength and weakness of an enterprise.

The liquidity ratio measures the corporations overall efficiency of operation. Similarly, leverage ratio measures the extent to which the corporation has been finance by debt, and turnover ratios measure the utilization of the corporation's resources. These financial ratios help us to find symptoms of problems. The cause of any problem may be determined only after locating the symptoms. Hence, the study of financial ratios behavior of the corporations assumes great significant.

Ratio Analysis is carried out to develop meaning relationship between individual items or group of items usually shown in the periodical financial statements. An

accounting ratio shows the relationship between the two inter-related accounting figures. Ratios are guides or shortcuts that are useful in evaluating the financial position and operations of a company. When the relationship between two figures in the balance sheet is established, the ratio so calculated is called 'balance sheet ratio'. Ratio may be expressed in the form of quotient, percentage or proportion. Ratio analysis involves two types of comparison for the useful interpretation of the financial statement. A ratio itself does not indicate the favorable or unfavorable position.

Most commonly used standards to evaluate the ratio are: Comparison of present ratio with past or expected future ratio. Comparison of the ratio of the firm with those of similar firms over the period of time or with industry average at the same point of time. With the help of ratio, one can judge financial performance of a business concern over a period of time and against the industry average. The ratio helps the analyst to form the judgment whether the performance of firm is good, questionable or poor. Management of the firm can take strategic decisions on the basis of position revealed by ratio. Investors can decide about the future of their investment. Creditors judge whether the firm is able to meet its obligations and whether the more lending would be beneficial for them or not. In view of the requirement of the various users of ratios, they can be classified into four major categories. They are: - liquidity ratio, leverage ratio, activity ratio and profitability ratio.

Liquidity ratio measures the ability of firm to meet its current obligations. Leverage ratio evaluates the long-term financial position of the firm. Activity ratios are employed to evaluate the efficiency with which the firm manages and utilizes its assets. Finally, profitability ratios are calculated to measure the operating efficiency of the company. Through ratio analysis is powerful technique of financial analysis; it should be used with extreme care and considered judgment because it suffers from certain drawbacks. The drawbacks of the ratio analysis are listed below: .It is difficult to decide the proper basis of comparison. .It calls interpretation to certain aspects of the business, which needs detailed investigation before arriving at any final conclusion. . Unless there is a consistency in adoption of accounting methods, ratios may not prove of greater use in case of inter-firm comparison. The price level changes make the interpretation of ratios invalid. .The ratios are generally calculated from past financial statements and thus, are no indicators of future.

### **Ratio Analysis & its Classification**

In general ratio may be classified on the following base lending to somewhat overlapping categories (Pandey, 1994:502-503).

#### **i) Traditional Classification**

It is classification according to the statement from which ratios are derived. By for the most convenient mode of classification, it has the sanctity of tradition in much

as since the advent of ratio analysis. Ratio has grouped in this manner from this angle ratios are classified as:

Balance sheet ratios or financial ratios: - These ratios deal with relationship between two items or groups of items, which are together to the balance sheet e.g. debt equity ratio.

Revenue statement ratio: These ratio sometimes also referred as operating ratio establish the relationship between two items or group, which are in the revenue statement e.g. stock turnover ratios.

Inter statement ratio or combine ratio: - These ratio portray the relationship between items of one of which part of balance sheet and profit & loss account (income statement).

## **ii) Functional Classification**

Ratios are grouped in accordance with certain test which they are intended to sub-serve from the point of view of varies parties having a financial interest in an enterprise test are: .Test of liquidity .Test of profitability .Market test etc.

## **iii) Classification According to Nature**

These ratios are classified from the point of view of financial management. They are: 1) Liquidity Ratio 2) Activity Ratio 3) Leverage Ratio 4) Profitability Ratio

## **1) Liquidity Ratio**

A liquidity ratio is assigned to find out the current assets intensifies and financial structure. In other words, liquidity ratio measures the ability of an enterprise to meet its current obligations. A core of liquidity ratio has emerged over the year which, when viewed in their totality and with respect to risk, is expected to yield a rough approximation of the business to pay its current liabilities and when they fall due for payment. Regarding the position of liquidity ratio, a current ratio of 2:1 is considered acceptable for most of firm although it is only rule of thumb standard and it is 1:1 for quick ratio. Though, it depends much on circumstances in case of seasonal business (Pradhan, 1986:17).

## **2) Activity Ratios**

Activity ratio also known as turnover ratio, indicate the speed with which assets are being converted or turned over into sales. This ratio is employed to evaluate the sales efficiency or activity and short-term liquidity or activity of an enterprise. These ratios also measure the degree of effectiveness in use of fund by a firm. The common ratios of activity/ turnover ratios are as follows:

- ) Inventory turnover ratio
- ) Debtors turnover ratio
- ) Average assets turnover ratio
- ) Fixed assets turnover ratio

- ) Current assets turnover ratio
- ) Total assets turnover ratio
- ) Capital employed turnover ratio

### **3) Leverage Ratio**

The use of finance is referred to by financial leverage. These ratios are also called solvency ratio or capital structure ratio. To judge the long term financial position of the firm the leverage ratios are two aspects of the long term solvency of the firm i.e. ability to repay the principle when due and regular payment of interest to the debt holder with the help of this ratio management can make the sound financial decisions about the approximate mix of equity & debt. The following ratios are included in leverage ratios:

- ) Debt Equity Ratio
- ) Debt to total capital Ratio
- ) Interest coverage Ratio

### **4) Profitability Ratio**

Profitability ratio shows the overall efficiency of the business concerns/corporations. The relation of return of firm to either its sales or its equity or its assets is known as profitability ratios. In other words, we can say that profitability ratios are used to measure the success of an enterprise in terms of its



earning on sales or on investment, profitability ratios are of two types.

- ) Profitability in relation to sales
- ) Profitability in relation to investment

### **Limitations of Financial Performance Analysis**

From the above discussion, it has been evident that financial performance analysis of great significance for investor, creditors, management, economist and other parties having interest in business. It helps management to evaluate its efficiency in past performance and take decisions relating to future. However, it is not free from drawbacks. Its limitations are listed below ( Jain & Narayan, 1989:B23-B25):

#### **a. Historical Nature of Financial Statements**

The basic nature of statements is historical. Past can never be a precise and infallible index of the future and can never be perfectly helpful for the future forecast and planning.

#### **b. No Substitute for Judgment**

Analysis of financial analysis is a tool to be used by expert analyst to evaluate the financial performance of a firm. That's why; it may lead to faulty conclusion if used by unskilled analyst.

### **c. Reliability of Figures**

Reliability of analysis depends on reliability of figures of the financial statements under scrutiny. The entire working of analysis will be vitiated by manipulation in the income statement, window dressing in the balance sheet, questionable producers adopted by the accountant for the valuation of fixed assets and such other facts.

### **d. Single year Analysis is not much valuable**

The analysis of these statements relating to single year only will have limited use and value. From this, one cannot draw meaningful conclusion.

### **e. Result may have different Interpretation**

Different users may differently interpret the result derived from the analysis. For example, a high current ratio may suit the banker but it may be the index of sufficiency of the management due to under-utilization of fund.

### **f. Changes in Accounting Methods**

Analysis will be effective if the figures derived from the financial statements are comparable. Due to change in accounting methods, the figures of current period may have no comparable base, and then the whole exercise of analysis will become futile.

### **g. Pitfall in inter-firm Comparison**

When different firms are adopting different procedures, records, objectives, policies and different items under similar heading, comparison will be more difficult. If done, it will not provide reliable basis to assess the performance, efficiency, profitability and financial condition of firm as compared to whole industry.

### **h. Price level change reduces the validity of analysis**

The continuous and rapid changes in value of money, in the present day, economically also reduces the validity of the analysis. Acquisition of assets at different levels of prices make comparison useless as no meaningful conclusion can be drawn from a comparative analysis of such items relating to several accounting period.

### **i. Selection of Appropriate Tool**

There are different tools of analysis available to the analyst. The tools to be used in a particular situation depend on skill, training, intelligence and expertise of analyst. If wrong tool is used, it may give misleading result and may lead to wrong conclusion, which may be harmful to the interest of business.

## **2. Review of related studies**

### **2.1 Review of related articles**

The review of this study carried out assorted articles by different researchers and authors in the area of predictive ability of financial ratio on corporate bankruptcy. The prediction of bankruptcy model has been formulated on the basis of those empirical works of financial ratios.

Ramster and Foster (1931) have analyzed eleven types of financial ratios for 173 firms whose securities were registered in the state of Illinois. The major conclusions of this study were that the firms which are on the verge of failure tend to have ratios lower than the successful firms and the ratios of failed firms deteriorate as the point of failure comes near. Patrick (1932) has examined whether there was a significant different in the trend of ratio for the successful and failure firms. He selected a sample of 19 companies which had failed during the period of 1920-1929 and chose a matching sample of 19 successful companies using financial soundness, asset size, sales volume, product line and fiscal year as matching. Each pair of firms was examined using a number of financial ratios for three year prior to the date of failure. The major findings of this study were:

- ) The ratios of both groups were compared with minimum level and found that successful firms surpassed the minimum level; while on the

other hand, the ratios of failed firms were below the minimum level.

- ) The ratios of failed firms deteriorated as the year of failure approached.
- ) All the ratios of failed firms were persistently different from the non-failed firms at least three year prior to failure.
- ) The net worth to debt and net profit to net worth ratios were found to be the best indicators of failure among the ratios used.

Winakor and Smith (1935) observed 183 firms which failed between the years of 1923-1931 for the ten years prior to the year. Twenty one ratios for each of the firms were computed and examined. Out of twenty one ratios, the ratio of net working capital to the total assets has found the most accurate and steady indicator of failure in this study. The mean value of the ratios of the failed firms was below the mean value non failed firms and showed the deterioration as the date of failure come near.

Beaver (1966) attempted a univariate prediction model to predict the financial ratios as predictors of failure on the basis of paired sample design of 79 failed and 79 non-failed firms of similar industries and same size. He used 30 ratios for every set of financial statement. 30 ratios were divided into six major common element groups and only one ratio for each group was selected for the analysis. Three criteria used to select the ratio i) popularity-based on the frequently appear in the literature ii) the ratios performed well in one of the previous study and iii) cash flow concept. In this

study comparison of mean values, dichotomous classification test and likelihood ratios were used to test predictive power of ratios for failure. The major findings of this study were:

- ) Ratio distribution of failed firm's beings it deteriorates at least five year before failure.
- ) The ratios of non-failed firms were quite stable throughout the five year before than failed firms.
- ) The gap determines the difference in the mean ratios of failed and non-failed firms increase as failure.
- ) All ratios do not predict equally well.
- ) The cash flow to total debt ratio has excellence discriminatory power.
- ) The predictive power of liquid asset was seen much weaker.
- ) The most successful predictor were i) cash flow to total debt ratio ii) net income to total asset ratio iii) current plus long term liability to total asst ratio iv) working capital to total asset ratio and v) current ratio.

Altman (1968) has applied the first multivariate discriminant analysis. The sample was composed of sixty six corporations with thirty three bankrupt and thirty three non- bankrupt firms. Twenty two potential ratios were chooses on the basis of popularity in the literature, potential relevancy to the study and few new ratios were initiated from the original list of ratios, five ratios were selected as doing the best

overall job together in the prediction of corporate bankruptcy. In order to arrive at a final profile of ratio the following procedures were used:

- ) Observation of the statistical significance of various alternative functions including determination of the relative contribution of each independent variables
- ) Evaluate of inter-correlations between the relevant variables.
- ) Observation of the predictive accuracy of the various profile and
- ) Judgment of the analyst.

Altman developed discriminant function as prediction model of corporate bankruptcy.

$$Z = 0.012 X_1 + 0.014 X_2 + 0.033 X_3 + 0.006 X_4 + 0.999 X_5$$

Where,

= intercept

$X_1$  = working capital to total asset ratio (CA-CL/TA)

$X_2$  = retaining earning to total asset ratio (RE/TA)

$X_3$  = earning before interest and tax to total asset ratio (EBIT/TA)

$X_4$  = market value of equity to book value of total debt (ME/ TD)

$X_5$  = sales to total debt (S/TD)

A Z-score of less than 1.8 indicates a very high probability of failure, while a Z

score larger than 3 indicates a high probability of non-failure. Z-score between 1.8 and 3 fall in the 'grey zone' where it is not possible to predict with confidence whether the firm will or will not fail. The major findings of this study were:

- ) In the case of large companies, where bankruptcy occurs less frequently.
- ) The multivariate framework was greater statistical significance than the common techniques of sequential ratios comparison.
- ) The discriminant ratio model proved to be extremely accurate in predicting bankruptcy correctly.
- ) Discriminant function was accurate in several secondary samples introduced to test the reliability of the model.
- ) The bankruptcy can be accurately predicted up to two years prior to actual failure with the accuracy diminishing rapidly after the second year.

Mayer and Piffer's (1970) study on the prediction of bank failure was carried out taking 39 paired failed banks and solvent banks. The failed banks were selected in the period of 1749-1965 and solvent banks for the same period. The study had attempted to discriminate between bankrupt and solvent banks facing similar local and national market condition. Thirty two financial ratios were used as the independent variables in stepwise linear regression model for prediction of bank failure. Financial ratios were computed for a period of six years prior to failure. The major findings of this study were the financial measures can evaluate relative



strength and weakness of firm, financial variable were unable to discriminate between viable and failing banks, when lead time is three years or more and the current financial position is needed to discriminate among bank groups.

Deakin (1973) had attempted to develop an alternative model to Beaver and Altman based on 32 failed and 32 non-failed firms. The study applied both univariate and multivariate statistical techniques to assess the predictive ability of large groups of ratios. The major outcome of this study were the five ratios out of fourteen ratios could best predict corporate failure in each of the five year prior to failure and the discriminant analysis was the best predicts business failure using ratios as prediction variable three years in advance with fairly high degree of accuracy.

Ohlson (1980) study on financial ratio and the probability of prediction of bankruptcy taking a sample of 105 bankrupt manufacturing companies and which experienced bankruptcy during the period of 1970-1976, compare with 2058 non-bankrupt manufacturing companies in contrast to paired sample decision of previous studies. In this study the econometric methodology of conditional logit analysis has been applied to avoid some problems of multivariate analysis. The four factors derived from financial statement were statistically significant in assessing the probability of bankruptcy. They were: i) size ii) the financial structure as measured by leverage (total liabilities to total asset) iii) some performance measures ( net income to total asset) iv) some measure of current liquidity (working capital to

total asset , current liability to current asset).

Dambolene and Khoury (1980) were conducted to corrected deficiency of the newer Zeta model of Altman's ratio stability and its treatment. This study presented another model on the corporate failure that uses financial ratios and discriminant analysis. Paired sample of 34 failed and 34 non-failed firms has been taken. The study found a substantial degree of instability in standard deviation of 19 ratios of bankrupt manufacturing companies over the non-bankrupt manufacturing companies. The standard deviation of ratios over time appears to be the strongest measure of ratio stability, profitability, leverage and liquidity ratios had shown relevant in predicting corporate failure and the leverage ratios and stability of fixed assets to net worth ratio represents historical reasons for the corporate failure.

In context of Nepal few attempts have been made in the study of financial ratio and predicting corporate bankruptcy.

Pradhan (1994) attempted to investigate the major aspect of financial distress in Nepal. This study provided behavioral evidence from 63 executives of Nepalese industries on the appropriateness of the choice of variables of prediction of financial distress. The major findings of this study were:

) Short term liquidity ratios were important predictors of sickness (quick

asset to current liabilities, current assets to current liabilities and cash to current liabilities).

- J The ratio with the highest mean weight is assigned the rank of 14 and was considered the least important ratios.
- J The finding was consistent with the usual findings of the studies on the bankruptcy prediction using statistical model.
- J There were no significant difference between the choice of financial ratios by the private and public sector enterprises.

There are some studies conducted in the field of financial performance analysis by various researchers and authors. Some of them have been reviewed in order to avoid possible duplication and bridge the gap. The first & foremost of any commercial banks is to maintain sufficient liquidity of its fund by properly managing current assets and current liabilities. Maintenance of satisfactory level of liquidity is sufficient enough to meet the deposits liabilities that are to be paid on demand not only that the liquidation position determines. The deposits paying ability of the bank but at time ensures the smooth operation to a considerable extent (Shrestha, M.K. 1987) Consideration of liquidity requires that the bank should be able to pay cash on demand. Since bulk of deposit liabilities of commercial banks are subject to withdrawal either without notice or a prior notice term, any commercial banks must meet the demand or close its doors- go in to liquidator. To be able to meet withdrawal of deposits the bank has to maintain cash reserve, which will vary as the

composition of total deposits changed (Vanish, 1978:16). Every bank strives to maximize its net profit earnings by employing its surplus cash by lending it to trade and industry against tangible and / or personal securities in a manner to pay on demand the acquired funds to their owners or persons named by them ( Vanish, 1978:19).

The study further stated-the two principal items of the assets portfolio of banks are the advance or bank credit & investment and other securities. Many countries have provided for the statutory provisions regarding the minimum percentage of bank deposits that must be invested in government securities. Similarly, the central bank may and frequently does determine the size and distribution of aggregate bank credit in the economy. New banks were being opened and existing banks busy opening new branches all over the country. The media was used extensively, to announce new products such as ATMs, new facilities and services, remittances, loans etc and mostly to establish each bank as a more viable option compared to other banks. A pretty picture that mesmerized the public into thinking that banks are doing well. In the last decade, just as the banks were emerging to take financing to new heights, the Nepal Stock Exchange too was just spreading its wings.

It was no coincidence that the major scrip being bought and sold at the NEPSE, as was mainly Nepal Stock exchange is known as was mainly that of the private commercial banks. Even today, the major transaction at NEPSE, determining the

daily up or down as the case may be is governed by the transactions in share of private commercial banks (Business Age International 2005, feb) In recent time the commercial banks have witnessed proliferation of commercial banks. However the Nepalese public has not been able to reap the potential benefits from the government's efforts of liberalized reform. This can be blamed on lack of a healthy competition. Market-oriented approaches should be promoted to encourage competitive pressure than priority sector lending, branch opening criteria and interest rate spreads. These directives can act as disincentives and even create negative impacts.

However, the proliferation of bank has made banking facilities available to a wider population. For example, Bank of Kathmandu in line with its vision to contribute to economic development of Nepal has tailored product such as Sajilo Bachat Khata, which can be opened at a minimum balance of Rs 1000 with an interest of 2.25 percent (Bhandari, 2005, feb) Mr. Gopal Shrestha (2004: April- May) in his article- Two Decades of Private Sector Bank in Nepal: An Analysis, on which he had analyzed 15 private commercial banks and presented their audited financial indicators ending 2059/60(mid July 2003). As of FY 2002/03, private sector commercial banks have mobilized more than Rs 107 billion in deposits and utilized Rs 67 billion through loans & advances with a gross credit deposit ratio of nearly 78%. Net worth of the sector is more than Rs 9 billion and the shares of this sector represent a significant proportion of shares traded in the securities market. In fact,

share market growth can be attributed to the private sector commercial banks of the country. His findings are:

- J Private sector bank has invested more than Rs 20 billion in HMG securities, which along
- J With mandatory CRR requirement are utilized to meet the resources gap of the government. This sector is providing lucrative employment opportunities. Directly and indirectly, a larger sector of work force has found employment because of the investing activities of the sector.
- J Non –Performing Assets (NPAs) of this sector are hovering around 8%, which is slightly higher than the internationally acceptable level of 5%? However as this sector has also built up loan loss provision to the extent of nearly 6% this will definitely cushion any disaster emanating from the level of NPAs.
- J Private sector banks used to accessible to the influential class in the earlier decades have started to serve the common people also which in turn has improved the purchasing power of the common people.
- J They have contributed handsomely in developing international trade and in routing remittances through the formal channel. Service orientation of the private sector banks have changed the perception of the common man that banks are meant for the services of common people, whereby improving the total economic scenario. These banks have assisted in the

integration of our country with the modern global village, which would have a pious wish without such assistance.

Lastly, analyzing the performance of private sector commercial banks of Nepal, he concluded that private sector is definitely a boon for the economy, the benefits of capitalistic economics and there should be no skepticism for adapting the same in the context of our country also.

Fago (2006) has been conducted the study on prediction of corporate bankruptcy in Nepal. This study presented model on the corporate bankruptcy that uses financial ratios and discriminant analysis in the context of Nepal. Twenty five samples were taken from listed manufacturing companies of Nepal including 11 bankrupt and 14 non-bankrupts. The study found a substantial different between the ratios of bankrupt and non-bankrupt manufacturing companies. This study evidenced that cash flow of bankrupt manufacturing companies is insufficient to operating requirement. This study provided the liquidity ratio is less than one for bankrupt and more than one for non- bankrupt companies that liquidity position of bankrupt companies are also poor. This study showed that out of ten ratios, the predicting power of current asset to current liabilities retained earning to total asset and earning before interest and tax to total assets are higher.

Joshi (2006) attempted to analyze multivariate discriminant predictive model using

multiple discriminate analysis and other related approach. This study has covered 30 companies which are from manufacturing; trading, hotel and others listed firms in Nepal Stock Exchange. The most of the selected financial ratios of the bankrupt and non-bankrupt companies observed that there are differences in the mean ratios since three year prior to bankruptcy. Ratio of bankrupt companies is found either negative or very weak except sales to total assets ratio. The ratios of non-bankrupt companies are quite stable throughout the three years before bankruptcy than bankrupt companies. On dichotomous classification test, it is evidently shows that not all ratios predict equally well. The ability to predict bankruptcy is prominent in the earning before interest and tax (EBIT) to total assets ratio. In the study, it was found that the multivariate discriminant classification seems 87 percent accurate while discriminating selected companies based on ten-selected financial ratios.

## **2.2 Review of related thesis**

Bhattarai, Rimala (1978), in her study on The Lending Policy of Nepalese Commercial Banks in Nepal, has conducted that an important aspect of commercial bank is leading its fund effectively than the collection of deposits if a bank can not lend its resources properly, the resources in collection deposits will also be useless. Instead of developing the country's economy, it creates greater disparity on the economic life of the people. Low capital formation means lesser rate of development when all the resources will be lacked up capital formation will not be



possible. As a result only an increase in all interest rate cannot develop the economy of the underdeveloped countries through higher motivates both savers & big savers.

Shrestha, M.B (1981), conducted a study of financial performance of Koshi rice Export Company limited, in term of ratio analysis, fund flow analysis and trend analysis for four years period, some of major finding of the study was: <sup>3</sup>/<sub>4</sub>The liquidity position of enterprise was found poor.

- The total assets turnover was extremely leveraged.
- The return on shareholders' equity was found decreasing & come down to 6 percentages from 35.7% four years back.

Shrestha has recommended some measure on the basis of the studies. The major recommendations of the study were improving the credit collection performance and maintaining an adequate bad debt provision. The study suggested checking the huge amount of advance forwarding that hampers working capital and quality of liquidity.

Joshi, Keshav Raj (1989), a study on financial performance of commercial banks, analyzed the different ratios of Nepal Arab Bank Limited and Rastriya Banijya Bank for the period of five years till fiscal year 1989 concluded that liquidity position of commercial bank is sound. Their debt to equity ratio is high, which doubt on solvency debt to equity ratio of local commercial bank is higher than joint venture banks. Conservation policy is followed by commercial banks for assets

utilization that is why investment is done in loans and advances. Asset utilizations for earning purpose is two third of the total assets. The main source of income for these banks is interest from loans and advance and overall profitability position of Nabil bank is better than others. He recommended dividend payout ratio of commercial banks should be determined keeping in mind the shareholder's expectation and growth requirement of the banks.

Bohara, Bhoj Raj (1992), has conducted a research on Comparative Study of the Financial Performance of Nabil bank and Nepal investment bank. The major objective of the study was to highlight the financial performance and role of joint venture banks in the economy. He attempt to analysis the financial performance with the help of financial analysis and the study derived the strength and weakness of two major joint venture bank by calculating liquidity ratio indicating ratios. Mr Bohora comes out with some valuable suggestion to the joint venture banks, which are as follows:

- Joint venture banks need to make balance between disbursing of cash dividend and issuing of bonus shares.
- These banks need to increase their equity base to maintain their capital adequacy.
- They need to maintain liquidity in the form of cash reserve ratio as per NRB rules.

The thesis entitled an appraisal of financial position of nepal bank limited, by Amatya, Nagendra Bahadur (1993), analyzed, examined and interpreted the financial position of bank from 1980/81 to 1989/90. The study reflects that the liquidity position of banks has fairly maintained and the bank has found to have adapted the conservative financing policy i.e. low position of equity capital has been restored to finance total asset. The bank has successfully operated beyond the breakeven point over the study period. Main finding of the study are:

- Regarding the liquidity management, the bank is in better position but the bank has been following uniform policy to finance current assets and current liabilities.
- The bank is successful in deposit collection but it has always adapted conservative and traditional credit policy.
- The trade and commerce advances are playing major role in the credit composition of the bank. Although the reserve of the bank is increasing gradually, the reserve plays a nominal role in the credit expansion control.
- The major portion of investment of the bank is in HMG' s securities, and the volume of transaction is high in all respect but the bank does not show higher rate of profit or it shows a decreasing trend of profit.

Poudel, Ashok (2002), in the thesis entitled "Financial Performance Analysis of Everest bank limited" has focused on the objectives as to examine the financial statement of the bank and analyze them to see the financial soundness of the bank to

observe the return over the equity to highlight the relationship between different variables, to provide suggestions and recommendation for the improvement of the future performance of Everest bank limited based on the findings of the analysis. It is found that the liquidity position of the bank to meet the daily cash requirement is sound. There is strong position regarding the mobilization of total deposit on loan and advances, normal position and decreasing trend of regarding the mobilization of total deposit as investment and bank has average position towards the utilization of working fund. Analysis of EPS reveals that the bank has very good increasing trend regarding EPS even though first two years shows the negative figure. The trend analysis of deposit, net profit, loan and advances and EPS shows the increasing trend even though the value shows in the beginning of studying period.

Shakya, Amogh Siddhi (2000), performed the study on "evaluation of financial performance of himalayan bank limited". The period study was from fiscal year 1995/96 to 1999/00. It tried to examine the overall performance of HBL for five years. The main tools used for analysis purpose was ratio analysis. The report concluded that the liquidity position of the bank was good. The bank had sufficient liquidity to meet unanticipated calls on all deposits. The deposits should be utilized more on productive sectors like government securities and shares of other institutions because idle assets would do not good. The analysis of the report showed that the bank had good rate of return though it was not able to keep up generating to have quite stable mixture of debt and equity financing. It is

recommended that the bank should try to increase the utilization of assets by providing loans and advances and should mobilize the total deposits to generate income and thus, earning more profit.

Maharjan, Mandira (2006), a research work on "A Study on Financial Performance of NABIL Bank Limited" performed by concludes that the liquidity position of the bank is good enough to meet the short-term obligations. The study shows that the bank is mobilizing its loan and advances adequately. The bank has better mobilization of its saving deposits in loans and advances for income generating purpose but it has not nicely mobilized its fixed deposits in loans and advances to generate the income. So it is suggested investing more in loan and advances as well as less in government securities efficiently for generating profit. Interest earned by the bank is inadequate in comparison to the assets. So it has drawn the attention of the bank toward the sense of significant EBIT. Since, the net profit of the bank in comparison to the total deposit is relatively low; it focused on earning operational profit either by increasing their operational efficiency, or by decreasing their operational expenses as far as possible. The bank is also suggested to formulate and implement some sound and effective financial and non financial strategies to meet required level of profitability as well as the social responsibility.

Adhikari, Dev Raj (1993), conducted in the study evaluating the "Financial performance of Nepal Bank Ltd". The study has concluded that investment portfolio

of the bank has not managed so efficient to maximize the return. Operational efficiency of the bank is indicated by the operational loss has been found unsatisfactory. So the bank has been suggested to manage its investment portfolio efficiently. It is recommended that the bank should try to mobilize its resources efficiently by creating new business and service ideas which will certainly help for the better utilization of ideal resources and for the economic development of the country. It has focused on utilization and mobilization of funds and resources of Nepal Bank Ltd. This study especially concentrated on the deposit collection of the bank and disbursement of fund as loan and advances. Therefore, its main study areas are uses and sources of funds and income and expenses trends of the bank.

Udas, Shyam Kumar (2001), conducted his thesis entitled "A Comparative Appraisal on Financial Performance of Nepal Bangladesh Bank Limited and Bank of Kathmandu Limited", found that both banks are maintaining sufficient amount of cash to meet the demand by their depositors. Bank of Kathmandu has higher portion of cash and bank balance out of it's out of its current assets than NB Bank. NB Bank is better position in terms of utilizing deposits than BOK. Similarly, profitability position of NB Bank is quite better than Bank of Kathmandu. Both Banks are highly leveraged whereas Bank of Kathmandu is highly leveraged than NB Bank. The earning per share of NB Bank is higher than Bank of Kathmandu.

Saud, G.B. (2006), in the study entitled "A study on Comparative Analysis of

Financial Performance of Himalayan Bank Limited, Nepal Bangladesh Bank Limited and Everest Bank Limited" shows Himalayan Bank Ltd. has performed better in terms of absolute net profit during the study period. All three banks are able to earn above 1% return on total assets and to mobilize deposit properly. But these banks are not able to pay regular dividend to its stockholders. However they are maintaining its EPS above its par value. Regarding the EPS, the banks are not able to retain its EPS on its previous level. It concludes that during the study period trend line show the decreasing pattern of net income after tax. It is recommended that Everest Bank Ltd and Nepal Bangladesh Bank Ltd to be more concerned for efficiency utilizing the deposits in loan and advances or other more profit generating sectors. It is also suggested that the capital adequacy ratios should be maintained as per the Nepal Rastra Bank directives.

Subedi, Narayan Prasad (2002), in the thesis entitled "A Comparative Study of Financial Performance between HBL and EBL" has concluded that the current ratio of EBL is greater than that of HBL. The variability of the ratios of HBL is more uniform than that of EBL. The liquidity of bank may be affected by external and internal factors such as interest rates, supply and demand position of loans and saving to investment situation. HBL has maintained the ratio of cash and bank balance to total deposit considerably lower than that of EBL. Comparatively HBL's profitability position is better than that of EBL. Profitability ratios like return on total assets, returns on total deposits are not satisfactory in the both banks. HBL has

lower capital adequacy ratio in comparison to directive issued by NRB. HBL's loan and advances to total deposit ratio are significantly lower than that of EBL.

Mahato, Bindeshwor (1997), in the thesis entitled "A Comparative Study of Financial Performance of NABIL and NIBL" concludes that both banks remain in adequate liquidity position to meet short-term obligation. But primary and secondary reserve position of NABIL is better than NIBL. NABIL is utilizing more deposits in income generating purpose. NABIL is utilizing low cost bearing deposits efficiently than NIBL. NIBL is following conservative and safer deposits and selective lending policy than NABIL through the capital adequacy requirements are meeting by both of them.

Ghimire, Gopal Prashad (2003), conducted research work on "A Comparative Case Study of the Financial Performance of Commercial Banks between NBBL, HBL and EBL". To observe the ability to mobilize the resources into investment, ability to maintain and manage liquidity, assets, capital structure, efficiency, productive and financial risk. The research objectives were to highlight financial performance to analyze and evaluate liquidity, profitability, leverage, activity, trend and growth of loans, investment and total deposit pattern of these banks and finally recommend suggestions for improvement. The research design was descriptive and analytical where both financial and statistical tools we used to analyze the data. The study was from 1996/97 to 200/01. It concludes that current ratio of all the banks was below



the normal standard even comparatively better in EBL.

Joshi, Jitendra Man (2004), has conducted the study on "Financial Analysis of Nepalese Commercial Banks" with the objectives of finding the comparative financial strengths and weakness of various commercial banks, return rate and expected return to the shareholders, systematic and unsystematic risk of the banks and providing recommendation on the basis of research findings. By using financial ratios, it is concluded that lending condition of banks is in decreasing trend. Banks in strong condition are holding good customers and discouraging low rated and less amounted loans. Instead of that, they are initiated towards remittance, bank guarantees and other commission generating activities, while other banks are showing aggressive and are spontaneously increasing loan loss provision. Deposits in the banks are also decreasing while some banks are holding enough funds. Its recommendation for SCBNL was utilizing the maximum of the outsider's funds towards the credit sector because return on credit sector is higher than on investment sector. Loan loss provision of SCBNL is comparatively higher. It is recommended to control while sanctioning loan outflows. So, the bank should improve its credit management.

Joshi, Sami (2006), performed study on "Financial Performance of Everest Bank Limited" conducted by has shown that EBL has been maintaining a steady growth rate over this period. EBL has been successful to foresee the quality of loans lent.

The bank's liquidity position is also satisfactory. The liquid assets have increased substantially in the review period. The bank's financial performance over the period shows continuous increase in its net profit. EBL in the later years has given more priority to invest its fund in government securities, it is recommended not to give all attention to government securities and diversify investment policy. EBL has greater portion of debt in capital, bank should be aware of the possible risk that may arise due to slackness in the business activities, the study recommends.

Maharjan, Sunil (2006), a thesis entitled "A Comparative Study of Financial Performance of HBL, NIBL and EBL" shows that EBL found to be comparatively better than sample bank because HBL and NIBL have aggressive working policy from the liquidity point of view. All sample banks are comparatively successful in assets management. Among sample banks, EBL found to be comparatively best in mobilizing its assets and deposits in profitable sectors in form of loan and advances, investment in government securities and shares & debentures. From the profitability point of view, NIBL found to be better among the sample banks because it pay lower interest rate for debt fund and earn higher interest by mobilizing it deposits and assets to different productive and profitable sectors.

NIBL is also found to be best on the basis of leverage ratio because HBL and EBL use a high debt fund rather than equity fund and assets. The capital base of bank is strong in NIBL, since it has higher capital adequacy ratio. NIBL also has more

assets from its shareholder's fund which shows they are strong from point of view of shareholder's fund.

EBL has highest positive growth rate of net profit among sample banks. The growth rate of earning per share is negative in HBL and positive in NIBL and EBL. Among them, EBL has highest positive growth in EPS since it has highest growth of net profit. EBL and NIBL have perfect positive correlation between the investment and net profit than HBL. EBL and NIBL are able to earn a net profit from investment and loan & advances. NIBL has highest deposit among sample banks in past. Since HBL, NIBL and EBL have less mobilization of deposits, it is recommended that HBL, NIBL and EBL to increase loan and advances to different productive or profitable sectors.

## Chapter 3

### RESEARCH METHODOLOGY

This study on financial ratios as predictors of failure in Nepal corresponds to the financial ratios useful for predicting failure in the context of Nepal. This section deals with the research design, nature and sources of data, selection of firm and methods of analysis.

#### **1. Research design**

Research design is the plan and strategy of research to attain research objectives mentioned in the first chapter. This study is descriptive and analytical nature based on secondary data. The research work is designed to obtain answer of research questions and develop discriminant model for the purpose of prediction of corporate failure.

#### **2. Nature and sources of data**

This study is based on secondary data obtained through published annual reports of sample firms and from the various volumes of Nepal stock Exchange official directory and company register office.

## 2.1 Data processing procedures

The secondary data were collected from 18 listed companies from manufacturing, trading, hotel and others industries. This sample has included both failure and non-failure in six and twelve respectively. In this study, a firm has been considered failure if they were continuous losses, default on payment of loan, negative operating cash flow.

**List of selected companies**

S.No.	Name of Companies
1	Bottlers Nepal Ltd.
2	Bottlers Nepal (Tarai) Ltd
3	Nepal Lube Old Ltd.
4	Sita World Travel(Nepal) P.Ltd
5	Himal Power Limited
6	Shri Bhrikuti Pulp and Paper Nepal Ltd.
7	Raghupati Jute Mills Ltd.
8	Bishal Bazar Company Ltd.
9	Yak and Yeti Hotel Ltd.
10	Soltte Hotel Ltd.
11	Taragaun Regency Hotel Ltd.
12	Unilever Nepal Ltd.
13	Biratnagar Jute Mills Ltd.
14	Morang Sugar Mills Ltd.
15	Balaju Yantra Shala Electro Ltd.
16	Shree Ram Sugar
17	Jyoti Spinning Mill Ltd.
18	Gorakhkali Rubber Udhog

The variables used in this study have been collected from the official annual reports

of the period of 1986 -2007 published by the Nepal Stock Exchange Ltd. It contains the balance sheet, income statement and cash flow statement of listed firms. Beside these, annual reports submitted to Security Board of Nepal by listed company up to 2007 is considered. The balance sheets provides information on current assets, current liabilities, fixed assets, total assets, total assets investment, long term liabilities, short term liabilities, reserves, capital, retained earnings etc. and income statement provides the information on sales, purchase, manufacturing cost, administrative expenses, gross profit, net profit etc. the details of listed selected manufacturing, trading, hotel and others companies and period of data used to meet the objective of the study .

### **3. Selection of the firms**

All listed company is required to submit its corporate annual report within specific period as prescribed by the Security Exchange Act and Regulation. Despite the legal provision, many listed companies failed to submitted annual reports to security board of Nepal (SEBON) in time. The selection procedure of firm is started with the elimination of the firms not submitting the annual report to SEBON. This process resulted selection of 18 listed companies from manufacturing, trading, hotel and other industries. The lists of 6 failure firms were taken from manufacturing, trading, hotel and other sectors and based on sample design of 12 non- failure firms were selected from those sectors.

## 4. Methods of analysis

In this section, methods of secondary and primary data analysis have been used.

These are as follows.

### 4.1 Profile analysis

Profile analysis is a suitable way of outlining the general relationship between failure and non- failure firms. This analysis was entirely based upon the mean values. The main objective of this analysis is to determine and study behavior of financial ratios of failure and non- failure firms. The following ten ratios are considered as important ratios in profile analysis on the based on previous studies.

On the basis of previous studies the following outcomes have been obtained.

- |                                    |                        |
|------------------------------------|------------------------|
| 1. Working capital to total assets | non- failure > failure |
| 2. EBIT to total assets            | non- failure > failure |
| 3. Sales to total assets           | non- failure > failure |
| 4. Cash flow to total debt         | non- failure > failure |
| 5. Current ratio                   | non- failure > failure |
| 6. Net income to total assets      | non- failure > failure |
| 7. Total debt to total assets      | failure > non-failure  |
| 8. Net income to net worth         | non- failure > failure |
| 9. Net worth to total assets       | non- failure > failure |

## **1. Working capital to total assets**

This ratio has been used to ascertain the short term liquidity position of the enterprises. The short term liquidity of an enterprise is measured by the degree to which it can meet its short term obligation. The consequences of inadequate short term liquidity are very serious and therefore measures of such liquidity have been attached greater importance. Net working capital itself is one of the measures of determining liquidity. An enterprise with more net working capital is considered more liquid than one with less net working capital. The higher ratio indicates greater assurance of ability to pay current liability.

$$\text{Working capital to total assets} = \text{working capital} / \text{total assets}$$

## **2. Earnings before interest and tax to total assets**

This ratio is computed to ascertain profitability position of the enterprises. This ratio shows the raw earning power of the firm's assets, before the influence of taxes and leverage, and it is useful for comparing with different tax situation and different degree of financial leverage. The higher ratio indicates favorable situation to firm.

$$\text{Earnings before interest and tax to total assets} = \text{EBIT} / \text{total assets}$$



### **3. Sales to total assets**

This ratio indicates how many times of sales on its total assets within year. The firm has a relatively high volume of sales relative to its investment in fixed and total assets. However, without information concerning what the norm is for the firm's line of business it is not clear how well the firm's ratio compare in a relative sense. Generally, higher ratio indicates the favorable for the firm.

$$\text{Sales to total assets} = \text{sales} / \text{total assets}$$

### **4. Cash flow to total debt**

This ratio is computed to ascertain liquidity position of the firm. This ratio shows cash inflow power of the firm to pay current liabilities. The consequence of inadequate cash flow is very serious and therefore measures of such liquidity have been attached greater importance.

$$\text{Cash flow to total debt} = \text{cash} / \text{debt}$$

### **5. Current ratio**

It is a most commonly used ratio which is defined as the ratio of current assets with respect to current liabilities. The higher ratio indicates greater assurance of ability to

pay current liabilities. The current ratio of 2:1 is generally considered an acceptable standard though it is a rule of thumb only.

$$\text{Current ratio} = \text{current assets} / \text{current liability}$$

## **6. Net income to total assets**

This ratio measures the return on total assets after interest and taxes. This number is the appropriate basis for assessing the effectiveness of the operating management of the firm. To assess the effectiveness of the management with respect to both its operating and financing decision, firms have to compute the return on total assets.

$$\text{Net income to total assets} = \text{net income} / \text{total assets}$$

## **7. Total debt to total assets / Debt Ratio**

Debt ratio is used to indicate the extent to which a firm has financed its assets with borrowed funds. Low debt to assets, from the debt holders' point of view, is considered to be significant that they receive a caution of protection against possible losses at the time of liquidation if the firm's has greater amount of equity in comparison to debt. However from the firm's management point of view, the firm with low debt ratio is not able to get leverage advantages.

$$\text{Debt ratio} = \text{debt} / \text{total assets}$$

### **8. Net income to net worth / Return on equity**

This ratio measures the return on the owner's investment in the firm. Generally higher ratio is better for owner. Whether this is good or poor can only be determined by comparing the return earned by the firm with that of other firms.

$$\text{Return on equity} = \text{net income} / \text{shareholder's equity}$$

### **9. Net worth to total assets**

This ratio measures proportion of equity with respect to its total assets. Whether this is good or poor can only be determined by comparing with that of other firms.

$$\text{Net worth to total assets} = \text{net worth} / \text{total assets}$$

## **4.2 Descriptive statistics**

In this study, average ratio and standard deviation of failure and non- failure firms have been computed to observed whether the difference in the financial ratios of failure firms and non- failure firm. Mean value gives the results of the average of

each ratio within group and while standard deviation presents the deviation of each ratio within group.

### **4.3 Multivariate discriminant analysis (MDA)**

Multiple discriminant analysis has been utilized in a variety of discipline since its first application the 1930's. More recently, this method had been applied successfully to financial problem such as credit evaluation and investment classification.

MDA is a statistical technique used to classify observations into one of several a priori groupings dependent upon the observations individual characteristic. It is used primarily to classify and make predictions in problems of failures or non-failures. Therefore, the first step is to established explicit group classifications. The number of group can be two or more. After the groups are established, data are collected for the objective in the group; then attempts to derive a linear combination of these characteristic that "best" discriminant between the groups.

Multivariate models refer to simultaneous consideration of several indicators in the prediction process. The multivariate discriminant analysis helps to overcome of the limitation of univariate analysis. For the purpose of this study, the financial ratios have been taken from previous studies and respondents' high ranked ratios are

considered to develop multivariate discriminant function for the purpose of discriminating firms into failure and non-failure based on selected variables in the context of Nepal.

$$Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \dots + \beta_n X_n$$

$X_1, X_2, X_3, X_4 \dots X_n$  are variables used to discriminate between two group- failure and non- failure. The problem is to determine the values of  $\beta_1, \beta_2, \beta_3, \beta_4 \dots \beta_n$  by means of the past data and some criterion that proves 'Z' useful as an index for discriminating among members of the two groups. This function transforms the individual variable values to a single discriminant score, or Z value, which is then used to classify firms into failure and non- failure firms.

## Chapter 4

### PRESENTATION AND ANALYSIS OF SECONDARY DATA

The analysis of the secondary data is presented in four sections. The brief analysis of profile of failure and non-failure companies is presented in the first section while second section of analysis presents descriptive statistics of financial ratios. The third section reports the result of multivariate discriminant analysis and the final section consequences the major findings of the study. This chapter is focused on the analysis of financial ratios that emerged in manufacturing, trading, hydro power, hotels and others sector in Nepal.

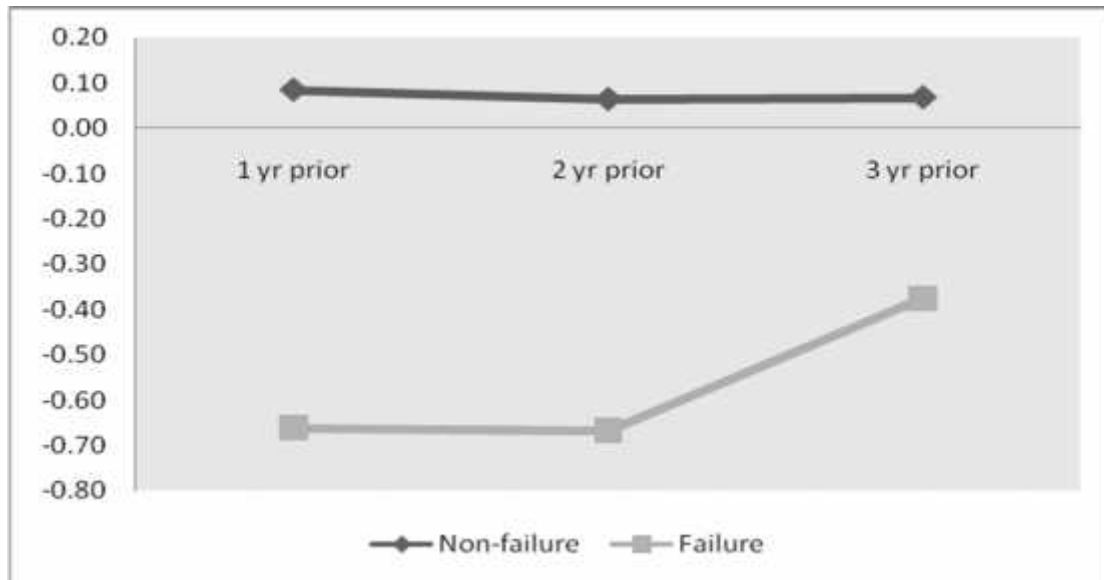
#### 1. Profile analysis of failure and non-failure firms

Profile analysis is an appropriate way of outlining the general relationships between failure and non-failure firms. This analysis demonstrated a difference between failure and non-failure firms. Profile concentrate upon a single point mean on the ratio distribution. If the mean value is not overlap, it implies that the ratio would be an excellence predictor of failure. This analysis was entirely based upon the mean values. Therefore, the mean has computed for failure and non-failure companies three years before failure to compare each other.

**Figure-4.1**

**Working capital to total assets ratio of failure and non-failure firms**

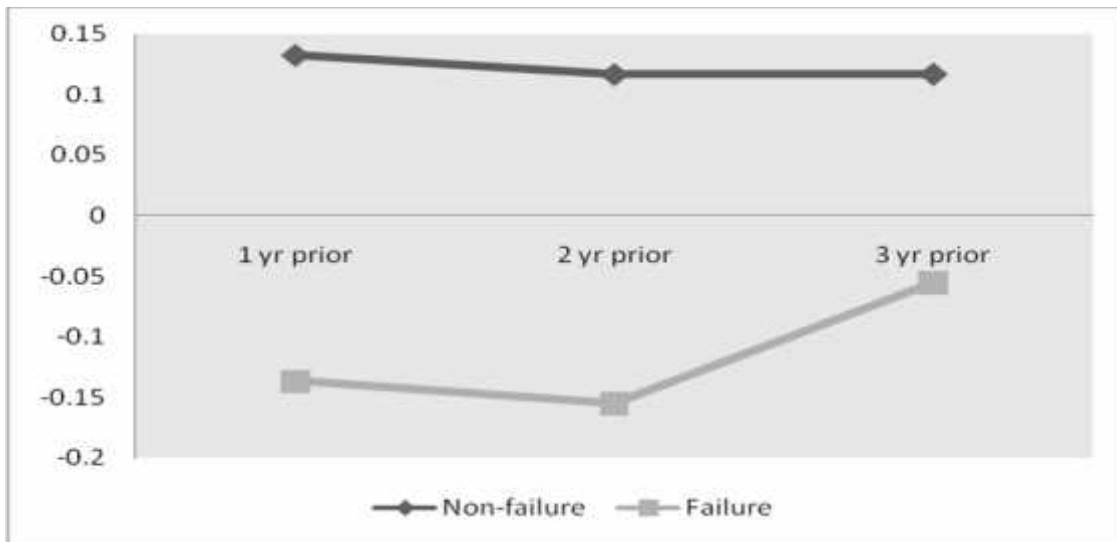
The figure summarized the ratio of working capital to total assets of 18 sample firms including 12 failure and 6 non-failure firms from 54 observations of three years prior to failure. Working capital means net working capital obtained from current assets less current liabilities. Total asset include currents assets, fixed assets and other assets.



The above figure depicts that working capital to total assets ratio of failure firms is negative in three years prior to failure. On the other hand, working capital to total assets ratio for non-failure companies is positive in all three years. The deterioration in the mean value of WCTA of failure companies is very pronounced over the three year period. The gap between the two groups in terms of mean value of WCTA is widening as they approach nearer to the verge of failure.

**Figure-4.2**  
**EBIT to Total Assets of failure and non-failure firms**

The figure presents the trend of EBIT to total assets ratio of 18 sample firms including 12 failure and 6 non-failure firms from 54 observations of three years prior to failure. EBIT is the profit before deducting interest and tax payable. Total asset is the summation of current assets, fixed assets and other assets.



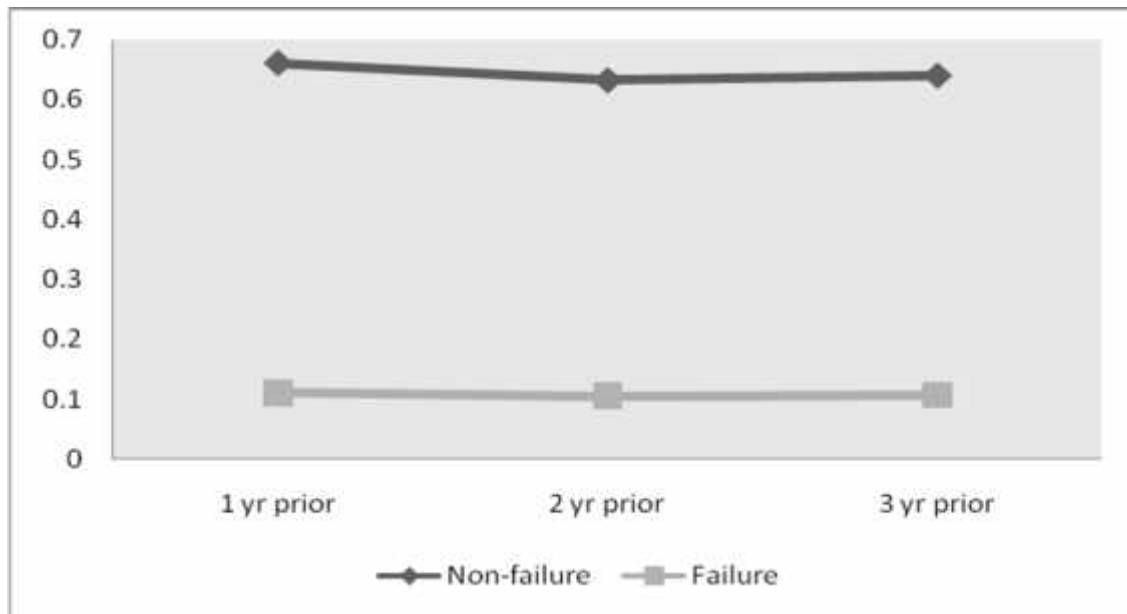
The above figure shows that the earnings before interest and tax to total assets of failure company is negative and it is deteriorating when it approaches nearer to time of failure. It seems that the earning is insufficient to pay interest and tax in all three years. EBIT to total assets of non-failure companies are positive and almost stable and sufficient to meet interest expenses in all the years.



**Figure-4.3**

**Sales to Total Assets of failure and non-failure firms**

The figure represents how many time the total asset turnover within a year. Sales refer sales revenue for year interest. Total asset obtained by the summation of currents assets, fixed assets and other assets. The summarize figure presents 18 sample firms including 12 failure and 6 non-failure firms from 54 observations

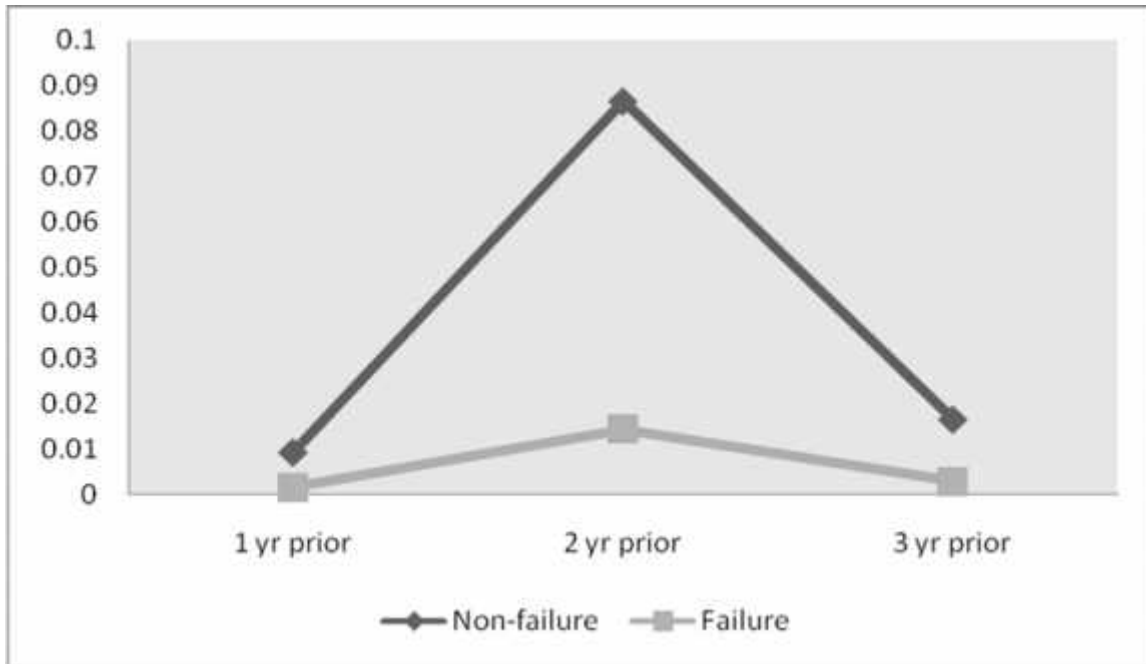


The above figure presents that the total assets turnover of non-failure companies is higher than that of failure companies in all three years. Therefore, this result seems similar with previous studies.

**Figure-4.4**

**Cash flow to total debt ratio of failure and non-failure firms**

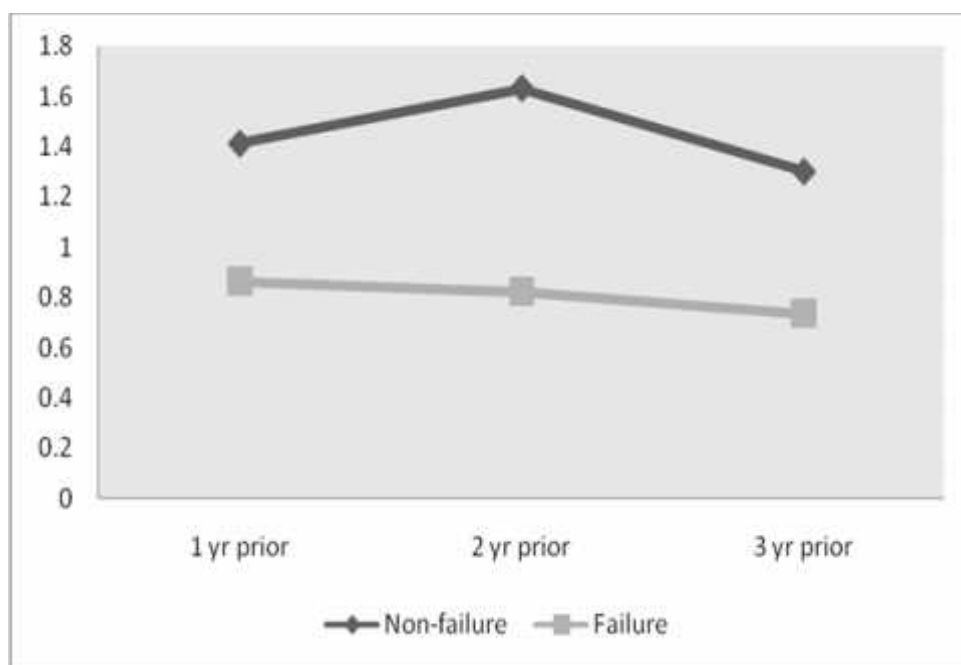
The figure presents the trend of cash flow to total debt ratio of 18 sample firms including 12 failure and 6 non-failure firms from 54 observations of three years prior to failure. Cash flow is computed by adding depreciation and non-cash expenses in profit of each year. Total debt includes current liabilities and long-term liabilities.



The figure explains that the cash flow to total debt ratio of non-failure firms is fluctuating (although it appears positive) in all three year. The cash flow to total debt ratio of failure firms is near to zero in all three year prior to failure. Hence, the failure firms have lack of fund for repayment of liabilities.

**Figure-4.5**  
**Current ratio of failure and non-failure firms**

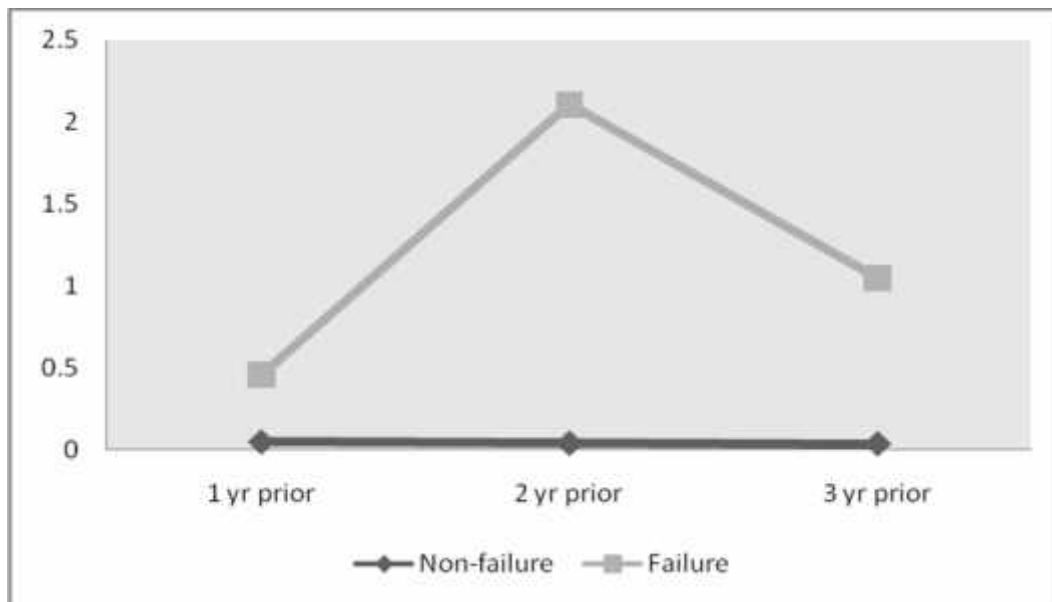
The figure presents the ratio of current asset and current liabilities of 18 sample firms including 12 failure and 6 non-failure firms from 54 observations of three years prior to failure. Current assets include cash, marketable securities, inventory, account receivables, and prepaid expenses while current liabilities include account payables and bills payables.



In the context of Nepal, figure-4.5 is the evidence that the current ratios of non-failure companies are higher than that of failure companies in all three year prior to failure.

**Figure-4.6**  
**Return on assets of failure and non-failure firms**

The figure depicts the ratio of net income and total assets of 18 sample firms including 12 failure and 6 non-failure firms from 54 observations of three years prior to failure. Net income refers after tax profit while total assets include currents assets, fixed assets and other assets.

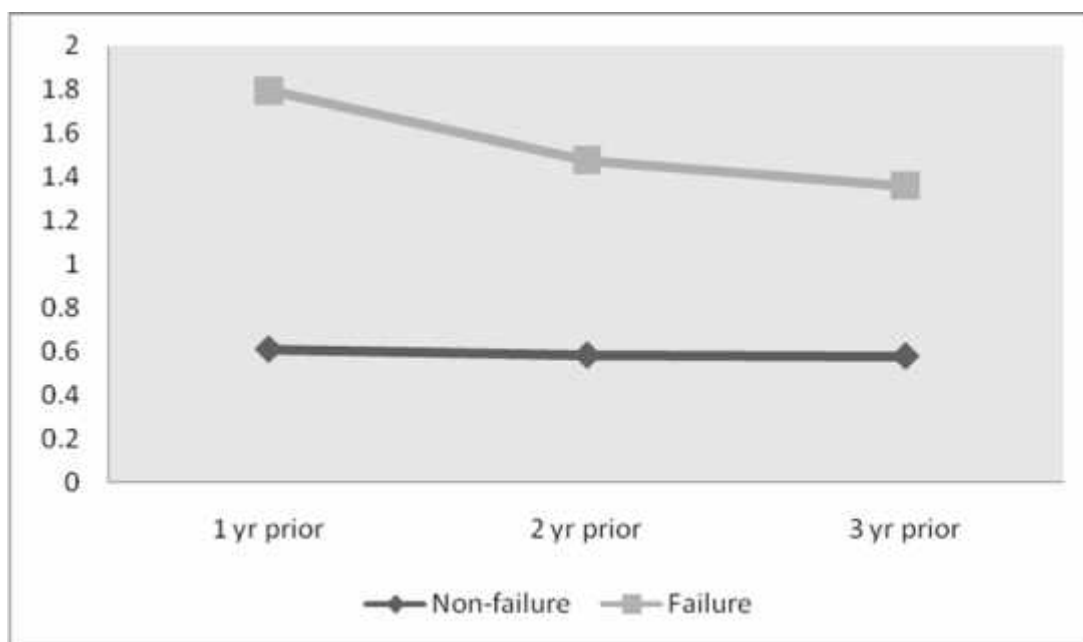


The figure depicts that the ROA of the non-failure companies is almost zero in all the three years, at the same time, the failure companies is positive. The result evidences that net income to total assets ratio of failure companies is better in comparison to non-failure ones. The result is opposite to previous studies.

**Figure-4.7**

**Debt ratio of failure and non-failure firms**

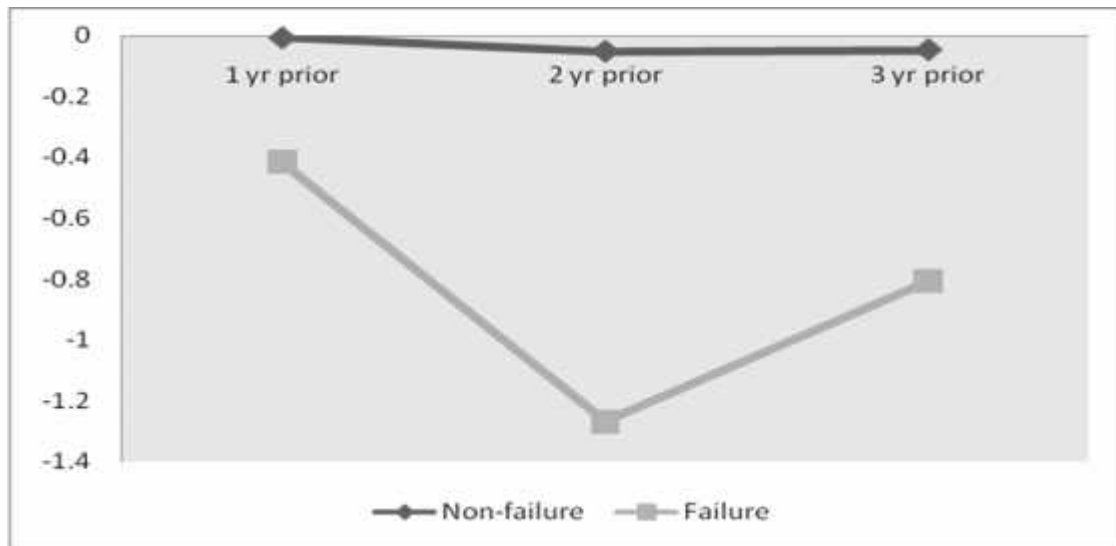
The figure explains the ratio of total debt and total assets of 18 sample firms among 12 failure and 6 non-failure firms from 54 observations of three years prior to failure. Total debt means current liabilities and long-term liabilities. Total asset include currents assets, fixed assets and other assets.



The figure above tells that the failure companies' proportion of debt to total assets is higher to non-failure companies. It seems that the failure companies' debt ratio is increasing from second year to the first year prior to failure.

**Figure-4.8**  
**Return on equity of failure and non-failure firms**

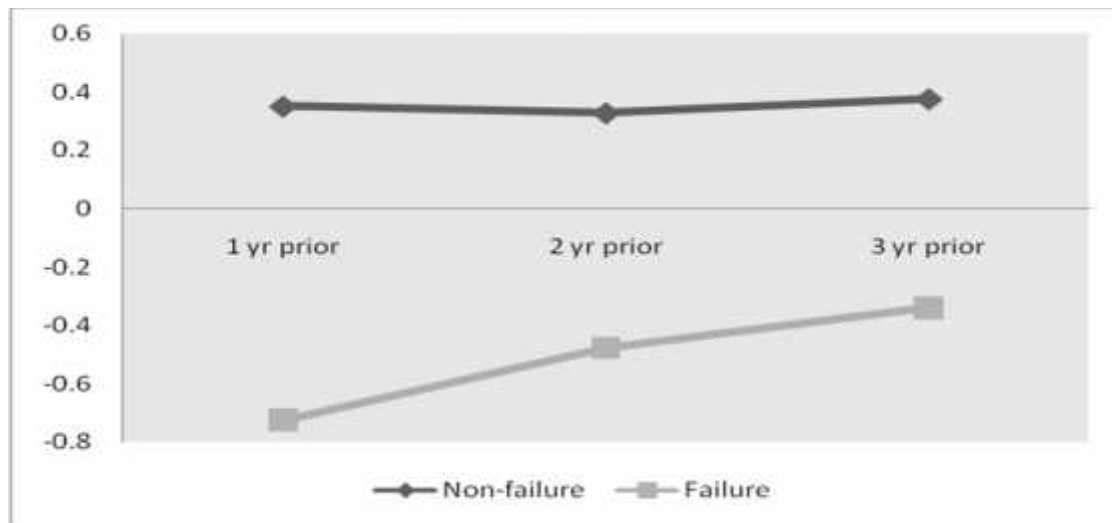
The figure presents actual outcomes of net income to net worth ratio of 18 sample firms including 12 failure and 6 non-failure firms from 54 observations three years prior to failure. Net income refers the profit after tax while net worth is obtained deducting total liabilities from total assets.



This figure presents that net income to net worth ratio of non-failure is higher to failure companies and it is stable in all three years. In the context of failure companies, this ratio is negative which is remarkably deteriorating from second year to the first year prior to failure.

**Figure-4.9**  
**Net worth to Total assets of failure and non-failure firms**

The figure presents actual outcomes of net worth to total assets ratio of three years prior to failure. Total assets refers the summation of currents assets, fixed assets and other assets while net worth is obtained deducting total liabilities from total assets.



The above figure presents that the non-failure companies' net worth to total assets ratio is almost constant and positive while in the failure companies it is quickly deteriorating and at the same time it tends to become negative prior to two years of their failure.

## 2. Descriptive statistics

Mean ratio and standard deviation are computed to observe the difference between the financial ratios of the failure companies and non-failure companies. Mean value

gives the results of the average of each ratio within group and in total while standard deviation presents the deviation of each ratio within group and in total.

**Table -4.1**  
**Descriptive statistics of financial ratios**

The table provides descriptive statistics of mean and standard deviation of nine ratios of failure and non-failure companies that are obtained from pooled cross section data of 18 companies including manufacturing, trading, hydro power, hotels and others.

Panel A: Descriptive Statistics of failure Companies									
	WCTA	EBITTA	STA	CFTA	CR	ROA	DR	ROE	NWTA
Mean	-1.70	-0.35	3.36	-0.12	2.42	3.61	4.63	-2.49	-1.54
SD	2.93	0.77	1.99	0.31	1.47	9.65	2.83	6.73	2.88
N	6	6	6	6	6	6	6	6	6
Panel B: Descriptive Statistics of Non-failure Companies									
Mean	0.21	0.37	1.93	0.11	4.34	0.13	1.77	-0.10	1.00
SD	0.81	0.34	1.47	0.31	4.03	0.32	0.83	1.00	0.96
N	12	12	12	12	12	12	12	12	12
Panel C: Descriptive Statistics of total selected companies									
Mean	-0.42	0.13	2.41	0.34	3.70	1.29	2.72	-0.90	0.19
SD	1.95	0.61	1.74	0.32	3.47	5.51	2.18	3.91	2.15
N	18	18	18	18	18	18	18	18	18

Panel–A indicates the summary of average ratios of selected failure companies that financial ratios seem to be weak. This table depicts debt ratio is extremely higher, ROA and STA is relatively higher, and ROE and WCTA are lower.

Panel–B presents that financial ratios of non- failure companies are better in comparison to the failure companies except the ROA.



Panel-C results the combined financial ratios obtained from both failure and non-failure companies. This ratio shows that WCTA and ROE are negative while others are positive.

### **3. Multivariate Discriminant Analysis**

Multivariate models refer to simultaneous consideration of several indicators in the prediction process. The multivariate discriminant analysis helps to overcome the limitations of univariate analysis. Multivariate analysis is a statistical technique used to classify an observation into one of several a priori groupings dependent upon the observation's individual characteristics. It is used primarily to classify and make prediction in problem where the dependent variable appears in qualitative forms. Therefore, the first step is to established explicit group classification.

After the groups are established, data are collected for the object in the groups; MDA then attempts to derive a linear combination of these characteristic which best discriminates between the groups. For the purpose of this study, the financial ratios are taken from previous studies and respondents' ranking (of ratios) to develop multivariate discriminant function for the purpose of discriminating firms into failure and non-failure based on selected variables in the Nepalese context.

**Table – 4.2**

**Accuracy of discriminant classification**

The table presents actual outcomes and predicted outcome of three years prior to failure. The row denotes the actual status, the column denotes the prediction made of the company, and each cell contains the number of companies fulfilling each condition.

**Classification Results<sup>a</sup>**

		FAILURE	Predicted Group Membership		Total
			non-failure	failure	
Original	Count	non-failure	11	1	12
		failure	1	5	6
	%	non-failure	91.7	8.3	100.0
		failure	16.7	83.3	100.0

a. 88.9% of original grouped cases correctly classified.

The model is accurate in classifying 88.9 percent of total sample correctly. The type I error is proved to be 16.7 percent, while the type II error is also 8.3 percent. Therefore, the outcome seems to be encouraging.

**Canonical Discriminant Function Coefficients**

	Function
	1
WCTA	.700
EBITTA	.302
STA	.245
CFTA	-2.433
CR	.034
ROA	.041
DR	1.603
ROE	.169
NWTA	.550
(Constant)	-4.747

Unstandardized coefficients

It was found that original classification was 89.9 percent accurate while

discriminating selected companies based on nine-selected financial variables. Based on this classification, multivariate discriminant function for prediction and classification is developed.

$$Z = -4.747 + 0.070 X_1 + 0.30X_2 + 0.245 X_3 - 2.433X_4 - 0.34 X_5 + 0.041X_6 + 1.603X_7 + 0.169 X_8 + 0.550 X_9$$

Where,

$X_1$  = Working capital to Total assets (WCTA)

$X_2$  = EBIT to Total assets (EBIT/TA)

$X_3$  = sales to Total assets (STA)

$X_4$  = Cash flow to total debt ratio (CFTD)

$X_5$  = Current ratio (CR)

$X_6$  = return on assets (ROA)

$X_7$  = Debt ratio (DR)

$X_8$  = Return on equity (ROE)

$X_9$  = Net worth to Total assets (NWTa)

The above model is useful in the prediction of failure. Therefore, it will be necessary to investigate the results presented. Moreover, it would be applicable for future use.

The discriminant function was related to maximize the separation of the two categories of failure. The Z-score of less than -0.731 indicates a very high probability of failure, while a Z-score larger than 1.461 indicates a high probability of non-failure. Z-score between -0.731 and 1.461 fall in the “gray zone” where it is

not possible to predict with confidence whether the company will or will not go failure.

**Table – 4.3**

**List of actual and predicted failure and non-failure companies, and their Z score**

S.No.	Name of Companies	Actual group	Predicted group	Z-score
1	Bottlers Nepal Ltd.	Non-failure	Non-failure	0.8105
2	Bottlers Nepal (Tarai) Ltd	Non-failure	Non-failure	0.4925
3	Nepal Lube Old Ltd.	Non-failure	Non-failure	0.3198
4	Sita World Travel(Nepal) P.Ltd	Non-failure	Non-failure	0.5350
5	Himal Power Limited	Non-failure	Non-failure	1.7643
6	Shri Bhrikuti Pulp and Paper Nepal Ltd.	Non-failure	Failure**	-1.0763
7	Raghupati Jute Mills Ltd.	Non-failure	Non-failure	0.3733
8	Bishal Bazar Company Ltd.	Non-failure	Non-failure	1.6231
9	Yak and Yeti Hotel Ltd.	Non-failure	Non-failure	1.2797
10	Soltte Hotel Ltd.	Non-failure	Non-failure	1.0217
11	Taragaun Regency Hotel Ltd.	Non-failure	Non-failure	0.5360
12	Unilever Nepal Ltd.	Non-failure	Non-failure	1.7278
13	Biratnagar Jute Mills Ltd.	failure	failure	-2.9561
14	Morang Sugar Mills Ltd.	failure	failure	-2.7215
15	Balaju Yantra Shala Electro Ltd.	failure	failure	-1.0539
16	Shree Ram Sugar	failure	Non-failure**	0.5168
17	Jyoti Spinning Mill Ltd.	failure	failure	-1.5502
18	Gorakhkali Rubber Udhog	failure	failure	-1.0037

This table gives a picture of misclassification using discriminant analysis. One company is misclassifying among 12 non-failure companies. Thus, the type I error proved to be 8.3 percent which occurs due to classification of non-failure company which has been predicted as failure.

In the case of failure company, there is only one misclassification, which occurs due to misclassification of failure company as non-failure which can be understood as the type II error (with nearly seventeen percent).

#### **4. The major findings of the study**

The major findings of the study are summarized as under:

- ) The most of the selected financial ratios of the failure and non-failure companies observed that there are differences in the mean ratios since three year prior to failure.
- ) Ratio of failure companies is found either negative or very weak except sales to total assets ratio. The ratios of non- failure companies are quite stable throughout the three years before failure than failure companies.
- ) The working capital to total assets ratio of failure firms is negative in three years prior to failure. On the other hand, working capital to total assets ratio for non-failure companies is positive in all three years.
- ) The earnings before interest and tax to total assets of failure company is negative and it is deteriorating when it approaches nearer to time of failure. EBIT to total assets of non-failure companies are positive and

almost stable and sufficient to meet interest expenses in all the years.

) The total assets turnover of non-failure companies is higher than that of failure companies in all three years.

) The cash flow to total debt ratio of non-failure firms is fluctuating (although it appears positive) in all three year. The cash flow to total debt ratio of failure firms is near to zero in all three year prior to failure. Hence, the failure firms have lack of fund for repayment of liabilities.

) The current ratios of non-failure companies are higher than that of failure companies in all three year prior to failure.

) The failure companies' proportion of debt to total assets is higher to non-failure companies. It seems that the failure companies' debt ratio is increasing from second year to the first year prior to failure.

) The net income to net worth ratio of non-failure is higher to failure companies and it is stable in all three years. In the context of failure companies, this ratio is negative which is remarkably deteriorating from second year to the first year prior to failure.

) The non-failure companies' net worth to total assets ratio is almost constant and positive while in the failure companies. It is quickly

deteriorating and at the same time it tends to become negative prior to two years of their failure.

) The multivariate discriminant classification is found 89.9 percent accurate while discriminating selected companies based on nine-selected financial variables.

) One company was misclassifying among 12 non failure companies. Thus, the type I error proved to be 8.3 percent which occurs due to classification of non-failure company which has been predicted as failure. In the case of failure company, there was one misclassification, which occurs due to misclassification of failure company as non-failure which can be understood as the type II error (with seven percent chances of misclassification).

) Based on this classification, multivariate discriminant function for prediction and classification is developed.

$$Z = -4.747 + 0.070 X_1 + 0.30X_2 + 0.245 X_3 - 2.433X_4 - 0.34 X_5 + 0.041X_6 + 1.603X_7 + 0.169 X_8 + 0.550 X_9$$

Where,

$X_1$  = Working capital to Total assets (WCTA)     $X_2$  = EBIT to Total assets (EBIT/TA)

$X_3$  = sales to Total assets (STA)

$X_4$  = Cash flow to total debt ratio (CFTD)

$X_5$  = Current ratio (CR)

$X_6$  = return on assets (ROA)

$X_7$  = Debt ratio (DR)

$X_8$  = Return on equity (ROE)

$X_9$  = Net worth to Total assets (NWTAs)

) The relative contribution of each variable to the total discriminant power of the discriminant function, Cash flow to total debt ratio and total debt to total assets have been found the most important ratios.



## Chapter 5

### SUMMARY AND CONCLUSION

#### 1. Summary

Financial failure identification and early warnings of impending financial crisis are important not only to analysts and practitioners. Countries throughout the world have been concerned with individual entity performance assessment. Developing countries and smaller economies, as well as the larger industrialized nations of the world, are vitally concerned with avoiding financial crises in the private and public sectors. Some policy makers in smaller nations are particularly concerned with financial panics resulting from failures of individual entities.

From the late 1960s to the present day, numerous studies were devoted to assessing one's ability to combine publicly available data with statistical classification techniques in order to predict financial failure.

Multiple discriminant analysis (MDA) continues to be the most popular technique, For a variety of reasons, MDA appears to be a major standard measurement for failure prediction models. Most of the studies have used a technique other than MDA; they usually have compared its results with those from MDA. It is interesting to note that MDA results continue to compare favorably with the other techniques.

The study attempted to review and compare a relatively large number of empirical

financial failure classification models. The knowledge that prior work has done with respect to early warning models may help obviate the consequences or reduce the number of these failures. This study expects that the quality and reliability of models constructed in many of the aforementioned studies will improve (1) as the quality of information on companies is expanded and refined, (2) as the number of business failure firms increases, thereby providing more data points for empirical analysis, and (3) as researchers and practitioners become more aware of the problems and potential of such models.

This study mainly aims to examine the predictive power of financial ratios to develop multivariate discriminant models in the context of Nepal. The attempts have been made to analyze multivariate discriminant predictive models using multiple discriminant analysis and other related approaches. To address the research issues, this study has formulated some problems: i) Which financial ratios seem the best predictors of financial failure in Nepal? ii) Are there any significant differences in the behavior of financial ratios between failure and non-failure firms? iii) In the view of respondents, which financial ratios have been perceived as the best predictor of financial failure in the case of Nepal? iv) How do the firm's financial characteristics, namely risks, profitability, assets, and liquidity, differ between failure and non-failure firms? and v) Whether the findings of the study are similar to previous studies?

The main purpose of this study is to examine the financial ratios useful for predicting financial failure in the context of Nepal. The specific objectives of this study are 1) to assess the differences in financial ratios of failure and non-failure firms. 2) to determine how do financial ratios deteriorate when firms move toward the failure. 3) to examine the profile analysis usefulness for predicting failure. 4) to analyze multiple discriminant analysis useful for predicting failure.

The variables used in this study have been collected from the official annual reports of 1986 -2007 published by the Nepal Stock Exchange Ltd., which contain the balance sheet, income statement and cash flow statement of listed firms. Beside these, annual reports submitted to Security Board of Nepal by listed company up to 2007 is considered.

## **2. Conclusion**

The study is, mainly, focused on predictive power of financial ratios on financial failure. The study suggested that the univariate analysis is no longer an important analytical technique due to the relative unsophisticated manner. The secondary and analyses have provided a consistent conclusion regarding the predictive ability of financial ratios. The ratios of non-failure companies are quite stable throughout the three years before failure than failure companies. The prediction of failure was not equally performed well by different financial ratios used in this study. The highest

accuracy was found while stepwise multivariate discriminant analysis with nine financial ratios was taken. In conclusion, the stepwise discriminant model was appropriate in predicting financial failure correctly in the context of Nepal.

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# Appendices

## Annex-1

### List of selected companies

S.No.	Name of Companies
1	Bottlers Nepal Ltd.
2	Bottlers Nepal (Tarai) Ltd
3	Nepal Lube Oil Ltd.
4	Sita World Travel(Nepal) P.Ltd
5	Himal Power Limited
6	Shri Bhrikuti Pulp and Paper Nepal Ltd.
7	Raghupati Jute Mills Ltd.
8	Bishal Bazar Company Ltd.
9	Yak and Yeti Hotel Ltd.
10	Soltte Hotel Ltd.
11	Taragaun Regency Hotel Ltd.
12	Unilever Nepal Ltd.
13	Biratnagar Jute Mills Ltd.
14	Morang Sugar Mills Ltd.
15	Balaju Yantra Shala Electro Ltd.
16	Shree Ram Sugar
17	Jyoti Spinning Mill Ltd.
18	Gorakhkali Rubber Udhyog

## Annex-2

### Working capital to total assets

Name of company	1	2	3
Bottlers Nepal Ltd.	0.23	0.31	0.2
Bottlers Nepal (Tarai) Ltd	0.39	0.43	0.17
Nepal Lube Old Ltd.	0.18	0.18	0.12
Sita World Travel(Nepal) P.Ltd	0.63	0.4	0.66
Himal Power Limited	0.16	0.20	0.16
Shri Bhrikuti Pulp and Paper Nepal Ltd.	-0.23	-0.22	-0.16
Raghupati Jute Mills Ltd.	0.1	0.07	0.1
Bishal Bazar Company Ltd.	-0.31	-0.37	-0.47
Yak and Yeti Hotel Ltd.	-0.33	-0.27	-0.11
Soltte Hotel Ltd.	0	-0.18	-0.17
Taragaun Regency Hotel Ltd.	0	0	0
Unilever Nepal Ltd.	0.19	0.21	0.31
Biratnagar Jute Mills Ltd.	-2.89	-2.89	-0.89
Morang Sugar Mills Ltd.	-1.22	-1.22	-1.39
Balaju Yantra Shala Electro Ltd.	0.32	0.32	0.26
Shree Ram Sugar	-0.1	-0.1	-0.13
Jyoti Spinning Mill Ltd.	0.18	0.05	-0.03
Gorakhkali Rubber Udhyog	-0.25	-0.16	-0.07

### Annex-3

#### Earnings before interest and tax to total assets

Name of company	1	2	3
Bottlers Nepal Ltd.	0.1	0.12	0.08
Bottlers Nepal (Tarai) Ltd	0.08	0.1	0.08
Nepal Lube Old Ltd.	0.07	0.05	0.08
Sita World Travel(Nepal) P.Ltd	0.36	0.15	0.25
Himal Power Limited	0.11	0.16	0.09
Shri Bhrikuti Pulp and Paper Nepal Ltd.	0.04	0.03	-0.06
Raghupati Jute Mills Ltd.	0.08	0.09	0.08
Bishal Bazar Company Ltd.	0.44	0.39	0.36
Yak and Yeti Hotel Ltd.	0.08	0.09	0.28
Soltte Hotel Ltd.	-0.04	0.03	0.01
Taragaun Regency Hotel Ltd.	0.07	0.02	0.02
Unilever Nepal Ltd.	0.2	0.17	0.13
Biratnagar Jute Mills Ltd.	-0.91	-0.52	-0.15
Morang Sugar Mills Ltd.	-0.16	-0.55	-0.28
Balaju Yantra Shala Electro Ltd.	0.02	-0.02	-0.07
Shree Ram Sugar	0.03	-0.01	-0.04
Jyoti Spinning Mill Ltd.	0.17	0.15	0.15
Gorakhkali Rubber Udhog	0.03	0.02	0.06

#### Annex-4

##### Sales to total assets

Name of company	1	2	3
Bottlers Nepal Ltd.	0.63	0.71	0.6
Bottlers Nepal (Tarai) Ltd	0.65	0.75	0.85
Nepal Lube Old Ltd.	0.93	0.74	0.83
Sita World Travel(Nepal) Pvt Ltd	0.28	0.22	0.18
Himal Power Ltd	0.24	0.24	0.21
Shri Bhrikuti Pulp and Paper Nepal Ltd.	0.61	0.52	0.37
Raghupati Jute Mills Ltd.	1.48	1.25	1.21
Bishal Bazar Company Ltd.	0.66	0.62	0.5
Yak and Yeti Hotel Ltd.	0.29	0.32	0.28
Soltte Hotel Ltd.	0.45	0.53	0.42
Taragaun Regency Hotel Ltd.	0.09	0.1	0.07
Unilever Nepal Ltd.	1.62	1.59	2.16
Biratnagar Jute Mills Ltd.	3.95	0.99	1.51
Morang Sugar Mills Ltd.	1	1.95	2.11
Balaju Yantra Shala Electro Ltd.	1.04	1.11	0.35
Shree Ram Sugar	0.62	0.4	0.43
Jyoti Spinning Mill Ltd.	1.14	0.94	0.94
Gorakhkali Rubber Udhyog	0.56	0.53	0.57

## Annex-5

### Cash flow to total debt

Name of company	1	2	3
Bottlers Nepal Ltd.	-0.05	0.05	-0.07
Bottlers Nepal (Tarai) Ltd	-0.15	0.14	0.04
Nepal Lube Old Ltd.	0.04	-0.02	0.01
Sita World Travel(Nepal) Pvt Ltd	0.14	0.26	-0.06
Himal Power Ltd	-0.15	-0.04	0.02
Shri Bhrikuti Pulp and Paper Nepal Ltd.	0.02	0	0
Raghupati Jute Mills Ltd.	0	0	-0.03
Bishal Bazar Company Ltd.	0.13	0.06	0.03
Yak and Yeti Hotel Ltd.	0	0	-0.01
Soltte Hotel Ltd.	-0.01	-0.01	0.02
Taragaun Regency Hotel Ltd.	0	0	0
Unilever Nepal Ltd.	0.14	0.6	0.25
Biratnagar Jute Mills Ltd.	0.29	0	-0.22
Morang Sugar Mills Ltd.	0	-0.52	-0.24
Balaju Yantra Shala Electro Ltd.	0	0	0
Shree Ram Sugar	0	0	0
Jyoti Spinning Mill Ltd.	-0.01	0.01	-0.01
Gorakhkali Rubber Udhog	-0.01	-0.02	0

## Annex-6

### Current ratio

Name of company	1	2	3
Bottlers Nepal Ltd.	1.98	2.57	1.6
Bottlers Nepal (Tarai) Ltd	2.03	2.25	1.44
Nepal Lube Old Ltd.	1.26	1.27	1.17
Sita World Travel(Nepal) Pvt Ltd	1.99	2.17	3.06
Himal Power Ltd	5.11	6.79	2.96
Shri Bhrikuti Pulp and Paper Nepal Ltd.	0.54	0.52	0.52
Raghupati Jute Mills Ltd.	1.49	1.36	1.71
Bishal Bazar Company Ltd.	0.46	0.34	0.22
Yak and Yeti Hotel Ltd.	0.22	0.28	0.56
Soltte Hotel Ltd.	0.44	0.56	0.53
Taragaun Regency Hotel Ltd.	0.09	0.09	0.05
Unilever Nepal Ltd.	1.33	1.38	1.79
Biratnagar Jute Mills Ltd.	0.2	0.42	0.47
Morang Sugar Mills Ltd.	0.41	0.31	0.36
Balaju Yantra Shala Electro Ltd.	1.48	1.64	1.37
Shree Ram Sugar	0.62	0.69	0.47
Jyoti Spinning Mill Ltd.	1.89	1.17	0.91
Gorakhkali Rubber Udhyog	0.58	0.69	0.83

### Annex-7

#### Net income to total assets

Name of company	1	2	3
Bottlers Nepal Ltd.	0.04	0.04	0.03
Bottlers Nepal (Tarai) Ltd	0.03	0.03	0
Nepal Lube Old Ltd.	0.02	0.03	0.03
Sita World Travel(Nepal) Pvt Ltd	0.26	0.11	0.19
Himal Power Ltd	0.11	0.16	0.09
Shri Bhrikuti Pulp and Paper Nepal Ltd.	-0.12	-0.12	-0.06
Raghupati Jute Mills Ltd.	0.02	0.02	0.02
Bishal Bazar Company Ltd.	0.27	0.23	0.22
Yak and Yeti Hotel Ltd.	-0.01	-0.01	-0.01
Soltte Hotel Ltd.	-0.15	-0.06	-0.05
Taragaun Regency Hotel Ltd.	-0.05	-0.06	-0.08
Unilever Nepal Ltd.	0.15	0.12	0.07
Biratnagar Jute Mills Ltd.	-0.89	-0.52	-0.14
Morang Sugar Mills Ltd.	3.65	13.24	6.38
Balaju Yantra Shala Electro Ltd.	0.04	0.04	0.03
Shree Ram Sugar	0.03	-0.01	-0.04
Jyoti Spinning Mill Ltd.	0.03	0.01	-0.01
Gorakhkali Rubber Udhog	-0.12	-0.12	0.08

## Annex-8

### Total debt to total assets / Debt Ratio

Name of company	1	2	3
Bottlers Nepal Ltd.	0.23	0.2	0.33
Bottlers Nepal (Tarai) Ltd	0.38	0.34	0.37
Nepal Lube Old Ltd.	0.69	0.66	0.87
Sita World Travel(Nepal) Pvt Ltd	0.63	0.34	0.32
Himal Power Ltd	0.38	0.40	0.54
Shri Bhrikuti Pulp and Paper Nepal Ltd.	1.52	1.45	1.1
Raghupati Jute Mills Ltd.	0.4	0.39	0.4
Bishal Bazar Company Ltd.	0.58	0.56	0.6
Yak and Yeti Hotel Ltd.	0.6	0.6	0.61
Soltte Hotel Ltd.	0.71	0.61	0.56
Taragaun Regency Hotel Ltd.	0.62	0.9	0.85
Unilever Nepal Ltd.	0.58	0.54	0.39
Biratnagar Jute Mills Ltd.	4.58	2.46	2.16
Morang Sugar Mills Ltd.	2.18	2.65	2.25
Balaju Yantra Shala Electro Ltd.	0.84	0.83	0.86
Shree Ram Sugar	0.75	0.79	0.76
Jyoti Spinning Mill Ltd.	0.99	1.12	1.12
Gorakhkali Rubber Udhog	1.44	1	1



## Annex-9

### Net income to net worth / Return on equity

Name of company	1	2	3
Bottlers Nepal Ltd.	0.04	0.04	0.03
Bottlers Nepal (Tarai) Ltd	0.03	0.03	0
Nepal Lube Old Ltd.	0.02	0.03	0.03
Sita World Travel(Nepal) Pvt Ltd	0.71	0.16	0.28
Himal Power Ltd	-1.00	-1.00	-1.00
Shri Bhrikuti Pulp and Paper Nepal Ltd.	-0.12	-0.12	-0.06
Raghupati Jute Mills Ltd.	0.02	0.02	0.02
Bishal Bazar Company Ltd.	0.27	0.23	0.22
Yak and Yeti Hotel Ltd.	-0.01	-0.01	-0.01
Soltte Hotel Ltd.	-0.15	-0.06	-0.05
Taragaun Regency Hotel Ltd.	-0.05	-0.06	-0.08
Unilever Nepal Ltd.	0.15	0.12	0.07
Biratnagar Jute Mills Ltd.	0.25	0.35	0.12
Morang Sugar Mills Ltd.	-3.1	-8.01	-5.1
Balaju Yantra Shala Electro Ltd.	0.26	0.23	0.21
Shree Ram Sugar	0.1	-0.07	-0.15
Jyoti Spinning Mill Ltd.	-	0.01	-
Gorakhkali Rubber Udhog	-	-0.12	0.08

## Annex-10

### Net worth to total assets

Name of company	1	2	3
Bottlers Nepal Ltd.	0.77	0.8	0.67
Bottlers Nepal (Tarai) Ltd	0.62	0.66	0.63
Nepal Lube Old Ltd.	0.31	0.34	0.13
Sita World Travel(Nepal) Pvt Ltd	0.63	0.34	0.68
Himal Power Ltd	-0.11	-0.16	-0.09
Shri Bhrikuti Pulp and Paper Nepal Ltd.	-0.52	-0.45	-0.1
Raghupati Jute Mills Ltd.	0.6	0.61	0.6
Bishal Bazar Company Ltd.	0.42	0.44	0.4
Yak and Yeti Hotel Ltd.	0.4	0.4	0.39
Soltte Hotel Ltd.	0.29	0.39	0.44
Taragaun Regency Hotel Ltd.	0.38	0.1	0.15
Unilever Nepal Ltd.	0.42	0.46	0.61
Biratnagar Jute Mills Ltd.	-3.58	-1.46	-1.16
Morang Sugar Mills Ltd.	-1.18	-1.65	-1.25
Balaju Yantra Shala Electro Ltd.	0.16	0.16	0.13
Shree Ram Sugar	0.25	0.21	0.24
Jyoti Spinning Mill Ltd.	-	-0.12	-
Gorakhkali Rubber Udhyog	-	-	-