# CHAPTER – I

## INTRODUCTION

## 1.1 BACKGROUND OF THE STUDY

Economic development is the backbone of the nation development. To develop economic condition of the country, industrialization is a very important tool. Nepal has been lagging behind the proper development of industry and commerce due to the lack of efficient manpower and the related resources. It is a great problem for the industries, agriculture, tourism, trade & commerce to make them sustainable and keep them upright. But industrialization or establishment of different companies is not an easy job. It needs basic infrastructure, huge amount of investment, expertise and specialist of different fields, development of technology etc. Others are raw materials, efficient employees, well management, and potential markets for product are also required factors for industrialization. But capital is essence of industrialization. Without it no business can start. It is the prime factor through which it can get all other factors.

There are different sources for the collection of required capital like issuing equity share, preference share, debenture, and long-term and short-term debt etc. All these sources have their owned advantages and disadvantages according to their types. But newly run companies do not have both facilities for investment.

Capital structure is a structure composed with equity capital and debt capital. It is the main organ of every organization. The combination of equity and debt should be in good proportion so that the organization can maximized its wealth. The capital structure is assumed sound capital structure when it shows increase in the value of the firm. Thus, evaluating how much debt and equity funds are required to run organization smoothly is a nerve breaking task. If organizations are not giving enough attention on it then it will be wipe out from the market To know the appropriate capital structure it is necessary to study how one source of fund can be divided into two one is equity and another is debt.

Fund that is collected from owner of the organization is called equity capital through it they can get ownership in that organization. In return of their equity capital investment they get dividend on the basis of investment amount whenever company wants to distribute their profit. Organizations are not liable to pay fixed and regular dividend.

The major source of funds is rising through debt. On debt financing fixed and regular interest are paid on periodical basis. Interest is deducted from profit then any amount remain it is distributed in the form of dividend so that first priorities are given to the debt holder. Equity shareholder can earn total amount of profit as dividend if there is no presence of debt capital in capital structure. In this way, return is always affected by interest and this effect is known as leverage. In other words, leverage is an objective of wealth maximizing the shareholders' wealth by using low cost of security.

Nepalese organizations are not beneficiated by the objectives of wealth maximizing because the companies are not using debt in their capital structure. Mostly prefer equity as their capital structure.

## 1.2 AIRLINES INDUSTRIES IN NEPAL: AN OVERVIEW

### 1.2.1 EVOLUTION

History of Civil Aviation (Airlines Industry) dates back to the dawn of April 1949 with the maiden landing of a single engine aircraft at Gauchar, Kathmandu. In 1950, scheduled services began aerially linking Kathmandu with Patna, Calcutta and Delhi with 28- seater DC- 3 Dakota. The beginning of air services linking Nepal with some prime Indian cities was a milestone in the process of the country's economic development and political exposure to the International community. At this backdrop, domestic flight services were initiated on Pokhara, Bhairawa, Simara and Biratnagar routes in 1951. In 1972, NAC took a big step and introduced Boeing 727 (then latest), and started its international services to places like Bangkok, Karachi, and Dubai. It was in the eighties that NAC added its services to Singapore, Hong-Kong, Frankfurt, Paris, London and Shanghai and then in the early Nineties to Osaka, Japan.

With this continuous development it was high time that a proper runway be made and officially announces it as an airport. Thus the Kathmandu airport came to be known as Tribhuvan Airport in 1955 and later re-named to Tribhuwan International Airport in 1964. Later to come in line with the mixed economic policy, Royal Nepal Airlines Corporation was established in 1958 under the RNAC act 2019 B.S. (SOUVENIR 8$^{TH}$ CAAN:2006)

### 1.2.2 CURRENT DEVELOPMENTS

However, it was only after the restoration of the multiparty democracy in 1990, the country took to economic liberalization under the guidelines of which private sector was allowed to venture into the airline industry. With this liberalization Necon Air Ltd. (then Pvt. Ltd.) became the first private sector to take the skies of Nepal. After this many airlines such as Everest Air, Nepal Airways also came into existence (not in operation any more). Therefore, till 1994, there were altogether 6 airlines operating (3 fixed wings and 3 rotor wings) on domestic routes. By now there are altogether there are 34 airlines registered with CAAN (Civil Aviation Authority Nepal) of which 19 are in operation and the rest are yet to start their operations. Of these 19 airlines in operation, 8 of them are into rotor wings (operating helicopters) and 11 into fixed wing (aircrafts).

The air transport network in Nepal at present nurtures 44 airports. Out of these 44 airports, 31 lie in the hilly region and 13 of them in the terrain region. Airports connect Forty Four (44) out of Seventy Five (75) districts (53.3%) in Nepal. In some of the hilly areas of Nepal where there are no roads, air transport is the only means of transport for tourists and the local community. These areas are served by the STOL aircrafts e.g. Twin Otter. (SOUVENIR 8$^{TH}$ CAAN: 2006)

## 1.3 FOCUS OF THE STUDY

In the growing business world through the means of transportations it is a global village. We are able to travel around the world within twenty-four hour. Airlines sector is one of the most important partners among them. It is not only generating money but also creating employment opportunities as well. Nepal, a landlocked country; where it is the only way to get connected with other country like England, U.S.A, Africa, e.t.c. It is also contributing in internal market. Nepal;

geographically diversified country, where no other means of transportation are accessible for far remote region like Dolpha, Humla, Solukhumbu, e.t.c .Thus , it's contribution can not be ignored in internal market. This study mainly focuses on capital structure of two airline companies. They are Buddha Air & Yeti Air.

In the process of industrial & technological development airlines sector offer the best services to their consumers. Their objectives of providing best services with maximizing profit can be achieved only with the capacity of collecting essential financial resources. Without the required fund, other sources will be useless and inactive. So, all the companies should give their first priority to choosing the appropriate sources of capital. For this purpose all the two organizations are using equity as well as debt in their capital structure. This study also focuses on their study of capital structure and leverage position.

## 1.4 STATEMENT OF THE PROBLEM

The capital structure is made with the combination of debt and equity. But due to the increasing amount of interest, most of the organizations have been suffering from huge losses. So it is necessary to compose the debt and equity proportions carefully. But in most of the Nepalese companies there is no existence of debt in their capital structure and equity capital is only one source of financing, while in some cases the proportion of debt is high, which creates the serious issue of interest payment to the firm.

The structure of capital is differing company to company according to its own policy and operating system. Some of the organization use only equity capital some use only debt and some use combination of both equity and debt. Therefore determination of capital structure largely depends upon policy of the company and cost of capital. Most of the companies make low cost capital structure. There is no model for determining capital structure in the Nepalese business organization. In the initial period of any company, they want to use only equity capital and do not want to include debt in their capital due to high interest charges.

For comparative study of capital structure it selects airline companies. Nepal is a geographically very hard to access through road transport so airline companies

are playing pivotal role. Yearly, there are new airlines emerging as well as some are lapsing like Necon Air. Through this study want to examine that what kind of capital structures these airlines maintaining and comparing capital structure of two airlines. Following table shows amount of profits and losses in balance sheet from FY 2058/59to FY 2063/64.

**Table no:-A**
**Profits and Losses in Balance Sheet for Buddha & Yeti**

| Fiscal Year | 20586\59 | 2059/60 | 2060/61 | 2061\62 | 2062/\63 | 2063\64 | |
|---|---|---|---|---|---|---|---|
| Buddha | (35,352,144) | 12,400,260 | (65,249,551) | (44,246,989) | 159,883,559 | 171,126,426 | Profits & Losses Amount in BS |
| Yeti | 8,520,267 | (3,382,962) | (8,487,616) | (12,741,543) | (3,816,375) | (311,716) | Profits & Losses Amount in BS |

Source: Appendix-1

From above data it shows that Buddha air suffering form losses in FY 2058/59, 20560/61 & 2061/62 and getting profit in FY 2059/60, 2062/63and 2063/64.Whereas in Yeti air it shows profit only in FY 2058/59 and suffering from losses from FY 2059/60 to 2063/64.

Undoubtedly, balanced capital is one of the core issues for the success of any companies. They do not consider it when forming capital structure, and no similarities in determining capital structure. In that portion different question may arise as to

- ❖ Why the companies are using existing capital structure ineffectively?
- ❖ Whether the change in capital structure can be effective?
- ❖ Whether the cost of capital declines with leverage?
- ❖ Whether the other factors except capital structure affect the cost of capital?

In Nepalese perspective, private as well as government owned airlines both are using debt and equity in their capital structure formation for e.g. Buddha & Yeti airlines all are utilizing debt facilities.

## 1.5 OBJECTIVE OF THE STUDY

The basic objective of this study is to comparative study of capital structure management done by airline companies in Nepal.

The specific objectives of this study are as follows:-

❖ To examine of capital structure of the organization under study.
❖ To analyze cost of capital and return on capital in relation to the capital employed.

## 1. 6 SINGNIFICANCE OF THE STUDY

This study is going to be carried out to know the problems and prospects of some of the airlines companies and the future policies to develop their appropriate capital structure. Due to lack of attention on forming capital structure they are facing financial problem. So the study of capital structure and leverage position analyzes the companies' position in essential capital generating process.

The study has to deal with different views of investors, shareholder's loan, the leverage position of different companies etc, which can reveal actual position of the company, can be observed. It can further help to be decided whether there is profitable condition for shareholder or debt holders, because if the company is more levered equity shareholders cannot get much profit from their investment. If the company is in profitable condition then equity shareholders can get extra profit as bonus amount. In this way the study is needed of gaining the idea about benefited group of person that will be either shareholders or loan providers.

It will be guide line for organization. It will assist future researcher. It will give general idea of theoretical and practical implementation. The study of capital structure shows the condition of capital structure of a company. It shows the mix of capital structure employed by the firm and matches the overall cost of capital, the value of the firm and the earning per share to its capital structure.

## 1. 7 LIMITATION OF THE STUDY

The study of capital structure does not consider other aspects of financial analysis like risk and return analysis, dividend policy analysis, short term financial analysis, long term financial analysis, capital budgeting etc which are essential to analysis the overall performance of the company.

Due to the time constraint to finish this study all the concerned area might not have been covered yet.

**Limitations**
- ⇨ The analysis period covers only 6 year data from FY 2058/59 to 2063/64.
- ⇨ The analysis will be based on the primary as well as secondary data that will be provided by the concerned company and the reliability and validity of the finding are highly depending upon reliability and validity these data provided.
- ⇨ It only covers capital structure and ignore other aspects of analysis.

## 1.8 ORGANIZATION OF STUDY

All the study will be organized in to five different chapters. Topic and sub topics of the chapters are as follows:

**Chapter- I: Introduction**

The chapter consists of:

- i.     Introduction of the study
- Ii      Problem of the study
- iii.    Objective of the study
- iv.    Significance of the study
- v.     Limitation of the study
- vi.    Research Methodology etc.

**Chapter- II:  Review of Literature**

This chapter consists of Literature Reviews in which include:

i.      Review of related books.

ii.     Review of related articles and journals.

iii.    Review of related studied.

**Chapter- III:  Research Methodology**

This unit is for brief explanation of planning and methods of research. It consists of following subtopics:

     i.        Research Design

     ii.       Population

     iii.      Sample

     iv.      Data and collection procedure

     v.       Tools for analysis

     vi.      Presentation methods etc.

**Chapter- IV:  Data Presentation and Analysis**

This Chapter consists of Data Presentation and Analysis in which include:

     i.        financial analysis

     ii.       Statistical analysis major findings.

**Chapter- V:  Summary, Conclusion and Recommendation**

This Chapter is for Major findings:

     i.        Summary

     ii.       conclusion

     iii.      Recommendation

Bibliography and appendixes are incorporated at the end of the study.

# CHAPTER- II
# REVIEW OF LITERATURE

Before focusing on the selected two domestic Airlines, it is also important to review source of the available relevant literature. There are many studies conducted by different people, but most of the previous studies have been conducted on the manufacturing sector. So I choose Airlines Industry, so that I can do something new.

## 2.1  REVIEW OF RELATED BOOKS

### 2.1.1  Meaning and Concept of Capital Structure

The company, different sources of financing is used to finance current and fixed assets. The sources of financing may be short term or long term but they are usually grouped into dept and equity which characterize the firm's capital structure. Thus, capital structure is the composition of debt and equity that comprise a firm's financing of its assets.

In words of Mathur, "The capital structure is the composition of long term debt and equity; it is a part of financial structure i.e. comprised to the total combination of preferred stock, common stock, long term debt and current liabilities. If current liabilities are removed from it we get capital structure**.**" (Mathur, 1979:210)

A distinction is usually made between financial structure and capital structure. Financial structure refers to all source (both short term and long term) that are used to finance the entire assets of a firm where as capital structure is taken as the capitalization part of firm's total financing, which includes only the long term sources such as long term debt and equity. Thus, the capital structure is a part of financial structure.

The nature of capital structure could differ from one company to another, "However a reasonable satisfactory capital structure can be determined by

considering relevant factors and analyzing the impact of alternative financing proposals on the earning per share." (Prasanna, 1985:176)

One of the financial manager's principal goals is to maximize the value of the firm's securities. For this purpose the firm should select a financial mix/financial leverage which will help in achieving the objective of financial management with a view to maximize the value of share. In order to attain this business goal, firm should select an appropriate capital structure.

According to Kuchhal, "Within this framework of equating the rate of return and the cost of capital, capital structure is sought by using a proportion of debt such that the correct degree of trading on equity leading to financial leverage will cause the highest market value of the ordinary shares."(Kuchhal, 1977:388)

Capital structure of a company consists of debts and equity securities, which provide funds for a firm. "Capital structure is made up of debt and equity securities which comprise a firm's finance of its assets. It is the permanent financing of a firm, represented by long-term debt plus preferred stock plus net worth." (Kulkarni, 1983:363)

"Apart from short-term finance from creditors and banks, companies are usually financed either by long term loans (debentures) carrying a fixed rate of interest on capital or by ordinary shares carrying membership of the company and dividends at rates which depend upon profits."(Francis, 1980:192)

The basic pattern of capital structure can be simple or complex. A simple capital structure consists of equity shares and preference shares. But a complex capital structure consists of multi securities as equity shares, preference shares, debentures, bonds etc.

The capital structure has many relevant dimensions. The financing mix is one of them. Other dimensions involve the investment decisions of the firm and the optimal use of leverage, within the constraints imposed by the internal and external environmental conditions. These conditions, in turn, affect the decision

of the firm with respect to the timing of investment and financing transactions as well as the acceptable levels of risk and liquidity. Capital structure can be dealt with the three different levels of complexity.

## 2.1.2  The Optimum Capital Structure

The capital structure differs according to different types of industries. "There is no such thing as the model capital structure for all business undertakings. One way of planning the capital structure is to make it fit in to a model compiled from a number of different experiences that may have been drawn from the historical ratios of the firm." (Kuchhal, 1977:390)

The optimum capital structure is the mix of finance in which the market value of each share is maximized or the average cost of capital is minimum. The value will be maximized or the cost will be minimum when the marginal cost of each source of fund is the same.

"An optimum capital structure would be obtained at that combination of debt and equity that maximizes that total value of the firm (value of shares plus value of debt) or minimizes the weighted average cost of capital."( Pandey, 1999:227)

"Up to a certain point debt added to the capital structure will cause the market value or the firm to rise and the cost of capital to decline. However after the optimum point has reached any additional debt will cause the market value to decrease and the cost of capital to increase." (Ernest, 1976:237)

 "Optimal capital structure can be properly defined as that combination of debt and equity that attains the stated managerial goals maximization of the firm's market value, and which minimizes the firm's cost of capital. As the existence of an optimum capital structure implies the simultaneous optimization of both the cost of capital and the firm's market value, it occupies a central position in the theory of financial management." (Phillippatos, 1974:237)

"The normative objective of the firm of maximizing stockholders wealth is to reduce the cost of capital to a minimum by continuing to raise long-term funds over time in the least 'expensive' ways."(Kreps & Watch, 1975:411)

The overall cost of capital is minimized, theoretically at least, when the firm reaches its optimum capital structure. The optimum capital structure strikes a balance between the risks and returns and thus maximizes the price of the stock.

According to Soloman, "A firm has certain structure of assets, which offers net operating earnings of a given size and quality, and gives certain structure of rates in the capital market, there is some specific degree of financial leverage at which the market value of the firm's securities will be higher (or the cost of capital will be lower) than at any other degree of leverage." (Soloman, 1963:92)
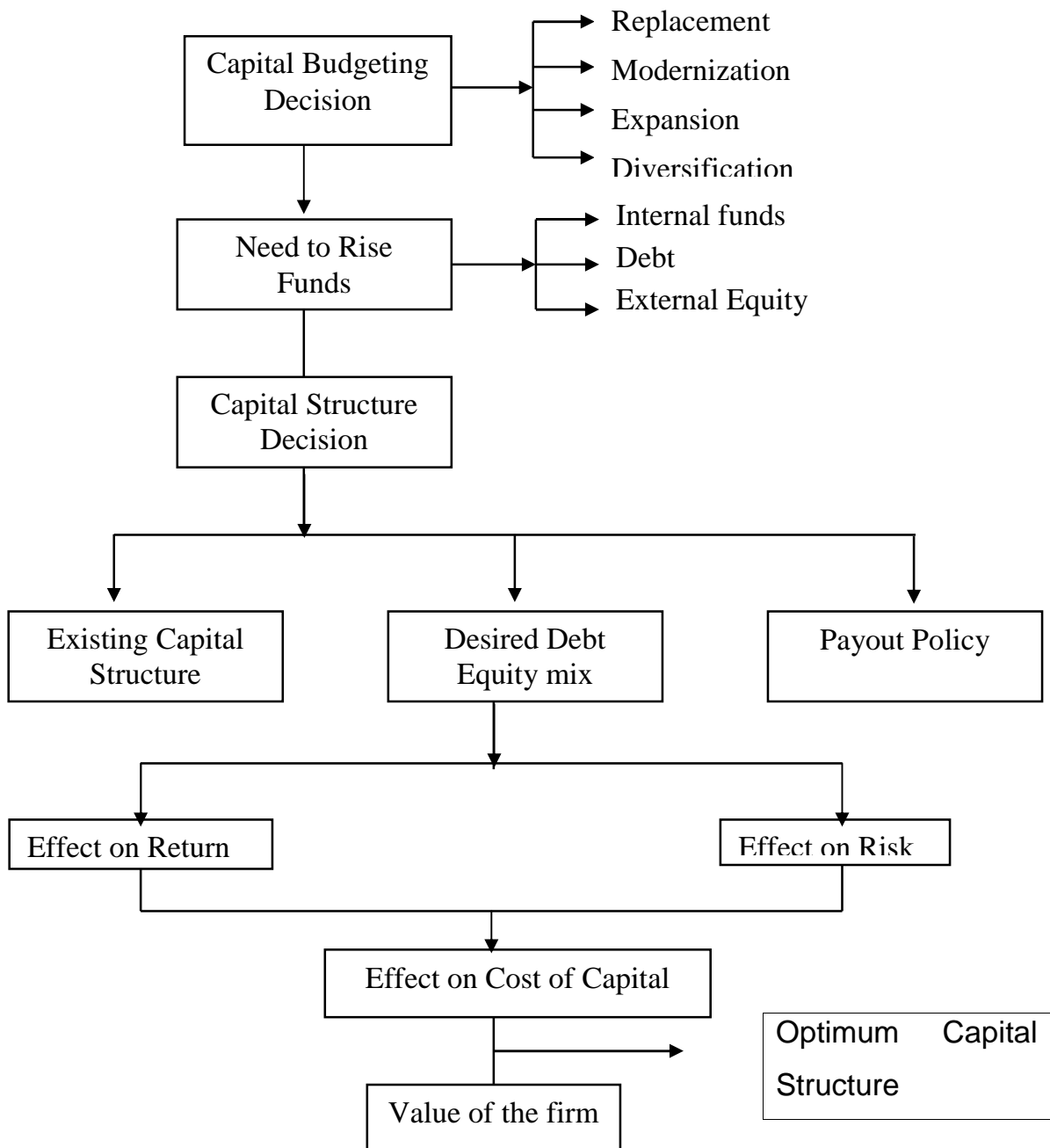
According to Pandey "An optimum capital structure would be obtained at the combination of debt and equity that maximizes the total value of the firm or maximize the weighted average cost of capital."(Pandey, 1999:227)

The optimal capital structure has been defined by Soloman as "Optimal capital structure can be defined as that mix of debt and equity which will maximize the market value of a company. If such and optimum capital structure does exist, it is two fold. That is it maximizes the value of the company and hence the wealth of its owners, it minimize the company's cost of capital which in turn increase its ability to find new wealth creating investment opportunities." (Soloman, 1996:115)

For many decades, the issue of optimal capital structure has troubled the financial world. Several studies have been conducted on the issue of capital structure, but the debate on the issue still continues.

## 2.1.3 THE CAPITAL STRUCTURE DECISION

**Figure no:-2.1**

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┌──────────────────┐           ──────► Replacement
│ Capital Budgeting│           ──────► Modernization
│     Decision     ├──────────►──────► Expansion
└────────┬─────────┘           ──────► Diversification
         │
         ▼
┌──────────────────┐           ──────► Internal funds
│  Need to Rise    ├──────────►──────► Debt
│     Funds        │           ──────► External Equity
└────────┬─────────┘
         │
         ▼
┌──────────────────┐
│ Capital Structure│
│     Decision     │
└────────┬─────────┘
         │
 ┌───────┼──────────────────────────┐
 ▼       ▼                          ▼
┌──────────────┐ ┌──────────────┐ ┌──────────────┐
│Existing      │ │Desired Debt  │ │Payout Policy │
│Capital       │ │Equity mix    │ │              │
│Structure     │ │              │ │              │
└──────────────┘ └──────┬───────┘ └──────────────┘
                        │
          ┌─────────────┴──────────────┐
          ▼                            ▼
   ┌──────────────┐            ┌──────────────┐
   │Effect on     │            │Effect on Risk│
   │Return        │            │              │
   └──────┬───────┘            └──────┬───────┘
          └────────────┬──────────────┘
                       ▼
          ┌──────────────────────┐
          │Effect on Cost of     │
          │Capital               │
          └──────────┬───────────┘
                     │        ─────►  ┌──────────────────┐
          ┌──────────┴───────┐        │Optimum   Capital │
          │Value of the firm │        │Structure         │
          └──────────────────┘        └──────────────────┘
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Above figure from Pandey, "Financial Management", 1999 : 634

Capital is a scarce resource and much more essential to maintain smooth operation of any firm. The available capital and financial resources should be utilized so efficiently that it could generate maximum return.

Capital Structure is considered as that mix of debt and equity and to operate in long run prospect. A firm must concentrate in its proportion. A firm can raise

required fund by issuing various types of financial instruments. Investors and creditors being the key suppliers of capital, they hold greater degree of risk and hence have claims over firm's assets and cash flow. Similarly debt holders are also a source of financing fund and they have risk considering firm's cash flow is uncertain and there is probability that it may default in its obligations to pay off its interest and principle. In the other hand, if a firm issue preference share, those shareholders even though have the priority in payment of dividend before common shareholders but after debt holders. Since the percentage of preference dividend is fixed as the percentage of interest to debt, it is preferably paid off only after interest payment. Common shareholders as are the owner of the firm; they are paid from cash remaining after all payment is being made. Since the common share i.e. equity fluctuate in the market more than the preference share and debt, there is more risk.

The above statement states in brief that either fund is raised by debt or equity financing risk is associated in proportion of its uncertainty is being paid off. The required rate of return expected by investors according to their risk is cost of capital. Therefore a firm should try to obtain necessary fund at lowest cost. This cost of capital is fully dependent upon the proportion of debt and equity i.e. financial leverage, which is actually the capital structure used by the firm.

Capital Structure concept has important place in financial management theory. It is basically known as financial structure, financial plan or leverage. Financing decision of a firm, as the other financial decision, is concerned with shareholders wealth maximization. As capital structure refers to the proportion of debt and equity, a choice in proportion is actually financial decision in case to fulfill investment requirement. Therefore, it is a wise decision to select such a financing mix, which maximizes shareholders wealth.

Capital Structure is taken as a capitalization part of firms total financing which includes only long term source such as long-term debt, preferred and equity. Therefore it is a part of financial structure.

The nature of capital structure differs from company, which is directly guided, regulated and controlled by management of the company "However a reasonable satisfactory capital structure can be determined by considering relevant factors and analyzing the impact of alternative financing proposals on the earnings per share."(Prasanna, 1985:176)

One of the financial managers principle goals is to maximize the value of the firm's securities .For this purpose firm should select a financial mix/leverage, which will help in achieving the objective of financial management with a view to maximize the value of share. In order to attain this business goal, firm should select an appropriate capital structure.

"Given the objective to the firm to maximize the value or equity share, the firm should select a financial mix/capital structure which helps in achieving the objective of financial management. If the capital structure decision affects the total value of the firm, a firm should select such financial mix that will maximize the shareholders wealth. Such capital structure is referred to as the optimum capital structure." (Khan and Jain, 1995:473)

"The choice of firm's capital structure is a marketing problem. It is essentially concerned with how the firm decides to decide its cash flows into two broad components, a fixed component that is earmarked to meet the obligations towards debt capital and a residual component that belongs to equity shareholders."(Prasanna, 2001:411)

The capital structure decision affects the overall cost of capital, total value of the firm and earning per share. Therefore it should be well planned. It aims to maximize value of firm and earning per share by minimizing cost of capital without effecting operating earning of the firm.

"The capital structure is the composition of debt and equity securities that make up the firm's financing of its assets. Both debt and equity securities are used in most large corporations. The choice of the amount of the debt and equity is made after a comparison on certain characteristics of each kind of security of

internal factors related to the firms operations and of external factors that can affect the firm." (Soloman, 1996:115)

The capital structure is rational judicious mix of debt, preferred stock and common stock. Therefore capital structure depends upon the efficiency of management in the rational estimation of capital mix. The financial manager should adhere in proper mixing of debt and equity that can maximize the value and minimizes the overall cost of capital of the firm.

"There are four dimensional lists when thinking about capital structure decision" (Brigham, n.d:451)

**1. Taxes:** If company is the tax paying and increase in leverage reduces the income tax paid by the company and increases the tax paid by the investor. If the company has large accumulated loss, as increase in leverage cannot reduce corporate tax, but does increase personal taxes.

**2**. **Bankruptcy:** With or without bankruptcy, financial distress is costly. Other things equal, distress is more likely for the firm with high business risk. That is why such firms generally issue less debt.

**3. Asset type:** The costs of distress are likely to be greater for firms whose value depends on growth opportunity of intangible assets. These firms are more likely to go for profitable opportunities and default occurs, their asset may be eroding rapidly. Hence, firms whose assets are weighed forward intangible assets should borrow significantly less on average their firms holding assets you can kick.

**4. Financial slack:** In the long operating decisions than on financing. Therefore, you want to make sure your firm was in sufficient financial slacks, so that financing is quickly accessible when good investment opportunity arises. Financial slack is most valuable to firms that have ample positive NPV Growth opportunity. That is another reason why growth companies usually aspire to conservative capital structure.

## 2.1.4 ASSUMPTIONS OF CAPITAL STRUCTURE

The theories of capital structure make certain assumptions to exhibit the influence of mix of debt if the capitalization on the valuation of the firm. These assumptions are for the sake of simplicity in explanation of the theories of capital structure.

These are ( Pandey, 1999:676)

1. Firms employ only two types of capital: Debt & Equity.
2. The firm's total assets are fixed. The degree of leverage can be changed by selling debt to repurchase shares or selling shares to retire debt.
3. Investors have the same subjective probability distributions of expected future operating earning for a given firm.
4. The firm has pa policy of paying 100 percent dividends.
5. The operating earnings of the firm are not expected to grow.
6. The business risk is assumed to be constant and independent of capital structure and financial risk.
7. The corporate and personal income taxes do not exist.

In the theoretical analysis of capital structure, the following basic symbols have been used:

a. B= Total market value of debt.

b. S= Total market value of stock.

c. V= Total market value of firm (B+S)

d. Ke= equity capitalization rate.

e. Kd= Cost of debt/Yield on the debt.

f. Ko=Overall capitalization rate.

g. I= Total amount of annual interest.

h. EBIT= Earning before interest & taxes.

i. Cost of debt i.e. Kd = I/B

j. Cost of equity= $\dfrac{EBIT - I}{S}$   or  $\dfrac{NOI - I}{S}$

k. Overall cost of capital i.e. Ko = $\dfrac{NOI}{V}$   or   Ko= Kd (B/V) + Ke (S/V)

l. Value of the firm i.e. V=B+S

## 2.1.5  THEORIES OF CAPITAL STRUCTURE

The theory of capital structure is closely related to the firm's cost of capital. Many debates over whether an optimal capital structure exists are found in the financial literature. Argument between those who believe there is an optimal capital structure for each firm and among those who believe in the absence of such optimal capital structure began in late 1950's and there is yet no resolution of the conflict. Modigliani and Miller logically admitted that the value of the firm or the cost of capital is independent of capital structure decision of the firm. On the other hand, according to the traditionalist's view, the value of the firm or the cost of capital is affected by the capital structure change. So, in order to understand how firms should manage the target capital structure decision, it is important to have some idea of major elements of capital structure theory.

The history presents several theories on capital structure management. In order to analyze the capital structure of any company four theories are considered
These theories are:
1. Net income (NI) approach.
2. Net operating income approach. (NOI)
3. Traditional approach; and
4. Modigliani-Miller (M-M) theory
    A. With Out taxes.
    B. With taxes.
    C. Miller's Model
5. Trade-Off or Static Theory

### 2.1.5.1    NET INCOME (NI) APPROACH:

Net Income approach focuses on the increase in total valuation of the firm through the reduction in the cost of capital leading to an increase in the degree of leverage. It is also a dependent hypothesis of capital structure. This theory relates to the questions regarding, what happens to the cost of equity and consequently to the market value of the stock and to the total value of the firm as it employs more debt in capital structure.

This theory is propounded by David Durand "The essence of the net income theory is that the firm can increase its value or lower the overall cost of capital by increasing the portion of debt in the capital structure."( Pandey, 1999:678)

According to Pandey "This approach is based on the crucial assumption that the use of debt does not change the risk perception of the investors. Consequently, the interest rate on debt and the equity capitalization rate remains constant to debt." (Pandey, 1999:678)

According to Shrestha, "The emphasis on EBIT is to measure how the degree of leverage brings change in valuation of the firm. Assuming a constant equity capitalization rate, the increase in cheaper debt funds lowers the weighted average cost of capital and there by raising the value of the firm and thus increasing in debt may not be risky."(Shrestha, 1981:28)

"The crucial assumptions of this approach are:" ( Pandey, 1999:678)
   a) The use of debt does not change the risk perception of investors; as a result, the equity capitalization 'Ke' and the cost of debt 'Kd' remains constant with changes in leverage.
   b) The debt capitalization rate is less than the equity capitalization rate.
   c) The corporate tax do not exists.

Therefore as the firm increases its leverage by increasing its level of debt relative to equity, the overall cost of capital declines. The importance of this levered overall cost is that it increases the value of the firm.

"As the portions of the cheaper debt funds in the capital structure, increases, the weighted average cost of capital decreases and approaches the cost of debt (Kd). Therefore as the firm increases its leverage by increasing its level of debt relative to equity, the overall cost of capital is that it increases the value of the firm." (Van Horne, n d: 380)

<u>Overall cost of capital can be expressed by the following formula.</u>

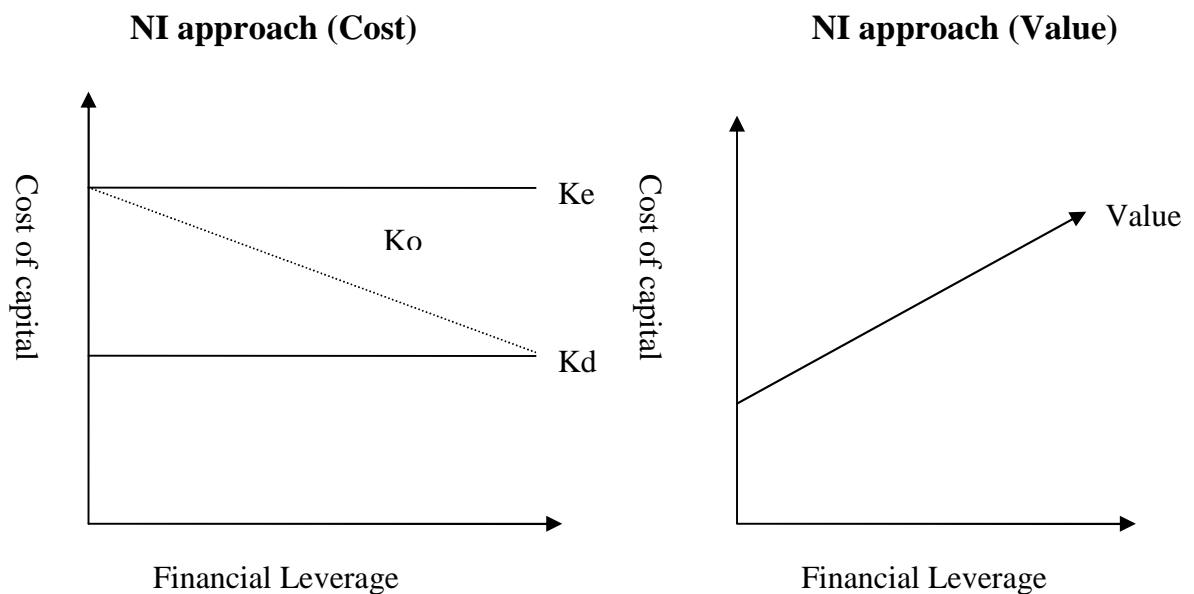Overall cost of capital (Ko) = $\dfrac{\text{Net Operating Income}}{\text{Total Value of the Firm}}$

Or, EBIT / V

Another formula for (Ko) = Ke - (Ke – Kd) B / V

As per the assumption of Net Income Approach, Ke and Kd are constant and 'Kd' is less than 'Ke'. Therefore, Ko will decrease as B/V increases. Also, 'Ke' = Ko when B/V= 0

**This approach is graphically shown below:**

**Figure no:-2.2**



(Figure from Pandey, "Financial Management", 1999:680)

Above figure show that 'Kd' and 'Ke' are constant and 'Ko' is declining. So, under the Net Income Approach the cost of capital will decline and value of the firm will increase with leverage. The optimum capital structure would occur at the point where the value of the firm is maximum and overall cost of capital is minimum. That point will have the maximum value of the lowest cost of capital when it is all debt financed or has as much debt as possible.

"NI does not recognize that an increase in the proportion of debt in the total capitalization results in higher risk. This is unrealistic. If loans are excessive, the equity shareholders would perceive increase in risk. They would sell their equity shares. A result, the market price of equity shares will go down. Thus, the very objective of optimizing the value of the firm will be defeated. On this reasoning, NI theory is adequate for capital structure management." (Upadhyay, 1985:874)

"The significance of this approach is that a firm can lower its cost of capital continually and increase its valuation by the use of debt funds. Again, the critical assumption is that the firm does not become increasing more risky in the minds of investors and creditors as the degree of leverage is increased." (Van Horne; n d: 233)

### 2.1.5.2 NET OPERATING INCOME (NOI) APPROACH:

David Durand has proposed this approach. Net operating income approach is just the opposite of the net income approach. It is in support of MM proposition. It is an independent hypothesis of capital structure decision, because capital structure of the firm is irrelevant. Any change in leverage will not lead to any change in the total value of the firm and market price of share, as the overall cost of capital is independent of the degree of the leverage. However, as the firm increase its relative debt level, the cost of equity increases. The reason the cost of equity capital increases is that the stock holders require a higher return due to the increase in risk imposed by additional debt.

**ASSUMPTIONS OF NOI APPROACH:** (Pandey, 1999:681)
1. The market capitalizes the value of the firm as a whole. Thus, the split between debt and equity is not important.
2. The market uses an overall capitalization rate Ko, to capitalize the net operating income. Ko, depends upon the business risk. If the business risk is assumed to remain unchanged, Ke is constant.
3. The use of less costly debt funds increases the risk to the shareholders. This causes the equity capitalization rate to increase. Thus, the

advantage of debt is offset exactly by the increase in the equity capitalization rare, Ke.

4. The debt capitalization rate, Kd, is a constant.
5. The corporate income taxes do not exist.

"Under operating income approach the capital structure is a more detail. Since, the value of the firm is independent of the firm's capital structure. If the firm increases its use of financial leverage by employing more debt then this directly is offset by an increase in the cost of capital." (Shrestha, 1981:28)

**Figure below explain this approach graphically.**

<u>**Figure no:-2.3**</u>
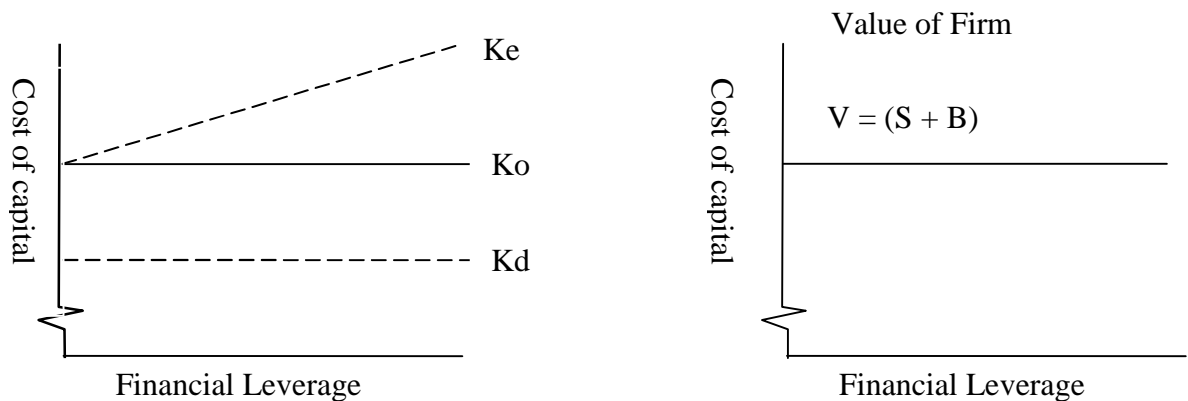


(Figure from Van Horne "Financial Management and Policy", 2000: 254)

From the above figure we can see that 'Ko' and 'Kd' are constant but 'Ke' is increasing. While 'Ke' is increasing but value of the firm is constant with leverage. "At the extreme degree of financial leverage hidden cost becomes very high and hence, the firm cost of capital and its market value are not influenced by the use of additional cheap debt fund." (Gitman and Prinches, P.791)

This can be expressed as:

$$Ke = \frac{Ko + (Ko - Kd)}{B/S} \quad \text{or} \quad Ke = \frac{Kd + Ko - Kd}{S/V}$$

"Like NI approach, the NOI also assumes a constant rate of Kd which means that the debt holders do not demand higher rate of interest for higher level of

leverage risk. But, equity holders do react to higher leverage risk and demand higher rate of return for higher equity debt equity ratio."(Shrivastav, 1984:618)

It is therefore reverse to NI approach. Any changes in leverage will not lead to any changes in the total value of the firm and the market price of a share as well as the overall cost of capital remains constant. The overall cost of capitalization rate and cost of debt remains constant but the cost of equity increases linearly with leverage.

Thus, this approach suggested that there is not any optimum capital structure. As the overall cost of capital is the same at all capital structure, every capital structure is optimal.

## 2.1.5.3 TRADITIONAL APPROACH:

The traditional view on the relationship between capital structure and the cost of capital is that the firm's cost of capital can be reduced by a judicious mix of debt and equity capital and an optimum capital structure exist for every firm. This approach which is also known as intermediate approach is a compromise between the net income approach and the net operating income approach.

According to Pandey, "The more sophisticated version of the net income approach is contained in the traditional view. According to this approach, the value of the firm can be increased or the cost of capital can be reduced by a judicious mix of debt & equity capital." (Iqwal, 1979:213)

"In this approach the cost of capital decreases within the reasonable limit of debt and then increase with in the leverage."(Prasanna, nd: 355)

"The main propositions of the traditional theory are" :( Pandey, 1999:683)

**FIRST STAGE: INCREASING VALUE**

In this first stage, the cost of debt (Kd) remains more or less constant up to a certain degrees of leverage but rises thereafter at an increasing rate.

It means that cost of equity (Ke) remains constant or rises slightly with debt. But it does not increase fast enough offsets the advantage of low cost of debt. During this stage, the cost of debt (Kd) remains constant or rises negligibly. Since the market views the use of debt as a reasonable policy. Thus, so long as debt is within acceptable limit and 'Ke' and 'Ki' remains constant, the value of the firm increases at a constant rate.

**SECOND STAGE: OPTIMUM VALUE**

In this stage, once the firm has reached a certain degree of leverage, increases in it have a negligible effect on the value of the firm. This is so because the increase in the cost of equity offsets the advantages of low cost of debt within that range or specific points, the value of the firm will be maximum or the cost of capital will be minimum.

**THIRD STAGE: DECLINING VALUE**

The overall cost of capital Ko as a consequence of the above behavior of Ke and Kd.

1. Decrease up to a certain point.
2. Remain more or less unchanged for moderate increase in leverage there after, and
3. Rises beyond a certain point.

After the certain level of leverage, the value of the firm increases with leverage or the overall cost of capital increases with leverage. The cost of debt and equity will tends to rise as a result of increasing the degree of financial risks that will make to increase in the overall cost of capital.

The earning of the company will be faster from the use of additional debt. The overall effect of these three stages is to suggest that the cost of capital is a function of leverage. It declines with leverage and after reaching a minimum
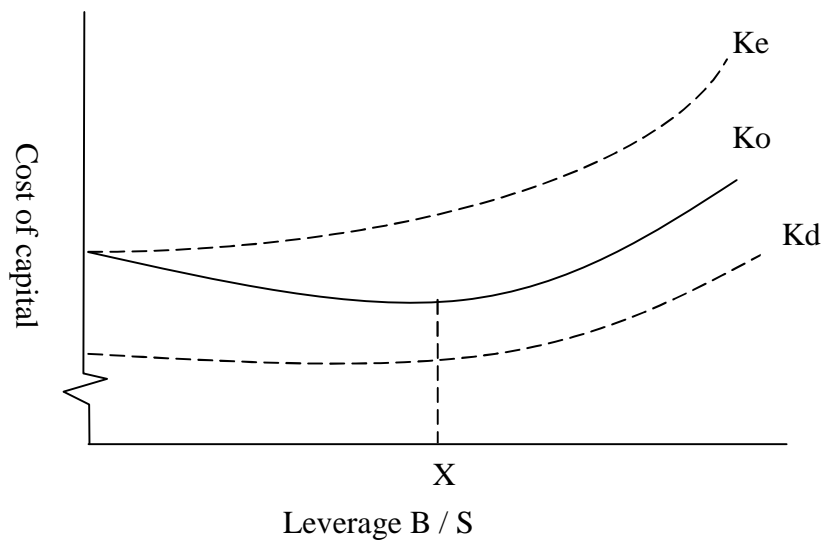
point or it would start rising under such a situation there is a precise point defines the optimum capital structure.

**One variation of the traditional approach can be seen from the below figure**
**Figure no:-2.4**

(Figure from Van Horne "Financial Management and Policy", 2000: 255)



Leverage B / S

From the above figure we can see that 'Ke' is assumed to rise at an increasing rate with leverage, whereas 'Kd' is assumed to rise only after significant leverage has occurred. At first, the weighted average cost of capital declines with leverage because the rise in 'Ke' does not entirely offset the use of cheaper debt funds. As a result, the weighted average cost of capital 'Ko' declines with moderate use of leverage. After a point, however the increase in 'Ke' is more than offsets the use of cheaper debt funds in capital structure, and 'Ko' begin to rise. The optimum capital structure is the point at which 'Ko' bottoms out. In this figure, this optimum capital structure is point X. Thus, the traditional position implies that the cost of capital is not independent of the capital structure of the firm and there is an optimal capital structure.

"According to this approach, there exists a particular capital structure that is better than any other for the firm. In the above figures, the debt equity ratio at the point 'p' results the overall cost of capital, which consequently maximizes the value of the firm. Therefore, the debt equity ration is relevant and optimal capital structure exists for the firm." (Prasanna, nd: 361)

## 2.1.5. 4 Modigliani – Miller Models (MM Hypothesis)

Modigliani-Miller model (MM) presented in 1958 have stated that under a given set of assumptions, the capital structure and its composition has no effect on the value of the firm. This theory propounded by those two researchers is later known as M-M theory. They have shown that the financial leverage does not matter and the cost of capital and the value are independent of the capital structure. There is nothing called the optimal capital structure. Modigliani and Miller in their original position advocate that the relationship between leverage and the cost of capital is explained by the net operating income approach. They make a formidable attack on the traditional position by offering behavioral justification for having the cost of capital remain constant throughout all degree of leverage.

- The M-M theory is based on some assumptions, which are mentioned below ( Brigham & Gapenski, 2001 :622)

a) There are no personal or corporate taxes.

b) Business risk can be measured by $\sigma_{EBIT}$, and firms with the same degree of business risk are said to be in a homogeneous risk class.

c) All present and prospective investors have identical estimates of each firm's future EBIT; that is, investors have homogeneous expectations about expected future corporate earnings and the riskiness of those earnings.

d) Stocks and bonds are traded in perfect capital markets. This assumption implies, among other things, (1) that there are no brokerage costs and (2) that investors (both individual and institution) can borrow at the same rate as corporations.

e) The debt of firms and individual is risk less, so the interest rate on all debt is the risk free rate. Further, this situation holds regardless of how much debt a firm (or individual) uses.

f) All cash flows are perpetuities; that is, all firms expect zero growth, hence have an "expectation ally constant" EBIT, and all bonds are perpetuities.

M-M theory, in 1958 proposed that the theory without taxes and later, they relaxed the theory with tax considerations. So

    a. M-M theory without taxes.

    b. M-M theory with taxes.

The following terminologies and notations are used in M-M theory.

- Levered firm: A firm that uses some percentage of debt in its capital structure.

- Unleveled firm: All equity-financed firms are known as unleveled firm.

- Risk Premium: Risk premium is that expected additional return by the equity holders for making a risky investment. In other words, it is the additional return demanded for the equity holder due to the inclusion of debt capital in firm's capital structure.

Notation:

1  $k_{SU}$ = The equity capitalization rate of an unleveled firm.

2  $k_{SL}$ = The equity capitalization rate of a levered firm.

3  kd = The debt capitalization rate.

4  $k_{OU}$ = The overall capitalization rate of an unleveled firm.

5  $k_{OL}$ = The overall capitalization rate of a levered firm.

6.  $V_U$ = Value of an unleveled firm.

7.  $V_L$ = Value of a levered firm.

8.  T = Corporate tax-rate.


**2.1. 5. 4. 1. A MM without Taxes:** (Brigham & Gapenski, 2001: 622)

MM first analyzed leverage under the assumption that there are no corporate or personal income taxes .On the basis of their assumption, they states and algebraically proved two propositions.

**Proposition I**: The value of any firm is established by capitalizing its expected net operating income (EBIT) at constant rate ($k_{SU}$) which is based on the firm's risk class. The total value of the firm is equal to the capitalized value of the operating earnings of the firm. The capitalization of expected net operating profit is made at a constant rate appropriate to the risk class of the firm.

$$V_L = V_U = EBIT / WACC = EBIT / k_{SU}$$

Where $V_L$ is the value of the levered firm (a firm with debt in its capital structure) and $V_U$ is the value of an unleveled firm. Both firms are assumed to be in the same business risk class, and $k_{SU}$ is the required rate of return for an unleveled, or all equity firms.

Since V is constant, then when there are no taxes and transaction costs, capital structure decisions have no effect on firm value.
On this basis we can say that,

- The weighted average cost of capital (WACC) to the firm is completely independent of its capital structure.
- The WACC for the firm, regardless of the amount of debt it uses, is equal to the cost of equity it would have if it used no debt.

**Proposition II:** The cost of equity to a levered firm, $k_{SL}$, is equal to (1) the cost of equity to an unleveled firm in the same risk class, $k_{SU}$, plus (2) a risk premium whose size depends on both the differential between an unleveled firm's cost of debt and equity and the amount of debt used:

$$k_{SL} = k_{su} + \text{Risk Premium} = k_{SU} + (k_{SU} - k_d)(D/S)$$

Where, D = market value of the firm's debt, S = market value of the firm's equity, and $k_d$ = constant cost of debt. This states that the rate of return on equity ($K_E$) increases linearly with the debt-to-equity ($D/E$) ratio
Taken together the two propositions imply that the total value of the firm is independent of the financing mix. Thus, MM argue that in a world without taxes, both the value of a firm and its WACC would be unaffected by its capital structure.

**MM's Arbitrage Proof:** (Brigham & Gapenski, 2001: 623)

MM used an arbitrage proof to support their propositions. They showed that, under their assumptions, if two companies differed only (1) in the way they are financed and (2) in their total market values, then investors would sell shares of

the higher –valued firm, buy those of the lower valued firm, and continue this process until the companies had exactly the same market value.

The arbitrage process refers to undertaking by a person of two related actions or steps simultaneously in order to derive some benefit either in the form of increased income from the same level or same income from lesser investment. According to this model, if two firms are alike in all respect expect that they differ in respect to their financing pattern and their market value, then the investors will develop a tendency to sell the shares of the over valued firm (creating the seller pressure) and to buy the shares of the under valued firm (creating a demand pressure). This, buying and selling pressure will continue till the two firms have same market values. The MM model can be explained with the help of an example as follows:

Let L and U be two firms identical in all respect except its financial structure. Firm L has Rs.500000 of 16% debt and sRs.2000000 as an equity capital, while firm U uses only equity of Rs.2500000. Both firms have EBIT = Rs.500000 and both bears the same level of business risk i.e.20%, and assumed that all earnings are paid out as dividends.
Then,

|  | FIRM U | | FIRM L |
| --- | --- | --- | --- |
| EBIT | 500000 | | 500000 |
| Less: Interest | --------- | | 80000 |
| NI available for equity Shareholders | 500000 | | 420000 |
| Value of equity (500000/.2) | 2500000 | (420000/.2) | 2100000 |
| Value of the firm | 2500000 | | 2600000 |

Assume, Anil own 10% share of firm L worth Rs.2100000. Now, he sells them in the market and by obtaining the loan of 50,000 at a rate of 16% buys the 10% share of Firm U for Rs.250000. he is remained with a surplus amount of Rs.10000.

Comparing his old income with that of new income:

Old income: 10% of 420000 = Rs.42000 (Without Interest)

New income= 10 % of 500000 = 50000

Less: Interest @ 16%          =  8000

Net income                    = 42000

Thus, we can see the investors is able to get the same return of Rs.42000 from firm U also, which he was receiving as an investor of firm L, but he has a funds of Rs.10000 left over for investment else where thereby indicating that he will be better off selling the holding in the levered firm and buying the holding in unleveled firm using his home made leverage.

This opportunity to earn extra income through arbitrage process will attract so many investors. The gradual increase in sales of the shares of levered firm will push it price down and the tendency to purchase the shares of unleveled firm will drive its price up. These selling and purchasing pressures will continue until the market values of two firms are equal. At this stage, the value of the levered and the unleveled firm and also their cost of capital are same; and thus the overall cost of capital, $k_o$ , is independent of financial leverage.

**2.1. 5.4. 1. B MM with Corporate Taxes :**( Brigham & Gapenski, 2001:626)

MM's original work, published in 1958, assumed zero taxes. In 1963, after the criticism of its model based on the ignorance of taxation, MM publish a second article incorporating the effect of corporate tax on the value of the firm. With the inclusion of corporate tax, they concluded that since interest being the deductible expenses, the increase in the leverage would increase the value of the firm.

Here are some propositions when corporations are subject to income tax:

**Proposition I:**  The value of a levered firm is equal to the value of an unleveled firm in the same risk class ($V_U$) plus the gain from leverage. The gain from leverage is the value of the tax saving, found as the product of the corporate tax rate (T) times the amount of debt the firm uses (D). In a world where corporate

income is subject to taxation and there are no bankruptcy costs, the firm value of levered firm increases with the gain from the leverage:

$$V_L = V_U + T_C {}^* D$$

Where $T_C$ is the marginal corporate tax rate and $D$ is the *market value* of the firm's debt, the combination of both gives total gain from the leverage factor. Since the gain from leverages increases as the debt increases as debt increases, in theory a firm's value is maximized at 100% debt financing.

Because all cash flows are assumed to be perpetuities, the value of unleveled firm can be found as:

$$S = V_U = \frac{EBIT(1-T)}{k_{SU}}$$

**Proposition II:**

The cost of equity to a leveled firm is equal to (1) the cost of equity to an unleveled firm in the same risk class plus (2) a risk premium whose size depends on the differential between the costs of equity and debt to an unleveled firm, the amount of financial leverage used, and the corporate tax rate. The levered cost of equity increases with the after-tax debt-to-equity ratio:

$$k_{SL} = k_{su} + \text{Risk Premium} = k_{SU} + (k_{SU} - k_d)(1-T)(D/S)$$

Where, $D$ = market value of the firm's debt, $S$ = market value of the firm's equity, and $k_d$ = constant cost of debt and $T$ = corporate taxation rate. In this case corporate taxes cause the cost of equity to rise less rapidly with leverage than was true in the absence of taxes.

Proposition II, coupled with the fact that reduces the effective cost of debt, is what produces the proposition I result, namely, that the firm's value increases as its leverage increases.

**2.1. 5. 4.1. C Miller's Model:** (Brigham & Gapenski, 2001: 632)

Although MM included **corporate** taxes in the second version of their model, they did not extend the model to include **personal** taxes. However, in his presidential address to the American Finance Association, Merton Miller

introduced a model designed to show how leverage affects firms' values when both personal and corporate taxes are taken into account.

Merton Miller in order to narrow the gap of MM theory incorporated corporate as well as personal income taxes in the selection of the optimal capital structure for the firm. Based on the same assumption used in the earlier MM models, with personal taxes included, the value of an unleveled firm under this model is found as follows:

$$V_U = \frac{EBIT(1-T_C)(1-T_S)}{k_{SU}}$$

Where $T_S$ is the personal income tax rate on equity income and $T_C$ is the marginal corporate tax rate. The numerator shows how much of the firm's operating income is left after the levered firm pays a corporate income taxes and its stockholders subsequently pays personal taxes on their equity income. Since the introduction of personal taxes lowers the income available to investors, personal taxes reduce the value of levered firm, other things held constant.
 Once the value of the unleveled firm has been obtained, the value of levered firm is obtained by:

$$V_L = V_U + \left[1 - \frac{(1-T_C)(1-T_S)}{(1-T_d)}\right]D$$

Where $T_S$ is the personal income tax rate on equity income, and $T_d$ is the personal tax on debt income, $T_C$ is the marginal corporate tax rate; $D$ is the *market value* of the firm's debt. And $V_U$ is the value of unleveled firm.

The Miller model has several important implications; (Brigham & Gapenski, 2001:633)

➢    Here, the term in the brackets ,

$$\left[1 - \frac{(1-T_C)(1-T_S)}{(1-T_d)}\right]$$

When multiplied by D, represent the gain from the leverage.

➢     If we ignore all the taxes ($T_c = T_S = T_d=0$), the equation will be same as that of original MM model without corporate taxes.

➤ If we ignore personal taxes,($T_S = T_d = 0$) the equation will be same as that of original MM model with corporate taxes

➤ If the effective personal tax rates on stock and bond incomes were equal, that is, if $T_s = T_d$, then $(1 - T_s)$ and $(1 - T_d)$ would cancel, and the bracketed term would again reduce to $T_c$.

➤ If $(1 - T_s)(1 - T_c) = (1 - T_d)$, then the bracketed term would to zero, and the value of using leverage would also be zero. This implies that the tax advantage of debt to the firm would be exactly offset by the personal tax advantage of equity. Under this condition, capital structure would have no effect on a firm's value or its cost of capital, so we would be back to MM's original zero-tax theory.

➤ Because taxes on capital gains are both lower than on ordinary income and can be deferred, the effective tax rate on stock income is normally less than that on bond income .In general, whenever the effective tax rate on income from stock is less than the effective rate on income from bonds, the Miller model produces a lower gain from leverage than is produced by MM with tax model.

**2.1. 5. 4.2 Criticisms of the MM and Miller Models:** (Brigham & Gapenski, 2001: 635)

The conclusion of the MM and Miller models follow logically from their initial assumption. However, both academicians and financial executives have voiced concerns over the validity of the MM and Miller model, and virtually no one believes they hold precisely. People who disagree with the MM and Miller theories generally attack them on the grounds that their assumptions are not correct. Here are the main objections:

1. ***Non-substitutability of personal and corporate leverages:*** under the MM model, the arbitrage mechanism operates on the assumption that the personal leverage of the investors and the corporate leverage are perfect substitute. However, in the real life there is a difference in the effects of personal leverage and the corporate leverage, and it may be substantiated as follows:

2. ***Different Borrowing Rates for the Corporate and the individuals:*** the arbitrage process pre-supposes that an individual investor is able to borrow funds at the same rate of interest at which the leverage firm can and hence the personal home made leverage of the individual investors investor is a perfect substitute of the corporate leverage. But in real life an individual cannot borrow or lend funds at the same rate at which a corporate firm can. A corporate entity having better credit standing in the market can definitely borrow at rates lower than the rates, which an individual has to pay.

3. ***Personal Gearing versus Corporate Gearing:*** In the arbitrage process, when investor takes a personal loan, he creates a personal gearing and then purchase shares of unleveled firm. In this way he in fact incurs an unlimited liability towards the lender. But as a shareholder of levered firm, his liability is limited only to the capital subscribed irrespective of the level borrowings by the firm. Therefore, the personal leverage is not substitute of the corporate gearing.

4. ***Leverage capacity:*** The firms usually have a higher leverage capacity as compared to the leverage capacity of the individuals. The creditors may not lend to an individual, beyond a particular level.

5. ***Inconveniences of personal leverage:*** Borrowings either by firms or by an individual involve a lot of formalities and inconveniences. Individual investors may have a preference for corporate borrowings because in this case, he will remain an outsider to the act of borrowings. Thus, the personal leverage may not all be sufficient replacement for corporate leverage.

So, because of these factors do not make the personal leverage as a perfect a substitute of corporate leverage.

➤ **Transaction Cost:** The assumption of no transaction costs of the MM model is also imaginary. The buying and selling of shares by the investors will surely involve some transactions costs, which will raise the arbitrage process to stop short of completion. Though, the quantum of transaction costs will generally be small, yet the efficiency of the arbitrage process will be affected.

- ➢ **Institutional investor:** It an institution or a firm is a shareholder of a levered firm which is highly valued in the market, he cannot take the benefit by the arbitrage mechanism because he is not allow to create a personal leverage in order to buy the shares of the unleveled firm.

- ➢ **Availability of Complete Information:** As this assumption is necessary for the emergence of the arbitrage process, it is illusory in the real life.

- ➢ **Danger of Bankruptcy:** In case of declining operating profit, a leveraged firm will sell the assets to raise the cash necessary to meet its interest obligation and thus avoid bankruptcy. Whereas, an unrevealed firm will cut down its dividends rather than selling assets. Because of this the investor who employed homemade leverage would not receive cash to pay the interest on his or her debt. Thus, homemade leverage puts stockholders in greater danger of bankruptcy than does corporate leverage.

- ➢ **Corporate tax:** According to miller, equilibrium would be reached, but to reach this equilibrium the tax benefit from corporate debt must be same for all firms, and it must be constant for an individual firm regardless of the amount of leverage used. But in reality the tax benefits vary from firm to firm: highly profitable companies gain the maximum tax from leverage than the smaller firm.

### 2.1.5.5 Trade-Off or Static Theory :( Brigham &. Gapenski, 2001:639)

This theory enhances the Modigliani-Miller theory by adding the possibility of financial distress (bankruptcy) under corporate taxes. According to this model, financial distress and agency costs could cause $V_L$ to decline as the level of debt rises. Thus,

$$V_L = V_U + T_C D - PVofFinancialDistressCosts - PVofAgencyCosts$$

The same relationship can be shown in the figure :( Eugene .F. Brigham 2001:640)

## Figure no:-2.5

Value of Firm V
($)

Present Value of Interest Tax Shelter: TD

Pure MM Value of Firm
$V_L = V_U + TD$

Financial Distress and
Agency Costs

Actual Value of Firm

$V_U$

Value of Firm with
No Financial Leverage

Optimal Amount of Debt

Debt ($)

0        A        B
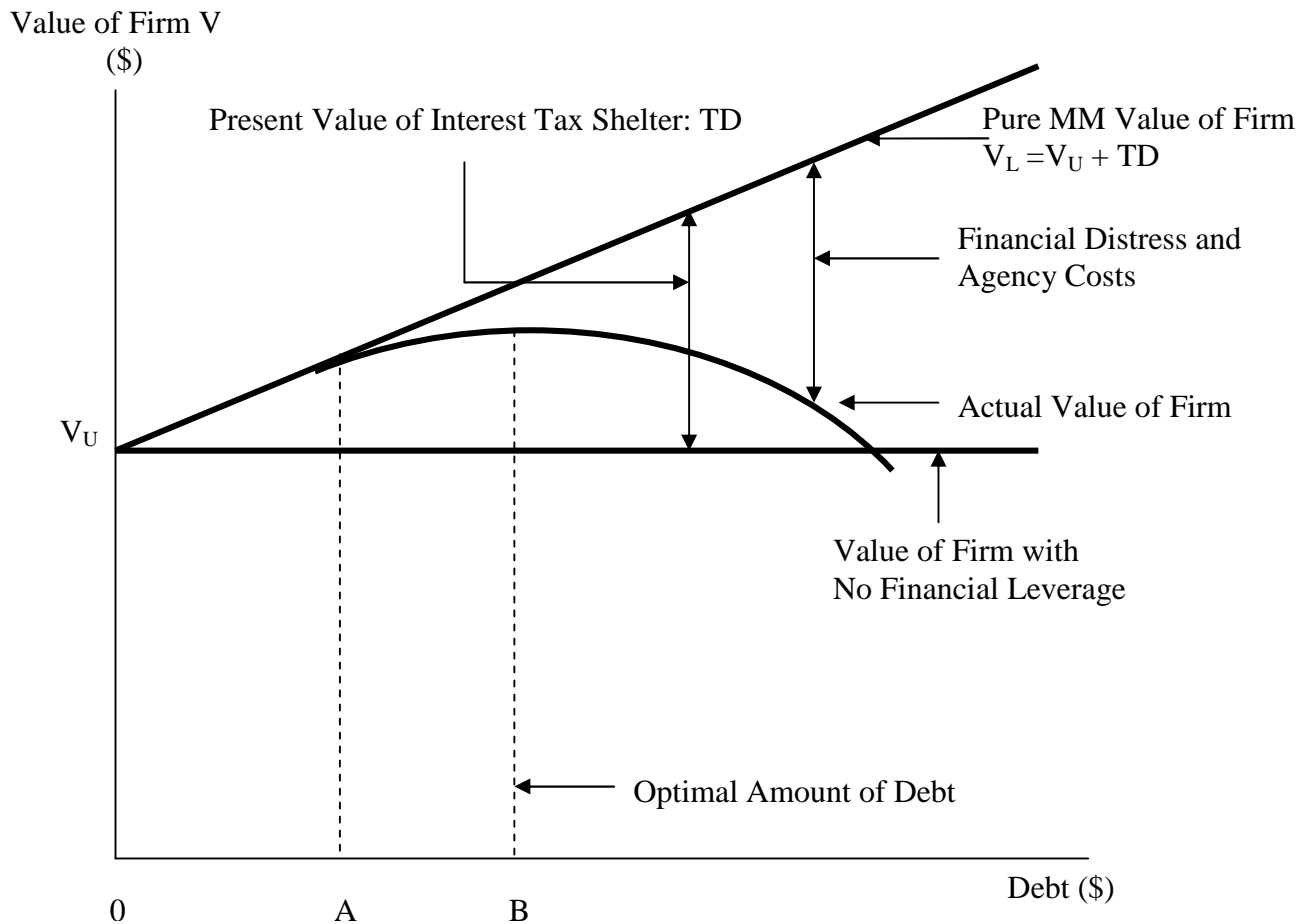
A summary of trade theory is expressed graphically in the above figure. Here is
some observation about the figure:

➢ Debt provides tax shelter benefits as interest being a deductible
expense. As a result using debt causes more of the firm's operating
income to flow through to investors, so the more debt the company uses,
the higher its value and the stock price. Under the MM assumptions,
when corporate taxes are considered, a firm's stock price will be
maximized if it uses 100% debt. The line labeled "MM results
incorporating the effects of corporate taxation in above figure express
this relationship.

➢ In the real world, firm rarely uses 100% debt. Because by doing so there
will be deprived of personal tax treatment of income from stock as well

as they reduce the probability of financial distress and also reduce the level of the interest paid by them.

➢ The tax shelter effects totally dominate until amount of debt reaches Point A. after point A, financial distress and agency costs become increasingly important, offsetting some of the tax advantages. At point B, the marginal tax shelter benefit of additional debt is exactly offset by the disadvantages of debt, and beyond Point B, the disadvantages outweigh the tax benefit. Thus, under this model the optimal level of debt in a firm's capital structure is determined by the balance of the tax shield provided by debt and the present value of the financial distress costs.

➢ Although it is not shown in the above figure, there is a relationship between the firm's stock price and its weighted average cost of capital. As a firm uses more and more debt, its weighted average cost of capital first decreases then reaches a minimum and eventually begins to rise. Moreover, the minimum WACC occurs where the stock price is maximized- at point B in the above figure.

However, the trade- off models cannot be used to specify a precise optimal capital structure, but they enable us to make three statements about leverage: (Brigham & Gapenski 2001:639)

➢ Firm with more business risk uses less debt than lower risk firm, other things being equal, because the greater the business risk, the greater the probability of financial distress at any level of debt, hence the greater the expected costs of distress. Thus firms with lower business risk can borrow more before the expected cost of distress offset the tax advantages of borrowing.

➢ The costs of financial distress depend not only on the probability of incurring distress but also on what happens if distress occurs. Specialized assets and intangible assets are more likely to lose value if financial distress occurs than are standardized tangible assets.

➢ Firms that are currently paying taxes at the highest rate, and that are likely to do so in the future, should use more debt than firms with lower tax rates. Higher corporate taxes lead to greater benefits from debt;

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other factors held constant, so more debt can be used before the tax shield is offset by financial distress and agency costs.

Although the trade-off model has intuitive appeal because they lead to the conclusion that both no-debt and all-debt are bad, while a 'moderate' debt level is good, it has very limited empirical support. This is because:

➢ Of the explanatory power which is very low. According to this, trade-off models capture only a part of actual behavior.
➢ The firm does not have consistent predictable and material effect on its capital structure.
➢ Actual debt ratios tend to vary widely across apparently similar firms within given industries, whereas the trade-off models suggest that similar firms should have similar debt ratios.

## 2.1.6 Factors to Be Considered While Determining Sound Capital Structure

The capital structure of a company should be planned generally keeping in view the interest of equity shareholder. But interest of other groups should also be given reasonable consideration. But, the choice of a suitable capital structure is not an easy task.

The capital structure will be planned initially when a company is incorporated. The initial capital structure should be designed very carefully. The management of the company should set a target capital structure and the subsequent financing decisions should be made with a view to achieve the target capital structure. The company needs funds to finance its activities continuously. Every time when funds have to be procured, the financial manager weighs the pros and cons of various sources of finance and selects the most advantageous sources keeping in view the target capital structure. Thus, the capital structure decision is a continuous one and has to be taken whenever a firm needs additional finances.

Generally, the following factors should be considered for determining a sound capital structure decision :( Pandey, 1999:719)

➢ **Return**

The capital structure of the company should be most advantageous. Subject to other consideration, it should generate maximum returns to the shareholders without adding additional costs to them.

➢ **Risk**

The use of excessive debt threatens the solvency of the company. To the point debt does not add significant risk it should be used, otherwise its use should be avoided.

➢ **Flexibility**

The capital structure should be flexible. It should be possible for a company to adapt its capital structure with a minimum cost and delay if warranted by a changed situation. It should also be possible for a company to provide funds whenever needed to finance its profitable activities.

➢ **Capacity**

The capital structure should be determined within the debt capacity of the company, and this capacity should not be exceeded. The debt capacity of a company depends on its ability to generate future cash flows. It should have enough cash to pay creditors fixed charges and principal sum.

➢ **Control**

The capital structure should involve minimum risk of loss of control of the company. The owners of closely- held companies are particularly concerned about dilution of control.


## 2.2 REVIEW OF RELATED ARTICLES AND JOURNALS

"Many corporate financing decisions depend on market valuations. Firms tend to issue equity instead of debt when market value is high, relative to book value and past market values, and repurchase equity when market value is low. These relationships are robust enough to be counted among the stylized facts of corporate finance. In this paper we use these old facts to produce a new fact:

Capital structure depends strongly on past market valuations as measured by past market-to-book ratios. The mechanics of this relationship are simple. Capital structure is the cumulative outcome of past financing decisions. Past financing decisions depend strongly on past market valuations. Therefore capital structure depends strongly on past market valuations. Empirically speaking, the most useful way to summarize past market valuations seems to be the external finance weighted average market-to-book ratio. This is a weighted average of past market-to-book ratios where the weights are the corresponding levels of external finance – equity plus debt. We find that the weighted average is strongly positively related to the equity-to- assets ratio, even controlling for contemporaneous levels of market-to-book. In other words, temporary fluctuations in value can induce permanent changes in capital structure. The tradeoff and pecking order theories of capital structure offer potential explanations for our main finding, but both theories fail to deliver on key ancillary predictions. An ancillary prediction of the tradeoff theory is that the influence of temporary fluctuations in market-to-book should disappear. However, a very conservative estimate of the half-life of this influence is ten years. An ancillary prediction of the pecking order is that firms only raise external finance when they have plans for the proceeds. However, the extra cash raised when market values are temporarily high increases cash balances to a level that is maintained for at least a decade. We develop a theory of capital structure based on market timing that offers a realistic explanation of all of these facts. Managers issue equity when they believe it is overvalued and repurchase equity or issue debt when they believe it is undervalued. Since there is no optimal capital structure, managers need not reverse these decisions in later periods when they believe that the firm is correctly valued. This means that temporary fluctuations in valuation have permanent effects on capital structure. Since market-timing gains depend on the amount of overvalued equity issued, managers may issue more equity than they need, storing the excess in cash balances. Other evidence also points to a market timing theory of capital structure outcomes. For example, the long-run stock returns following equity issues and repurchases suggest that financing decisions are timed to take advantage of temporary mispricing. It is worth noting, however, that the market timing theory developed here does not assume that capital markets actually are inefficient. The only requirement is that

managers try to time the market. This proposition is hard to dispute given the survey evidence of Graham and Harvey (2001). They find that two-thirds of CFOs agree that "the amount by which our stock is undervalued or overvalued was an important or very important consideration in issuing equity. Market timing appears to be a real and important influence on capital structure outcomes."(Wurgler, 2000)

"We put forward a theory of the optimal capital structure of the firm based on Jensen's (1986) hypothesis that a firm's choice of capital structure is determined by a trade-off between agency costs and monitoring costs. We model this tradeoff dynamically. We assume that early on in the production process, outside investors face an informational friction with respect to withdrawing funds from the firm which dissipates over time. We assume that they also face an agency friction which increases over time with respect to funds left inside the firm. The problem of determining the optimal capital structure of the firm as well as the optimal compensation of the manager is then a problem of choosing payments to outside investors and the manager at each stage of production to balance these two frictions." (Atkeson and Cole, 2005)

"The impact of the additional debt in a tax less and economically perfect world, the total market value of the company's debt plus equity should not be changed as a debt is substituted for equity. Although expected earning per share will increase as debt is substituted by equity (or additional financing is done with debt rather equity) this affect is exactly offset by the markdown in the company's price earning ratio. The markdown occurs because the additional debt exposes the common stock holders to an extra financial risk" (Modigliani & Miller, 1958:261)

## 2.3. REVIEW OF RELATED STUDIES

Aryal has conducted a research work titled "An Evaluation of Capital Structure of Bottlers Nepal Pvt. Ltd." in the year 1991.

- The study was conducted with main objectives to study the relationship between debt and shareholders, EBIT and Interest

Payment and to analyze the return on capital in relation to capital employed.

- His study was conducted on the basis of secondary data provided by the organization. Analyses are based on five year data.

- He found that the long term debt of BNL is increasing year by year because the company borrowed more tong term debt. This portion is more than shareholder equity in the company's capital structure. The leverage portion of the company has increasing trend and the correlation co-efficient shows a moderate degree of correlation between long-term debt and shareholders equity.

- He suggested on the basis of his analyses that company should lower down the debt amount and increase the cheaper sources of funds like equity share by public offering.

- Research Gap

Aryal chooses BNL for his study no comparison is possible and limited his analyses to five years since 1984/85.But the present situation of BNL shows the zero amount of debt in its capital structure.

Dhungana conducted a study titled "Comparative Evaluation of Capital Structure between Butwal Spinning Mills Ltd And Jyoti Spinning Mills Ltd." in the year 1994.

- His specific objectives of the study were to highlight the capital structure of both the companies. To compare financial performance and to access capital structure of two firm in term of debt to shareholders equity, total debt to total assets, interest coverage ratio, EBIT, EBT, EAT etc.

- He had examined various records through secondary data and had been both statistic and financial tools.

- After analyzing both the organization, he found that both the companies have high debt equity ratio and are highly leveled. These debts are totally used for the management of the assets. Both the companies have a significant relationship between long term debt and shareholders equity even though it have a negative.

- He recommended on the basis of his analyses that to improve public image company should collect investment fund through public by issuing equity shares to decrease its cost of capital.
- Research Gap

Dhungana has taken only two manufacturing organization Butwal Spinning Mills Ltd And Jyoti Spinning Mills Ltd for his study. He concentrates study on five year secondary data.

Pant has done his work on "A Study on Capital and Assets Structure of NIDC" in the year 1996.

- His study was based on growth rate of fixed assets and liquidity ratios of NIDC.
- Mr. Pant used both financial and statistical tools for analysis. No comparative ratio is possible because of single company study.
- He concluded that growth rate of fixed assets is very high .He analyses that the liquidity ratio is normally high and the ratio is fluctuating, so it can be said that the corporation does not pay more attention towards its liquidity position.
- He recommended that corporation should pay the attention to maintain the growth rate of fixed assets. Corporation should stabilize a certain ratio, which is appropriate to corporation.
- Research Gap

He does not include the impact on due to changes in assets and capital structure on profitability of the firm.

Prasai has conducted a research work "A Study on Capital Structure of Nepal Bank Ltd." in the year 1999.

- The basis objective of the study is to analyses the interrelationship and trend among capital, deposit, investment and net profit of Nepal Bank Ltd.
- To meet the above objective, Mr. Prasai had used both financial and statistical tools. Since his study was based on a single Bank. There is no comparative result.

- The study ended with some recommendation on the basis of few findings, which were discovered. The average growth rate of total deposits and other liabilities is higher than the average growth rate of net profit, and higher than the growth rate of total expenses. He founded that Net worth of the company is very low in comparison of total debt and total assets. Total liabilities of the bank are increasing but barrowing from other bank decreasing. He ignored for the significant relationship between total investment and net profit, total deposit and net profit.

- He has suggested that the bank should reduce expenditure and control investment. The bank needs to enhance its image by controlling fluctuation in the earnings per share to improve its market price per share.

- <u>Research Gap</u>

He suggested controlling the expenses for improving market price per share. But MPS is not depending only upon expenses of the firm.


Rajlawat has done his study on "A Study On Capital Structure Of Necon Air Ltd." in the year 1999.

- This study was focused to the capital structure of private airlines with the objective to highlight growth and policies of NAL, to examine the financial position and to analyze the capital structure of organization.

- Mr. Rajlawat used both financial and statistical tools for analysis. For this purpose ratio analysis and correlation co-efficient were used to complete this study.

- After analyzing the capital structure of the organization, he found that the ratio of total debt on share capital is higher than its necessity. He proceeded with the favorable condition of the overall leverage of the firm. The correlation between EAT and common shareholder is not statistically significant. Hence, Mr. Rajlawat was not satisfied by capital structures of NAL.

- He suggested that NAL should decrease its debt capital as far as possible and practicable. Company should search for cheaper source of fund for investment.
- Research Gap

The analysis of Rajlawat covers the analyses of capital structure of the company only for five years. Among 115 listed companies he selects only one company NAL for study work as a most reputed airline industry in Nepal. That makes difficult to compare with others airline companies what is the condition of NAL with other airlines.

G.B.Tamang has done his study on "An Impact of Capital Structure on Profitability" in the year 2001

- This was based on comparative study of two hotels Yak & Yeti and Soaltee. The study was focused on optimal capital structure.
- Mr. Tamang used both financial and statistical tools for analysis. For this purpose ratio analysis and correlation co-efficient were used to complete this study.
- Through his study he found that both hotels D/E ratios are not higher according to standard ratio, which is 1:1. Soltee has negative correlation co-efficient. Both hotels have higher profit margins. Hotel Soltee does have financial leverage.
- He suggested that hotel Y&Y should reduce its equity multiplier and increase the use of assets efficiently in order to get higher ROE. Both hotels should try to increase assets turnover and redeem the amount of total debt, otherwise such debt would be burden in terms of paying fixed interest. They should also consider other factor like operating efficiency and assets efficiency.
- Research Gap

G.B. Tamang has taken only two hotels Soaltee and Y&Y for his study. The study is limited to the impact of capital structure on profitability. He recommend that the government should make sound policy towards tourism but without increasing hotel's capacity and making good plan to attract the tourist, the government alone cannot do anything.

Sapkota has conducted his study on "A Study of Capital and Assets Structure Management of Nepal Bank of Ceylon." in the year 2002.

- This main purpose of the study was to examine interpret the capital and assets structure of NBOC.

- For analysis purpose he used both financial as well as statistical tools.

- After analysis of data he found that bank was exposed with financial risk and operating risk. He also discovered that cash reserve for deposits withdraw was too high which meant cash was under utilized. By applying statistical tools he fond that there was positive relationship between total deposit and investment.

- From his analysis he suggested that bank should concern about its both risk, and cash fund should properly utilized.

- <u>Research Gap</u>

He focus on his study only on NBOC which makes very difficult to compare with others to find out what is the actual condition of NOBC with others.

From the review of the above studies on capital structure and leverage position, it is clear that different persons have presented different views about capital structure and its impact on profitability. All above research title "Capital Structure" are mainly based on manufacturing and banking sector as service sector airlines are neglected. Nobody has done comparative study of airlines business. Possibly this study may be the first of its kind in the area as the study is concentrated in two airline companies registered in CAAN. The study is done to find out composition of debt and equity maintain by airline sector.

# CHAPTER – III
# RESEARCH METHODOLOGY

Research methodology is the process of arriving to the solution of the problem through planned and systematic dealing with the collection, analysis and interpretation of facts and figures. Therefore, to analysis the capital structure management of two selected companies, this chapter has been design to through light on the analysis procedures.

This chapter has been divided into five sections. First section describes research design, second section describes population and sample of data, third section describes sources of data, and fourth section describes data collection techniques and fifth section has data analysis tools.

## 3.1 RESEARCH DESIGN

The analysis of this study is based on certain research design to fulfill the objectives of the study. The main objective of this study is to analyze the relationship between debt and shareholders' equity of airlines sectors, and provide suggestion on the basis of findings. The research design followed for this study is analytical as well as descriptive. For the analytical purpose the financial report of these selected airlines companies and other related data were collected from the respective companies and other sources. This study attempts critical analysis of airlines companies like Buddha Airlines and Yeti Airlines.

## 3.2 POPULATION AND SAMPLE

To get the information about capital structure management, more representative and comprehensive sample are selected for wide coverage of population. Civil Aviation Authority of Nepal (CAAN) issued Air Operator Certificate (AOC) to 34 airline companies in Nepal. Among them 19 airlines companies have valid AOC (Air Operator Certificate) and only 15 airlines are in operation. Out of them two airline companies have been chosen for this study on the basis of purposive sampling method.

The sample airline companies selected are as follows:

BUDDHA AIRLINES

YETI AIRLINES

The research selects Buddha Air and Yeti Air (see Annex-2 for company profile) on the basis of their establishment and profit earnings.

## 3. 3 SOURCES OF DATA

This study is primarily based on secondary data provided by two airlines companies selected for this study which are Buddha Airlines and Yeti Airlines. Additional information has been collected from various sources, which are as follows

- ❖ Annual reports (Balance Sheet, Profit & Loss Account)
- ❖ Published and Unpublished journals & articles
- ❖ Economic survey of ministry of finance
- ❖ Telephonic Inquiries
- ❖ Personal Visits
- ❖ Interviewing & questionnaire

## 3. 4 DATA COLLECTION TECHNIQUES

Study is based primarily on the secondary sources of the information. Most of the data used for the analysis purposes are taken from the airline companies and previous research reports etc. has also been considered. Collected raw data are processed for analytical purposes .For gathering data, questionnaire method and interview method have been used.

## 3. 5 DATA ANALYSIS TOOLS

On the basis of historical data, using financial tools and for primary data statistical tools perform detail analysis of different variables.

These data collected are in raw form, and independently judging these data does not provide much help. Therefore, these data are converted into a number of financial ratios. Beside this, statistical tools have been used for the study.

## 3.5.1 FINANCIAL TOOLS

**Ratio Analysis**

Ratio analysis is a powerful tool of financial analysis. Ratio is defined as the indication quotient of two mathematic expressions and the relationship between two or more things .It is used as an index or yard sticks for evaluating the financial position and performance of a firm. Some ratios used for this study are defined below.

Debt – Equity Ratio

This shows the amount of debt that is financed by equity. The debt here would comprise of both the short term and long term debt. Capital structure is the focal point in solvency analysis. This refers to the composition of right side of the balance sheet and the mix between debt and stockholders equity. The composition of debt and equity in the capital structure is an important determinant of the cost of capital to a company.

Debt – Equity ratio in terms of the long – term debt and shareholder's equity is calculated as follows.

$$= \frac{\text{Long Term Debt}}{\text{Shareholders Equity}}$$

Debt – Equity ratio in terms of the total debt and shareholders equity is calculated as follows

$$= \frac{\text{Total Debt}}{\text{Shareholders Equity}}$$

Long Term Debt To Total Debt Ratio

Long Term Debt to Total Debt ratio in terms of the long – term debt and total debt is calculated as follows.

$$= \frac{\text{Long Term Debt}}{\text{Total Debt}}$$

Debt to Total Assets Ratio

Debt to Total Assets ratio is defined as total debt is divided by total assets. It indicates the percentage of assets that are financed through debt. It is calculated as under.

$$= \frac{\text{Total Debt}}{\text{Total Assets}}$$

A low ratio represents security to creditors in extending credit. A very low ratio can cause worry to shareholders as it means company is not using debt to best advantage.

Interest Coverage Ratio

It is also known as "Times Interest Earned Ratio". This ratio measures the debt serving capacity of a firm in so far as fixed interest on long –term loan is concerned. The interest coverage ratio is the sum of net profit before interest (EBIT) and taxes divided by interest charges.

$$= \frac{\text{Net Profit before Interest and Taxes}}{\text{Interest Charges}}$$

This ratio shows how much time the interest charges are covered by funds that are ordinarily available to pay the interest charges .A higher ratio is desirable, but too high ratio indicates that the firm is very conservative in suing debt. A lower ratio indicates excessive use of debt or inefficient operations.

Return On Assets (ROA)

Return on assets ratio is defined as EBIT is divided by total assets. It indicates the percentage return on financed assets. It is calculated as under

$$= \frac{\text{Net Profit before Interest and Taxes}}{\text{Interest Charges}}$$

Taxes are not controllable by management, and since firms' opportunities for availing tax incentives differ, it may be more prudent to use before tax measure of ROA.

## Return On Common Shareholder Equity (ROCSE)

The ratio of net income to common equity measures the return on common equity or the rate of return on stockholder's investment.

$$= \frac{\text{Net Income Available to Common Stockholders}}{\text{Common Equity}}$$

## Return On Capital Employed (ROCE)

This ratio is one of the most important ratios of financial analysis; it shows how well the firm is using its capital.

$$= \frac{\text{Net Profit after Taxes}}{\text{Capital Employed}}$$

## Net Profit Margin

Net Profit is obtained when operating expenses, interest and taxes are subtracted from the gross profit. The net profit margin ratio is measured by dividing profit after tax by sales.

$$= \frac{\text{Net Profit after Taxes}}{\text{Sales Revenue}}$$

## Earning Per Share

The earning per share is calculated by dividing the profit after taxes by the total number of common shares outstanding.

$$= \frac{\text{Net Profit after Taxes}}{\text{Number of Common Share Outstanding}}$$

## Overall Capitalization Rate under Net Income Approach (Ko)

The concept and assumption of net income approach was already discussed more precisely in chapter two, as net income approach is a relevancy theory of capital structure.

$$= \frac{\text{Earning After Tax}}{\text{Value of the firm (V)}}$$

Here, Value of the firm is equal to market value of debt (B) plus market value of stock(S)

$$V=S+B$$

Equity Capitalization rate under Net Operating Income Approach

Equity Capitalization rate under Net Operating Income Approach is calculated through dividing earning after tax by market value of stock.

$$= \frac{\text{Earning after Tax}}{\text{Market Value of Stock}}$$

Operating Leverage

Business risk depends in part on the extent to which a firm builds fixed costs into its operation If fixed costs are high , even a small decline in sales can lead to a large decline in ROE . So, other things held constant, the higher a firm's fixed costs, the greater its business risk. Higher fixed costs are generally associated with more highly automated, capital intensive firms and industries. However, businesses that employ highly skilled workers who must be retained and paid even during recessions also have relatively high fixed costs, as do firms with high product development costs, because the amortization of development costs is an element of fixed costs.

If higher percentage of total costs is fixed, then the firm is said to have a high degree of operating leverage. The degree of operating leverage (DOL) was defined as the percentage change in the earning before interest and taxes relative to a given percentage in sales.

$$= \frac{\text{Change in EBIT}}{\text{Change in Sales Revenues}}$$

Financial Leverage

The use of fixed charges sources of funds, such as debt and preference capital along with the owner's equity is the capital structure is described as financial leverage.

Financial leverage affects the earnings per share .When the economic conditions are good and the firm's EBIT ,its EPS increase faster with more debt in capital structure . The degree of financial leverage (DFL) is defined as the percentage change in EPS due to the given percentage change in EBIT.

$$= \frac{\text{Change in EPS}}{\text{Change in EBIT}}$$

### 3.5.2 STATISTICAL TOOLS

In this research, the following statistical tools are used

**Average:-**

Average is defined as sum of observations divided by their number in the selected sample.

$$\text{Average (mean)} = \frac{\text{Sum of observations}}{\text{Number of values}}$$

$$\overline{X} = \frac{\sum X}{N}$$

**Coefficient of correlation (r):**

'The correlation coefficient indicates the linear relationship between two or more variables. The measures of correlation called the "correlation coefficient" can be summarized in one figure, the degree and direction of movement.'(B.C.Bajracharya, 2000:250) It can be calculated by using the method of Karl Person's correlation coefficient, because it is one of the widely used mathematical methods of calculation, the correlation coefficient between two variables. In symbolically, it is defined as:

$$r = \frac{\sum dx.dy - \frac{\sum dx.\sum dy}{n}}{\sqrt{\sum dx^2 - \frac{(\sum dx)^2}{n}} \sqrt{\sum dy^2 - \frac{(\sum dy)^2}{n}}}$$

Where, dx2 = deviation in x = X-A

dy2 = deviation in y = Y-B

**Assumptions**

If r = 1, there is positively perfect correlation between the two variables.

If r = -1, there is negatively perfect correlation between the two variables.

If r = 0, the variables are uncorrelated.

'The nearer the value of r to +1, the closer will be the relationship between two variables and the nearer the value of r, the lesser will be the relation.' (B.C.Bajracharya, 2000:256)

## <u>Probable Error (P.E):</u>

The probable error of the correlation coefficient helps to interpret its value. P.E., which is the measure of testing the reliability of correlation coefficient, denotes it. If r be the calculated value of r from a sample of n pair of observation the P.E. is denoted by

$$P.E. = \frac{0.6745(1 - r^2)}{\sqrt{n}}$$

It can be interpreted to know weather its calculated value of r is significant or not in the following ways.

If r<PE, it is insignificants perhaps there is no evidence of correlation

If r>6PE, it is significant. It is other causes, nothing can be concluded. The probable error of correlation may be used to determine the limits within which the population correlation coefficient lies. The limits for population correlation are r+PE.' (B.C.Bajracharya, 2000:257)

## <u>Analysis of Time Series</u>

A series formed from a set of statistical data arranged in accordance with their time of occurrence is said to be a time series .A time series shows the relation between two variables one being the time. It helps in future forecasting & Planning on basis of past information .To measure trend, Least Square Method is widely used .Straight line trend is represented by the following equation.

$$Y = a + bX \text{ ------------ (1)}$$

Where,

**Y** = Estimated Value of Y

**a** = Value of Y variable when X=0

**b** = Slope of line or the amount of change in Y variable that is associated with a change of one unit in X variable.

In order to determine the value of the constants **a** and **b** the following two normal equations are to be solved.

$$\sum Y = na + b\sum X \text{ ----------------------------- (2)}$$

$$\sum XY = a\sum X + b\sum X^2 \text{ ---------------------- (3)}$$

Where;

X = Number of years for with the date are given.

The value of and b can now be determined by solving equations (2) and (3). These value of a and b are substituted in equation (1) to have the required trend line. To make calculation easier, the deviation of the independent variable (i.e. time) are taken from the middle of the time period so that $\sum X = 0$; then the above two equations change to;

$$\sum Y = na \qquad\qquad \sum XY = b\sum X^2$$

$$\therefore a = \frac{\sum Y}{n} \qquad\qquad \therefore b = \frac{\sum XY}{\sum X^2}$$

:

The constant **a** gives the arithmetic means of Y and the constant **b** indicates the rate of change.

# CHAPTER – IV

# DATA ANALYSIS AND PRESENTATION

## 4.1.0  FINANCIAL ANALYSIS

Organization uses different types of funds to run smoothly and gain profits to expand it. For fulfilling these purposes it perform different tasks .Organization utilized fund to generate profit. To find out it is utilizing its fund in proper way or in productivity area through means of measurement is financial analysis. These financial analyses are as follows.

## 4.1.1  Long Term Debt as a percentage of Total Debt

It is measured by dividing the long Term Debt (LTD) by Total debt (TD).The Long-Term debt of the airlines companies is sum of the secured loan and unsecured loan provided by the various institutions. Total debt comprise to Long-term loan, short-term loan, current liabilities and provisions. The calculation of LTD as a percentage of TD is presented in the following table no.1

**Table - 1**

**Calculation of Long Term Debt as a percentage of Total Debt For Buddha & Yeti**

| FY | Long Term Debt | Total Debt | LTD as a % of Total Debt | Changes |
|---|---|---|---|---|
| **Buddha** | | | | |
| 2058\59 | 918,759,382 | 1,024,979,044 | 89.64 | -------- |
| 2059\60 | 1,322,609,322 | 1,495,664,322 | 88.43 | (1.21) |
| 2060\61 | 1,344,134,986 | 1,543,001,338 | 87.11 | (1.32) |
| 2061\62 | 1,304,442,688 | 1,444,281,908 | 90.32 | 3.21 |
| 2062\63 | 1,209,558,814 | 1,432,980,543 | 84.41 | (5.91) |
| 2063\64 | 1,079,350,217 | 1,278,393,487 | 84.43 | 0.02 |
| **Average** | | | **87.39** | |
| **Yeti** | | | | |
| 2058\59 | 208,812,599 | 248,999,712 | 83.86 | -------- |
| 2059\60 | 209,942,690 | 233,278,101 | 90.00 | 6.14 |
| 2060\61 | 104,101,058 | 207,135,790 | 50.26 | (39.74) |
| 2061\62 | 123,950,561 | 217,845,015 | 56.90 | 6.64 |
| 2062\63 | 117,764,206 | 276,817,331 | 42.54 | (14.36) |
| 2063\64 | 168,144,660 | 378,071,649 | 44.47 | 1.93 |
| **Average** | | | **61.34** | |

*Sources: Annual reports & Websites of concerned company*

In most of the years long-term debt of the Buddha is more than half of its total debt which is near to 90%. The long-term debt of the Buddha consists of loan provided by various financial institutions. Total debt is the sum of long-term debt, current liabilities and provisions. At the beginning of the year long-term debt is Nrs 918,759,382/= and total debt is Nrs 1,024,979,044/= and the percentage of long-term debt to total debt is 89.64 %. It indicates that total debt is composed of more than half of the long-term debt than the short-term debt. In the FY 2059/60 long-term debt and total debt are in increasing trends comparing to last year but contribution of long term debt on total debt is decreased by 1.21% than the previous fiscal year's percentage. The LTD as a percentage of TD is 88.43% in FY 2059/60, 87.11% in FY 2060/61, 90.32% in FY 2061/62, 84.41% in FY 2062/63, and 84.43% in FY 2063/64. The LTD is in increasing trends in the FY 2059/60 and 2060/61 and it is decreasing in last three years period i.e. in the year 2061/62 , 2062/63,and 2063/64 which indicates that the company is using more long-term sources for its need of debt capital. Amount of long term debt and total debt in FY 2063/64 is less than compare to previous year although portion of long term debt in total debt is the highest for all the period.  It is obvious that the short-term source is more costly than long-term; therefore the company should consider this fact.

By above calculation we can see that average ratio for Yeti of long term debt to total debt is 61.34% which is more than half portion of its total debt. At the beginning of the year long-term debt is Nrs 208,812,599/= and total debt is Nrs 248,999,712/= and the percentage of long-term debt to total debt is 83.86 %. In the FY 2059/60 ratio between the long-term debt and total debt is increased by 6.14% more than the previous fiscal year's percentage. The LTD as a percentage of TD is 83.86% in FY 2058/59, 90% in FY 2059/60, 50.26% in FY 2060/61, 56.9% in FY 2061/62, 42.54% in FY 2062/63. By analyzing above table from last four fiscal years LTD to TD ratio are near about 50% of total debt i.e. in the FY 2060/61, 2061/62, 2062/63, and 2063/2064 .In FY 2060/61 portion of long term debt on total debt is decreased by 39.74% comparing to previous year

.It indicates that Yeti is managing its remaining 50% total debt through short term loan which is less costly comparing to long term debt.

Normally, the short-term loans mature within one financial year and the borrower should repay the amount along with the outstanding interest within a year. The company should be in a position of repaying the borrowed amount in a short period of time, it should manage the required amount to repay the short-term loans whether the company is in profit or not. For this reason, the company should concentrate in collecting the amount, which will definitely interrupt its smooth operation and ultimately it will affect its profitability. Inversely, in long term debt repayment time period for principal amount should be more than one year. Interest rate in long term debt is more than short term debt. Therefore, the companies using huge amount of short-term sources as total debt may give proper attention towards this fact.

So the company should try to collect the amount to pay the loan and interest year by year no matter whether the company is in profitable condition or loss. If all the attention may concentrate on the repayment of borrowing amount, the company cannot give time to implementing its development work, which may directly affect its profitability.

## 4.1.2 Debt Equity Ratio in terms of Long Term Debt and Shareholders Equity.

This ratio is obtained by dividing the long-term debt by shareholders equity, which can be used to analyze the DE ratio of the firm. The following table shows calculation of Debt Equity Ratio in terms of long-term debt and shareholder's equity.

**Table - 2**

**Calculation of Debt Equity ratio in terms of Long Term Debt and Shareholder Equity**

**For Buddha & Yeti**

| FY | Long Term Debt | Shareholders Equity | LTD as a % of Shareholders Equity | Changes |
|---|---|---|---|---|
| **Buddha** | | | | |
| 2058\59 | 918,759,382 | 36,025,356 | 2550.31 | -------- |
| 2059\60 | 1,322,609,322 | 90,277,760 | 1465.04 | (1085.27) |
| 2060\61 | 1,344,134,986 | 12,627,949 | 10644.13 | 9179.08 |
| 2061\62 | 1,304,442,688 | 33,630,511 | 3878.75 | (6765.38) |
| 2062\63 | 1,209,558,814 | 237,761,059 | 508.73 | (3370.02) |
| 2063\64 | 1,079,350,217 | 249,003,926 | 433.47 | (75.26) |
| **Average** | | | **3246.74** | |
| **Yeti** | | | | |
| 2058\59 | 208,812,599 | 71,160,267 | 293.44 | -------- |
| 2059\60 | 209,942,690 | 112,640,000 | 186.38 | (107.06) |
| 2060\61 | 104,101,058 | 104,152,384 | 99.95 | (86.43) |
| 2061\62 | 123,950,561 | 99,898,457 | 124.08 | 24.13 |
| 2062\63 | 117,764,206 | 152,783,625 | 77.08 | (47.00) |
| 2063\642 | 168,144,660 | 156,288,284 | 107.59 | 30.51 |
| **Average** | | | **148.09** | |

*Sources: Annual reports & Websites of concerned company*

The above calculation shows that the debt equity ratio in terms of long-term debt and shareholder's equity for Buddha is positive for all the years during the study period which means Buddha is utilizing more long term debt than Shareholders' equity. Whereas increasing and decreasing trend four decreasing and one increasing trend. At the beginning of the year long-term debt is Nrs 918,759,382/= and shareholder equity is Nrs 36,025,356/= and the percentage of long-term debt to shareholders' equity is 2550.31. Similarly, debt equity ratio in the FY 2059/60 is 1465.04, 2060/61 is 10644.13, 2061/62 is 3878.75, FY

2062/63is 508.73, 2063/64 is 433.47 which tells us that the company has raised 25.25, 14.65, 106.44, 38.78, 5.08, and 4.33 of debt capital for every one rupee of ownership capital. The average debt equity ratio in term of long term debt and shareholders equity for the study period is 3246.74.

Calculation of debt equity ratio is terms of long-term debt and shareholders equity for Yeti in the FY 2058/59 is 293.44, which implies the portion of long-term debt in shareholders' equity. It means that company has raised 2.9344 of debt capital for every one rupee of ownership capital. Debt equity ratio is terms of long-term debt and shareholders equity for Yeti in FY 2058/59, 2059/60, 2060/61, 2061/62, 2062/63, and 2063/64 is respectively 293.44, 186.38, 99.95, 124.08, 77.08 and 107.59 which tells us that the company has raised 2.934, 1.863, 0.9995, 1.240, 0.770, and 1.075 of debt capital for every one rupee of ownership capital. The average debt equity ratio in term of long term debt and shareholders equity for the study period is 148.09

From above calculation, two airlines have more debt capital than equity. While drawing a comparison between the two airlines Buddha has debt capital more than equity, so it should try to reduce the debt capital, otherwise it may reach liquidation. Whereas the condition of Yeti is using debt not in a great deal .Yeti has less debt capital compare to Buddha and due to this reason the amount of profit may decrease. The profit of the company is directly affected by the high amount of interest and tax payment. In that situation, Yeti should utilized more amount debt, where as Buddha should try to reduce its high amount of interest payment.

### 4.1.3  Total  Debt as a percentage of Total Assets

The amount of debt used for financing the assets of the company is measured by the Debt to total asset ratio. Debt capacity for financing the assets can be measured from this calculation. The total assets consist of permanent capital plus current liabilities. Total debt comprise to Long-term loan, short-term loan, current liabilities and provisions. The calculation of LTD as a percentage of TD is presented in the following table no.3

**Table 3**

**Calculation of Debt Assets ratio in terms of Total Debt to Total Assets For Buddha & Yeti**

| FY Buddha | Total Debt | Total Assets | TD as a % of Total Assets | Changes |
|---|---|---|---|---|
| 2058\59 | 1,024,979,044 | 1,061,004,400 | 96.60 | -------- |
| 2059\60 | 1,495,664,322 | 1,585,942,082 | 94.31 | (2.30) |
| 2060\61 | 1,543,001,338 | 1,555,629,287 | 99.19 | 4.88 |
| 2061\62 | 1,444,281,908 | 1,477,912,419 | 97.72 | (1.46) |
| 2062\63 | 1,432,980,543 | 1,670,741,602 | 85.77 | (11.96) |
| 2063\64 | 1,278,393,487 | 1,527,397,413 | 83.70 | (2.07) |
| Average | | | **92.88** | |
| **Yeti** | | | | |
| 2058\59 | 248,999,712 | 320,159,979 | 77.77 | -------- |
| 2059\60 | 233,278,101 | 342,535,139 | 68.10 | (9.67) |
| 2060\61 | 207,135,790 | 311,288,174 | 66.54 | (1.56) |
| 2061\62 | 217,845,015 | 317,743,472 | 68.56 | 2.02 |
| 2062\63 | 276,817,331 | 429,600,956 | 64.44 | (4.12) |
| 2063\64 | 378,071,649 | 518,450,052 | 72.92 | 8.49 |
| Average | | | **69.72** | |

*Sources: Annual reports & Websites of concerned company*

By analyzing above data for Buddha, it shows that total debt and total assets are in fluctuating trends .Whereas comparison of total debts to total assets ratio for each fiscal year it shows decreasing trend except in FY 2060/61 increased by 4.88%. In the FY 2058/59 of the year total debt is Nrs 1,024,979,044/= and total assets is Nrs 1,061,004,400/= which means the portion of outsider's fund in the total assets is 96.60%. In the FY 2059/60, 2060/61, 2061/62, 2062/63, and 2063/64 the ratios are 94.31%, 99.19%, 97.72%, 85.77%, and 83.70% respectively. The average ratio of total debt to total assets ratio is 92.88% which means stake of shareholder in airlines is only 7.12% for the study period. The financial position of this airline seems to be very poor during the study period

because average ratio is above 90% .Buddha could go into liquidation if it does not reduce the portion of outsider's fund from its total assets. From above table it shows that ratio between total debts to total assets are in decreasing trend.

Calculation of total debt to total assets ratio in the above table for Yeti shows the shares of the total assets financed by outsider funds. In the FY 2058/59 the portion of total debts is Nrs 248,999,712/= and total assets is Nrs 320,159,979/= which revealed that portion of assets financed through outsider's fund is 77.77%. This implies greater stake of creditors than shareholders in the company. Similarly, the portion of outsider funds in the total assets in the FY 2059/60, 2060/61, 2061/62, 2062/63, and 2063/64 are 68.10%, 66.54%, 68.56%, 64.44%, and 72.92% respectively. The percentage of assets financed by outsider funds of the company has been decreasing except in the FY 2061/62 and 2063/64 increased by 2.02% and 8.49% respectively. But in the last year of the study the ratio is increased due to an increase in total debt capital as well as total assets. The average ratio for the entire period is 69.72% of total debts.

Among two airline companies, average ratio of total debt to total assets of Yeti is lower than of Buddha Airlines. To have equal risk from equity and debt capital all airline must have 50% of the debt capital for financing their asset, therefore all airline should think seriously in time, otherwise they could go into liquidation.

### 4.1.4  Return On Asset (ROA)

Return on assets is a measure of profit per rupee of its assets. ROA reflects efficient use of assets for any organization. It measures the profitability as well as production power of assets in terms of generating sales revenue. Returns on assets for two airline companies Buddha & Yeti are given below.

**Table - 4**

**Calculation of Return on Asset (ROA) For Buddha & Yeti**

| FY | Net Profit | Total Assets | Net Profit/ Total Assets | Changes |
|---|---|---|---|---|
| **Buddha** | | | | |
| 2058\59 | 30,416,390 | 1,061,004,400 | 2.87 | -------- |
| 2059\60 | 47,752,404 | 1,585,942,082 | 3.01 | 0.14 |
| 2060\61 | (77,649,811) | 1,555,629,287 | (4.99) | (8.00) |
| 2061\62 | 21,002,562 | 1,477,912,419 | 1.42 | 6.41 |
| 2062\63 | 204,130,548 | 1,670,741,602 | 12.22 | 10.80 |
| 2063\64 | 56,269,490 | 1,527,397,413 | 3.68 | (8.53) |
| Average | | | **3.03** | |
| **Yeti** | | | | |
| 2058\59 | 4,561,572 | 320,159,979 | 1.42 | -------- |
| 2059\60 | (11,903,229) | 342,535,139 | (3.48) | (4.90) |
| 2060\61 | (5,104,654) | 311,288,174 | (1.64) | 1.84 |
| 2061\62 | (4,253,927) | 317,743,472 | (1.34) | 0.30 |
| 2062\63 | 8,925,168 | 429,600,956 | 2.08 | 3.42 |
| 2063\64 | 3,504,659 | 518,450,052 | 0.68 | (1.40) |
| Average | | | **(0.38)** | |

*Sources: Annual reports & Websites of concerned company*

From the above calculation, in FY 2058/59 amount of net profit Nrs 30,416,390/= and amount of total assets Nrs 1,061,004,400/= which shows return on assets is 2.87% which shows that Buddha generates rupee 2.87 profits for every rupee of its asset use. Similarly, ROA ratios are for the FY 2059/60 is 3.01, FY 2060/61 is (4.99), FY 2061/62 is 1.42, FY 2062/63 is 12.22 and FY 2063/64 is 3.68. The average ROA for the airline is 3.03, which is greater of first four years of the study period. Inversely, average ROA is less than the ratios of last two years. By compare yearly ratios it reveals that in FY 2060/61 and 2063/64 ROA is decreased by 8% and 8.53% respectively.

The data relating to Yeti are extremely horrifying as the net profit of the company is in negative sign which ultimately resulting negative (0.38) average ROA for study period. Return on assets shows the negative value for all years except FY 2058/59, 2062/63 and 2063/64 that are 1.42, 2.08, and 0.68 respectively.. The ROA is (3.48), (1.64), and (1.34) in the FY 2059/60, 2060/61, and 2061/62 respectively. The company suffers loss in most of the years over the study period due to poor performance and inefficient assets utilization by the management The capacity of the company's assets in terms of generating sales earning net profit is very weak which indicates the inefficient productivity of the assets.

Among two airline companies, average return in assets for Buddha is the highest. Yeti suffers loss so their average ratio shows the negative value.

### 4.1.5 Return On Shareholders Equity Fund (ROSE)

This ratio; also called return on proprietors' funds, is a measure of the percentage of net profit to shareholders' fund. It can be calculated dividing net profit by shareholders fund. Shareholders fund composed of adding equity share capital, preference share capital, capital reserve, and revenue reserve, accumulated balance of profits & losses, and deduction of fictitious assets. The ratio of net profit to shareholders' funds shows the extent to which profitability objective is being achieved. Higher the ratio, the better it is.

**Table No. - 5**

**Calculation of Return on Shareholders' Equity Fund (ROSE) For**

**Buddha & Yeti**

| FY | Net Profit | Shareholders Equity Fund | Net Profit Shareholders Equity | Changes |
|---|---|---|---|---|
| **Buddha** | | | | |
| 2058/59 | 30,416,390 | 36,025,356 | 84.43 | -------- |
| 2059/60 | 47,752,404 | 90,277,760 | 52.89 | (31.54) |
| 2060\61 | (77,649,811) | 12,627,949 | (614.90) | (667.80) |
| 2061\62 | 21,002,562 | 33,630,511 | 62.45 | 677.36 |
| 2062/63 | 204,130,548 | 237,761,059 | 85.86 | 23.40 |
| 2063\64 | 56,269,490 | 249,003,926 | 22.60 | (63.26) |
| Average | | | **(51.11)** | |
| **Yeti** | | | | |
| 2056\57 | 4,561,572 | 71,160,267 | 6.41 | -------- |
| 2057\58 | (11,903,229) | 112,640,000 | (10.57) | (16.98) |
| 2058\59 | (5,104,654) | 104,152,384 | (4.90) | 5.67 |
| 2059\60 | (4,253,927) | 99,898,457 | (4.26) | 0.64 |
| 2060\61 | 8,925,168 | 152,783,625 | 5.84 | 10.10 |
| 2061\62 | 3,504,659 | 156,288,284 | 2.24 | (3.60) |
| Average | | | **(0.87)** | |

*Sources: Annual reports & Websites of concerned company*

From the above calculation for Buddha in FY 2058/59 amount of net profit is Nrs 30,416,390/= and amount of shareholders equity fund is Nrs 36,025,356/= which shows return on shareholders equity fund ROE is 84.43 % .ROE 84.84% shows that Buddha generates rupee 0.84 profits for every rupee of its shareholders fund used. Similarly, ROE ratios are for the FY 2059/60 is 52.89, FY 2060/61 is (614.90), FY 2061/62 is 62.45, FY 2062/63 is 85.86 and FY 2063/64 is 22.60. By compare yearly ratios it reveals that in FY 2059/60, FY 2060/61 and 2063/64 ROE are decreased by 31.54%, 667.80% and 63.26% respectively but in FY 2061/62 and 2062/63 are increased by 677.36% and 23.40% respectively . The

average ROE for the airline is (51.11), which is in a negative value due to FY 2060/61 ROE (614.90) only negative value of the study period. It shows that ROE for Buddha is the worst among the selected airline companies for research. If we ignore FY 2058/59 then all ROE are positive value which is satisfactory.

By analyzing above data of Yeti in FY 2058/59 amount of net profit is 4,561,572/= and amount of shareholders fund is 71,160,267/= which shows that ROE is 6.41%. The average ROE is (0.87)% for the airline during the study period .ROE shows the negative value for all years except FY 2058/59, 2062/63 and 2063/64 that are 6.41, 5.84 and 2.24 respectively. The ROE is (10.57), (4.90), and (4.26) in the FY 2061/62, 2062/63, and 2063/64 respectively which indicates poor performance and inefficient productivity of the shareholders fund. Where as relation to yearly decrease or increase in ROE, there are three increasing trends and two decreasing trends. Increasing ROE trends are in FY 2060/61 by 5.67%, FY 2061/62 by 0.64%, FY 2062/63 by 10.10%. And decreasing ROE trends are in FY 2059/60 by 16.98%,FY 2063/64 by 3.60%.The management of the company is advised to rearrange its capital structure and run the company with a new sight; otherwise it is impossible to anticipate any success in future.

## 4.1.6  Return On Capital Employed (ROCE)

This ratio is indicator of the earning capacity of the capital employed in the business. By capital employed , we mean not only the equity share capital , but also in addition to that the various fixed liabilities representing borrowed amount as also capital reserves, revenue reserves, undistributed profit as reduced by the fictitious assets. This ratio is considered to be the most important ratio because it reflects the overall efficiency with which capital is used. It can be calculated dividing net profit by capital employed which composed of shareholders equity and long term debts.

## Table No. - 6

## Calculation of Return on Capital Employed (ROCE) For

## Buddha & Yeti

| FY | Net Profit | Total Capital Employed | Net Profit/Total Capital Employed | Changes | Equity Fund |
|---|---|---|---|---|---|
| **Buddha** | | | | | |
| 2058\59 | 30,416,390 | 954,784,738 | 3.19 | -------- | |
| 2059\60 | 47,752,404 | 1,412,887,082 | 3.38 | 0.19 | |
| 2060\61 | (77,649,811) | 1,356,762,935 | (5.72) | (9.10) | |
| 2061\62 | 21,002,562 | 1,338,073,199 | 1.57 | 7.29 | |
| 2062\63 | 204,130,548 | 1,447,319,873 | 14.10 | 12.53 | |
| 2063\64 | 56,269,490 | 1,328,354,143 | 4.24 | (9.87) | |
| Average | | | **3.46** | | |
| **Yeti** | | | | | |
| 2058\59 | 4,561,572 | 279,972,866 | 1.63 | -------- | |
| 2059\60 | (11,903,229) | 322,582,690 | (3.69) | (5.32) | |
| 2060\61 | (5,104,654) | 208,253,442 | (2.45) | 1.24 | |
| 2061\62 | (4,253,927) | 223,849,018 | (1.90) | 0.55 | |
| 2062\63 | 8,925,168 | 270,547,831 | 3.30 | 5.20 | |
| 2063\64 | 3,504,659 | 324,432,944 | 1.08 | (2.22) | |
| Average | | | **(0.34)** | | |

*Sources: Annual reports & Websites of concerned company*

From the above calculation for Buddha , in FY 2058/59 amount of net profit is Nrs 30,416,390/= and amount of capital employed is Nrs 954,784,738/= which shows return on capital employed (ROCE) is 3.19 % .ROCE 3.19% shows that Buddha generates rupee 0.032 profits for every rupee of its capital employed. Similarly, ROCE ratios are for the FY 2059/60 is 3.38, FY 2060/61 is (5.72), FY 2061/62 is 1.57, FY 2062/63 is 14.10 and FY 2063/64 is 4.24. In FY 2060/61 Buddha suffers heavy loss that causes negative value for ROCE (5.72). By compare yearly ratios it reveals that in FY 2060/61 and 2063/64 ROCE is decreased by 9.10%, and 9.87% respectively but in FY 2059/60 , FY 2061/62

and 2062/63 is increased by 0.19%, 7.29% and 12.53 % respectively . The average ROCE for the airline is 3.46. If we ignore FY 2060/61 then all ROCE are positive value which is satisfactory. It shows that ROCE for Buddha is the best among the selected airline companies for research.

By analyzing above data for Yeti in FY 2058/59 amount of net profit is 4,561,572/= and amount of capital employed is 279,972,866/= which shows that ROCE is 1.63%. The average ROCE is (0.34)% for the Yeti airline during the study period .ROCE shows the negative value for all years except FY 2058/59, 2062/63 and 2063/64 these are 1.63, 3.30 and 1.08 respectively. The ROCE are (3.69), (2.45), and (1.90) in the FY 2059/60, 2060/61, and 2061/62 respectively which indicates poor performance and inefficient productivity of the capital employed. Where as relation to yearly decrease or increase in ROCE, there are three increasing trends and two decreasing trends. Increasing ROCE trends are in FY 2060/61 by 1.24%, FY 2061/62 by 0.55%, FY 2062/63 by 5.20%. And decreasing ROCE trends are in FY 2059/60 by 5.32%, FY 2063/64 by 2.22% It shows that ROCE for Yeti is the worst among the selected airline companies for research. The management of the company is advised to rearrange its capital structure and run the company with a new sight; otherwise it is impossible to anticipate any success in future.

### 4.1.7 Profit Margin

Every business organization's aim is how to maximized profit from their investment. The company can find out its profitability with the help of profit margin ratio. It can be obtained divining net profit by sales revenue. The profitability is directly related to the sales revenue of the company; therefore, it is clearly known that the only way of increasing profit is the increase in sales volume .Higher the ratio, the better it is. The following table illustrates the profit margin ratios for the airline companies selected for study.

**Table - 7**

**Calculation of Profit Margin for Buddha & Yeti**

| FY | Net Profit | Sales | Net Profit/ Sales Revenues | Changes |
|---|---|---|---|---|
| **Buddha** | | | | |
| 2058\59 | 30,416,390 | 436,056,401 | 6.98 | -------- |
| 2059\60 | 47,752,404 | 533,727,439 | 8.95 | 1.97 |
| 2060\61 | (77,649,811) | 419,779,542 | (18.50) | (27.44) |
| 2061\62 | 21,002,562 | 642,168,943 | 3.27 | 21.77 |
| 2062\63 | 204,130,548 | 1,047,410,682 | 19.49 | 16.22 |
| 2063\64 | 56,269,490 | 988,238,490 | 5.69 | (13.80) |
| Average | | | **4.31** | |
| **Yeti** | | | | |
| 2058\59 | 4,561,572 | 255,964,145 | 1.78 | -------- |
| 2059\60 | (11,903,229) | 238,594,314 | (4.99) | (6.77) |
| 2060\61 | (5,104,654) | 236,795,898 | (2.16) | 2.83 |
| 2061\62 | (4,253,927) | 274,589,599 | (1.55) | 0.61 |
| 2062\63 | 8,925,168 | 367,149,292 | 2.43 | 3.98 |
| 2063\64 | 3,504,659 | 661,107,618 | 0.53 | (1.90) |
| Average | | | **(0.66)** | |

*Sources: Annual reports & Websites of concerned company*

The situation of the Buddha is far better among the selected airline companies for research on this count. In FY 2058/59 amount of net profit and sales revenues are Nrs 30,416,390/= and 436,056,401/= respectively which reveals that company is earning profit of 6.98% from its sales revenues. From above table it shows that sales revenues and net profit increase in same time or when sales revenues decrease net profit also decrease .Thus it shows positive correlation between net profit and sales revenues. The profit margin ratio for the FY 2059/60, FY 2060/61, FY 2061/62, FY 2062/63, and FY 2063/64 are 8.95%, (18.50)%, 3.27%, 19.49%, and 5.69% respectively. From above calculation we can see that profit margin ratio of Buddha is (18.50)% of negative value due to loss in  FY 2060/61 by Nrs (77,649,811/=)  . In above table we can see that there

is highly fluctuation on increasing and decreasing trends. There are three increasing trends and two decreasing trends. Increasing profit margin ratios are in FY 2059/60 by 1.97%, FY 2061/62 by 21.77%, FY 2062/63 by 16.22%, and decreasing profit margin ratios are in FY 2060/61 by 27.44%, FY 2063/64 by 13.80%. The average profit margin ratio for Buddha is 4.31% of last six years. This indicates that the company should make such policy to earn high amount of profit from the sales revenue by increasing operating efficiency.

By analyzing above data for Yeti in FY 2058/59 amount of net profit is 4,561,572/= and amount of sales revenues is 255,964,145/= which shows that profit margin is 1.78%. The average profit margin is (0.66)% for the Yeti airline during the study period .Profit margin ratios shows the negative value for all years except FY 2058/59, 2062/63 and 2063/64 these are 1.78, 2.43 and 0.53 respectively. The profit margin ratio are (4.99), (2.16), and (1.55) in the FY 2059/60, 2060/61, and 2061/62 respectively which indicates under utilization of resources. Where as relation to yearly decrease or increase in profit margin, there are three increasing trends and two decreasing trends. Increasing profit margin ratio trends are in FY 2060/61 by 2.83%, FY 2061/62 by 0.61%, FY 2062/63 by 3.98%. And decreasing profit margin ratio trends are in FY 2059/60 by 6.77%, FY 2063/64 by 1.90%. From above calculation we can see that highly positive value in FY 2062/63 by 2.43% and highly negative value in FY 2059/60 by (4.99) %. However, the company is increasing its sales volume, the profit is not in the increasing order. Neither the sales volume is so small nor it is fluctuates vastly, but the company is suffering a huge loss. It indicates that the capital structure of the company is not suitable and the company is not using its resource properly which is clearly indicated by the above calculation.

### 4.1.8  Earning Per Share (EPS)
EPS is the ratio by which one can understand the return available for the shareholders from their investment, because EPS measures the earning available to shareholders on per share basis. As a commonly used ratio for the study of capital structure it is used in the calculations, which have been done for the two airline companies selected for the research. The following table shows the EPS for the selected companies for the study.

**Table - 8**

**Calculation of earning per share for Buddha & Yeti**

| FY | Net Profit | Number of Shares | Net Profit/ Number of Shares | Changes |
|---|---|---|---|---|
| **Buddha** | | | | |
| 2058\59 | 30,416,390 | 635,000 | 47.90 | -------- |
| 2059\60 | 47,752,404 | 700,000 | 68.22 | 20.32 |
| 2060\61 | (77,649,811) | 700,000 | (110.93) | (179.15) |
| 2061\62 | 21,002,562 | 700,000 | 30.00 | 140.93 |
| 2062\63 | 204,130,548 | 700,000 | 291.62 | 261.61 |
| 2063\64 | 56,269,490 | 700,000 | 80.38 | (211.23) |
| Average | | | **67.87** | |
| **Yeti** | | | | |
| 2058\59 | 4,561,572 | 313,200 | 14.56 | -------- |
| 2059\60 | (11,903,229) | 626,400 | (19.00) | (33.57) |
| 2060\61 | (5,104,654) | 1,126,400 | (4.53) | 14.47 |
| 2061\62 | (4,253,927) | 1,126,400 | (3.78) | 0.76 |
| 2062\63 | 8,925,168 | 1,126,400 | 7.92 | 11.70 |
| 2063\64 | 3,504,659 | 1,566,000 | 2.24 | (5.69) |
| Average | | | **(0.43)** | |

*Sources: Annual reports & Websites of concerned company*

The condition of EPS for Buddha is better among selected airlines for the study. It has average EPS 67.87, which is pretty good indicating that the shareholders are getting 67.87% return from their investments. In other word, shareholders can get Nrs 67.87/= as earning per share. In FY 2058/59 amount of net profit is 30,416,390/= and number of share is 635,000/= which reveals that EPS for that year is 47.90. In fiscal year 2059/60 EPS is increased to 68.22% while comparing to previous year EPS it increased by 20.32%.The increasing ESP due to increasing net profit attracts shareholders to invest more money. Unfortunately, EPS ratio for FY 2060/61 is (110.93)% which reveal that decrease by 179.15% due to loss amount of Nrs (77,649,811).EPS for FY 2061/62 and

2062/63 are 30% and 291.62% respectively which reveal that increase in ratio 140.93% and 261.61% compare to previous EPS ratios. In FY 2063/64 EPS ratio is 80.38% that means EPS ratio decreased by 211.23%. FY 2062/63and 2063/64 have greater EPS than average EPS. For the fiscal year 2062/63 of study period is boom period of the airline thus EPS is increased by 261.61% than from pervious year ratio. It indicates company is trying to give more return to shareholders by increasing its capacity to maximize profit.

By analyzing above table, average EPS of Yeti for study period is (0.43) % in negative value which is worst among the selected airlines for the study. The EPS for Yeti is 14.56, (19.00), (4.53), (3.78), 7.92, and 2.24 during the FY 2058/59, 2059/60, 2060/61, 2061/62, 2062/63, and 2063/64 respectively. There are three increasing trend in FY 2060/61 by 14.47%, 2061/62 by 0.76% , and 2062/63 by 11.70%  although in FY 2060/61 and FY 2061/62 has negative EPS ratios .The calculation shows that the shareholders of the company are not getting anything from their investment. Number of shares is increased in FY 2059/60 to 626400 from 313200, in FY 2060/61 to 1126400 from 626400, and In FY 2063/64 to1566000 from 1126400.Due to increase in number of shareholders the amount of profit will also split among old as well as new shareholders which ultimately cause decrease in earning per share. The EPS can increase only when the net profit for the company increases. Therefore Yeti should be in profit to provide a good return for the shareholders and to run the business in right track.

The EPS is directly proportional to the net profit of the company, as the net profit increases the EPS also raises. Therefore, the company should give a proper attention towards their operation to earn adequate amount of profit. But due to the several reason of our country like unstable government, political and economical causes, two airlines are not going on right track.

### 4.1.9  Book value per share (BVPS)

Book value of a share can be determined by dividing the net worth of the company by number of shares. The calculation of BVPS for the selected airlines companies is shown in the following table no 9 below

**Table - 9**

**Calculation of   Book value per share (BVPS) for Buddha & Yeti**

| FY | Net Worth | Number of Shares | Net Worth/ Number of Shares | Changes |
|---|---|---|---|---|
| **Buddha** | | | | |
| 2058\59 | 36,025,356 | 635,000 | 56.73 | -------- |
| 2059\60 | 90,277,760 | 700,000 | 128.97 | 72.24 |
| 2060\61 | 12,627,949 | 700,000 | 18.04 | (110.93) |
| 2061\62 | 33,630,511 | 700,000 | 48.04 | 30.00 |
| 2062\63 | 237,761,059 | 700,000 | 339.66 | 291.62 |
| 2063\64 | 249,003,926 | 700,000 | 355.72 | 16.06 |
| Average | | | **157.86** | |
| **Yeti** | | | | |
| 2058\59 | 71,160,267 | 313,200 | 227.20 | -------- |
| 2059\60 | 112,640,000 | 626,400 | 179.82 | (47.38) |
| 2060\61 | 104,152,384 | 1,126,400 | 92.46 | (87.36) |
| 2061\62 | 99,898,457 | 1,126,400 | 88.69 | (3.78) |
| 2062\63 | 152,783,625 | 1,126,400 | 135.64 | 46.95 |
| 2063\64 | 156,288,284 | 1,566,000 | 99.80 | (35.84) |
| Average | | | **137.27** | |

*Sources: Annual reports & Websites of concerned company*

Average BVPS for Buddha is 157.86.In FY 2058/59 amount of net worth is 36,025,356/= and number of shares is 635,000/= that reveals BVPS is 56.73.From FY 2059/60 Shares are increased to 700,000/= to FY 2063/64. From above calculation it shows that BVPS is 128.97, 18.04, 48.04, 339.66, and 355.72 for FY 2059/60, 2060/61, 2061/62, 2062/63, and 2063/64 respectively. BVPS is in increasing trend for all year except in FY2060/61 decreased by 110.93. In FY 2062/63 and 2063/64 BVPS is more than two times than average BVPS due to high retain earning. Upward trend of BVPS for Buddha shows good indicator for debts and shareholders. The increasing amount of BVPS indicates the increasing amount of reserve from shareholders side. If the amount of

reserve increases for coming years, the company may arrange to collect very low amount of capital as debt because share capital would be enough to operate business activities.

By analyzing above table it shows that average BVPS is 137.27 for Yeti .In FY 2058/59 and 2059/60 BVPS is 227.20 and 179.82 respectively which are higher than average BVPS. In FY 2060/61, 2061/62, 2062/63, and 2063/64 BVPS is 92.46, 88.69, 135.64, and 99.80 respectively which are less than average BVPS. While making comparison to previous year BVPS all has decreasing trend except in FY 2062/63 by 46.95.These decreasing cause of number of shares is increased in FY 2059/60 to 626400 from 313200, in FY 2060/61 to 1126400 from 626400, and in FY 2063/64 to1566000 from 1126400. For the capital requirement of any company it will either procure the fund from debt or from equity. If the increase in the reserve amount of Yeti will continue to raise the company any need a very little amount of fund from outsiders.

## 4.1.10 Interest Coverage Ratio

In order to analyses the debt capacity of the company, the interest coverage ratio is calculated by dividing EBIT (net operating profit before interest and taxes) by interest charge of the company. Coverage ratio is one of the parts of capital structure and leverage ratio. It is concerned with the firms ability to pay fixed charge securities that may be either debt or preference share. Generally it can be calculated with the help of profit and loss account of the company, by which the company can analyses its own capacity for the payment of fixed charges.

Interest coverage ratio is a part of coverage ratio, which is calculated and presented in the following table

**Table - 10**

**Calculation of Interest coverage ratio for Buddha & Yeti**

| FY | EBIT | Interest Charges | EBIT/Interest Charges(In Times) | Changes |
|---|---|---|---|---|
| **Buddha** | | | | |
| 2058\59 | 113,665,552 | 83,249,162 | 1.37 | -------- |
| 2059\60 | 164,797,180 | 117,044,776 | 1.41 | 0.04 |
| 2060\61 | (2,616,388) | 75,033,423 | (0.03) | (1.44) |
| 2061\62 | 98,536,012 | 65,613,350 | 1.50 | 1.54 |
| 2062\63 | 353,473,116 | 45,165,581 | 7.83 | 6.32 |
| 2063\64 | 127,770,977 | 52,849,251 | 2.42 | (5.41) |
| Average | | | **2.41** | |
| **Yeti** | | | | |
| 2058\59 | 23,165,513 | 18,603,941 | 1.25 | -------- |
| 2059\60 | 1,487,431 | 13,390,660 | 0.11 | (1.13) |
| 2060\61 | 12,629,979 | 17,734,633 | 0.71 | 0.60 |
| 2061\62 | 16,547,621 | 20,801,548 | 0.80 | 0.08 |
| 2062\63 | 31,767,862 | 19,864,096 | 1.60 | 0.80 |
| 2063\64 | 26,938,724 | 21,363,368 | 1.26 | (0.34) |
| Average | | | **0.95** | |

*Sources: Annual reports & Websites of concerned company*

The computed ratios imply how many times the interest charged are covered by funds. By above calculation average interest coverage ratio is 2.41 times for Buddha on six years period .The average interest coverage ratio is 2.41 times which is greater than the ratios of the FY 2058/59, 2059/60, 2060/61, and 2061/62. It is less than the ratio of the FY2060/61, and 2063/64. It is 1.37 times in the FY 2058/59 and increased by 0.04 times in the FY 2059/60 and it becomes 1.41 times. It means earning before interest and tax is not sufficient to pay interest for 1 times. It is 11.50 times and 7.83 times in the FY 2061/62 and 2062/63. The ratio has increased continuously for two years. But it became 2.42

times in the FY 2063/64 which is 5.41 times less than previous year. In FY 2060/61 amount of EBIT is (2,616,388)/= which is negative value so interest coverage ratio is also in negative value of (0.03) times. The FY 2062/63 is the safest year from the creditors' point of view due to the higher ratio and the FY 2060/61 is an unsafe year due to the less interest

Average interest coverage ratio for six year period is 0.95 times for Yeti. It means earning before interest and tax is not sufficient to pay interest for 1 times. It is 1.25 times in the FY 2058/59 and decreased by 1.13 times in the FY 2059/60 and it becomes 0.11 times. It is 0.71 times, 0.80 times, and 1.60 times in the FY 2060/61, 2061/62 and 2062/63 which shows increment in each year. In FY 2059/60, 2060/61, 2061/62 amount of interest is more than amount of EBIT so that interest coverage ratio is less than one .In FY 2063/64 it drop by 0.34 times and goes to 1.26 times. The high amount of interest means the high amount of debt capital and low amount of equity capital in the firm's capital structure. In such situation, the company should understand that the high percentage of debt capital means company can go to bankrupt. Company should properly utilize its debts to earn more profit and enhance capacity to pay interest.

## 4.1.11 Overall Cost of Capital ( Ko )

Overall capitalization means the cost of overall capital collected by the company from the different sources. In this regard, Ko is calculated as per the NOI, approach.

Overall cost of capital can be expressed by the following formula

Overall cost of capital (ko) $= \dfrac{\textbf{Net Operating Income}}{\textbf{Total Value of the firm}}$

Or EBIT/V

As per the assumptions of NI approach, ke and kd are constant and kd is always less than ke. Therefore, ko will decrease as B/V increase. Also Ke = Ko when B/V = 0

Calculation of overall cost of capital for selected manufacturing companies is given below in table no 11

**Table no - 11**

**Calculation of overall cost of capital for Buddha & Yeti**

| FY | EBIT | Value of the Firm | EBIT/Value of the firm | Changes |
|---|---|---|---|---|
| **Buddha** | | | | |
| 2058\59 | 113,665,552 | 990,136,882 | 11.48 | -------- |
| 2059\60 | 164,797,180 | 1,400,486,822 | 11.77 | 0.29 |
| 2060\61 | (2,616,388) | 1,422,012,486 | (0.18) | (11.95) |
| 2061\62 | 98,536,012 | 1,382,320,188 | 7.13 | 7.31 |
| 2062\63 | 353,473,116 | 1,287,436,314 | 27.46 | 20.33 |
| 2063\64 | 127,770,977 | 1,157,227,717 | 11.04 | (16.41) |
| Average | | | **11.45** | |
| **Yeti** | | | | |
| 2058\59 | 23,165,513 | 271,452,599 | 8.53 | -------- |
| 2059\60 | 1,487,431 | 322,582,690 | 0.46 | (8.07) |
| 2060\61 | 12,629,979 | 216,741,058 | 5.83 | 5.37 |
| 2061\62 | 16,547,621 | 236,590,561 | 6.99 | 1.17 |
| 2062\63 | 31,767,862 | 274,364,206 | 11.58 | 4.58 |
| 2063\64 | 26,938,724 | 324,744,660 | 8.30 | (3.28) |
| Average | | | **6.95** | |

*Sources: Annual reports & Websites of concerned company*

From above table it shows that EBIT and Value of firm for Buddha is Nrs 113665552/= and Nrs990136882/= respectively for FY 2058/59 and Ko is 11.48. Calculation of Ko for Buddha shows negative value of (0.18) in the FY 2060/61 which cause decrease of 11.95 in that FY. The only reason behind this is the negative value of EBIT .In the FY 2061/62 Ko is 7.13, which is 7.31% higher than previous year. From FY 2061/62 to FY 2062/63 Ko is in increasing trend by 7.31% and 20.33% respectively but in FY 2063/64 it decreased by 16.41%. In the FY 2062/63 which has the highest percentage of cost of capital for six years during the study period ie 27.46.Higher cost of capital means the lower profit for the company. So the company never appreciates the higher cost of capital. The average overall cost of capital is 11.45%.

Overall cost of capital (Ko) for Yeti is 8.53% in the FY 2058/59. In FY 2059/60 it is decreased by 8.07% and reached to 0.46 which is lowest cost for collecting the overall capital. In FY 2060/61, FY 2061/62, FY 2062/63, and FY 2063/64 Ko is 5.83, 6.99, 11.58, and 8.30 respectively. The overall highest cost of capital is 11.58 among the six year in the FY 2062/63. Overall cost of capital (Ko) for Yeti has two decreasing and three increasing trend. The Ko is decreased by 8.07 and 3.28 in the FY 2059/60 and 2063/64 respectively. Ko is increased by 5.27, 1.17, and 4.58 in FY 2060/61, 2061/62, and 2062/63respectively. The average Ko is 6.95% for six year period.

From the overall calculation of two airlines companies, it must be clear that, company should make an effort to trim down the overall cost of capital (Ko) to secure high percentage of return for collected capital. Reducing the debt capital is one of the best ways of reducing the Ko

## 4.1.12 Equity Capitalization Rate (Ke)

Equity is one of the sources of capital, which has its own cost and it is known as cost of equity (Ke). A large amount of equity means the higher amount of Ke. In this study equity capitalization rate is calculated as EBT divided by the market value of share as shown in table 12 below.

**Table - 12**

**Calculation of Equity Capitalization rate (Ke) for Buddha & Yeti**

| FY | Net Profit Before Taxes | Value of Equity Share | Net Profit BT Value of Equity Share | Changes |
|---|---|---|---|---|
| **Buddha** | | | | |
| 2058\59 | 30,416,390 | 71,377,500 | 42.61 | -------- |
| 2059\60 | 47,752,404 | 77,877,500 | 61.32 | 18.70 |
| 2060\61 | (77,649,811) | 77,877,500 | (99.71) | (161.02) |
| 2061\62 | 28,000,761 | 77,877,500 | 35.95 | 135.66 |
| 2062\63 | 247,861,237 | 77,877,500 | 318.27 | 282.32 |
| 2063\64 | 68,541,281 | 77,877,500 | 88.01 | (230.26) |
| Average | | | **74.41** | |
| **Yeti** | | | | |
| 2058\59 | 4,561,572 | 62,640,000 | 7.28 | -------- |
| 2059\60 | (11,903,229) | 112,640,000 | (10.57) | (17.85) |
| 2060\61 | (5,104,654) | 112,640,000 | (4.53) | 6.04 |
| 2061\62 | (4,253,927) | 112,640,000 | (3.78) | 0.76 |
| 2062\63 | 8,925,168 | 156,600,000 | 5.70 | 9.48 |
| 2063\64 | 4,098,494 | 156,600,000 | 2.62 | (3.08) |
| Average | | | **(0.55)** | |

*Sources: Annual reports & Websites of concerned company*

The equity capitalization rate Ke for Buddha is seemed to be 42.61 in the FY 2058/59. Then it is increased by 18.70% and reached to 61.32 in FY 2059/60.In FY 2060/61 Ke is (99.71) which is negative value decreased by 161.02.It increased by 135.66% and becomes 35.95 in the FY 2061/62, which means that the company has spent 35.95% of cost for collecting the equity capital. In FY 2062/63 it reached to 318.27 by increasing 282.32. Again it starts to decrease by 230.26 and reached to 88.01 in the FY 2061/62 .Average ratio is 74.41 which is less than the ratio of first four year and greater than the ratio of last two year.

From the above calculation of equity capitalization rate (Ke) for Yeti shows negative value of 0.55 during the six years study period. The reason behind this is due to negative value of EBT, which means that the company is not able to pay any cost for the equity capital. In FY 2058/59, FY 2059/60, FY2060/61, FY 2061/62, FY2062/63, and FY 2063/64 Ke is 7.28, (10.57), (4.53), (3.78), 5.70, and 2.62 respectively. Three increasing and two decreasing trend. In FY 2060/61, FY 2061/62, and FY 2062/63 increased by 6.04, 0.76, and 9.48 respectively and in FY 2059/60 and FY 2063/64 decreased by 17.85 and 3.08 respectively.

According to the above calculation of Ke for Buddha & Yeti; it can be said that the performance of Yeti is poor. The performance of Buddha is satisfactory. Average Ke of Yeti is negative i.e. (0.55), which is lowest than Buddha airline company. Yeti should change their whole financial structure and manage it with clear vision so that they could improve their profitability power

### 4.1.13 Degree of Operating Leverage (DOL)

Operating leverage is a way of measuring the business risk of the company. Operating leverage causes in sales volume to have a magnified effect on EBIT. The operating leverage can be measured more precisely in terms of degree of operating leverage (DOL) as shown in table 13 below.

**Table - 13**

**Calculation of Degree of Operating Leverage for Buddha & Yeti**

| FY Buddha | EBIT | Change in EBIT | % Change in EBIT | Sales | Change in Sales | %Change in Sales | DOL |
|---|---|---|---|---|---|---|---|
| 2058\59 | 113,665,552 | ---------------- | -------------- | 436,056,401 | ---------------- | ----------- | --------- |
| 2059\60 | 164,797,180 | 51,131,628 | 31.03 | 533,727,439 | 97,671,038 | 18.30 | 1.70 |
| 2060\61 | (2,616,388) | (167,413,568) | 6398.65 | 419,779,542 | (113,947,897) | (27.14) | (235.72) |
| 2061\62 | 98,536,012 | 101,152,400 | 102.66 | 642,168,943 | 222,389,401 | 34.63 | 2.96 |
| 2062\63 | 353,473,116 | 254,937,104 | 72.12 | 1,047,410,682 | 405,241,739 | 38.69 | 1.86 |
| 2063\64 | 127,770,977 | (225,702,139) | (176.65) | 988,238,490 | (59,172,192) | (5.99) | 29.50 |
| Average | | | | | | | **(39.94)** |
| **Yeti** | | | | | | | |
| 2058\59 | 23,165,513 | ------------------ | ---------- | 255,964,145 | ---------------- | ----------- | --------- |
| 2059\60 | 1,487,431 | (21,678,082) | (1457.42) | 238,594,314 | (17,369,831) | (7.28) | 200.19 |
| 2060\61 | 12,629,979 | 11,142,548 | 88.22 | 236,795,898 | (1,798,416) | (0.76) | (116.16) |
| 2061\62 | 16,547,621 | 3,917,642 | 23.67 | 274,589,599 | 37,793,701 | 13.76 | 1.72 |
| 2062\63 | 31,767,862 | 15,220,241 | 47.91 | 367,149,292 | 92,559,693 | 25.21 | 1.90 |
| 2063\64 | 26,938,724 | (4,829,138) | (17.93) | 661,107,618 | 293,958,326 | 44.46 | (0.40) |
| Average | | | | | | | **17.45** |

***Sources: Annual reports & Websites of concerned company***

The degree of operating leverage can be measured as percentage change in sales with respect to percentage change in EBIT. In the above table, calculation of DOL for Buddha in the fiscal year 2059/60 is 1.70% when EBIT at Nrs 113,665,552/= and sales at Nrs 436,056,401/= which means 1% increase in sales cause increase the operating profit (EBIT) by 1.70%.In FY 2060/61 DOL is (235.72) which means that if company increase sales by 1% operating loss will decrease by 235.72%. DOL becomes negative in FY2060/61 due to decrease in sales and negative EBIT value. Therefore decreasing sales may damage the goodwill of the company. Similarly, in the FY 2061/62, 2062/63, and 2063/64 DOL are 2.96, 1.86, and 29.50 respectively which indicates that if the company increases sales by 1% EBIT will go up 7.23%.But overall DOL for six year is (39.94) in negative value that shows that company is not earning enough from its sales.

From above table for Yeti in the FY 2059/60 DOL is 200.19, which means if the sales change by 1% the EBIT will change by 200.19%. DOL in the fiscal year 2060/61 is negative i.e. (116.16) which indicates that loss is occurred. If sales decrease by 1% EBIT will decrease by 116.16%. In the FY 2061/62 and 2062/63 DOL are 1.72 and 1.90 respectively which means if the sales increase by 1% the EBIT will also increase by 1.70% and 1.90%. In the FY 2063/64, the DOL is negative i.e. (0.40) that indicates loss. If sales decrease by 1% EBIT will decrease by 0.40%. Company should operate this business sufficiently above the break-even point when there is negative DOL. Average DOL is 17.45% which is good sign for company.

The negative DOL shows the inefficient earning capacity of the firm. The company cannot improve its profitability until it increases its EBIT. Average DOL is negative for Buddha and positive for Yeti. The earning capacity of the firm is higher which has positive DOL than the company, which has negative DOL. To improve the operating position of the company, Buddha & Yeti should try to increase sales volume above its break even point.

## 4.1.14 Degree of Financial Leverage (DFL)

Degree of financial leverage measures a proportionate change in EPS as a result of given change in EBIT. The financial leverage exists when the company has debt capital in the composition of capital structure. The extra amount of investment by debt capital can be measured only with the help of financial leverage which is calculated as follows in Table 14

**Table 14**

**Calculation of Degree of Financial Leverage for Buddha & Yeti**

| FY Buddha | EPS | Change in EPS | % Change in EPS | EBIT | Change in EBIT | % Change in EBIT | DFL |
|---|---|---|---|---|---|---|---|
| 2058\59 | 47.90 | --------- | ---------- | 113,665,552 | -------------- | ------------- | -------- |
| 2059\60 | 68.22 | 20.32 | 29.78 | 164,797,180 | 51,131,628 | 31.03 | 0.96 |
| 2060\61 | (110.93) | (179.15) | 161.50 | (2,616,388) | (167,413,568) | 6398.65 | 0.03 |
| 2061\62 | 30.00 | 140.93 | 469.72 | 98,536,012 | 101,152,400 | 102.66 | 4.58 |
| 2062\63 | 291.62 | 261.61 | 89.71 | 353,473,116 | 254,937,104 | 72.12 | 1.24 |
| 2063\64 | 80.38 | (211.23) | (262.77) | 127,770,977 | (225,702,139) | (176.65) | 1.49 |
| Average | | | | | | | **1.66** |
| **Yeti** | | | | | | | |
| 2058\59 | 14.56 | ------- | -------- | 23,165,513 | --------------- | ------------ | --------- |
| 2059\60 | (19.00) | (33.57) | 176.64 | 1,487,431 | (21,678,082) | (1457.42) | (0.12) |
| 2060\61 | (4.53) | 14.47 | (319.31) | 12,629,979 | 11,142,548 | 88.22 | (3.62) |
| 2061\62 | (3.78) | 0.76 | (20.00) | 16,547,621 | 3,917,642 | 23.67 | (0.84) |
| 2062\63 | 7.92 | 11.70 | 147.66 | 31,767,862 | 15,220,241 | 47.91 | 3.08 |
| 2063\64 | 2.24 | (5.69) | (254.05) | 26,938,724 | (4,829,138) | (17.93) | 14.17 |
| Average | | | | | | | **2.53** |

*Sources: Annual reports & Websites of concerned company*

As mentioned in the above table the DFL for JSML in the FY 2059/60 is 0.96 which indicates a change in EBIT by 0.96% will affect the EPS by 1%. However, the DFL in the subsequent year is decreasing; both EBIT and EPS are fluctuating. Therefore, the company should try to streamline these things, otherwise, it can think about changing its capital structure to get reliable condition of the company. The DFL in the FY 2060/61 is 0.03, in the FY 2061/62 are 4.58, in the FY 2062/63 is 1.24, and in the FY 2063/64 is 1.49 which means 1% change in EBIT will cause the EPS by 0.03%, 4.58%, 1.24% and 1.49% respectively. Average DFL is 1.66%.

The DFL analysis for Yeti shows EPS and EBIT in fluctuating trends. DFL in the FY 2059/60 is negative is (0.12), which means that if EBIT increase by 1% it's net loss will decrease by 0.12%. DFL in the FY 2060/61 and 2061/62 is (3.62) and ( 0.84), which means that if EBIT increase by 1% it's net loss will decrease

by 3.62% and 0.84%. DFL in the FY 2062/63 and 2063/64 are 3.08% and 14.17%. It indicates that if EBIT increase by 1% EPS will increase by 3.08% and 14.17% respectively. At the last two year of study positive DFL sign that means the company is on right track.

In the capital structure of any company, interest expenses and return in equity increases the level of financial position. The average DFL for Buddha is 1.66 and for Yeti are 2.53. Comparing two airline company average DFL Buddha and Yeti have positive which indicates the most reliable situation. Only the positive DFL does not indicate the better financial position of the company because both negative EPS and EBIT result positive DFL.

## 4.1.15 Comparative Ratio

All the calculated ratios for the six years of study since FY 2058/59 to 2063/64 are presented in the comparative ratios calculation which is shown in table 15 below.

**Table - 15**

**Calculation of Comparative Analysis of Ratios for Buddha & Yeti**

| S.No. | Ratios | Buddha | Yeti |
|-------|--------|--------|------|
| 1 | Long Term Debt to Total Debt | 87.39 | 61.34 |
| 2 | Debt to Equity | 3246.74 | 148.09 |
| 3 | Total Debt to Total Assets | 92.88 | 69.72 |
| 4 | Return on Assets | 3.03 | (0.38) |
| 5 | Return on Shareholders Equity | (51.11) | (0.87) |
| 6 | Return on Capital Employed | 3.46 | (0.34) |
| 7 | Profit Margin | 4.31 | (0.66) |
| 8 | Earning Per Share | 67.87 | (0.43) |
| 9 | Book Value Per Share | 157.86 | 137.27 |
| 10 | Interest Coverage | 2.41 | 0.95 |
| 11 | Overall Capitalization Rate | 11.45 | 6.95 |
| 12 | Equity Capitalization Rate | 74.41 | (0.55) |
| 13 | Degree of Operating Leverage | (39.94) | 17.45 |
| 14 | Degree of Financial Leverage | 1.66 | 2.53 |

*Sources: Annual reports & Websites of concerned company*

For last six year average long term debt to total debt for Buddha is 87.39%. Which means Buddha is using high amount long term debt in total debt .Yeti has 61.34% portion of long term debt in total debt portion total debt.

For average debt to equity ratio while drawing a comparison between the two airlines Buddha has debt capital more than equity, so it should try to reduce the debt capital, otherwise it may reach liquidation. Whereas the condition of Yeti is using debt not in a great deal. Yeti has less debt capital compare to Buddha and due to this reason the amount of profit may decrease.

Average debt to total asset ratio for Buddha is the highest among the selected companies for the study.

The average return on assets (ROA) is the highest for Buddha indicating the good production power of assets. The average return on assets (ROA) for Yeti is negative, which indicates that the asset of the company is not generating profit.

The averages ROSE for two airlines have negative value. Buddha has the highest negative value among two airlines. The investors of the two airlines are getting no returns from their investment.

The averages ROCE for two airlines have negative value. Buddha has the highest positive value of averages ROCE than Yeti airlines.

Only Buddha has positive profit margin ratio for six year study period. Yeti shows negative value of profit margin ratio, which indicates that the companies are suffering loss during almost all the study period.

Earning per share (EPS) for Buddha is the highest among two airlines. So the investors can be attracted by the proposal of Buddha. EPS of Yeti is negative indicating the worst situation among two airlines.

According to the average book value per share, Yeti has less BVPS than Buddha airlines .The condition of Yeti is worst than Buddha.

The average interest coverage is positive two airlines which show that the company's earning are sufficient to repay their interest. Although the use of higher amount of debt, the coverage ratio for Buddha is the highest than Yeti airlines. Yeti has lowest interest coverage ratio than Buddha airlines.

The average overall cost of capital (Ko) for Buddha is higher than Yeti .From the calculation ko of Buddha is seems to be higher due to levered company.

Ke is also higher in an average for Buddha than Yeti airlines companies. The use of less costly debt fund increases the risk to the shareholders; this causes the equity capitalization rate to increase.

Average DOL for Buddha is negative, which shows the inefficient earning capacity of the airline company. In case of Yeti, the average DOL shows the good situation of the airline company. Among two airlines Yeti has Better DOL. Buddha should try to increase their sales volume to improve the operating position of the company due to negative DOL.

The average DFL for Yeti shows satisfactory result comparing Buddha. There is no any consistency in the DOL and DFL for the airline companies.

## 4.2.0  STATISTICAL ANALYSES

The statistical analysis includes various methods of measuring relationship methods of measuring relationship between two or more variables as well as their significance.

## 4.2.1.0  CORRELATION ANALYSIS

In this study, different relationships have been calculated with the help of Karl person's formula of correlation coefficient, and calculating PE for measuring significant correlation. The correlation coefficient is denoted by 'r' and shows the direction of relationship between two variables. Correlation analysis is defined as the statistical technique, which measure the degree of relationship between the variables.

**4.2.1.1 Correlation Coefficient Between Total Debts And Shareholders Equity**

**Table No. - 16**

**Calculation of Correlation Coefficient, Probable Error between Total Debts and Shareholders Equity for Buddha & Yeti**

| Name of Airlines | Correlation Coefficient | Probable Error | 6X PE | Significant/ Insignificant |
|---|---|---|---|---|
| Buddha | -0.0408 | 0.2749 | 1.6494 | Insignificant |
| Yeti | 0.7056 | 0.1383 | 0.8295 | Insignificant |

*Sources: Annual reports & Websites of concerned company*

The calculation of correlation coefficient between the total debts and shareholders equity in the above table 16 shows the negative correlation for Buddha and the calculated correlation is not significant because value or 'r' is less than six times the value of PE. Yeti has positive correlation between total debts and shareholders equity but calculated correlation is not significant. Similarly, calculated value of 'r' is less than six times the value of PE, the relationship between two variables are insignificant.

**4.2.1.2 Correlation Coefficient Between Net Profits and Shareholders Equity**

**Table No. - 17**

**Calculation of Correlation Coefficient, Probable Error between Net Profits and Shareholders Equity for Buddha & Yeti**

| Name of Airlines | Correlation Coefficient | Probable Error | 6X PE | Significant/ Insignificant |
|---|---|---|---|---|
| Buddha | 0.7579 | 0.1172 | 0.7032 | Significant |
| Yeti | 0.3441 | 0.2428 | 1.4566 | Insignificant |

*Sources: Annual reports & Websites of concerned company*

Calculation of correlation coefficient between net profit and shareholders equity for Buddha shows positive correlation and the calculated correlation is

insignificant because value or 'r' is greater than the six times the vale of PE. Yeti has positive correlation and the calculated correlation is not significant. Calculated value or 'r' is insignificant because value of 'r' is six times less than the value of PE.

### 4.2.1.3 Correlation Coefficient Between EBIT and Interest

**Table No. - 18**

**Calculation of Correlation Coefficient, Probable Error between EBIT and Interest for Buddha & Yeti**

| Name of Airlines | Correlation Coefficient | Probable Error | 6X PE | Significant/ Insignificant |
|---|---|---|---|---|
| Buddha | -0.3227 | 0.2467 | 1.4801 | Insignificant |
| Yeti | 0.8185 | 0.0909 | 0.5453 | Significant |

*Sources: Annual reports & Websites of concerned company*

Calculated correlation coefficient between EBIT and interest payment of Buddha shows negative correlation and calculated correlation is not significant because of 'r' is less than six times value of PE. Yeti has positive correlation between EBIT and interest payment. Calculated correlation is significant for Yeti because value or 'r' is greater than six times the vale of PE.

### 4.2.1.4 Correlation Coefficient Between Net Profits and EPS

**Table No - 19**

**Calculation of Correlation Coefficient, Probable Error between Net Profits and EPS for Buddha & Yeti**

| Name of Airlines | Correlation Coefficient | Probable Error | 6X PE | Significant/ Insignificant |
|---|---|---|---|---|
| Buddha | 0.9999 | 0.0001 | 0.0003 | Significant |
| Yeti | 0.9149 | 0.0449 | 0.2692 | Significant |

*Sources: Annual reports & Websites of concerned company*

The correlation coefficient between EPS and net profit is positive for both Buddha and Yeti and calculated correlation is significant for both airlines. Calculated correlation is significant because value or 'r' is greater than six times than the vale of PE.

## 4.2.2.0 ANALYSIS OF TIME SERIES

Time series is used to predict future forecasting and planning of variables on the basis of past and present information. In regarding to this interest coverage and book value are forecasted for next 3 years. The projections are based on the following assumption.

- The main assumption is that other things remain unchanged.
- The forecasting will be true only with the limitation of least square methods are carried out.
- Two airlines will continue to run in present position.
- The economy will remain in the present stage.

### 4.2.2.1 Trend Analysis of Interest Coverage Ratio

The analysis of interest coverage ratio of Buddha & Yeti for six years from FY 2058/59 to 2063/64 and forecast of the same for next 3 years are presented in the following table.

**Table no - 20**

**Calculation of Trend Values of Interest Coverage Ratio for Buddha & Yeti**

| Fiscal Year (t) | Buddha | | Yeti | |
|---|---|---|---|---|
| | Actual Value | Trend Value | Actual Value | Trend Value |
| 2058\59 | 1.37 | 0.55 | 1.25 | 0.62 |
| 2059\60 | 1.41 | 1.30 | 0.11 | 0.76 |
| 2060\61 | (0.03) | 2.04 | 0.71 | 0.89 |
| 2061\62 | 1.50 | 2.79 | 0.80 | 1.02 |
| 2062\63 | 7.83 | 3.53 | 1.60 | 1.15 |
| 2063\64 | 2.42 | 4.27 | 1.26 | 1.28 |
| 2064\65 | | 5.02 | | 1.42 |
| 2065\66 | | 5.76 | | 1.55 |
| 2066\67 | | 6.51 | | 1.68 |

*Sources: Annual reports & Websites of concerned company*

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In above table 20 shows increasing trend of trend value of interest coverage ratio for two airlines. For Buddha interest coverage ratio of trend value shows in FY 2058/59 has 0.55 times and it will be increased to 6.51 times in FY 2066/67. It means the airline company has ability to pay interest of Nrs 1 by earning Nrs 6.51. Similarly, for Yeti interest coverage ratio of trend value shows in FY 2058/59 has 0.62 times and it will be increased to 1.68 times in FY 2066/67.

### 4.2.2.2 Trend Analysis of Book Value Per Share

The analysis of book value per share of Buddha & Yeti for six years from FY 2058/59 to 2063/64 and forecast of the same for next 3 years are presented in the following table.

**Table no - 21**

**Calculation of Trend Values of Book Value per Share for Buddha & Yeti**

| Fiscal Year (t) | Buddha | | Yeti | |
|---|---|---|---|---|
| | Actual Value | Trend Value | Actual Value | Trend Value |
| 2058\59 | 56.73 | 3.79 | 227.20 | 192.51 |
| 2059\60 | 128.97 | 65.42 | 179.82 | 170.41 |
| 2060\61 | 18.04 | 127.05 | 92.46 | 148.32 |
| 2061\62 | 48.04 | 188.67 | 88.69 | 126.22 |
| 2062\63 | 339.66 | 250.30 | 135.64 | 104.13 |
| 2063\64 | 355.72 | 311.93 | 99.80 | 82.03 |
| 2064\65 | | 373.56 | | 59.94 |
| 2065\66 | | 435.19 | | 37.84 |
| 2066\67 | | 496.82 | | 15.75 |

*Sources: Annual reports & Websites of concerned company*

In above table 21 shows increasing trend of trend value of book value per share for Buddha whereas decreasing trend of trend value for Yeti. For Buddha book value per share of trend value shows in FY 2058/59 has Nrs 3.79/= and it will be increased to Nrs 496.82/= in FY 2066/67. Similarly, for Yeti book value per share of trend value shows in FY 2058/59 has Nrs 192.51/= and it will be decreased to Nrs 15.75/= in FY 2066/67.

## 4.3.0  MAJOR FINDINGS

1. The overall analysis of two airlines Buddha & Yeti shows different position for each of them.
2. Buddha is levered company using nearly 90% as long term debt whereas Yeti is using nearly 50% long term debt in composition of total debt.
3. Buddha has high average ratio of debt to equity ratio compare to other two airlines. Yeti has lowest ratio among them.
4. Buddha has high average ratio of debt to total assets ratio compare than Yeti airlines. Yeti has lowest ratio than Buddha.
5. Comparing with Yeti airlines, Buddha has highest average ROA.
6. Comparing with Yeti airlines, Buddha has highest average ROCE.
7. Only Buddha has positive average profit margin ratio.
8. Yeti has negative average EPS whereas Buddha has positive average EPS value. Buddha has high positive value than Yeti.
9. Yeti has lowest average book value per share.
10. Buddha has highest average interest coverage ratio than Yeti airlines.
11. Buddha has highest average overall cost of capital (Ko)
    And equity capitalization rate (Ke) than Yeti.
12. Buddha has negative average DOL whereas Yeti has
    Positive average DOL.
13. Both airlines have positive average DFL.
14. For two airlines calculation of correlation coefficient, probable error between total debts and shareholders' equity shows that insignificant relation between total debts and shareholders' equity.
15. Calculation of correlation coefficient and probable error between net profit and shareholders' equity shows that significant relation between net profit and shareholders' equity for Buddha but insignificant relation for Yeti.
16. Calculation of correlation coefficient and probable error between EBIT and interest pay shows that insignificant relation between EBIT and interest pay for Buddha and significant relation for Yeti.

17. For two airlines calculation of correlation coefficient and probable error between net profit and EPS shows that significant relation between net profit and EPS.
18. Interest coverage trend value shows increasing trend for two airlines
19. Book value per share trend value shows increasing trend for Buddha but decreasing trend for Yeti.

# CHAPTER - V

## SUMMARY, CONCLUSION AND RECOMMENDATIONS

### 5.1 SUMMARY

This study entitled "Optimum Capital Structure": A comparative study of two airlines companies" has been prepared to fulfill the requirement of Master' of Business studies (MBS). The aim of this study, as mentioned in introduction chapter is to examine and analyze capital structure management in Nepalese airline companies. The study is based in secondary data collected from concerned airlines, documents and published and unpublished materials. Descriptive as well as analytical research has been designed to attend the objectives of the study. The method of investigation are followed by accounting/financial tools i.e., percentage mean, Karl Person's correlation coefficient, probable Error, and trend analysis.

The scheme of the study is divided into five chapters. The first chapter consists of framework of the study of study. In second chapter review of the issues related with abstracts of capital structure. The possible valid used of ratios and mechanics; financial and statistical tools and techniques are briefly reviewed in chapter three of research methodology. In fourth chapter consists of analytical framework of data and findings that is considered as important part revealing the performance of selected airline companies. This chapter is fifth chapter which is the last chapter. Lastly in this chapter incorporates summary of the study, conclusion of the analysis, and recommendation.

### 5.2 CONCLUSION

This study has sought to analyze financial strategies followed by airlines companies in Nepal. Having analyzed some factors relevant for airline industries one can conclude that much research is needed to clarify obscure points. As avenues to be explored one could suggest a comparison of free domestic markets with regulated domestic markets lacking internal competition, the impact of leasing versus purchase of aircraft, possible advantages of economics of

scale and the supposed advantage of contracting new debt when the business has a high proportion of tangible assets.

Capital structure has attracted intense debate and scholarly attention in financial management from the view point of creditors, owners, firms and other related parties. Tax deductibity of interest on debt is gift for capital structure decision but due to less developed capital market interest rate is fluctuating within a large range. The uncertainty of interest rate create difficulty in determine company's optimal structure.

From the major findings of secondary date the following conclusions are drawn:
- All two airlines are extremely using debt unit's capital structure.
- Buddha has highest debt to equity ratio and debt to total assets ratio compare to others two.
- Buddha has highest ROA and ROCE between two airlines. Inversely Yeti has negative value of ROA and ROCE which is lowest between two.
- Buddha has positive profit margin ratio where as Yeti has negative profit margin ratio.
- Yeti has negative EPS where as Buddha has positive EPS.
- Buddha has highest average interest coverage ratio between two airlines.
- Buddha ahs highest average overall cost of capital and equity capitalization rate between two airlines.
- Yeti has both positive average DOL and average DFL. Buddha has negative average DOL and positive average DFL.
- It shows significant relation between total debts and shareholder's equity for two airlines.
- It shows significant relation between net profit and shareholder's equity for Buddha but insignificant relation for Yeti.
- It shows insignificant relation between EBIT and interest pay for Buddha and significant relation for Yeti.
- It shows significant relation between net profit and EPS for two airlines.

- Interest coverage trend value shows increasing trend for two airlines where as book value per share trend value shows increasing trend for Buddha but decreasing trend for Yeti.

In comparison, it is found that Buddha seems to be better in terms of profitability and capital structure than Yeti. Thus, it can be remarked form the analysis that Buddha promises a better future.

## 5.3 RECOMMENDATIONS

After deriving the main findings of selected 3 airlines companies, some concrete suggestions have been presented. These suggestions would help in taking good decisions in relation to capital structure management of Buddha & Yeti.

I. **WELL PALNNED CAPITAL STRUCTURE**

The highest debt equity ratio is found in Buddha air that is 3246.74 % (in average) and the lowest debt equity ratio is found in Yeti air that is 148.09 %( in average).

So, we can see that Buddha air is having the highest portion of debt in its capital structure, and this type of higher debt capital create higher risk and that is dangerous signal from creditor's point of view. Such, type of higher debt capital may not be applicable for future expansion.

Company management should seek for a well planned capital structure which can provide the company with maximum return and minimum cost. Management should evaluate the benefits of any projects from the investors prospective, when a company wants to increase additional fund. Company should select best one from different alternative financial plans that maximizes the return and minimizes the cost .These financial plans can be analyzed from EPS-EBIT approach.

## II. IMPROVING IN DEBT SERVING CAPACITY

Interest coverage ratio of Buddha air is 2.41 times and Yeti is 0.95 times. Looking at the above figure we can see that none of companies are having very good interest coverage ratio. Such types of lower ratio implies lower debt serving capacity .Timely interest payment is unsure due to the lack of adequate reserves and surplus .So, it is suggested to companies to increase its sales revenues. When sales increase it will ultimately affect to increase in EBIT. That causes high interest coverage ratio which is good for creditor's point of view.

## III. ALTERNATIVE FINANCING ARRANGEMENTS

Airlines industries have borrowed debt from different commercial banks and other countries .Dollars and pounds rates are increasing day by day, and it implies that the payable rate is also increasing .On the other hand its rate of interest is also too high .So, it is better for the airlines companies to pay the long term debt as early as possible. If companies are going to increase its debt capital in the coming year then it should have to refund its higher cost of debt.

Companies should try to identify different alternative available fund .And, and then comparison should be done about cost of fund, which helps in selecting the lower cost of fund.

## IV. MANAGEMENT STRUCTURE

Staffs of airline companies are not well trained, which is one of the main reasons for overstaffing .Over staffing creates automatically high operational cost. So, we can recommended these companies to make its management technological based.

Companies should try to reduce its overstaffing either by providing training or by hiring skilled and well trained personnel from outside. The company must reorganize its human resource department and should stop recruitment of unskilled staffs. If companies provide training to its staffs and make them technological base then they can successfully

reduce problem of overstaffing. As, a result it leads to minimize the operating cost and maximize the profits.

## V.   MANAGEMENT AND DIFFERENT INVESTORS RELATION

Managers are anent of shareholders, promoters and creditors .Shareholders are the owners of the company .So, and management should not undermine shareholders interest, because shareholders are entitled to bear high risk. Therefore, management should always be responsible for the welfare of the shareholders .On the other hand creditors are interested in the continuing profitable performance of organization so that they may receive interest and principal sum on time. Management of the companies should maintain balance between different interests.

## VI.   STRENGTH COMPETITIVE CAPABILITY

More than 15 airlines industries have come into existence with innovative ideas, modern technology and best service and punctuality. So, management of companies should try to adopt sound competitive strategy .That is they should try to identify the strength and weakness of their competitors, local market is not sufficient therefore they should try to create international market service, they should conduct market research of their services and should have to apply effective advertisement policy for increasing their market share.

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# APPENDIX-1

## BALANCE SHEET OF

### BUDDHA AIR

| FISCAL YEAR | 2058\59 | 2059\60 | 2060\61 | 2061\62 | 2062\63 | 2063\64 |
|---|---|---|---|---|---|---|
| **CAPITAL& LIABILITIES** | Amount | Amount | Amount | Amount | Amount | Amount |
| **Shareholders Equity** | **63,500,000** | **70,000,000** | **70,000,000** | **70,000,000** | **70,000,000** | **70,000,000** |
| Capital | 63,500,000 | 70,000,000 | 70,000,000 | 70,000,000 | 70,000,000 | 70,000,000 |
| **Reserve Fund** | **7,877,500** | **7,877,500** | **7,877,500** | **7,877,500** | **7,877,500** | **7,877,500** |
| **Profit & Loss A/C(Profit)** | | **12,400,260** | | | **159,883,559** | **171,126,426** |
| **Total Long Term Debt** | **918,759,382** | **1,322,609,322** | **1,344,134,986** | **1,304,442,688** | **1,209,558,814** | **1,079,350,217** |
| Long Term Debt | 918,759,382 | 1,322,609,322 | 1,344,134,986 | 1,304,442,688 | 1,209,558,814 | 1,079,350,217 |
| **Current Liabilities** | **106,219,662** | **173,055,000** | **198,866,352** | **139,839,220** | **223,421,729** | **199,043,270** |
| **TOTAL CAPITAL** | **1,096,356,544** | **1,585,942,082** | **1,620,878,838** | **1,522,159,408** | **1,670,741,602** | **1,527,397,413** |
| **FISCAL YEAR** | 2056\57 | 2057\58 | 2058\59 | 2059\60 | 2060\61 | 2061\62 |
| **ASSETS** | Amount | Amount | Amount | Amount | Amount | Amount |
| **Fixed Assets(Net)** | 985,786,557 | 1,393,737,708 | 1,358,919,602 | 1,227,205,551 | 1,224,300,360 | 1,212,550,364 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Investment | | | | | 200,000 | 12,547,269 |
| Current Assets | 69,159,236 | 188,344,758 | 195,568,460 | 224,440,076 | 400,764,423 | 269,833,840 |
| Profit & Loss A/C(Losses) | 35,352,144 | | 65,249,551 | 44,246,989 | | |
| Differed Expenses | 6,058,607 | 3,859,616 | 1,141,225 | 26,266,792 | 45,476,819 | 32,465,940 |
| **TOTAL ASSETS** | **1,096,356,544** | **1,585,942,082** | **1,620,878,838** | **1,522,159,408** | **1,670,741,602** | **1,527,397,413** |

# APPENDIX-2

## BALANCE SHEET OF
### YETI AIR

| FISCAL YEAR | 2058\59 | 2059\60 | 2060\61 | 2061\62 | 2062\63 | 2063\64 |
|---|---|---|---|---|---|---|
| **CAPITAL& LIABILITIES** | Amount | Amount | Amount | Amount | Amount | Amount |
| **Shareholders Equity** | **62,640,000** | **112,640,000** | **112,640,000** | **112,640,000** | **156,600,000** | **156,600,000** |
| Capital | 62,640,000 | 112,640,000 | 112,640,000 | 112,640,000 | 156,600,000 | 156,600,000 |
| **Reserve Fund** | | | | | | |
| **Profit & Loss A/C(Profit)** | **8,520,267** | | | | | |
| **Total Long Term Debt** | **208,812,599** | **209,942,690** | **104,101,058** | **123,950,561** | **117,764,206** | **168,144,660** |
| Long Term Debt | 208,812,599 | 209,942,690 | 104,101,058 | 123,950,561 | 117,764,206 | 168,144,660 |
| **Current Liabilities** | **40,187,113** | **23,335,411** | **103,034,732** | **93,894,454** | **159,053,125** | **209,926,989** |
| **TOTAL CAPITAL** | **320,159,979** | **345,918,101** | **319,775,790** | **330,485,015** | **433,417,331** | **534,671,649** |
| **FISCAL YEAR** | 2055\56 | 2056\57 | 2057\58 | 2058\59 | 2059\60 | 2060\61 |
| **ASSETS** | Amount | Amount | Amount | Amount | Amount | Amount |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Fixed Assets(Net)** | 275,279,759 | 271,614,008 | 226,403,453 | 205,009,171 | 123,534,416 | 221,499,321 |
| **Investment** | | | | | | |
| **Current Assets** | 37,054,330 | 65,703,871 | 82,276,091 | 112,734,301 | 306,066,540 | 296,950,731 |
| **Profit & Loss A/C(Losses)** | | 3,382,962 | 8,487,616 | 12,741,543 | 3,816,375 | 311,716 |
| **Differed Expenses** | 7,825,890 | 5,217,260 | 2,608,630 | | | 15,909,881 |
| **TOTAL ASSETS** | **320,159,979** | **345,918,101** | **319,775,790** | **330,485,015** | **433,417,331** | **534,671,649** |

# APPENDIX-3

## PROFIT & LOSS ACCOUNT OF
### BUDDHA AIR

| PARTICULARS/FISCAL YEAR | 2058\59 | 2059\60 | 2060\61 | 2061\62 | 2062\63 | 2063\64 |
|---|---|---|---|---|---|---|
| **OPERTING REVENUE (A)** | 436,056,401 | 533,727,439 | 419,779,542 | 642,168,943 | 1,047,410,682 | 988,238,490 |
| **OPERTING EXPENSES (B)** | 322,518,117 | 378,871,433 | 338,954,668 | 444,604,171 | 599,413,893 | 774,993,055 |
| **(a) OPERATING INCOME(A-B)** | 113,538,284 | 154,856,006 | 80,824,874 | 197,564,772 | 447,996,789 | 213,245,435 |
| **ADD: NON OPERATING REVENUE (C)** | 127,268 | 9,941,174 | 9,434,192 | 346,590 | 1,732,736 | 17,067,913 |
| **LESS: NON OPERATING EXPENSES (D)** | | | 92,875,454 | 99,375,350 | 96,256,409 | 102,542,371 |
| **(b) NON OPERATING INCOME(C-D)** | 127,268 | 9,941,174 | (83,441,262) | (99,028,760) | (94,523,673) | (85,474,458) |
| **PROFIT/LOSS BEFORE INTEREST & TAX(a+b)(EBIT)** | **113,665,552** | **164,797,180** | **(2,616,388)** | **98,536,012** | **353,473,116** | **127,770,977** |
| **LESS: NON OPERATING EXPENSES** | | | | | | |
| INTEREST | 83,249,162 | 117,044,776 | 75,033,423 | 65,613,350 | 45,165,581 | 52,849,251 |
| **PROFIT/LOSS BEFORE PROVISION & TAXES** | **30,416,390** | **47,752,404** | **(77,649,811)** | **32,922,662** | **308,307,535** | **74,921,726** |
| **LESS:PROVISION FOR** | | | | 6,998,199 | 43,730,689 | 12,271,791 |
| **PROFIT/LOSS BEFORE TAXES FOR CURRENT YEAR** | **30,416,390** | **47,752,404** | **(77,649,811)** | **25,924,463** | **264,576,846** | **62,649,935** |
| **LESS:PROVISION FOR TAX** | | | | 4,921,901 | 60,446,298 | 6,380,445 |
| **NET PROFIT/LOSS AFTER TAXES FOR CURRENT YEAR** | **30,416,390** | **47,752,404** | **(77,649,811)** | **21,002,562** | **204,130,548** | **56,269,490** |
| LESS:- DIVIDEND PAID | | | | | | 45,026,623 |
| **PROFIT/LOSS AFTER DIVIDEND PAID** | 30,416,390 | 47,752,404 | (77,649,811) | 21,002,562 | 204,130,548 | 11,242,867 |
| **ADD:- PROFIT /LOSS UPTO LAST YEAR** | (65,768,534) | (35,352,144) | 12,400,260 | (65,249,551) | (44,246,989) | 159,883,559 |
| **PROFIT/LOSS TRANSFER TO BALANCE SHEET** | **(35,352,144)** | **12,400,260** | **(65,249,551)** | **(44,246,989)** | **159,883,559** | **171,126,426** |

# APPENDIX-4

## PROFIT & LOSS ACCOUNT OF
### YETI AIR

| PARTICULARS/FISCAL YEAR | 2058\59 | 2059\60 | 2060\61 | 2061\62 | 2062\63 | 2063\64 |
|---|---|---|---|---|---|---|
| OPERTING REVENUE   (A) | 255,964,145 | 238,594,314 | 236,795,898 | 274,589,599 | 367,149,292 | 661,107,618 |
| OPERTING EXPENSES  (B) | 229,114,072 | 224,771,993 | 180,555,854 | 221,385,275 | 320,165,390 | 598,899,938 |
| (a) OPERATING INCOME(A-B) | 26,850,073 | 13,822,321 | 56,240,044 | 53,204,324 | 46,983,902 | 62,207,680 |
| ADD: NON OPERATING REVENUE     (C) | 473,710 | 333,106 | 339,002 | 120,000 | 96,552 | 1,001,721 |
| LESS: NON OPERATING EXPENSES  (D) | 4,158,270 | 12,667,996 | 43,949,067 | 36,776,703 | 15,312,592 | 36,270,677 |
| (b) NON OPERATING INCOME(C-D) | (3,684,560) | (12,334,890) | (43,610,065) | (36,656,703) | (15,216,040) | (35,268,956) |
| PROFIT/LOSS BEFORE INTEREST & TAX(a+b)(EBIT) | 23,165,513 | 1,487,431 | 12,629,979 | 16,547,621 | 31,767,862 | 26,938,724 |
| LESS: NON OPERATING EXPENSES | | | | | | |
| INTEREST | 18,603,941 | 13,390,660 | 17,734,633 | 20,801,548 | 19,864,096 | 21,363,368 |
| PROFIT/LOSS BEFORE PROVISION & TAXES | 4,561,572 | (11,903,229) | (5,104,654) | (4,253,927) | 11,903,766 | 5,575,356 |
| LESS:PROVISION FOR | | | | | 1,082,161 | 593,835 |
| PROFIT/LOSS BEFORE TAXES FOR CURRENT YEAR | 4,561,572 | (11,903,229) | (5,104,654) | (4,253,927) | 10,821,605 | 4,981,521 |
| LESS:PROVISION FOR TAX | | | | | 1,896,437 | 1,476,862 |
| NET PROFIT/LOSS AFTER TAXES FOR CURRENT YEAR | 4,561,572 | (11,903,229) | (5,104,654) | (4,253,927) | 8,925,168 | 3,504,659 |
| LESS:- DIVIDEND PAID | | | | | | |
| PROFIT/LOSS AFTER DIVIDEND PAID | 4,561,572 | (11,903,229) | (5,104,654) | (4,253,927) | 8,925,168 | 3,504,659 |
| ADD:- PROFIT /LOSS UPTO LAST YEAR | 3,958,695 | 8,520,267 | (3,382,962) | (8,487,616) | (12,741,543) | (3,816,375) |
| PROFIT/LOSS TRANSFER TO BALANCE SHEET | 8,520,267 | (3,382,962) | (8,487,616) | (12,741,543) | (3,816,375) | (311,716) |

# APPENDIX-5

## SUMMARY OF BALANCE SHEET OF
### BUDDHA AIR

| PARTICULARS/FISCAL YEAR | 2058\59 | 2059\60 | 2060\61 | 2061\62 | 2062\63 | 2063\64 |
|---|---|---|---|---|---|---|
| SHAREHOLDERS EQUITY SHARE(1) | 63,500,000 | 70,000,000 | 70,000,000 | 70,000,000 | 70,000,000 | 70,000,000 |
| RESERVE FUND(2) | 7,877,500 | 7,877,500 | 7,877,500 | 7,877,500 | 7,877,500 | 7,877,500 |
| PROFIT & LOSS A/C(3) | (35,352,144) | 12,400,260 | (65,249,551) | (44,246,989) | 159,883,559 | 171,126,426 |
| **(a)SHAREHOLDER'S EQUITY FUND or NET WORTH(1+2+3)** | **36,025,356** | **90,277,760** | **12,627,949** | **33,630,511** | **237,761,059** | **249,003,926** |
| LONG TERM DEBT(4) | 918,759,382 | 1,322,609,322 | 1,344,134,986 | 1,304,442,688 | 1,209,558,814 | 1,079,350,217 |
| CURRENT LIABITIES(5) | 106,219,662 | 173,055,000 | 198,866,352 | 139,839,220 | 223,421,729 | 199,043,270 |
| **TOTAL DEBT(4+5)** | **1,024,979,044** | **1,495,664,322** | **1,543,001,338** | **1,444,281,908** | **1,432,980,543** | **1,278,393,487** |
| **(b)CAPITAL EMPLOYED(a+4)** | **954,784,738** | **1,412,887,082** | **1,356,762,935** | **1,338,073,199** | **1,447,319,873** | **1,328,354,143** |
| **NET ASSETS(c-5)** | **954,784,738** | **1,412,887,082** | **1,356,762,935** | **1,338,073,199** | **1,447,319,873** | **1,328,354,143** |
| FIXED ASSETS(6) | 985,786,557 | 1,393,737,708 | 1,358,919,602 | 1,227,205,551 | 1,224,300,360 | 1,212,550,364 |
| CURRENT ASSETS(7) | 69,159,236 | 188,344,758 | 195,568,460 | 224,440,076 | 400,764,423 | 269,833,840 |
| INVESTMENT(8) | | | | | 200,000 | 12,547,269 |
| DIFFERED EXPENSES(9) | 6,058,607 | 3,859,616 | 1,141,225 | 26,266,792 | 45,476,819 | 32,465,940 |
| **(c)TOTAL ASSETS(6+7+8+9)** | **1,061,004,400** | **1,585,942,082** | **1,555,629,287** | **1,477,912,419** | **1,670,741,602** | **1,527,397,413** |

# APPENDIX-6

## SUMMARY OF BALANCE SHEET OF
### YETI AIR

| PARTICULARS/FISCAL YEAR | 2058\59 | 2059\60 | 2060\61 | 2061\62 | 2062\63 | 2063\64 |
|---|---|---|---|---|---|---|
| SHAREHOLDERS EQUITY(1) | 62,640,000 | 112,640,000 | 112,640,000 | 112,640,000 | 156,600,000 | 156,600,000 |
| RESERVE FUND(2) | | | | | | |
| PROFIT & LOSS A/C(3) | 8,520,267 | 0 | (8,487,616) | (12,741,543) | (3,816,375) | (311,716) |
| **(a)SHAREHOLDER'S EQUITY FUND or NET WORTH(1+2+3)** | **71,160,267** | **112,640,000** | **104,152,384** | **99,898,457** | **152,783,625** | **156,288,284** |
| LONG TERM DEBT(4) | 208,812,599 | 209,942,690 | 104,101,058 | 123,950,561 | 117,764,206 | 168,144,660 |
| CURRENT LIABITIES(5) | 40,187,113 | 23,335,411 | 103,034,732 | 93,894,454 | 159,053,125 | 209,926,989 |
| **TOTAL DEBT(4+5)** | **248,999,712** | **233,278,101** | **207,135,790** | **217,845,015** | **276,817,331** | **378,071,649** |
| **(b)CAPITAL EMPLOYED(a+4)** | **279,972,866** | **322,582,690** | **208,253,442** | **223,849,018** | **270,547,831** | **324,432,944** |
| **NET ASSETS(c-5)** | **279,972,866** | **319,199,728** | **208,253,442** | **223,849,018** | **270,547,831** | **308,523,063** |
| FIXED ASSETS(6) | 275,279,759 | 271,614,008 | 226,403,453 | 205,009,171 | 123,534,416 | 221,499,321 |
| CURRENT ASSETS(7) | 37,054,330 | 65,703,871 | 82,276,091 | 112,734,301 | 306,066,540 | 296,950,731 |
| INVESTMENT(8) | | | | | | |
| DIFFERED EXPENSES(9) | 7,825,890 | 5,217,260 | 2,608,630 | 0 | | |
| **(c)TOTAL ASSETS(6+7+8+9)** | **320,159,979** | **342,535,139** | **311,288,174** | **317,743,472** | **429,600,956** | **518,450,052** |

# APPENDIX-7

## Company Profiles

### Buddha Air

Buddha Air started their operations with just one brand new Beech 1900D aircraft in October 1997 to begin with. They at present operate with five brand new Beech 1900Ds & three brand new ATR-42. Within a short span of time Buddha Air has been able to capture a large volume of market and has been successful enough to name itself as one of the most reliable, safe airlines.

At present Buddha Air flies to 15 major destinations in Nepal. It also operates mountain flights daily to Everest region for one hour.

| | |
|---|---|
| Company name: | Buddha Air |
| Company Type: | Private Company operating in the domestic sector. |
| Company Objective: | Establish it as the most reliable, safe and best airline. |
| Year of Establishment: | 1997 |
| Type of Aircraft used: | Beech 1900D & ATR |
| Aircraft strength (fleet): | Five (5) Beeches 1900D & Three (3) ATR-42 |
| Aircraft details: | Manufacturer: Raytheon Aircraft Company, USA. |
| Engine Type: | Two P & WC, PT6A 67D Free Shaft Turbine engines |
| MTOW: | 16,950 lb |
| MLW: | 16,100 lb |
| Aircraft empty weight: | 15,000lb |
| Max. Cruising Speed: | 288 KTAS |
| Max. Operating altitude: | 25,000 feet |
| Aircraft suppliers: | Raytheon Aircraft Company, USA |

### Yeti Airlines

After being accorded with the Air Operating Certificate No. 023/98 by the Civil Aviation Authority Nepal (CAAN), Yeti Air began its operation on 21st September, 1998 with one aircraft (Twin Otter) to begin with. Since then it has been providing services to almost all parts of Nepal through its regular scheduled and charter flights. At present, it has Four Twin Otter aircrafts, Two Dornier & Six Jet Stream

providing services to its valued customers far and wide. However, its main concentration area has been Lukla where a large number of tourists visit each year.

Yeti Airlines has been promoted by Thamserku Trekking (Pvt.) Ltd, which is one of the largest and most successful trekking agencies in the kingdom of Nepal. This is evident from the fact that it has been awarded by His Majesty's Government of Nepal a number of times in the past years for earning the highest amount of foreign exchange from trekking tourism. Although one of the youngest airline in the airlines industry of Nepal, Yeti Airlines has been very fortunate enough to scale the heights of success ever since it's operation in 1998. This has been largely successful because of its team of well-experienced, qualified and dedicated staff to oversee the functioning of all spheres of management and the day-to-day functions.  The purpose of the company has been to play a role of an economic stimulator for the development of rural areas and the tourism industry of the country. This has been largely true from the fact that it has been operating in very remote areas like Simikot, Dolpa, Jumla, Phaplu, Lamidanda etc and the number of passengers (both local and tourists) it carries with itself to these areas helping boost the tourism industry of the country.

However, despite of the fact that Yeti Airlines doing a very good job many people might think why has it not brought in new/modern aircrafts as has been done by other airlines. The prime reason for this is because Nepal being a hilly region where almost 83% of the area is covered by Mountains and hills, STOL (Short Take- Off and Landing) aircrafts have been the best choice.

Company name:          Yeti Air
Company Type:          Private Company operating in the domestic sector.
Company Objective:     Establish it as the most reliable, safe and best airline.
Year of Establishment:  1998
Type of Aircraft used:  DHC-6/300 Twin Otter, Dornier & Jet Stream-42
Aircraft details:
Manufacturer:          Dehavilland DHC-6 Canada
Suppliers:             Kenn Borek Air Ltd, Canada

Engine Type:               Turbo Prop

Max Take off Weight:       12,500 lb

Maximum Landing Weight:  12,300

Fuel capacity:             2500lb

Aircraft Empty weight:     7200 lb

Speed:                     160 Knots

Total Passenger Capacity: 42 pax

# APPENDIX-8

**ROE to Debt Ratio**

| Name of Airlines | Correlation Coefficient | Coefficient of Determination | Probable Error | 6X PE | Significant/ Insignificant |
|---|---|---|---|---|---|
| Buddha | -0.4418 | 0.1952 | 0.2216 | 1.3297 | |
| Yeti | 0.4002 | 0.1602 | 0.2313 | 1.3875 | |

**ROE to Debt Equity Ratio**

| Name of Airlines | Correlation Coefficient | Coefficient of Determination | Probable Error | 6X PE | Significant/ Insignificant |
|---|---|---|---|---|---|
| Buddha | -0.9293 | 0.8635 | 0.0376 | 0.2255 | |
| Yeti | 0.1324 | 0.0175 | 0.2705 | 1.6232 | |

**NP to TD**

| Name of Airlines | Correlation Coefficient | Coefficient of Determination | Probable Error | 6X PE | Significant/ Insignificant |
|---|---|---|---|---|---|
| Buddha | -0.0994 | 0.0099 | 0.2726 | 1.6358 | |
| Yeti | 0.5325 | 0.2835 | 0.1973 | 1.1838 | |

# APPENDIX-9

Calculation of Correlation Co-efficient Between the Total Debt and Shareholders' Equity for Buddha

| | X | Y | dx X-A' | dy Y-A' | dx2 | dy2 | dxdy |
|---|---|---|---|---|---|---|---|
| 58/59 | 84.43 | 96.60 | 135.5417 | 3.7183 | 18371.5434 | 13.8260 | 503.9891 |
| 58/60 | 52.89 | 94.31 | 104.0017 | 1.4283 | 10816.3467 | 2.0401 | 148.5490 |
| 58/61 | -614.90 | 99.19 | -563.7883 | 6.3083 | 317857.2848 | 39.7951 | -3556.5647 |
| 58/62 | 62.45 | 97.72 | 113.5617 | 4.8383 | 12896.2521 | 23.4095 | 549.4492 |
| 58/63 | 85.86 | 85.77 | 136.9717 | -7.1117 | 18761.2375 | 50.5758 | -974.0968 |
| 58/64 | 22.60 | 83.70 | 73.7117 | -9.1817 | 5433.4098 | 84.3030 | -676.7960 |
| | -306.67 | 557.29 | 0.0000 | 0.0000 | 384136.0743 | 213.9495 | -4005.4702 |
| | -51.11 | 92.88 | | | | | |

| n | 6.0000 | | -4005.4702 |
|---|---|---|---|
| Edx | 0.0000 | | 619.7871 |
| Edy | 0.0000 | | 14.6270 |
| Edxdy | -4005.4702 | r | **-0.4418** |
| Edx2 | 384136.0743 | R2 | 0.1952 |
| Edy2 | 213.9495 | PE | 0.2216 |
| Edx Edy/n | 0.0000 | **6X PE** | **1.3297** |
| (Edx)2/n | 0.0000 | | |
| (Edy)2/n | 0.0000 | | |
| r | -0.4418 | | |

Calculation of Correlation Co-efficient Between the Total Debt and Shareholders' equity for Yeti

| | X | Y | dx X-A' | dy Y-A' | dx2 | dy2 | dxdy |
|---|---|---|---|---|---|---|---|
| 58/59 | 6.41 | 77.77 | 7.2833 | 8.0483 | 53.0469 | 64.7757 | 58.6187 |
| 58/60 | -10.57 | 68.10 | -9.6967 | -1.6217 | 94.0253 | 2.6298 | 15.7248 |
| 58/61 | -4.90 | 66.54 | -4.0267 | -3.1817 | 16.2140 | 10.1230 | 12.8115 |
| 58/62 | -4.26 | 68.56 | -3.3867 | -1.1617 | 11.4695 | 1.3495 | 3.9342 |
| 58/63 | 5.84 | 64.44 | 6.7133 | -5.2817 | 45.0688 | 27.8960 | -35.4576 |
| 58/64 | 2.24 | 72.92 | 3.1133 | 3.1983 | 9.6928 | 10.2293 | 9.9575 |
| | -5.24 | 418.33 | 0.0000 | 0.0000 | 229.5175 | 117.0033 | 65.5890 |
| | -0.87 | 69.72 | | | | | |

| n | 6.0000 | | 65.5890 |
|---|---|---|---|
| Edx | 0.0000 | | 15.1498 |
| Edy | 0.0000 | | 10.8168 |
| Edxdy | 65.5890 | r | **0.4002** |
| Edx2 | 229.5175 | R2 | 0.1602 |
| Edy2 | 117.0033 | PE | 0.2313 |
| Edx Edy/n | 0.0000 | **6X PE** | **1.3875** |
| (Edx)2/n | 0.0000 | | |
| (Edy)2/n | 0.0000 | | |
| r | 0.4002 | | |

# APPENDIX-10

Calculation of Correlation Co-efficient Between the Total Debt and Shareholders' Equity for Buddha

|  | X | Y | dx<br>X-A' | dy<br>Y-A' | dx2 | dy2 | dxdy |
|---|---|---|---|---|---|---|---|
| 58/59 | 84.43 | 2550.31 | 135.5417 | -696.4283 | 18371.5434 | 485012.4235 | -94395.0570 |
| 58/60 | 52.89 | 1465.04 | 104.0017 | -1781.6983 | 10816.3467 | 3174448.9510 | -185299.5962 |
| 58/61 | -614.90 | 10644.13 | -563.7883 | 7397.3917 | 317857.2848 | 54721403.4701 | -4170563.1188 |
| 58/62 | 62.45 | 3878.75 | 113.5617 | 632.0117 | 12896.2521 | 399438.7468 | 71772.2982 |
| 58/63 | 85.86 | 508.73 | 136.9717 | -2738.0083 | 18761.2375 | 7496689.6334 | -375029.5648 |
| 58/64 | 22.60 | 433.47 | 73.7117 | -2813.2683 | 5433.4098 | 7914478.7153 | -207370.6976 |
|  | -306.67 | 19480.43 | 0.0000 | 0.0000 | 384136.0743 | 74191471.9401 | -4960885.7361 |

-51.11    3246.74

| n | 6.0000 |  | -4960885.7361 |
|---|---|---|---|
| Edx | 0.0000 |  | 619.7871 |
| Edy | 0.0000 |  | 8613.4472 |
| Edxdy | -4960885.7361 | r | **-0.9293** |
| Edx2 | 384136.0743 | R2 | **0.8635** |
| Edy2 | 74191471.9401 | PE | **0.0376** |
| Edx Edy/n | 0.0000 | 6X PE | **0.2255** |
| (Edx)2/n | 0.0000 |  |  |
| (Edy)2/n | 0.0000 |  |  |
| r | -0.9293 |  |  |

Calculation of Correlation Co-efficient Between the Total Debt and Shareholders' equity for Yeti

|  | X | Y | dx<br>X-A' | dy<br>Y-A' | dx2 | dy2 | dxdy |
|---|---|---|---|---|---|---|---|
| 58/59 | 6.41 | 293.44 | 7.2833 | 145.3533 | 53.0469 | 21127.5915 | 1058.6568 |
| 58/60 | -10.57 | 186.38 | -9.6967 | 38.2933 | 94.0253 | 1466.3794 | -371.3177 |
| 58/61 | -4.90 | 99.95 | -4.0267 | -48.1367 | 16.2140 | 2317.1387 | 193.8303 |
| 58/62 | -4.26 | 124.08 | -3.3867 | -24.0067 | 11.4695 | 576.3200 | 81.3026 |
| 58/63 | 5.84 | 77.08 | 6.7133 | -71.0067 | 45.0688 | 5041.9467 | -476.6914 |
| 58/64 | 2.24 | 107.59 | 3.1133 | -40.4967 | 9.6928 | 1639.9800 | -126.0796 |
|  | -5.24 | 888.52 | 0.0000 | 0.0000 | 229.5175 | 32169.3563 | 359.7009 |

-0.87    148.09

| n | 6.0000 |  | 359.7009 |
|---|---|---|---|
| Edx | 0.0000 |  | 15.1498 |
| Edy | 0.0000 |  | 179.3582 |
| Edxdy | 359.7009 | r | **0.1324** |
| Edx2 | 229.5175 | R2 | **0.0175** |
| Edy2 | 32169.3563 | PE | **0.2705** |
| Edx Edy/n | 0.0000 | 6X PE | **1.6232** |
| (Edx)2/n | 0.0000 |  |  |
| (Edy)2/n | 0.0000 |  |  |
| r | 0.1324 |  |  |

# APPENDIX-11

Calculation of Correlation Co-efficient Between the Total Debt and Shareholders' Equity for Buddha

|  | NP | TD | dx | dy |  |  |  |
|---|---|---|---|---|---|---|---|
|  | X | Y | X-A' | Y-A' | dx2 | dy2 | dxdy |
| 58/59 | 0.3042 | 10.2498 | -0.1657 | -3.4490 | 0.0275 | 11.8959 | 0.5715 |
| 58/60 | 0.4775 | 14.9566 | 0.0077 | 1.2578 | 0.0001 | 1.5821 | 0.0096 |
| 58/61 | -0.7765 | 15.4300 | -1.2464 | 1.7312 | 1.5534 | 2.9970 | -2.1577 |
| 58/62 | 0.2100 | 14.4428 | -0.2598 | 0.7440 | 0.0675 | 0.5535 | -0.1933 |
| 58/63 | 2.0413 | 14.3298 | 1.5714 | 0.6310 | 2.4694 | 0.3981 | 0.9915 |
| 58/64 | 0.5627 | 12.7839 | 0.0928 | -0.9149 | 0.0086 | 0.8370 | -0.0849 |
|  |  |  | **0.0000** | **0.0000** | **4.1265** | **18.2636** | **-0.8632** |

0.4699    13.6988

| n | 6.0000 |  | -0.8632 |
|---|---|---|---|
| Edx | 0.0000 |  | 2.0314 |
| Edy | 0.0000 |  | 4.2736 |
| Edxdy | -0.8632 | **r** | **-0.0994** |
| Edx2 | 4.1265 | **PE** | **0.2726** |
| Edy2 | 18.2636 | **6X PE** | **1.6358** |
| Edx Edy/n | 0.0000 |  |  |
| (Edx)2/n | 0.0000 |  |  |
| (Edy)2/n | 0.0000 |  |  |
| r | -0.0994 |  |  |

Calculation of Correlation Co-efficient Between the Total Debt and Shareholders' equity for Yeti

|  | NP | TD | dx | dy |  |  |  |
|---|---|---|---|---|---|---|---|
|  | X | Y | X-A' | Y-A' | dx2 | dy2 | dxdy |
| 58/59 | 0.0456 | 2.4900 | 0.0527 | -0.1136 | 0.0028 | 0.0129 | -0.0060 |
| 58/60 | -0.1190 | 2.3328 | -0.1119 | -0.2708 | 0.0125 | 0.0733 | 0.0303 |
| 58/61 | -0.0510 | 2.0714 | -0.0439 | -0.5322 | 0.0019 | 0.2833 | 0.0234 |
| 58/62 | -0.0425 | 2.1785 | -0.0354 | -0.4251 | 0.0013 | 0.1807 | 0.0151 |
| 58/63 | 0.0893 | 2.7682 | 0.0964 | 0.1646 | 0.0093 | 0.0271 | 0.0159 |
| 58/64 | 0.0350 | 3.7807 | 0.0422 | 1.1771 | 0.0018 | 1.3857 | 0.0496 |
|  |  |  | **0.0000** | **0.0000** | **0.0296** | **1.9630** | **0.1283** |

-0.0071    2.6036

| n | 6.0000 |  | 0.1283 |
|---|---|---|---|
| Edx | 0.0000 |  | 0.1719 |
| Edy | 0.0000 |  | 1.4011 |
| Edxdy | 0.1283 | **r** | **0.5325** |
| Edx2 | 0.0296 | **PE** | **0.1973** |
| Edy2 | 1.9630 | **6X PE** | **1.1838** |
| Edx Edy/n | 0.0000 |  |  |
| (Edx)2/n | 0.0000 |  |  |
| (Edy)2/n | 0.0000 |  |  |
| r | 0.5325 |  |  |

# APPENDIX-12

Calculation of Correlation Co-efficient Between the Total Debt and Shareholders' Equity for Buddha

|  | TD | NP | dx | dy |  |  |  |
|---|---|---|---|---|---|---|---|
|  | X | Y | X-A ' | Y-A ' | dx2 | dy2 | dxdy |
| 58/59 | 10.2498 | 0.3042 | -3.4490 | -0.1657 | 11.8959 | 0.0275 | 0.5715 |
| 58/60 | 14.9566 | 0.4775 | 1.2578 | 0.0077 | 1.5821 | 0.0001 | 0.0096 |
| 58/61 | 15.4300 | -0.7765 | 1.7312 | -1.2464 | 2.9970 | 1.5534 | -2.1577 |
| 58/62 | 14.4428 | 0.2100 | 0.7440 | -0.2598 | 0.5535 | 0.0675 | -0.1933 |
| 58/63 | 14.3298 | 2.0413 | 0.6310 | 1.5714 | 0.3981 | 2.4694 | 0.9915 |
| 58/64 | 12.7839 | 0.5627 | -0.9149 | 0.0928 | 0.8370 | 0.0086 | -0.0849 |
|  |  |  | **0.0000** | **0.0000** | **18.2636** | **4.1265** | **-0.8632** |

13.6988    0.4699

| n | 6.0000 |  | -0.8632 |
|---|---|---|---|
| Edx | 0.0000 |  | 4.2736 |
| Edy | 0.0000 |  | 2.0314 |
| Edxdy | -0.8632 | **r** | **-0.0994** |
| Edx2 | 18.2636 | **PE** | **0.2726** |
| Edy2 | 4.1265 | **6X PE** | **1.6358** |
| Edx  Edy/n | 0.0000 |  |  |
| (Edx)2/n | 0.0000 |  |  |
| (Edy)2/n | 0.0000 |  |  |
| r | -0.0994 |  |  |

Calculation of Correlation Co-efficient Between the Total Debt and Shareholders' equity for Yeti

|  | NP | TD | dx | dy |  |  |  |
|---|---|---|---|---|---|---|---|
|  | X | Y | X-A ' | Y-A ' | dx2 | dy2 | dxdy |
| 58/59 | 0.0456 | 2.4900 | 0.0527 | -0.1136 | 0.0028 | 0.0129 | -0.0060 |
| 58/60 | -0.1190 | 2.3328 | -0.1119 | -0.2708 | 0.0125 | 0.0733 | 0.0303 |
| 58/61 | -0.0510 | 2.0714 | -0.0439 | -0.5322 | 0.0019 | 0.2833 | 0.0234 |
| 58/62 | -0.0425 | 2.1785 | -0.0354 | -0.4251 | 0.0013 | 0.1807 | 0.0151 |
| 58/63 | 0.0893 | 2.7682 | 0.0964 | 0.1646 | 0.0093 | 0.0271 | 0.0159 |
| 58/64 | 0.0350 | 3.7807 | 0.0422 | 1.1771 | 0.0018 | 1.3857 | 0.0496 |
|  |  |  | **0.0000** | **0.0000** | **0.0296** | **1.9630** | **0.1283** |

-0.0071    2.6036

| n | 6.0000 |  | 0.1283 |
|---|---|---|---|
| Edx | 0.0000 |  | 0.1719 |
| Edy | 0.0000 |  | 1.4011 |
| Edxdy | 0.1283 | **r** | **0.5325** |
| Edx2 | 0.0296 | **PE** | **0.1973** |
| Edy2 | 1.9630 | **6X PE** | **1.1838** |
| Edx  Edy/n | 0.0000 |  |  |
| (Edx)2/n | 0.0000 |  |  |
| (Edy)2/n | 0.0000 |  |  |
| r | 0.5325 |  |  |

# APPENDIX-13

## Calculation of Correlation Co-efficient Between the ROE and Debt Ratio for Buddha

|  | ROE | Debt Ratio | dx | dy |  |  |  |
|---|---|---|---|---|---|---|---|
|  | X | Y | X-A' | Y-A' | dx2 | dy2 | dxdy |
| 58/59 | 84.43 | 96.60 | 33.4300 | 3.6000 | 1117.5649 | 12.9600 | 120.3480 |
| 58/60 | 52.89 | 94.31 | 1.8900 | 1.3100 | 3.5721 | 1.7161 | 2.4759 |
| 58/61 | -614.90 | 99.19 | -665.9000 | 6.1900 | 443422.8100 | 38.3161 | -4121.9210 |
| 58/62 | 62.45 | 97.72 | 11.4500 | 4.7200 | 131.1025 | 22.2784 | 54.0440 |
| 58/63 | 85.86 | 85.77 | 34.8600 | -7.2300 | 1215.2196 | 52.2729 | -252.0378 |
| 58/64 | 22.60 | 83.70 | -28.4000 | -9.3000 | 806.5600 | 86.4900 | 264.1200 |
|  |  |  | -612.6700 | -0.7100 | 446696.8291 | 214.0335 | -3932.9709 |
|  | 51.00 | 93.00 |  |  |  |  |  |

| n | 6.0000 |  | -4005.4702 |
|---|---|---|---|
| Edx | -612.6700 |  | 619.7871 |
| Edy | -0.7100 |  | 14.6270 |
| Edxdy | -3932.9709 | r | -0.4418 |
| Edx2 | 446696.8291 | R2 | 0.1952 |
| Edy2 | 214.0335 | PE | 0.2216 |
| Edx Edy/n | 72.4993 | 6X PE | 1.3297 |
| (Edx)2/n | 62560.7548 |  |  |
| (Edy)2/n | 0.0840 |  |  |
| r | -0.4418 |  |  |

## Calculation of Correlation Co-efficient Between the ROE and Debt Ratio for Yeti

|  | ROE | Debt Ratio | dx | dy |  |  |  |
|---|---|---|---|---|---|---|---|
|  | X | Y | X-A' | Y-A' | dx2 | dy2 | dxdy |
| 58/59 | 6.41 | 77.77 | 5.4100 | 7.7700 | 29.2681 | 60.3729 | 42.0357 |
| 58/60 | -10.57 | 68.10 | -11.5700 | -1.9000 | 133.8649 | 3.6100 | 21.9830 |
| 58/61 | -4.90 | 66.54 | -5.9000 | -3.4600 | 34.8100 | 11.9716 | 20.4140 |
| 58/62 | -4.26 | 68.56 | -5.2600 | -1.4400 | 27.6676 | 2.0736 | 7.5744 |
| 58/63 | 5.84 | 64.44 | 4.8400 | -5.5600 | 23.4256 | 30.9136 | -26.9104 |
| 58/64 | 2.24 | 72.92 | 1.2400 | 2.9200 | 1.5376 | 8.5264 | 3.6208 |
|  |  |  | -11.2400 | -1.6700 | 250.5738 | 117.4681 | 68.7175 |
|  | 1.00 | 70.00 |  |  |  |  |  |

| n | 6.0000 |  | 65.5890 |
|---|---|---|---|
| Edx | -11.2400 |  | 15.1498 |
| Edy | -1.6700 |  | 10.8168 |
| Edxdy | 68.7175 | r | 0.4002 |
| Edx2 | 250.5738 | R2 | 0.1602 |
| Edy2 | 117.4681 | PE | 0.2313 |
| Edx Edy/n | 3.1285 | 6X PE | 1.3875 |
| (Edx)2/n | 21.0563 |  |  |
| (Edy)2/n | 0.4648 |  |  |
| r | 0.4002 |  |  |

# APPENDIX-14

Calculation of Correlation Co-efficient Between the ROE and Debt Equity Ratio
for Buddha

|  | ROE | Debt Equity | dx | dy |  |  |  |
|---|---|---|---|---|---|---|---|
|  | X | Y | X-A ' | Y-A ' | dx2 | dy2 | dxdy |
| 58/59 | 84.43 | 2550.31 | 33.4300 | -696.6900 | 1117.5649 | 485376.9561 | -23290.3467 |
| 58/60 | 52.89 | 1465.04 | 1.8900 | -1781.9600 | 3.5721 | 3175381.4416 | -3367.9044 |
| 58/61 | -614.90 | 10644.13 | -665.9000 | 7397.1300 | 443422.8100 | 54717532.2369 | -4925748.8670 |
| 58/62 | 62.45 | 3878.75 | 11.4500 | 631.7500 | 131.1025 | 399108.0625 | 7233.5375 |
| 58/63 | 85.86 | 508.73 | 34.8600 | -2738.2700 | 1215.2196 | 7498122.5929 | -95456.0922 |
| 58/64 | 22.60 | 433.47 | -28.4000 | -2813.5300 | 806.5600 | 7915951.0609 | 79904.2520 |
|  |  |  | -612.6700 | -1.5700 | 446696.8291 | 74191472.3509 | -4960725.4208 |

51.00     3247.00

| n | 6.0000 |  | -4960885.7361 |
|---|---|---|---|
| Edx | -612.6700 |  | 619.7871 |
| Edy | -1.5700 |  | 8613.4472 |
| Edxdy | -4960725.4208 | r | -0.9293 |
| Edx2 | 446696.8291 | R2 | 0.8635 |
| Edy2 | 74191472.3509 | PE | 0.0376 |
| Edx Edy/n | 160.3153 | 6X PE | 0.2255 |
| (Edx)2/n | 62560.7548 |  |  |
| (Edy)2/n | 0.4108 |  |  |
| r | -0.9293 |  |  |

Calculation of Correlation Co-efficient Between the ROE and Debt Equity Ratio
for Yeti

|  | ROE | Debt Equity | dx | dy |  |  |  |
|---|---|---|---|---|---|---|---|
|  | X | Y | X-A ' | Y-A ' | dx2 | dy2 | dxdy |
| 58/59 | 6.41 | 293.44 | 5.4100 | 223.4400 | 29.2681 | 49925.4336 | 1208.8104 |
| 58/60 | -10.57 | 186.38 | -11.5700 | 116.3800 | 133.8649 | 13544.3044 | -1346.5166 |
| 58/61 | -4.90 | 99.95 | -5.9000 | 29.9500 | 34.8100 | 897.0025 | -176.7050 |
| 58/62 | -4.26 | 124.08 | -5.2600 | 54.0800 | 27.6676 | 2924.6464 | -284.4608 |
| 58/63 | 5.84 | 77.08 | 4.8400 | 7.0800 | 23.4256 | 50.1264 | 34.2672 |
| 58/64 | 2.24 | 107.59 | 1.2400 | 37.5900 | 1.5376 | 1413.0081 | 46.6116 |
|  |  |  | -11.2400 | 468.5200 | 250.5738 | 68754.5214 | -517.9932 |

1.00     70.00

| n | 6.0000 |  | 359.7009 |
|---|---|---|---|
| Edx | -11.2400 |  | 15.1498 |
| Edy | 468.5200 |  | 179.3582 |
| Edxdy | -517.9932 | r | 0.1324 |
| Edx2 | 250.5738 | R2 | 0.0175 |
| Edy2 | 68754.5214 | PE | 0.2705 |
| Edx Edy/n | -877.6941 | 6X PE | 1.6232 |
| (Edx)2/n | 21.0563 |  |  |
| (Edy)2/n | 36585.1651 |  |  |

| r | 0.1324 |
|---|---|

# APPENDIX-15

Calculation of Correlation Co-efficient Between the Net Profit and Total Debts for Buddha

|       | TD      | NP      | dx      | dy      |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | X       | Y       | X-A'    | Y-A'    | dx2     | dy2     | dxdy    |
| 58/59 | 10.2498 | 0.3042  | -3.7502 | -0.6958 | 14.0641 | 0.4842  | 2.6095  |
| 58/60 | 14.9566 | 0.4775  | 0.9566  | -0.5225 | 0.9152  | 0.2730  | -0.4998 |
| 58/61 | 15.4300 | -0.7765 | 1.4300  | -1.7765 | 2.0449  | 3.1559  | -2.5404 |
| 58/62 | 14.4428 | 0.2100  | 0.4428  | -0.7900 | 0.1961  | 0.6241  | -0.3498 |
| 58/63 | 14.3298 | 2.0413  | 0.3298  | 1.0413  | 0.1088  | 1.0843  | 0.3434  |
| 58/64 | 12.7839 | 0.5627  | -1.2161 | -0.4373 | 1.4788  | 0.1912  | 0.5318  |
|       |         |         | **-1.8070** | **-3.1808** | **18.8079** | **5.8127** | **0.0947** |

14.0000   1.0000

| n        | 6.0000  |       | -0.8632 |
|----------|---------|-------|---------|
| Edx      | -1.8070 |       | 4.2736  |
| Edy      | -3.1808 |       | 2.0314  |
| Edxdy    | 0.0947  | **r** | **-0.0994** |
| Edx2     | 18.8079 | **PE** | **0.2726** |
| Edy2     | 5.8127  | **6X PE** | **1.6358** |
| Edx Edy/n | 0.9579 |       |         |
| (Edx)2/n | 0.5442  |       | 0.0099  |
| (Edy)2/n | 1.6862  |       |         |
| r        | -0.0994 |       |         |

Calculation of Correlation Co-efficient Between the Net Profit and Total Debts for Yeti

|       | TD     | NP      | dx      | dy      |         |         |         |
|-------|--------|---------|---------|---------|---------|---------|---------|
|       | X      | Y       | X-A'    | Y-A'    | dx2     | dy2     | dxdy    |
| 58/59 | 2.4900 | 0.0456  | -0.5100 | -0.9544 | 0.2601  | 0.9108  | 0.4867  |
| 58/60 | 2.3328 | -0.1190 | -0.6672 | -1.1190 | 0.4452  | 1.2522  | 0.7466  |
| 58/61 | 2.0714 | -0.0510 | -0.9286 | -1.0510 | 0.8624  | 1.1047  | 0.9760  |
| 58/62 | 2.1785 | -0.0425 | -0.8215 | -1.0425 | 0.6749  | 1.0869  | 0.8565  |
| 58/63 | 2.7682 | 0.0893  | -0.2318 | -0.9107 | 0.0537  | 0.8295  | 0.2111  |
| 58/64 | 3.7807 | 0.0350  | 0.7807  | -0.9650 | 0.6095  | 0.9311  | -0.7534 |
|       |        |         | **-2.3785** | **-6.0427** | **2.9059** | **6.1153** | **2.5237** |

3.0000   1.0000

| n        | 6.0000  |       | 0.1283  |
|----------|---------|-------|---------|
| Edx      | -2.3785 |       | 1.4011  |
| Edy      | -6.0427 |       | 0.1719  |
| Edxdy    | 2.5237  | **r** | **0.5325** |
| Edx2     | 2.9059  | **PE** | **0.1973** |
| Edy2     | 6.1153  | **6X PE** | **1.1838** |
| Edx Edy/n | 2.3955 |       |         |
| (Edx)2/n | 0.9429  |       | 0.2835  |
| (Edy)2/n | 6.0857  |       |         |
| r        | 0.5325  |       |         |