CHAPTER - I

INTRODUCTION

1.1 Background of the Study

Nepal is the beautiful transit country between India and Chine, being itself as a very potential opportunity it has situated in lap of Himalayas, Nepal is located in between the latitude 26° 22°N to 30° 27' North and longitude 80° 40' E to 88°12' East an elevation 90 to 8848 m. The country is bordering between the two most populous countries of the world, India in the east, west and south and China in north.

Nepal is the land locked country and home place natural beauty with traces of artifacts Nepal is one of the least developed countries in the world. More than 80% of the total people are still in the rural areas and most of them are deprived from he minimum requirement of human livelihood. In Nepal still 47% of people are under the line of poverty and average life expectancy of Nepalese people is 62.2 Years.

Geographically, the country is divided in three Regions Mountain, Hill and Tarai accommodation 7.3, 44.3 and 48.4 percent of the population respectively. Based on area of district these regions constitute 35, 43 and 23 percent of total land area. There are 5 development regions and 75 administrative districts. Districts are further divided into smaller units, called village development committee (VDC) and municipality.

Currently there are 3915 VDC's and 58 Municipalities in the country. Each VDC id composed of 9 words, Municipality words range from 9 to 35, and Kathmandu is the capital city.

There are members of peaks, rivers and lakes in the country. Major peaks are the Mount Everest (8848 m.). Mt. kanchanjangha the third highest peak of the world and the second

highest in the country (8586 m.). Mt Lhotse (8516 m.), Mt. Makalu (8463 m.) , Mt. Choyou (8201 m.), Mt. Dhawlaghiri (8167 m.), Mt. manaslu (8163 m.), Mt.Annapurna (8091 m.), Mt. Gaurishankar (7134 m.), Mt. Machhapuchhre (6996 m.) and many other big or small gracious peak. (Nepal in figure 2006, CBS).

Economic growth is the most ceuricious part for the country, for its sustainable development from the grass route. Nepal is one of the least developed countries in the world. It is an agricultural and landlocked country bounded on the north by the Tibetan Autonomous Region in China and on the east, south, and west by India. Its total area is about 147181 sq. km (56,827 sq miles). According to the annul report of National Planning Commission, still 35% of Nepalese people are below the line of poverty. Majority of the people still depend upon the agriculture. At the same time, higher percentage of illiteracy can be found among the people. Geographically, Nepal is divided into mountain, hill, inner plain and plain area. Politically, it is divided into five development regions, fourteen zones and seventy five districts. The population of Nepal according to the 2001 census is about 23,200,000. The per capita income of the average Nepalese is USD 311, according to the F/Y 2005/06. Nepal is poorly developed in the entire sectors; the poor economic condition of the country is due to low level of income, low education, lack of awareness etc. economic status is growing very slowly. The unstable political environment and rapidly growing terrorism also affects directly in the development of the country. However there are many more alternatives like developing roads, transport, electricity and tourism to support the economic growth of our country, it is being very slowly.

Nepal is a landlocked country surrounded by mountains and hills. About 17% of area lies in Terai region. Physically, Nepal is divided into three regions of the basis of geographic features. The Himalayan region consists of area ranging from 4887m to 8848m above the sea level; embraces eight earth’s tallest mountain peaks. These regions are least flexible. So there is sparse human habitant in this region and occupy only about 15% of the total area of the country. The Terai region consists of nearly 17 % of the total area. About 40%

of this region is under cultivation. Population in this region constitutes 46.7 of the total population of the country. The hilly region covers about 68% of the total area. Only 10% area of the region is cultivated. Out of the total population 46% of population constitutes in this region (Agrawal, 2058: 85).

Due to internal conflicts and turbulent political situation, Nepali economy has remained unstable for the last few years. The fiscal year 2005/2006 was as unstable and challenging as the previous years from the viewpoint of security and development. The incidents that took place during these years directly affected the economy of the country and the GDP increased marginally during the review period. After the recent political change and the conclusion the Peace Accord, there is a strong likelihood that the economic activities will gain momentum. As a result, expansion and diversification of new and big industrial projects, sustainable increase in the number of tourist arrivals and increase in business transactions have occurred. It is believed that a drastic change will occur in the economy of the country and a new Nepal will be formed.

No improvement was seen in the business activities in the fiscal year 2005/06 due to unsatisfactory level of productivity of agriculture owing to unfavorable weather, price hike in petroleum products and recession on trade and transport.

The growth rate of Nepali economy in the fiscal year 2005/06 is estimated to be 1.9%, which is 0.8% less than that of the fiscal year 2004/05. The GDP in agriculture and non-agriculture sector has grown by 1.7% and 2.8% respectively. These growth rates were 3% and 2.1% respectively in the previous fiscal year. The main causes of the decreases in the economic growth rate are the internal and external incidents, unfavorable weather, and excessive increase in the price of petroleum products and recession in development works.

It is estimated that the number of tourists visiting Nepal increased by 14.5% during the review period in comparison with the previous fiscal year. Thus, tourism sector has

started to show signs of improvement. Improvement has been seen in foreign employment sector this year. The number of people going abroad for foreign employment has grown by 29%.

In the fiscal year 2005/06, the growth rate in the broad money and narrow money was 15.6% and 13.9% respectively. The time deposits increased by 16.4% during the period as compared to only 9.2% last year.

The revised estimate o the total government expenditure for the fiscal year 2005/06 is Rs. 101 billion of which 63.5% is in the current expenditure and 20.1% in the capital expenditure. Revenue, the main source of government income, increased by 12.5% last year, but this year it increased by 3.1% only. The budget deficit is increased by 32.9% as compared to 12.9% last year.

Due to the reasons like the continual price hike in petroleum products and the decrease of agriculture sector owing to unfavorable weather during the review year, it is estimated that the rate of price hike will be 8% in average as compared to 4.5% in the previous fiscal year. There was a fall even in foreign trade during the review period. In the fiscal year 2005/06 exports increased by 4.2% only as compared to 8.9% in the previous fiscal year. However, exports increased by 17.1% in the fiscal year 2005/06, whereas in the fiscal year 2004/05 it was 9.7% only. Excessive price hike in petroleum products was instrumental in bringing this gap in the foreign trade.

It is estimated that the size of the total foreign exchange reverse in the banking system by the end of the fiscal year 2005/06 was Rs. 165 billion, an increase of 27% over one year ago (MBL, Annual Report, 2005/06: 2).

Nepal has a dualistic economy. It is majority dominated by agriculture. It is accounted for 40% of national gross domestic product (GDP), providing employment to 81.2% of the economically active population of the country in 1991. But in recent years the non-

agriculture sector is contributing more in GDP than the agricultural sector. Public & private manufacturing industries were established with the objective of balanced regional development, public welfare, employment generation, import substitution and to export promotion for dissemination of the development activities according to national priority. This implies that Nepal on the one hand has market economy and substance economy and subsistence economy on the other hand.

Financial institutions include banks, finance companies, co-operative organizations and insurance companies. All of them do contribute something to the economy of the country. Financial institutions play a vital role in the proper functioning of an economy. These institutions act as intermediary between the individuals who lend and who borrow. These institutions accept deposits and in return lend it to people who are in need of financial resources. These institutions make the flow of investment easier. So we cannot deny the role of a bank for the development of the country. It pulls the funds scattered in the economy and mobilizes them to the productive sector. But these institutions inherent a large amount of risk, which cannot be denied. If a bank behaves irresponsibility, the costs borne by the economy are enormous.

Bank is an institution that deals in money and its substitute and also provides other financial services. Bank accepts and makes loan as well as derives a profit from differences in interest rates paid and charges respectively.

The term “Bank” is originated from the Latin word “Bancus” which refers to the bench on which the banker would keep its money and his/her records. Some persons trace its origin to the French word “Banque” and the Italian word “Banca” which means a bench for keeping, lending and exchanging of money or coins in the market place by moneylenders and moneychangers.

The first bank called the “Bank of Venice” was established in Venice a city and sea-port in north-east Italy, in 1157 to finance the monarch in his wars. But actually, it was not a

bank in broad sense but simply an office for the transfer of the public debt. Many of the early banks dealt primarily in coin and bullion, much of their business being money changing and the supplying of foreign and domestic coin of the correct weight and fineness. As a first central bank, "The Bank of England" was incorporated on July 27, 1694, as a private joint-stock association, with a capital of £1.2 million. In return for the loan of its entire capital to the government it received the right to issue notes and a monopoly on corporate banking in England.

According to Chamber's Twentieth Century Dictionary – "Bank is an institution for keeping, lending and exchanging etc. of money".

According to the Shorter Oxford Dictionary – "Bank is established for the custody of money received from on behalf of its customer its essential duty is to pay their draft in it, its profit arise from its use of the money left unemployed by them".

Indian Banking Regulation 1949 Sec 5(b) defines bank as "Accepting for the purpose of lending or investment of deposit from the public, repayable on demand or otherwise, and withdrawal by cheque, draft, order or otherwise".

According to above definition, the bank accepts deposit with a view of lending or investing and insisting that money deposits are withdrawn by cheque, draft and order or otherwise. Although the above act defines the banking in broad sense, at present time banking is such a vague term. It does a lot more than deposits and credit, remitting of money, letter of credit (L.C.), guarantee, issue of money, controlling monetary activities of country etc.

The kingdom of Nepal lies along the southern slopes of Himalayas, though the modern banking institution has a very recent origin in Nepal. Therefore the term bank is new thing for Nepalese economy. Modern banking system makes the economy always alive

and smart to run and maintain day-to-day commercial, economic and banking transaction. In short, banking transaction helps a country to develop its economy swiftly.

Banking sector plays an important role in the economic development of the country. Commercial banks are one of the vital aspects of this sector, which deals in the process of channel zing the available resources in the needed sectors. It is the intermediary between the deficit and surpluses of financial resources. Financial system contains two components viz. depository financial institution and non-depository financial institution. Commercial banks and finance companies (in Nepalese context) are the example of depository financial institutions whereas employee provident fund, development banks, insurance companies etc. are the examples of non-depository financial institutions. All the economic activities are directly or indirectly channeled through these banks. People keep their surplus money as deposits in the banks and hence banks can provide such funds to finance the industrial activities the form of loans and advances.

The present structure of financial institutions is based on the foundation laid by commercial banks. The commercial banks command the highest share of national resources, which must be utilized for the rapid economic development of the company. Realizing the importance of commercial bank, Dr. Pant has remarked, “Indeed no institution has greater or closer interest in well established, expanding and successful industry and agriculture than a commercial bank” (Pant, 1971:125).

Commercial banks are stated as a key component of the financial institution. They can play vital role in accelerating the pace of economic development of the country through the mobilization of the scattered savings and channeling it in the real sector of the economy. Besides that, commercial banks grant business loan on the basis of proposal and also grant traditional loan with the guarantee of valuables i.e. gold and silvers.

In order to fulfill the demand and need of modern banking transactions and to remove all the inconveniences, in past time Nepal Bank Limited was established on 30th Kartik 1994 B.S. as the first commercial bank in the country. Before the establishment of NBL, there

was hardly any source other than the organized money market to meet the financial needs of people. As there was political change in 2007 B.S., solid and important events took place in 2012 B.S. because of establishment of Nepal Rastra Bank as a control bank. The Rastriya Banijya Bank (RBB) which is fully state-owned came into existence on 22nd Magh 2022 B.S. under RBB Act 2021 with the explicit objectives banking facilities to areas or regions of the country not covered by Nepal Bank Ltd. and making RBB's activities more development oriented rather than profit oriented. Various branches in various times were opened by these two banks. And after two decades of establishment of RBB, Joint venture bank Nabil bank was established in 2040 B.S. Then after commercial banks were established with joint stock and increasing tremendously. However, we can say that the development of commercial banks in 6 decades history is very much satisfactory.

Witnessing a significant development in the capital market, His Majesty's Government initiated to reform capital markets by converting Securities Exchange Center into Nepal Stock Exchange (NEPSE) in 1993 (2049 BS). NEPSE is a not-profit organization operated under Securities Exchange Act, 1983 with the basic objective of imparting free marketability and liquidity to the government and corporate securities by facilitating transactions in its trading floor through member market intermediaries such as brokers, market makers etc. NEPSE opened its trading floor on 13th January 1994. Then after it started its organized open-outcry system in its floor. However, HMG amended Security Exchange Act, 1983 for the second time on Jan 30, 1997 and established the Securities Board of Nepal (SEBON) as an apex regulatory body as it widened the horizon of SEBON by bringing market intermediaries directly under it's jurisdiction and also made it mandatory for the corporate bodies to report to SEBON annually as well as semi-annually regarding their performance. Since its establishment, SEBON has been concentrating its efforts to improve the legal and statutory frameworks which are the basis for the healthy development of the capital market. As per the security ordinance of 2005, the major objectives of SEBON are to regulate issue and trading of securities and market intermediaries, promote market development and protect investors' right. Among

the many functions of SEBON, one of the most important functions is to comment on the prospects of issuing companies. As per the provision of Security Exchange Act, 1983 and Company Act, 1997, companies issuing their securities to the public should first get their prospectus approved from Company Registrar's Office (CRO) and then apply to SEBON along with the approved prospectus to get issue approval. In this context CRO and SEBON were cooperating with each other in order to make the prospectus more informative and reliable.

The prospectus include the short description about the introduction of the company, objectives of the company, existing shareholders with the number of share they possess, name of the board of directors. It also includes last three years' income statement, net worth and other important financial statement and also projected financial statement of coming three years'. On the basis of all these financial statement SEBON analyses the past performance of the company. It also tests the reality of the projected financial performance of the company. After making all these analysis, SEBON either gives approval for the issuance of the share to public or not.

There are 23 commercial banks in the country licensed by NRB as of mid July 2007. At the time of expanding the branches of commercial banks, emphasis was given to the deposit mobilization and credit disbursement. However, the importance of the quality-credit could not be recognized and the banking sector failed to witness the expected developments. Subsequently, the banking sector faced the problem of bad debts, overdue loans, accrued interest, accumulation of non-banking assets and excess liquidity in the banking system. In addition to these expected happenings, new challenges were added to the Nepalese banking sector due to the adverse developments in the domestic economy resulting from the deteriorating peace and security situation and continuous persistence of natural calamities inside the country on one hand and global recession primarily caused by international terrorism on the other. Viewing the need of structural is reform amidst these adverse implications. NRB recently issued directives to run commercial banks in a

healthy competitive manner to ensure the sustainable development of the overall banking system.

The term capital denotes the long-term funds of the firm. The long-term funds o the firms are financed by two major components, i.e., debt capital and equity capital. Debt capital includes long-term borrowings incurred by the firm. Equity capital consists long-term funds provided by the firm's owners. *The mix of long-term debt and equity maintained by the firm is called capital structure.* Capital structure shows, what percentage of the firm's capital is in equity and what percentage of firm's capital is in debt.

Capital structure is one of the most complex areas of financial decision making due to its inter-relationship with other financial decision variables. A financial manager must understand the firm's capital structure and its relationship to risk, return and value for attainment of its primary objective of wealth maximization.

Capital structure is very crucial part of the financial management as the various composition of debt and equity capital may impact differently on risk and rate of return to equity shareholders. The funds required to business enterprises are raised either through the ownership securities (i.e. equity shares and preference shares) and creditor shares (i.e. debentures or bonds). A business enterprise has to maintain proper mix of both the securities in a manner that the cost and the risk perception to the shareholders are minimized. The mix of different securities is portrayed by the firm's capital structure (Koirala, 1990:105).

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

Capital structure is considered as the 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

supply 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 in uncertain and there is probability that it may default in it's obligations to pay off it's interest ands principle. In the other hand, if a firm issues preference share, those shareholders have the priority in payment of dividend is fixed as the percentage of interest to debt, it is preferably paid off only after interest payment. Common shareholders are as 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 risks 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 concepts has important place in financial management theory. It is basically decision is concerned with shareholders wealth maximization. As capital 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 a financing mix, which maximizes shareholders wealth.

Machhapuchchhre Bank Limited was registered in 1998 as the first regional commercial bank to start banking business from the western region of Nepal with its head office in Pokhara. Today, with a paid up capital of above 820 million rupees, it is one of the full fledged commercial bank operating in Nepal; and it ranks in the topmost among the private commercial banks.

Machhapuchchhre Bank Limited is striving to facilitate its customer needs by delivering the best of services in combination with the state of the art technologies and best international practices.

Machhapuchchhre Bank Limited is the pioneer in introducing the latest technology in the banking industry in the country. It is the first bank to introduce centralized banking software named GLOBUS BANKING SOFTWARE developed by Temenos NV, Switzerland. The bank provides modern banking facilities such as Any Branch Banking, Internet Banking and Mobile Banking to its valued customers.

The bank in the last few years have really opened up with branches spread all around the country. At this stage, it has its Corporate Office in Kathmandu and branch offices in other parts of Kathmandu, Damauli, Bhairahawa, Birgunj, Banepa, and different parts of Pokhara in addition to the Head Office in Naya Bazar, Pokhara. A full-fledged banking branch is in operation in Jomsom located high up in the mountains too. The bank aims to serve the people of both the urban and rural areas. The bank intends to open many more branches in the coming years and have already envisaged the opening of 8 branches during the year 2007/08.

1.2 Focus of the study

Capital is the most important factor from beginning of the business organization. Due to lack of the capital, the business organization cannot operate regularly their daily activities. The success of business organization depends upon proper composition of debt equity in the capital structure. The proper composition of debt and equity help to generate high return to the business organization and help in long-term solvency.

Investors invest their funds in ownership securities or debt securities of the organization with the expectation of getting favourable return in the future. In absence of proper utilization of the capital it fails to meet their expectation and damages the creditworthiness o the organization and leads to fall the market value of the organization.

The banks are such business organization which deals with others money and the capital structure incase of the bank are very crucial. This study mainly focuses on the capital structure management of MBL.

1.3 Statement of the problem

Today the functions of commercial bank is not only confined to do its usual functions but also to do something for the development of the economy. The development of the country depends upon the financial position in this regard; the commercial bank collects the scattered resources from different sectors and mobilizes them in productive sectors.

Commercial banks are very important for the development of a country. They channel funds from saver unit and productivity in the country. At present, there are altogether 25 commercial banks operating in the country with heavy competitions. The banks are introducing various new technologies and schemers to lure to customers. Today most of the banks have introduced E-banking services, ATM, Debit and Credit Cards, Any Branch Banking and Mobile Banking systems. The banking business is one of the fastest growing businesses in the country.

The study of capital structure for banking business is very essential since the business is operated with outsider's funds. He capital structure decision is important for long run profitability and solvency of the business. Generally, high debt-equity ratio is concerned to be disadvantageous from owner's point of view especially when the firm is earning higher rate of return on the capital employed.

The study of the capital structure in banking business is very important as it deals with other money. The capital structure decision also impact upon long run profitability and solvency of the firm. The capital structure decision is important for long run profitability and solvency of business. Generally high debt-equity ratio is considered to be disadvantageous from owner's point of view especially when the firm is earning higher

rate of return o the capital employed. The financial manager must be able to maintain appropriate proportion of debt-equity to avoid financial risk. The proportion of debt in the banking business is obviously larger than in any other business. The banks accumulate deposit from various unit groups paying certain percent interest and mobilize in productive sector and earn high return. The banks are considered as mechanism to canalize the funds from the small saver to the productive sectors. The study of capital structure, in case of banking business very important of liquidation of one bank creates contagion effect over the economy of the country. In this study, debt is considered to be cost bearing liabilities (i.e. saving deposit, fixed, call deposit and short term loan).

Under new policy of commercial banks, NRB directed the entire bank to increase the capital to Rs. 1 billion by mid July 2009 through minimum 10 percent paid up capital increment every year effective from mid may 2002. So, the banks are being highly sensitive business. NRB reforms their policy from time in favours of depositors and owners of the companies.

The problems area for the study is reflected in the following research questions:

- Does the capital structure affect the cost of capital?
- Is the sample bank capable to enhance the earning by its capital structure?
- What is the relation between capital structure, profitability and EPS of the bank?

1.4 Objective of the study

The major objectives of the study are to evaluate the capital structure of Machhapuchchhre Bank Ltd., Kathmandu Office. It is the study about the capital structure & profitability of MBL by taking the financial data. It tries to analyze the overall capital structure & profitability. The specific objectives are as follows:

- To analyze the debt serving capacity of MBL.
- To evaluate whether the capital structure affects the cost of equity of MBL.
- To analyze the relationship between capital structure and profitability, cost of capital, EPS of MBL.

- To identify problem in the capital structure of the company.
- To suggest and recommend on the basis of findings.

1.5 Significance of the study

The capital structure affects on the profitability and long-term financial position of the organization. The earning nature of the organization helps to adopt appropriate mix of debt and equity in the capital structure. On account of this significance, the capital structure and profitability of the organization is justified as a specific matter for the study.

The study helps to analyze the relation between the capital structure and performance of the organization and leads to design appropriate capital structure. This helps also the researcher, creditors, investors and stockholders to analyze the financial position of the organization and they may know the impacts if capital structure on the profitability of the organization.

1.6 Limitation of the study

This study has been made for the partial fulfillment of the requirement for the Master's Degree in Business Studies (M.B.S.) but not a comprehensive study. The study has been conducted with certain limitations. The time is the one factor of limitations. Besides it, the scope of the study is limited within the bank. Some more limitations are follows:

i) The study analyzes capital structure and profitability of a particular bank.

ii) The whole study is based on secondary data.

iii) Difficult to collect all required data, due to business secrecy.

iv) The study is fully based on the student's limited financial resources within a limited period.

v) Variation of data in itself is also found when comparing with different sources.

vi) The study is not a final study of the subject.

1.7 Organization of the study

The study has been organized into five chapters. The title of each of these chapters is as follows:

CHAPTER I Introduction

Introduction chapter comprises background of the study, focus of the study, statement of problem, objectives of the study, significance of the study and limitation of the study.

CHAPTER II Review of literature

Review of literature chapter comprises conceptual review of the capital structure and review of the past thesis.

CHAPTER III Research methodology

Research methodology deals with the method of investigation and includes research design, nature of the data, data collection procedure and tools used.

CHAPTER IV Presentation and analysis of data and major findings

Data presentation and analysis of data deal with different statistical and the financial tools that used in the analysis of the data.

CHAPTER V Summary, conclusion and recommendation

Last chapter includes the *summary, findings* of the study and *recommendation*.

CHAPTER - II
REVIEW OF LITERATURE

This chapter has been provided into three parts. Part one presents theoretical framework, part two includes the empirical works on capital structure and profitability management as well as review of Nepalese study on the topic, part three provides the conclusion and remarks.

Before entering into any research, it is necessary to be clear about its theoretical aspects. This chapter includes a discussion on the theoretical framework and major empirical works. The theoretical analysis and review of literature conducted in this chapter provides the framework, with the help of which this study has been accomplished. This chapter also includes the conceptual framework of the study to make the basic knowledge for the study, which is also, be the foundation of the study

Theoretical framework of the Study.

2.1 General concept of Capital Structure

Capital, collective term for a body of goods and monies from which future income can be derived. Generally, consumer goods and monies spent for present needs and personal enjoyment are not included in the definition or economic theory of capital. Thus, a business regards its land, buildings, equipment, inventory, and raw materials, as well as stocks, bonds, and bank balances available, as capital. Homes, furnishings, cars, and other goods that are consumed for personal enjoyment (or the money set aside for purchasing such goods) are not considered capital in the traditional sense.

In the more precise usage of accounting, capital is defined as the stock of property owned by an individual or corporation at a given time, as distinguished from the income derived from that property during a given period. A business firm accordingly has a capital account (frequently called a balance sheet), which reports the assets of the firm at a

specified time, and an income account, which reckons the flow of goods and of claims against goods during a specified period.

Capital is a scare sources and much essential to maintain smooth operation of any firm. The available capital and financial sources should be efficiently that could generate maximum return.

Capital Structure is considered as the 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 supply of capital, they hold greater degree of risk and hence have claims over firm's assets and cash flow is uncertain and there is probability that it may default in it's obligations to pay off it's interest and principal. In the other hand, if the firm issues preference share, those shareholders 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 return of expected by investors according to their risk is cost of capital. Therefore a firm should try to obtain necessary fund at lowest cost. The 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.

2.2 Conceptual basis of Capital Structure

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 a financing mix, which maximizes shareholders wealth.

The term capital denotes the long-term funds of the firm. The long-term funds o the firms are financed by two major components, i.e., debt capital and equity capital. Debt capital includes long-term borrowings incurred by the firm. Equity capital consist long-term funds provided by the firm's owners. *The mix of long-term debt and equity maintained by the firm is called capital structure.* Capital structure shows, what percentage of the firm's capital is in equity and what percentage of firm's capital is in debt. Capital structure is one of the most complex areas of financial decision making due to its inter-relationship with other financial decision variables. A financial manager must understand the firm's capital structure and its relationship to risk, return and value for attainment of its primary objective of wealth maximization. (V.K. Saxena & C.D. Vashist, 2002: B.5.1)

A financial manager must strive to obtain the best financing mix or optimum capital structure for his/her firm. The firm's capital structure is optimum when the market value of share is maximized. The use of debt affects the return and risks of shareholders; this will increase the return on equity but also risk at the same time. When the shareholders' return is maximized with the minimum risk, the market value per share will be maximized and firm's capital structure would be optimum (Van Horne, 1983: 10).
Capital structure is permanent financing of the firm represented primarily by long-term debt, preferred stock and common stock, but excluding all short term credit (Weston & Brigham, 1982: 555).

Both debt and equity are used in most large corporation. The choice of the amount of debt and equity is made after a comparison of certain characteristics of each kind of securities, of interest factor related to the firm's and of external factors can affect the firm (Hampton, 1986: 42).

The term of capital structure is used to represent the proportionate relationship between debt and equity. The debt and equity mix of a firm is called capital structure. The capital structure decision is a significant financial decision since it affects the shareholders' return, risk and market value of shares (Pandey, 1992:663).

The importance of an appropriate capital structure is the obvious. There is a viewpoint that strongly supports the close relationship between leverage and value of firm. There is an equally strong body of opinion, which believes that financing mix or the combination of debt and equity has no impact on the shareholders' wealth and the decision on financial structure is irrelevant. In other words, there is nothing such as optimum capital structure (Khan & Jain, 1999: 11.1).

Under the assumption that a firm will attempt to maximize the run market value of ownership shares; there exists an optimum capital structure for each individual firm. It varies in different industries because the typical assets structure and stability of earning, which determine inherent risks vary for different type of production (Kulkarni, 1983: 368).

The concern of the financial decision is with the financing mix or capital or leverage. The financing decision of a firm relates to the choice of the portion of these sources to finance the investment requirement. There are two aspects of the financing decisions. First, the theory of capital structure which shows the theoretical relationship between the employment of debt and the return to the shareholders. The use of debt implies a higher return to the shareholders and also the financial risk. A proper balance between debt and equity to ensure a trade off between risk and return to the shareholders are necessary. A capital structure with reasonable proportion of debt and equity capital is called optimum capital structure (Khan & Jain, 1984: 10).

Capital structure of a company refers to the composition or make-up of its capitalization and it includes all long-term capital resources, viz. loans, reserves, shares and bonds (Charles, 1960: 72).

2.3 Assumptions of Capital Structure (Khan & Jain, 1999: 11.1-11.2)

Capital structure theory has some assumptions which are as follows:

a) There are only two sources of funds used by a firm: Debt and Ordinary Shares.
b) There are no corporate taxes (this assumption is removed later)
c) The dividend payout ratio is 100% i.e. the total earnings are paid out as cash dividend to the shareholders and there is no retained.
d) The firm's total assets are given and do not change. The investment decisions are in other words, assumed constant.
e) The firm's total financing remains constant. The firm can change its degree of leverage either by selling shares and use the proceeds to retire debentures or by raising more debt and reduce the equity capital.
f) The operating profits (EBIT) are not effect to grow.
g) All investors are assumed to have the same subjective probability of the future expected EBIT for a given firm.
h) The firm's business risk is constant over the time and it assumed to the independent of its capital structure and financial risk.
i) Perpetual life of the firm.

2.4 Classification of Capital Structure (Saxena & Vashist, 2002: B.5.1-5.2)

There are different classifications of capital structure. These are mentioned below:

1. Simple Capital Structure

(i)

Balance Sheet as at…….

Equity Share Capital	Rs.2,00,000	Fixed Assets	Rs.1,20,000
		Current Assets	80,000
	2,00,000		2,00,000

(ii)

Balance Sheet as at…….

Equity Share Capital	Rs.1,60,000	Fixed Assets	Rs.1,20,000
Retained Earnings	40,000	Current Assets	80,000
	2,00,000		2,00,000

2. Complex Capital Structure

(i)

Balance Sheet as at…….

Equity Share Capital	Rs.1,80,000	Fixed Assets	Rs.1,20,000
Current Liabilities	20,000	Current Assets	80,000
	2,00,000		2,00,000

(ii)

Balance Sheet as at…….

Equity Share Capital	Rs.1,40,000	Fixed Assets	Rs.1,20,000
Preference Share Capital	40,000	Current Assets	80,000
Retained Earnings	20,000		
	2,00,000		2,00,000

(iii)

Balance Sheet as at…….

Equity Share Capital	Rs.80,000	Fixed Assets	Rs.1,20,000
Preference Share Capital	40,000	Current Assets	80,000
Retained Earnings	20,000		
Debentures and long term loan	60,000		
	2,00,000		2,00,000

(iv) Mostly short-term liabilities are omitted in considering capital structure, but some authors (for example, J.R. Lindsay and A.W. Samtez) have held the view that considering the importance of bank credit, etc. it is better to include all liabilities (long-term and short-term) in consideration of capital structure. The view is not common view. If this view is also considered, the capital structure will be shown as follows:

Balance Sheet as at…….

Equity Share Capital	Rs.80,000	Fixed Assets	Rs.1,20,000
Preference Share Capital	40,000	Current Assets	80,000
Retained Earnings	20,000		
Debentures and long term loan	40,000		
Current Liabilities	20,000		
	2,00,000		2,00,000

Normally, current liabilities are considered only in working capital analysis and not in the analysis of sources of long-term funds.

3. Classification based on sources

Under this category long-term funds can be financed from (i) Internal capital, and (ii) External capital. Internal capital includes bonus issue, capital reserve and reserves and

surplus. External capital refers to share capital, share premium, forfeited share, debentures and long-term liabilities.

4. Classification based on ownership

(i) Ownership capital comprises of equity share capital and retained earnings.
(i) Debt capital includes debentures and long-term loans.

Preference share capital is treated both as part of ownership capital or as part of debt capital. It should be grouped based on the view taken by the management.

5. Classification based on cost behaviour

Classification is also attempted based on cost behaviour of various sources of capital, i.e., fixed cost capital and variable cost capital.

Fixed cost capital includes preference share capital, debentures, long-term debt.
Variable cost capital includes equity share capital.

2.5 Theories of Capital Structure

2.5.1 Net Income (NI) Approach

Two capital structure theories, i.e., the net income approach and the net operating income approach, were propounded by David Durand. According to NI approach, the firm can increase its total valuation (V), and lower its cost of capital (K_o) when it increases the degree of leverage (D/V). The optimum capital structure can be attained when the cost of capital of a firm is the lowest and value of the firm is the greatest. The main feature of the NI approach is that a firm can lower its cost of capital continuously by use of debt capital and thus increase its total valuation. Reduction in the cost of capital (i.e., more and more use of debt and increase in the value of the firm) is possible when:

i) Cost of debt (K_d) is less than cost of equity (K_e) and it remains constant;

ii) The firm does not become more risky in the minds of investors and creditors consequent upon increase in the degree of leverage (Saxena & Vashist, 2002: B.5.3).

The financial leverage according to the NI approach is an important variable in the capital structure decision of the firm. With the judicious mixture of debt and equity, a firm can evolve an optimum capital structure which will be the on, at which value of the firm is the highest and overall cost of capital the lowest. At that structure the market price per share would be maximum. If the firm uses no debt be equal to the equity-capitalization rate. The weighted average cost of capital will decline and will approach the cost of debt as the degree of leverage reaches on (Pandey, 1984: 412).

According to this approach, there is optimal capital structure where the market price per share of stock is maximum. The significances of this approach are that a firm can lower its cost of capital continually and increase its total valuation by the use of debt funds. This will increase use of leverage overall cost of capital declines and total value of the firm rises (Khan & Jain, 1984: 411).

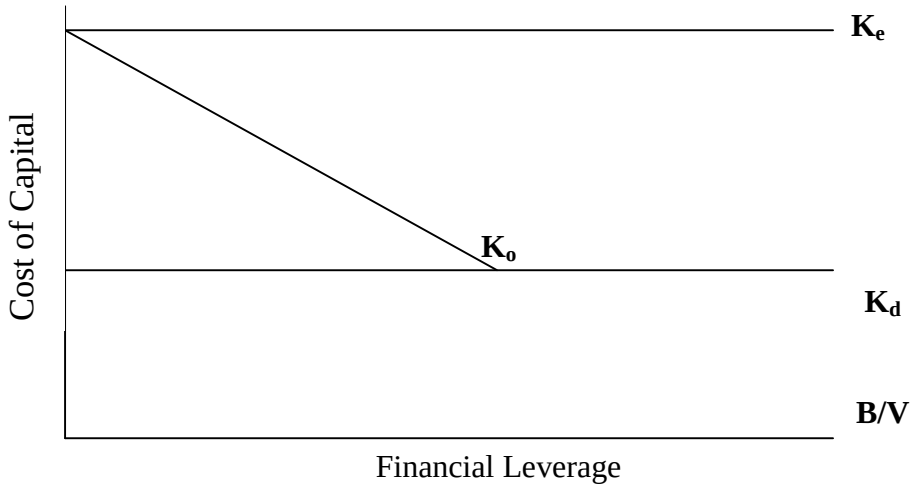


Figure. No. 1

Graphically, the effect on the firm's cost of capital and its total market value is shown in Figure No. 1. If cost of debt and cost of equity are constant as is assumed in the NI

approach, then the proportion of cheaper debt funds in capital structure increases, the cost of capital decreases. Thus, under the NI approach the firm can lower its cost of capital and raises its total market value through the addition of debt capital (Gitman and Pinches,1985: 710).

Assumption of Net Income (NI) Approach

NI approach is based on the following three assumptions:

a) The cost of debt is less the cost of equity.
b) The debt content does not change the risk perception of the investors, as a result the equity capitalization rate K_e and the debt capitalization rate K_d remain constant with change in leverage.
c) There are no corporate taxes. Therefore as firm increases its leverage by increasing its level of debt relatives to equity, the overall cost of capital declines (Saxena & Vashist, 2002:5.3).

As per NI approach, the value of the firm can be determined as under:

$$V = S + D$$

where V = Value of the firm;
S = Market value of equity;
D = Market value of debt.

Market value of debt can be determined as follows:

$$S = E/K_e$$

where S = Market value of equity;
E = Earnings available for equity shareholders;
K_e = Equity capitalization rate or cost of equity (Saxena & Vashist, 2002:5.3).

2.5.2 Net Operating Income (NOI) Approach

NOI approach was also advocated by David Durand. This approach is diametrically opposite to the net income approach. The essence of this approach is that the capital structure decision to the firm is irrelevant. Any change in leverage will not lead any change in the total value of the firm and the market price of shares, as the overall cost of capital is independent of the degree of leverage (Saxena & Vashist, 2002:5.5).

Assumption of Net Operating Approach (NOI) Approach

NOI approach is based on following assumptions:

a) Overall cost of capital (K_o) does not vary with leverage, i.e., it remains constant for all degree of leverage.
b) Both Earning Before Interest and Taxes (EBIT) and overall cost of capital (K_o) are constant and independent of leverage. Value (V) of the firm does not change as leverage is changed. The market capitalizes the value of the firm as a whole. The split between debt and equity is not important. The value of the firm is found out by capitalizing the net operating income (EBIT) at overall cost of capital (K_o). Thus:

$$V = \frac{EBIT}{K_o}$$

c) The value of equity (S) is a residual value, which is arrived at by subtracting the value of debt (D) from the constant of the firm (V), i.e.,

$$S = V - D$$

d) The cost of debt, i.e., K_d is a constant.

The cost of equity (K_e) is arrived at as follows:

$$K_e = \frac{EBIT - I^*}{S}$$

Where, I^* = Interest

The use of cheaper debt capital increases the risk to shareholders. This raises the cost of equity or capitalization rate.

The main point of NOI approach is that cost of equity (K_e) increases with increase in leverage, but the cost of debt (K_d), the weighted average cost of capital, K_e and total value of the firm V remain constant (Saxena & Vashist, 2002: 5.5).

Features of Net Operating Approach (NOI) Approach

⇒ Total market value of the firm (V) is obtained by capitalizing net operating income (EBIT) at the overall cost of capital (K_e), which is constant.

⇒ Total value of the stock (S) is found by subtracting the value if debt from total market value of the firm.

⇒ The cost of equity (EBIT - I)/S tends to rise in correspondence in the degree of leverage.

⇒ The overall cost of capital is an average of the cost of debt and equity.

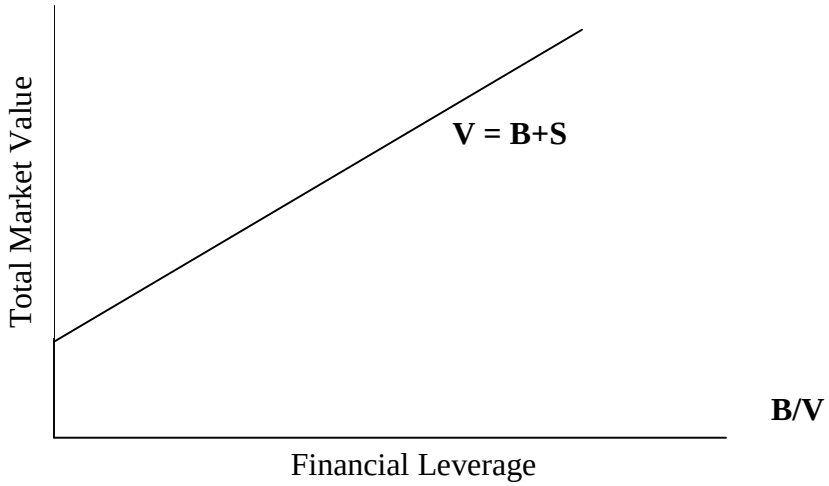


Figure. No. 2

Under the NOI approach, the capital structure selected is a “more detail” since the value of the firm is independent of the firm’s capital structure. If the firm increases its uses of

financial leverage more debt directly offset by an increase in the cost of equity capital. This relationship as presented in Figure No. 2 indicates that as more debt is added to the firm's capital structure, the cost of equity capital rapidly rises. According to NOI approach, the cost of debt has two parts. The explicit cost which is represented by the interest rate, and an implicit or hidden cost, which result from the increased cost of equity attribute to increase in the degree of financial leverage. At extreme degree of financial leverage, this hidden cost becomes very high. Hence, the firm's cost of capital and its total market value is not influenced by the use of additional "cheap" debt funds (Gitman & Pinches,1985: 792).

2.5.3 Modigliani – Miller's (M-M) Hypothesis

Franco Modigliani and Meron H. Miller (M-M) developed a hypothesis, which fundamentally affects the understanding of effects of gearing. They argue that in the absence of corporate tax, cost of capital and the market value of the firm remain invariant to the changes in capital structure or degree of leverage (Saxena & Vashist, 2002: 5.7).

Assumptions of Modigliani – Miller's (M-M) Hypothesis

The M-M Hypothesis is based on following assumptions relating to the capital market, behaviour of investors, actions of the firm and tax environment.

a) The securities are traded in perfect market. This means that investors are free to buy and sell securities. The investors can borrow from the market at the rate of interest at which firms can borrow.
b) The investors have homogeneous expectations.
c) It is possible to classify the firms into homogeneous risk classes. The firms in a given risk class are equally risky and their expected future earnings are capitalized at the same rate, i.e., in a given class, the firms have same expected and required rate of returns.

d) The dividend payout ratio is 100%, i.e., firms distribute all net earnings to shareholders.
e) There is no corporate tax. This assumption was later on removed (Saxena & Vashist, 2002: 5.7).

Based on the above assumptions, the M-M Hypothesis gave two propositions- Proposition I and Proposition II. These propositions are discussed below:

Proposition I: - This proposition is identical to the NOI hypothesis. The M-M hypothesis argues that the market value of the firm (V), and its overall cost of capital (K_o) are independent of its capital structure. For a firm's risk class, the market value of the firm is established by capitalizing net operating income (NOI = EBIT) at an appropriate rate as follows:

$$V = S + D = \frac{EBIT}{K_o} = \frac{X}{K_o} \text{ or } K_o = \frac{EBIT}{V}$$

Or K_o = K_d (D/V) + K_e (S/V)

V = The market value of the firm.

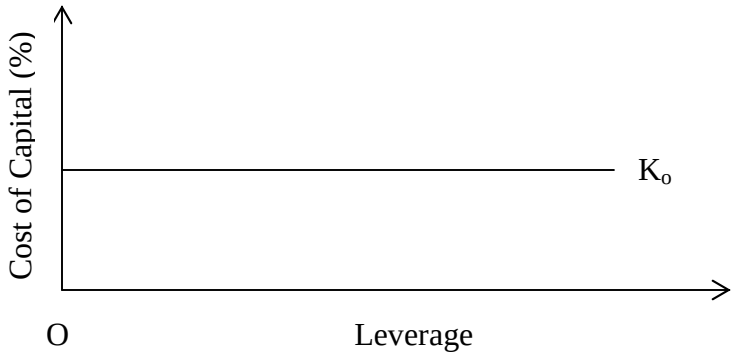
S = The market value of equity share.

D = The market value of debt.

X = Net operating income or earning before interest.

K_o = The capitalization rate appropriate to risk class of the firm.

In the above formula, EBIT is calculated before interest and for this reason it is independent of capital structure or leverage. Cost of capital K_o is equal to the capitalization rate appropriate to the risk class of the firm, and therefore, it is independent of capital structure, market structure, market value (V) must also be independent of capital structure or leverage. This is explained in the diagram given below:



Effect of leverage on cost of capital (M-M Hypothesis- Proposition I)

Figure. No. 3

The cost of capital function as hypothesis by M-M through Proposition I is shown above in Figure No. 3. It is evident from this that average cost of capital is a constant and is not affected by leverage (Saxena & Vashist, 2002: 5.7-5.8).

Arbitrage Process: - M-M hypothesis does not accept the NOI approach as valid. It is held in this hypothesis that two identical in all respects except for their capital structure cannot command different values or have different cost of capital. M-M argue that if two firms differ only (a) in the way they are financed, i.e., capital structure are different; and (b) in their total market values, investors will sell the share of over-valued firm and buy the shares of under-valued firm. This process will continue till the two firms have the same market value. This is called arbitrage or switching process. When the equilibrium is reached, the NOI condition will be fulfilled and the value of the firm and their average cost of capital will be the same. Thus, it is held that V and K_o are independent of capital structure (Saxena & Vashist, 2002: B.5.8).

Proposition II: - The M-M Hypothesis argues that cost of capital K_e is equal to constant average cost of capital K_o plus a premium for the financial risk. This can be written as follows:

$$K_e = K_o + \text{Risk premium}$$

The premium for financial risk equals to the difference between equity capitalization rate K_e and cost of debt multiplied by the ratio of D/S, that is:

$$K_e = K_o + (K_o - K_e) \times D/S$$

In brief, the Proposition II implies that firm's cost of equity increases to offset the use by cheaper debt capital. Alternatively, the firm's use of debt increases its cost of equity as well. Proposition II of M-M Hypothesis presumes a linear relationship between K_e and debt equity ratio (D/S) (Saxena & Vashist, 2002: 5.9).

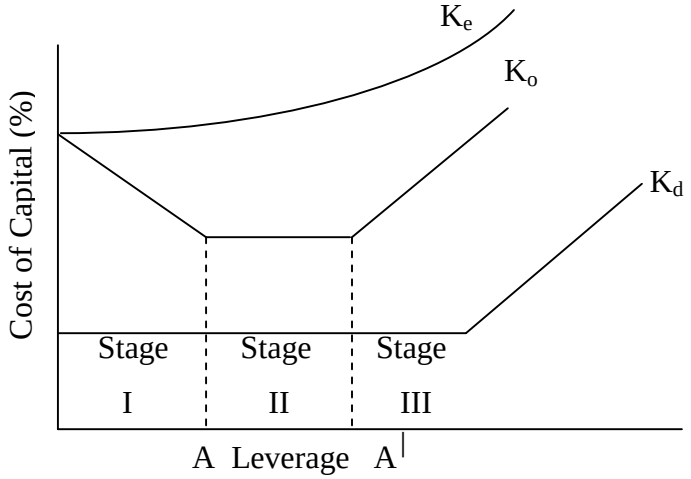
2.5.4 Traditional Approach

The traditional view, which is also known as an intermediate approach, is a compromise between NI approach and NOI approach. The crux of the traditional view relating to leverage and valuation and valuation is that through judicious use of debt-equity proposition, a firm can increase its total value and thereby reduce its overall cost of capital (Barges, 1963: 11).

The approach justifies the view that debt capital is relatively cheaper than ordinary shares. So changing leverage i.e., using debt instead of equity capital obviously causes a decline in the overall cost of capital is minimum or raised further the firm would become financially more risky to the investors who whole penalize the firm by demanding a higher equity capitalization rate (Khan & Jain, 1992: 495).

Traditional approach is a compromise between two extremes, i.e., net income approach and net operating income approach. The advocates of this approach hold the view that the value of the firm, i.e., V, can be increased or the cost of capital can be reduced up to a certain point by a judicious mix of debt and equity capital. Beyond that, the increase of equity more than offsets the use of cheaper debt capital in the capital structure and average cost of capital begins to rise. The average cost of capital structure further rises,

when cost of debt also begins to rise. The optimum capital structure is the point at which overall cost of capital is the minimum or value of the firm is maximum. The essence of the traditional approach is that a firm may, through judicious mix of debt and equity, reduce the cost of capital and increase its total value. Graphically, traditional approach can be depicted as follows: (Saxena & Vashist, 2002: 5.10)



The Cost of Capital Behaviour (Traditional Approach)

Figure. No. 4

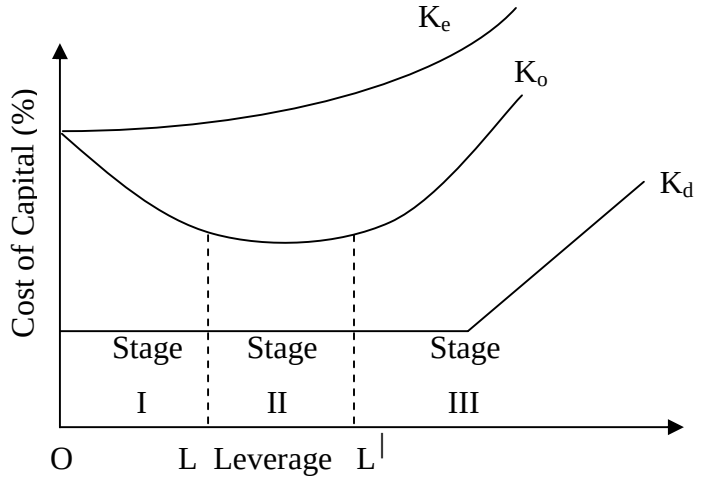
The traditional theory implies that the cost of capital is not independent of the capital structure of the firm. The traditional theory holds that this is an optimum level of capital structure. For degree of leverage before this point marginal cost of debt is less than the marginal cost of equity. Beyond this point, the marginal cost of debt exceeds that of equity (Saxena & Vashist, 2002:5.10).

Solomon holds the view that the reaction of the overall cost of capital to changes in capital structure can be divided into following three stages:

First stage (Increasing value):- in the joint stage cost of equity K_e remains constant or rises slightly with debt, but it does not rise fast enough to offset the advantage of low cost of debt. Thus during this stage the market value of the firm increases and the average cost or overall cost of capital. i.e., K_o decreases as leverage increases.

Second Stage (Optimum value):- once the firm has reached certain degree of leverage, increase in leverage (i.e., additions of debt capital) will have insignificant or negligible effect on the value of the firm and the cost of capital. During this stage, there is a range in which value of the firm V will be maximum and the average cost of capital K_o will be minimum.

Third Stage (Declining value):- Beyond the acceptable limits of leverage, the value of the firm V will decrease and overall cost of capital K_o will increase with in lend of leverages. This happens because both cost of debt K_o and cost of equity K_e will rise abnormally as the investors perceive high degree of financial risk. The three stages have been expressed graphically as below: (Saxena & Vashist, 2002:5.10 - 5.11)



Effect of leverage on Cost of Capital (Traditional Approach – A variation)

Figure. No. 5

2.6 Other related concept of Capital Structure

Common Stock

Common stock is a security representing the residual ownership of a corporation. It guarantees only the right to participate in sharing the earning of the firm if the firm is profitable. Common shareholders usually have the additional right to vote at stockholders meeting on issues affecting fundamental policies of the corporation. Also, the

shareholders have the right to select the members of their board of directors, the right to inspect the firm's books (only for the legitimate purpose of evaluating the performance of management), and the right to obtain a list of the names and address of other shareholders (Hampton, 1986: 38).

Common equity in a corporation or partnership or proprietorship interests in an unincorporated firm constitute the first source of funds to a new business and the base of support for borrowing by existing firms. The nature of equity ownership depends on the form of the business or organization. The central problems of such ownership revolve around an apportionment of certain rights and responsibilities among those who have provided the funds necessary for the operation of the business. The rights and responsibilities attached to equity consist of positive considerations (income potential and control of the firm) and negative considerations (loss potential, legal responsibility, and personal liability) (Weston & Copeland: 931).

When the investors buy common stock, they receive certificates of ownership as proof of their part as owner of the firm. The certificate states the number of shares and their par value (Bhalla, 1983: 154).

Preferred Stock

Shares whose holders are the first to receive dividends from available profit are preference shares. Preference shares are redeemed before ordinary shares when a company is liquidated (Microsoft Encarta 2006).

Preference stock is a source of capital that is part of shareholders equity. It has lower claim priority than the firm's debt but a higher priority than its common stock (Steven E. Bolten, Robert L. Conn, 1981: 612).

Accountants classify preferred stock as equity and generally list it in the equity proton of the balance sheet under the title "preferred stock" or "preferred equity". However in

financial analysis preferred is sometimes treated as debt and sometimes as equity, depending on the type of analysis being made. If the analysis is being made by a common stockholder's then the key consideration is the fact that the preferred dividend is a fixed charge, which must be paid ahead of common stock dividends, so the common stock holder will view preferred stock as being similar to debt. Suppose, however that the analysis is being made by a bondholder studying the firm's vulnerability to failure due to a decline in sales and income. If the firm's income declines the debt holders have a prior claim ahead of preferred stockholder's to the available income and if the firm fails, debt holders have prior claims to assets when the firm is liquidated. Thus to the bondholder preferred stock is similar to common equity. From management's perspective preferred lies between debt and common equity. Since the dividends on preferred stock are not a fixed charge in the sense that failure to pay them represents a default on an obligation, preferred stock is safer to use than debt. On the other hand, if the firm is highly successful, then the common stockholders will not have to share that success with the preferred stockholders, because preferred dividends are fixed. We see then, that preferred has come characteristics of debt and some the characteristic of common stock and it is entirely appropriate (Brigham, 1998: 510).

Long-term debt

If an existing obligation is not to be paid within one year or current operating cycle (whichever is longer) or replaced by another current liability, it is properly classified as long-term liability. The most frequently encouraged long-term liabilities are holds payable; long-tern notes payable, lease obligations, pension obligations, differed taxes, other long-term deferrals and occasionally contingent liabilities.

The use of borrowed funds is known as the trading on equity. The customary reason for using borrowed fund is the expectation of investing them in a capital project that will provide a return in excess of the cost of the acquired funds.

When additional funds are needed to expand the business or for current operations, a corporation has the choice of issuing debt or equity securities. There are four basic reasons why a company may wish to issue debt rather than equity securities.

- ⇒ Bonds may be the only available source of funds.
- ⇒ Debt financing has a lower cost.
- ⇒ Debt financing offers a tax advantage.
- ⇒ The voting privilege is not shared.

Debenture

The word “debenture” has derived from the Latin word ‘debere’ meaning merely a debt and it has nothing to do with the security or lack of it.

A corporate debenture is a security representing a long-term promise to pay a certain sum of money at a certain time or over the course of the loan, with a fixed rate of interest payable to the holder of the debenture. Debenture have significant place in corporate finance. It enables to have funds without sharing control with the holders of the security. It may be unsecured or secured, convertible or non-convertible.

Retained earning

Retained earning is also called reinvested earnings. It is increased in stockholders equity due to profitable operation. It may be capital reserve, revenue reserve etc.

Dividend

Dividend, in corporation finance, a fund appropriated out of the profits of a corporation and distributed among its stockholders; also the share of the fund received by a stockholder. Dividends are usually declared periodically (quarterly, semi-annually, or annually) by the directors of a corporation. The action of a board of directors with respect

to the declaration or non-declaration of dividends is usually final and conclusive upon the stockholders and is subject to review by the courts only in the event that the action is arbitrary or capricious.

Dividends are distributed on a proportional basis; the fractional share of the total dividend received by stockholders is equal to the proportional share of the stocks owned by them. Holders of the preferred stock of a company generally have a prior right to the payment of dividends over holders of common stock, and if their stock so provides, are paid at a fixed periodic rate. Preferred dividends may be cumulative or non-cumulative. Cumulative dividends are those that, if not paid for one or more periods, constitute charges on the profits of succeeding periods and must be paid at a future date before dividends may be distributed on common stock. Non-cumulative dividends, if omitted, do not constitute charges on future profits. Dividends may take the form of additional shares of stock or of the right to purchase stock for a fixed sum per share; such dividends are called stock dividends and rights.

The term *dividend* is applied also to the assets of a bankrupt or insolvent business that are distributed among its creditors during the course of its liquidation. The term is used in insurance to signify the sum appropriated out of profits for distribution among policyholders whose policies so provide; such dividends may be used to reduce the next premium (Microsoft Encarta 2006).

Dividend, in the normal use of the word, refers to that portion of retained earnings that is paid to stockholders. Dividend policy refers to the policy or guidelines that management uses in establishing the portion of retained earnings that is to be paid in dividend (Bhalla, 1983: 167).

2.7 Determination of Capital Structure

There is some element of capital structure for decision. Without study of these element, the company cannot make appropriate capital structure and analysis of leverage may be

incomplete. So we have to make a study of determinants of capital structure in the following ways.

EBIT / EPS Analysis

In the study of leverage the EBIT-EPS analysis is must because it is a method of financing under various assumptions of EBIT that should raise its capital position in different situation. In that situation, they have to choose better capital source as per the profitability of the company in the near future. To make balanced and appropriate capital structure for better future, the company needs to select different alternatives from different source in different proportion. The EBIT-EPS analysis is one of the best ways by which, we can understand the exclusive use of equity capital, debt capital, preference capital, a combination of different proportion and so on. These are analytical instrument, which will be useful in planning the capital structure and increasing earning before interest and taxes with greater value of EPS.

The main objective of any company is to maximize the market value of the firm as well as shareholder's wealth position. Keeping this in view, the EBIT-EPS analysis should be considered logically at the first stage of designing capital structure. The EBIT-EPS analyses show the impact of various financial alternatives on EPS at various levels of EBIT. This method involves the comparison of alternative method of financing under various assumptions as to EBIT. With these methods, the financial manager can make an appropriate financial decision.

Cost of Capital

Cost of capital is generally used in the sense of overall cost of capital. This overall cost of capital is comprised of the costs of various components of financing, i.e., the sources from which the capital has been raised. Each source has got own cost. All these costs are combined to compute overall cost of capital of a firm.

Cost of capital is a very widely used term in the literature of finance. It is defined as the minimum rate of return (or required rate of return), that a firm must earn on its assets in order to maintain its market value and attract needed funds. It is the rate of return at which the market value of a firm remains unchanged. In capital investment proposals, cost of capital is used as discounting rate or hurdle rate, or cut-off rate that is applied to projects' cash flow stream to determine whether the project is worthwhile or not. One of the financial objectives of a firm is to earn more than cost of capital. It is the rate of return required by those who invest in the firm (Saxena & Vashist, 2002:5.16).

Flexibility

Flexibility means the firm's ability to adopt its capital structure to the needs of changing condition. The firm should keep flexible financial plan in order to economize use of funds by substituting one from financing other.

The restrictive covenants are commonly included in long-term loan agreement and debenture. The covenants in loan agreement may include restriction to distribute cash dividend, to purchase assets or to raise additional external financial. The firm also is required to maintain a certain ratio, as debt equity ratio or current ratio at certain ratio.

The firm having the discretion of refunding its debt and preference shares capital can enjoy considerable degree of flexible. The financial plan of the firm should be flexible enough to change the composition of the capital structure as warranted by the firm's operating strategy and needs.

2.8 General concept of Profitability

Profit, in business, the monetary difference between the cost of production and marketing of goods or services and the prices subsequently received for those goods or services. Profit is an essential competitive feature of buying and selling in the economic system.

The opposite of profit is loss, whereby the cost of producing certain goods or services is higher than the price a buyer is willing to pay for them. In free market economy, the will to make and function by profits is termed the *profit motive*. Though normally taken as the basic motive for business, its universality has been challenged by the theory of the firm. Japanese firms, especially, are renowned for preferring market share over at least short-term profits.

The term 'Profit' is being used in several senses. According to Prof. Knight, "Perhaps no term or concept in economic discussion is used with a more bewildering variety of well-established meaning that profit". Some writers have defined it as the percentage returns on investment of capital while others haves called it the reward of ownership. Some have referred to it as reward for risk-taking, while others have called it as a reward for entrepreneurship. There are still others who have defined profit as the residual income which results after all the three factors of production have been paid off. To get an accurate meaning of profit, it appears necessary to distinguish gross profit from net profit (Seth M.L., 1998: 438).

The profit and simply the money gained from a sale, which is more than the money spent. According to the dictionary of commerce, profit is termed as to describe the surplus resulting after a defined trading period but must be regarded as the first essential charge upon business, being a reward for engaging resources in conditions of speculative risk for the satisfaction of consumer resources of speculative risk for the satisfaction of consumer demand. It furnishes resources to invest in future operations and consequently its absence must result in a decline in effective capital resources and ultimately competitive extinction of the business.

The term 'profit' can be used in two senses. As a owner oriented concept it refer to amount and share of national income which is paid to the owners of business, that is those who supply equity capital as variant is described as profitability. In other word, profitability refers to situation where output exceeds input that is the value created by the use of resources is more than the total of input resource.

Profitability is a deviation of the term profit which explains ability to make a profit is a primarily a measuring rod of success of business enterprise. It is the basic test performance of any business simply stating. Profit is money excess of sale over money spent but the term "Profit" is very controversial and there are several different interpretations about it.

An economist will say that profit is the reward of entrepreneurship for risk taking. A labour leader might say that it is a measure of how efficiently labour has produced and that it provides a base for negotiating a wage increase. And investor will view it is a gauge of the return on his/her money. An internal revenue agent might regard it as a base for determining income taxes. The accountant will define it simply as the excess of firm's revenue over expenditure of producing revenue in given fiscal period (Lynch & Williamson, 1989: 99).

In this regard, American Institute of Banking says, "Under the free enterprise system like USA, the interest of the nation as well as those of the individual stockholders is supposed to be best served by vigorously seeking profit. But the profit cannot be a sole objective of an enterprise and an enterprise should not be evaluated just on the ground of the profit it earned. Neither bank nor the community will be the best served it the banker unreasonably sacrifices safety funds of the liquidity of bank in an effort to increase income" (American Institute of Banking, 1972:15).

Every business firm has different types of goal. Profit maximization is the goal of business. Profit is very important for business firm. It is equally important as for is water. To cover cost of staying in business such as replacement of machines, furniture, obsolescence of machines, market or technical risks etc. Profit is essential in the sense to the self-financing principal. It provides structure and helps to minimize cost of capital. Profit of business is attraction for investors. So investors would invest their money where

there is adequate profit. Hence profit is required to ensure and satisfy the entire expectation of management, shareholders, investors, employees and nation as whole.

2.8.1 Traditional Approach towards Profit

Profit maximization is the traditional approach of business environment and economic theory on the ground of profit for firm. In the economic theory, one of the assumptions is profit maximization. It always assumes that a firm sets a target to maximize the profit and is discretionary behaviour of the firm, so in the managerial economics, to maximize profit is the central belief.

"Profit is the measurement of the business firm's overall performance. A business firm can claim it to be successful if it can maintain maximum profit to justify the worth of return on investment. This helps business firm to save from shortage of funds and provides best opportunities to under take the expansion of assets to enlarge business" (Shrestha, 1980: 23-24).

The promise of profit provides a strong incentive to owners and manager to act efficiently. Therefore it is common in economic theory to hypothesis that the criteria for evaluating the action of the firm are profit maximization. The basic incentives for business are to produce goods and services. The profit in this sense is revenue that remains after deducting both explicit and implicit costs, including nominal profit considered of the entrepreneur's services. "Profit is essential for every enterprise to survive in the long run as well as to maintain capital adequacy through retained earning. It is also necessary to accept market for both and equity to provide funds for increased assistance to the productive sector" (Robinson, 1951: 21-22).

2.8.2 Modern Approach towards Profit

Business environment is totally different from past to today. In past time one of main objectives of firm was profit maximization. But today salsas maximization is the main

objective of the firm. So that firm's objective may be to maximize its growth rate or satisfaction shareholders' wealth maximization.

Today every business firms finance by equity owners, creditors. Professional management is related to customer, employee, government and society concerned with firm. Besides other objectives of business firm, wealth maximization of shareholders' is normal objective of firm or otherwise a firm should set a standard for reasonable profit.

There are threats given to profit maximization and the economists to the profitability concept of firm give so many alternatives. Though there are denials towards profitability maximization model of a firm. Economists still do not have unified views to cover the alternative model when markets are perfect competitive, monopolistic or oligopolistic form. Therefore, the profitability model is still in the existence. A business firm still prefers to maximize profit as far as possible. "Business has multiple goals and the needs of survival, goodwill, security and both commonly call for some sacrifice of short term profits. Most business does, however, rate profitability consistently high among their term objectives and it could be argued short term goal such as security and growth rate, subordinate to long term profitability."

2.9 Review of Related Studies

Shambhu Prasad Parajuli had carried out a study on "Capital & Ownership Structure: It's Impact on Profitability: a case study of Nepal Lever Limited" **(2001)**. He found that firm's debt equity ratio has been decreasing & has reached zero level from the fiscal year 2055/56. This in other words means that the management has decided against the use of leverage in its financial structure. But the firm could do well if it does lever its financial structure as the ROE has decreased from the fiscal year 2055/56 i.e. the year in which it relinquished its long term debt from the financial structure. From the Du pont analysis, it is seen that the asset use efficiency if some what consistent over the study periods but profit margin and equity multiplier is in decreasing trend which caused continuous

decrease in ROE over the period. Now it appears that ROE could be levered up by increasing amount of debt in the firm.

The current liabilities also have been increasing with the decrease in the long term debt. The increase in current liabilities would affect the liquidity aspects of the firm. The flexible financing policy implies surplus cash and little short-term borrowing. But in the case of NLL, it is just opposite. To rely on current liabilities for the employment of capital increases the profitability that the firm will experience long lived asset with short term borrowing, maturity mismatching would necessitate frequent & is inherently risky because short term interest rate are more volatile than longer rates.
Therefore he has suggested to maintain a proper capital structure by including long term debt also.

Kamal Raj Pathak had carried out a study on "Capital and Profitability: a comparative case study between Nepal Indoseuz Bank Ltd. and Nepal Grindlays Bank" **(1999)**. The capital structures of both banks are highly levered, so it is difficult for them to interest and principal that may ultimately lead them to liquidity and bankruptcy. There is no significance relationship between debt and equity ratio in term of fixed deposits to net worth and overall capitalization rates of the banks. The ROE fluctuation is found to be influenced by the dividend payout ratio and interest margin in NIB Ltd. Both banks vary in the total assets, number of bank branches and volume of truncations. Both the banks are efficient and well established and doing well. He has suggested that NIB Ltd. should expand assets and branches, which ultimately affect the bank's performance and increase the profitability more than ever.

G.B. Tamang had done the comparative study about two Hotels, Yak & Yeti and Soaltee, which is entitled "An Impact of Capital Structure on Profitability" **(2001)**. He has found that to provide maximum returns to the shareholders and to increase the value of the firm, the firm has to focus on profit which is one of the measurements of successful firm in planning its most optimal capital structure. By analyzing the debt to equity ratio in

terms of long-term debt and shareholders equity, both Hotels' D/E ratios are not higher according to the standard ratio, which constitute 1:1. Hotel Yak & Yeti is trying to be levered company, which has practice of increasing the D/E ratio, since 2055/056 by approximately 27% every year. While calculating the correlation coefficient, he found that Hotel Soaltee has negative correlation and there is safety to lenders last year, which is indicated by the decreasing D/E ratio. Hotel Soaltee does not have financial leverage that is why changes in EBIT are not able to bring multiplier and increase the use of assets efficiently. In other words to get higher ROE, both Hotels have once higher profit margin but it is impossible to get high profit margin every time. So thy should try to increase assets turnover and redeem the amount of total debt, otherwise such debt would be a burden in terms of paying fixed interest while Hotels are not getting high profit. He has also recommended that they should give equal importance to other factor like operating efficiency and assets efficiency, etc. and the government also should make effective tourism policy.

Gautam Raj Giri had conducted a thesis on "Capital Structure Management of Listed Joint Venture Commercial Banks" **(2006)**. He studied on two joint venture commercial banks; they are Standard Chartered Bank Nepal Limited (SCBNL) and Nepal Bangladesh Bank Limited (NBBL). He found that JVBs have lack of theoretical and practical knowledge with regard to capital structure theories. Nepalese investors are not attracted by the theories. JVBs in Nepal have concentrated their business with big businessmen and industrialists. Their clients are mostly big manufacturer; carpet and garment exporters, multinational companies, large scale of industries, NGOs as well as INGOs, travel agencies, cargo agencies, housing companies etc. Therefore, the JVBs are suggested to open their doors to the small depositors and entrepreneurs also. The capital structure of selected banks is highly levered. The proportion of debt and equity capital should be decided keeping in mind the efforts of tax advantage and financial distress. The banks, when they are in difficult to pay interest and principal, ultimately lead to liquidation or bankruptcy. For such, the banks should reduce the high use of debt capital. Return ratios like; return on total assets and return on shareholder's equity are not

satisfactory in NBBL. SCBNL seems very good performing than NBBL in case of ROE. The savings from rural communities are neglected by JVBs, without which they can't contribute much to the economic development of the country. So, JVBs recommended being cooperative and should expand the branches by covering all the five development regions of the country including rural areas to achieve geographically balanced approach. JVBs are basically not concentrated to mobilize their deposit funds in productive areas. Nepalese shareholders are very much concerned about the payment of cash dividend by the joint venture banks rather than their financial statement. He has suggested paying cash dividend consistently. He also has suggested expanding branches and assets, which ultimately affect the banks capital structure and expected to increase the profitability more than the present. Last but not the least; the banks have to enhance effectiveness, efficiency and proper coordination of its departmental tasks by continuously reviewing its structural design in accordance with the need of the changing time and situation.

Rima Devi Shrestha had conducted a study on the topic of "Focus on Capital Structure of selected and listed public companies" **(2003)**. Her objective of the study was to analyze the capital structure of selected and listed companies. She used data from 19 companies and study had covered different sectors manufacturing finance, utility service and other allied area. She had found that most of these companies have debt capital relatively very higher than equity capital. Consequently, most of them are operating at losses to the extent that payment of interest on loan has been serious issues. Most of the losses are after charging interest on loan. She has suggested that the government has to consider in public enterprises is that of evaluating the relationship between use of debt and its impact on overall earning of public enterprises. So, the government should be sure in knowing how using debt capital will minimize return. Government of Nepal invested large amount of money in public enterprises. It should need to develop a suitable capital structure guideline to make public enterprise aware of the responsibility to repay the debt schedules. The other thing, which needs to be made publicity transparent that government money is not a lost less, found. Government has to analyze cost and risk return trade off. Thus, capital structure needs to be made more determinate by realistic analysis of cost.

Ramesh Raj Aryal had submitted a thesis study on "An evaluation of Capital Structure of Bottlers Nepal Limited" **(2001)**. He has found that the long-term debt on BNL is increasing year by year because the company has borrowed more long-term debt. Different ratio analyses show the inefficient capital structure management of the company. He had made his analyses only five years periods and he suggested that the company has to follow good policy to set capital structure. The calculation of leverage position indicates the bad performance of the company because it is in increasing trend. After doing all calculations like ratio, leverage, capital structure position, correlation and P/E ratio etc, it was found that the company is facing bad situation due to inefficient capital structure. So the company has to lower down the amount of debt and to obtain additional fund through the issue of equity share by using cheaper source of collecting funds. In order to build up public image, share must be issued to the general public. Moreover the company should think about other new product for winter season to increase good image of the company. The company ahs regarded as highly geared up capital structured company. Thus, to design suitable pattern of capital structure for the company, the management must bring about a satisfactory compromise among these conflicting factors of cost, risk, control and timing. He recommended that the company to shift debt capital to equity capital when the company has high earning per share.

This study is different from the above studies. The study revolves around the banking industry and name of the selected bank is Machhapuchchhre Bank Ltd. This study is done considering the data of five years for the bank from the year 2001/2002 to 2005/2006 A.D. (2058/59 to 2062/63 B.S.). This study attempts to analyze and evaluate the relationship of the capital structure with various variables as like profitability, cost of equity and so on that will provide useful information for policy maker and the implementation of suggested findings.

CHAPTER - III
RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is a systematic way to solve the research problem. In other words, research methodology describes the methods and process applied in the entire aspect of the study. Research methodology refers to the various sequential steps (along with a rational of each steps) to be adopted by a researcher in studying a problem with certain objectives in view (Kothari,1994:9).Thus the overall approach to the research is presented in this chapter. This chapter consists of research design, sample size and selection process, data collection procedure and data processing techniques and tools.

3.2 Research Design

A research design is the specification of methods and procedures for acquiring the information needed. It is the overall operational pattern of framework for the project that stipulates what information is to be collected, from which sources and by what procedures (Poul,1997:34). Thus a research design is a plan for the collection an analysis of data. For research there exits different types of research design like; Historical research, Descriptive research, Case study research, Field study research, Analytical research, True experimental research and so on. Research design is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and to control variance.

The study is evaluative and analytical type of study regarding the capital structure and profitability. The research design used in the study is descriptive and evaluative. The data relative to topics are collected through financial statement of the bank and other available sources. The data for five years had been collected and various financial and statistical tools had been used to resolve the objectives.

3.3 Nature and Sources of Data

Generally this study is based on primary data and secondary data. Primary data are collected through interviews questionnaires, observations and direct meeting with concerned persons. Secondary data are collected from Annual report of the concerned firm, supporting data and information are collected from the office of the concerned firm and another institution. Documents, books, other publishes or unpublished material, thesis, newspapers are the important data and informal quires, with the authorities of the concerned firm is primary source in nature.

3.4 Population and Sample

Nowadays a number of commercial banks have been emerging rapidly. Some have already been established and others are in the process of establishment. Currently, there are 25 commercial banks are in Nepal. In this study, all the commercial banks are population of the study. Among them Machhapuchchhre Bank has been selected as samples for the present study on the basis of good financial performance.

The population of the present study is listed as under, the commercial banks operating in the banking industry of Nepal.

Table 3.1

List of Commercial Banks in Nepal

S. No.	Commercial Banks	Establishment Year B.S.	Head Office
1.	Nepal Bank Limited	1994/7/30	Kathmandu
2.	Rastriya Banijya Bank	2022/10/10	Kathmandu
3.	NABIL Bank Limited	1984/07/16	Kathmandu
4.	Nepal Investment Bank Limited	2042/11/26	Kathmandu
5.	Standard Chartered Bank Limited	2043/10/16	Kathmandu
6.	Himalayan Bank Limited	2049/10/5	Kathmandu

7.	Nepal SBI Bank Limited	2050/3/23	Kathmandu
8.	Nepal Bangladesh Bank Limited	2050/2/23	Kathmandu
9.	Everest Bank Limited	2051/7/1	Kathmandu
10.	Bank of Kathmandu Limited	2051/11/28	Kathmandu
11.	Nepal Credit and Commerce Bank Limited	2053/6/28	Siddhartha nagar
12.	Lumbini Bank Limited	2055/4/1	Chitwan
13.	Nepal Industrial and Commercial Bank Limited	2055/4/5	Kathmandu
14.	Machhaputhhre Bank Limited	2057/6/17	Pokhara
15.	Kumari Bank Limited	2057/12/21	Kathmandu
16	Sunrise Bank Limited		Kathmadndu
17.	Laxmi Bank Limited	2058/12/21	Birjung
18.	Siddhartha Bank Limited	2059/9/9	Kathmandu
19	Prime Commercail Bank Limited		Kathmandu
20.	Agricultural Development Bank Limited	2024/11/7	Kathmandu
21	Global Bank Limied		Kathmandu
22	Citizen Bank Limited		Kathmandu
23	Bank of Asia Nepal		
24	DCBL Bank Limited		
25	NMB Bank Limited		

Source: Annual report of NRB 2064/65: 52

3.5 Data Collection

Almost secondary data has been taken in this study. The data needed are collected from Balance Sheet, Profit & Loss Account, other related books of account of the concerned

bank, stock exchange board and Nepal Rastra Bank. The primary data has been taken from interviews questionnaires, observations and direct meeting with concerned persons.

3.6 Tools and Techniques Employed

As mentioned earlier, this study is confined to the single analysis of capital structure and profitability of the private commercial bank. To reach the objectives, the collected data are computed and analyzed using statistical and financial tools.

3.6.1 Statistical Tools

Statistical tools such as simple correlation coefficient, simple regression analysis, time series and test of hypothesis etc. have been used in this study.

Correlation Analysis

Correlation analysis is defined as the statistical technique, which measures the degree and direction of relationship between the variables. Among the various methods, Karl Pearson's method is used in this study. The result of correlation coefficient lies between +1 and -1, i.e. correlation can either be positive or negative. If correlation is positive it explains that the variables are moving in the same direction. If correlation is negative, it explains that the variables are moving in the opposite direction. Correlation coefficient (r) is calculated as below:

$$r = \frac{N\Sigma XY - \Sigma X\Sigma Y}{\sqrt{N\Sigma X^2 - (\Sigma X)^2} \times \sqrt{N\Sigma Y^2 - (\Sigma Y)^2}}$$

Where,

N= number of observations.

X and Y are variables.

Regression Analysis

Regression is one of the statistical tools, which is used to determine relationship between two or more variables and to make estimate of one variable on the basis of the other variable. It helps which unknown value of one variable can be estimated on the basis of known value of the variable. In this study the researcher uses simple regression equation.

Simple Regression Model

Regression analysis shows how variables are related. Regression is the estimation of unknown values or prediction of one variable from known of the other variables. The regression equation can be determined by:

$$Y = a + bX$$

Where,

a = Intercept or Regression Constant

b = Slope of regression line or regression coefficient

Regression Constant (a)

It is known as numerical constant that determine the distance o the fitted line directly above or below the origin (i.e., Y-intercept). The value of the constant, which is intercept of the model, indicates the leverage level of dependent variable when independent variable is zero. In other words, it is better to understand that constant indicates mean or average effect on dependent variable if all the variables omitted from the model.

Regression coefficient

The regression coefficient of each independent variable (b) indicates the marginal relationship between that variable and value of dependent variable, holding constant effect of all other independent variable in the regression model. It is known as the slope of regression line. In other words, the coefficient describes how to change in dependent variable affect the variable of the dependent variable estimate. It is also that the numerical constant change in dependent variable.

T- Statistic

In order to test whether the sample correlation coefficient is significance of any correlation between the variable in the population, t-test for the significance of an observed sampled correlation is applied.

The t-statistic is calculated by the following formula under H_o:

$$t = \frac{r}{\sqrt{1-r^2}}\sqrt{n-2}$$

Decision: t calculated value ≤ t tabulated at α = 5% level of significance, it is not significant

Analysis of time series

A series formed from a set of statistical data arranged in accordance with their time occurrence is said to be a time series. A time series shows the relation between two variables, one being the time. With the view of MBL, it helps in future forecasting & planning on the basis of past information.

To measure the Trend, Least Square Method is widely used and the straight-line trend is represented by the following equitation:

Y = a + bX ---------- (I)

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.

$\sum Y = Na + b\sum X$ ---------- (II)

$\sum XY = a\sum X + b\sum X^2$ ---------- (III)

Where,

N = Number of years for which the date are given.

The value of 'a' and 'b' can be determined by solving equations (II) and (III). These values of a and b are substituted in equation (I) to have the required tend 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:

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

$\therefore a = \sum Y/n$ $\qquad$ $\therefore b = \sum XY/\sum X^2$

The constant 'a' gives the arithmetic mean of Y and the constant 'b' indicates the rate of the change.

Analysis of Chi Square: Non-Parametric test

It is depends only on the set of observed and expected frequency and degree of freedom. Since chi square test doesn't make any assumption about population parameters, it is also distribution free test. This test is good for nominal or original scale of measurement. Nominal scale or measurement deals with the data which can only be classified into categories such as strongly agreed, agreed, disagree, and strongly disagree and so on where as the ordinal level of measurement assigns different ranks.

Similar to the binomial distribution, chi square test is also used for analysis qualitative variables such as opinions of person.

n, religious affiliation, smoking habits and so on. CHI square test is a test , which describe the magnitude of difference between observed and expected (theoretical) frequencies under a certain assumption. In other words, it is described the magnitude of the discrepancy between theory and observation it is defined as

$$\text{Chi square} = \sum \frac{(O-E)^2}{E}$$

Where, O =observed frequencies

E =Expected frequencies

Expected frequencies= RT × CT

Where,

N= Number of observation.

RT= Row total

CT= Column Total

3.6.2 Financial Tools

1. Capital Structure Analysis

⇒ Fixed deposit analysis

⇒ Fixed deposit composition and index statement

⇒ Fixed deposit to total assets

⇒ Fixed deposit to total debt

2. Shareholders' Equity Analysis

⇒ Shareholders' composition and index statement

⇒ Net worth as percentage of total liabilities

3. Analysis of financial mix

The financial analysis mix is performing by using ratio analysis. It is a powerful tool of financial analysis. Ratio analysis is assess enterprise efficiency and to help to find reason for inefficiency, and also to see management ratio.

Ratios reflect symptoms not causes. It is used to interpret the financial statement so that the strengths and weakness of a firm as well as its historical performance and current condition can be determined.

4. Capital Structure Ratio

The ratio indicates the proposition of debt and debt equity in financing the firm's assets. It is concerned with long-term debt solvency of a firm. Capital structure ratios are calculated to measure the financial risk and firm's ability of using the debt for the benefit of the shareholders. The capital structure ratios are as follows:

⇒ Fixed deposit to net worth

⇒ Debt to net worth
⇒ Fixed deposit to capital employed
⇒ Debt to total assets adequacy
⇒ Capital sufficiency ratio
⇒ Debt competence ratio
⇒ Capital structure & capitalization rate

5. Profitability Analysis

This is performed by analyzing earning capacity of the assets, expenses analysis, return ratio, market related profitability ratios to arrive at the conclusion. Profitability analysis would be incomplete if these above aspects are not taken into considerations.

⇒ Earning capacity of assets analysis
⇒ Proportion of investment in assets
⇒ Income of assets as % of total income

6. Expenses Analysis

⇒ Major Expenses to total operating expenses
⇒ Major Expenses to total income

7. Profitability ratio to investment or Return Ratio

⇒ Return on total deposit
⇒ Return on total assets
⇒ Return on capital employed
⇒ Return of shareholders' equity
⇒ Earning per share
⇒ Dividend per share
⇒ Earning and dividend yield
⇒ Price earning ratio
⇒ Market value per share
⇒ Book value per share

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Appendix 1

Calculation of fixed deposit position

Fiscal Year	Fixed Deposits (Rs.)	Index	% Increase or Decrease
2060/61	736224000	100	-
2061/62	921632000	125.18	25.18
2062/63	1227280000	158.34	33.16
2063/64	1914763000	214.36	56.02
2064/65	2604900000	250.40	36.04
		Average Change	37.60

Calculation of fixed deposit position

Fixed deposit position (Increase or decrease $= \frac{2002/03 - 2001/02}{2001/02} \times 100$

For 2061/62 = 25.18 % and so on……..

Index = 2060/61 + 2061/62

= 100 + 25.18

For 2061/62 = 125.18 and so on……..

Appendix 2

Calculation of Fixed deposit as percentage of total liabilities

Fiscal Year	Total liabilities (Rs.)	Fixed Deposits (Rs.)	Percentage
2060/61	1104377361.83	736224000	66.66
2061/62	2399857094.10	921632000	38.40
2062/63	3448634251.00	1227280000	35.59
2063/64	6456460820.59	1914763000	29.66
2064/65	9069830401.31	2604900000	28.72
		Average	39.8

Fixed deposit as percentage of total liabilities = $\frac{\text{Fixed deposit}}{\text{Total liabilities}} \times 100$

For 2060/61 $= \frac{736224000}{1104377361.83} \times 100$

= 66.66 % and so on……..

Appendix 3

Calculation of Fixed deposit to total debt

Fiscal Year	Total Debt (Rs.)	Fixed Deposits (Rs.)	Percentage
2060/61	1024833329	736224000	71.84
2061/62	1898151196	921632000	48.55
2062/63	2894412408	1227280000	42.4
2063/64	5818721436	1914763000	32.91
2064/65	8122632242	2604900000	32.07
		Average	45.56

Fixed deposit to total debt $= \frac{\text{Fixed deposit}}{\text{Total debt}} \times 100$

For 2060/61 $= \frac{736224000}{1024833329} \times 100$

= 71.84 % and so on……..

Appendix 4

Calculation of composition of shareholders' equity **(In Rs.)**

Year→ Particulars↓	2060/61	2061/62	2062/63	2063/64	2064/65
Paid up capital	136200100.00	544174000.00	550000000.00	550000000.00	715000000.00
Reserve and Funds	(56656066.92)	(42468102.16)	4221843.14	87739384.31	216091357.00
Total SHS equity	79544033.08	501705897.84	554221843.14	637739384.31	931091357.00
No. of shares	1362001	5441740	5500000	5500000	7150000
Net worth per share	58.40	92.20	100.77	115.95	130.22

$$\text{Net worth per share} = \frac{\text{Total SHS equity}}{\text{No of shares}} \times 100$$

$$\text{For 2060/61} = \frac{79544033.08}{1362001} \times 100$$

= 58.40 % and so on……..

Appendix 5

Calculation of Net worth to total liabilities

Fiscal Year	Net worth	Total liabilities	Percentage
2060/61	79544033.08	1104377361.83	7.20
2061/62	501705897.84	2399857094.10	20.91
2062/63	554221843.14	3448634251.00	16.07
2063/64	637739384.31	6456460820.59	9.88
2064/65	931091357.00	9069830401.31	10.27

$$\text{Net worth to total liabilities} = \frac{\text{Net worth}}{\text{Total liabilities}} \times 100$$

$$\text{For 2060/61} = \frac{79544033.08}{1104377361.83} \times 100$$

= 7.20 % and so on……..

Appendix 6

Shareholders' equity composition & index

Fiscal Year	Net worth	Index	% increase or decrease
2060/61	79544033.08	100	-
2061/62	501705897.84	630.73	530.73
2062/63	554221843.14	641.20	10.47
2063/64	637739384.31	656.27	15.07
2064/65	931091357.00	702.27	46.00
		Average change	150.57

Shareholders' equity composition (increase or decrease)

$$= \frac{2002/03 - 2001/02}{2001/02} \times 100$$

For 2061/62 = 530.73 % and so on……..

Index = 2060/61 + 2061/62 (last year + current year)

= 100 + 530.73

For 2061/62 = 630.73 and so on……..

Appendix 7

Calculation of fixed deposit to net worth

Fiscal Year	Net worth	Fixed deposit	Percentage
2060/61	79544033.08	736224000	925.56
2061/62	501705897.84	921632000	183.70
2062/63	554221843.14	1227280000	221.44
2063/64	637739384.31	1914763000	300.24
2064/65	931091357.00	2604900000	279.77

$$\text{Fixed deposit to net worth} = \frac{\text{Fixed Deposit}}{\text{Net Worth}} \times 100$$

$$\text{For 2060/61} = \frac{736224000}{79544033.08} \times 100$$

= 925.56% and so on……..

Appendix 8

Calculation of total debt to net worth

Fiscal Year	Net worth	Total debt	Percentage
2060/61	79544033.08	1024833329	1288.40
2061/62	501705897.84	1898151196	378.34
2062/63	554221843.14	2894412408	522.25
2063/64	637739384.31	5818721436	912.40
2064/65	931091357.00	8122632242	872.38

$$\text{Total debt to net worth} = \frac{\text{Total Debt}}{\text{Net Worth}} \times 100$$

$$\text{For 2060/61} = \frac{1024833329}{79544033.08} \times 100$$

= 1288.40% and so on……..

Appendix 9

Calculation of fixed deposit to capital employed

Fiscal Year	Fixed deposit	Capital employed	Percentage
2060/61	736224000	815768033	90.25
2061/62	921632000	1423337898	64.75
2062/63	1227280000	1781501843	68.89
2063/64	1914763000	2552502384	75.02
2064/65	2604900000	3535991357	73.67

Fixed deposit to capital employed $= \frac{\text{Fixed Deposit}}{\text{Capital employed}} \times 100$

For 2060/61 $= \frac{736224000}{815768033} \times 100$

= 90.25% and so on……..

Appendix 10

Calculation of total debt to total assets

Fiscal Year	Total debt	Total assets	Percentage
2060/61	1024833329	1104377361.83	92.80
2061/62	1898151196	2399857094.10	79.09
2062/63	2894412408	3448634251.00	83.93
2063/64	5818721436	6456460820.59	90.12
2064/65	8122632242	9069830401.31	89.56

Total debt to total assets $= \frac{\text{Total debt}}{\text{Total assets}} \times 100$

For 2060/61 $= \frac{736224000}{1104377361.83} \times 100$

= 92.80% and so on……..

Appendix 11

Calculation Capital sufficiency ratio

Fiscal Year	Capital fund	Total deposit	Percentage
2060/61	93850100	994817000	9.43
2061/62	489459000	1778786000	27.50
2062/63	516869000	2754632000	18.80
2063/64	582739000	5586803000	10.40
2064/65	784700755	7893300000	9.94

$$\text{Capital fund to total deposit} = \frac{\text{Capital fund}}{\text{Total deposit}} \times 100$$

$$\text{For 2060/61} = \frac{93850100}{994817000} \times 100$$

= 9.43% and so on……..

Appendix 12

Calculation of Interest Coverage Ratio

Fiscal Year	EBIT	Interest	Times
2060/61	78158625.30	64480333.84	1.21
2061/62	151144089.68	76155897.89	1.98
2062/63	236590472.52	113579092.57	2.08
2063/64	411726101.16	187027981.93	2.20
2064/65	645607351.65	288661548.62	2.24

$$\text{Interest coverage ratio} = \frac{\text{EBIT}}{\text{Interest}}$$

$$\text{For 2060/61} = \frac{78158625.30}{64480333.84}$$

= 1.21 times and so on……..

Appendix 13

Calculation of Capital Structure mix

Fiscal Year	Fixed Deposits (Rs.)	Equity share capital	Total value of bank	Proportion
2060/61	736224000	136200100	872424100	0.84:0.16
2061/62	921632000	544174000	1465806000	0.63:0.37
2062/63	1227280000	550000000	1777280000	0.69:0.31
2063/64	1914763000	550000000	2464763000	0.78:0.22
2064/65	2604900000	715000000	3319900000	0.78:0.22

$$\text{Fixed deposit proportion} = \frac{\text{Fixed deposit}}{\text{Total value of bank}}$$

$$\text{For 2060/61} = \frac{736224000}{872424100}$$

= 0.84 and so on……..

$$\text{Equity share capital proportion} = \frac{\text{Equity share capital}}{\text{Total value of bank}}$$

$$\text{For 2060/61} = \frac{136200100}{872424100}$$

= 0.16 and so on……..

Appendix 14

Calculation of Overall capitalization rate

Fiscal Year	EBIT	Total value of bank	K_o
2060/61	78158625.30	872424100	8.96
2061/62	151144089.68	1465806000	10.31
2062/63	236590472.52	1777280000	13.31
2063/64	411726101.16	2464763000	16.70
2064/65	645607351.65	3319900000	19.45

$$\text{Overall capitalization rate} = \frac{\text{EBIT}}{\text{Total value of bank}} \times 100$$

$$\text{For 2060/61} = \frac{78158625.30}{872424100}$$

= 8.96% and so on……..

Appendix 15

Calculation of Equity capitalization rate

Fiscal Year	2060/61	2061/62	2062/63	2063/64	2064/65	Average
EPS	1.00	2.81	8.49	15.43	18.74	9.30
MVPS	100	100	125	256	320	180.20
Rate	1.00	2.81	6.79	6.02	5.86	4.50

$$\text{Equity capitalization rate} = \frac{\text{EPS}}{\text{MVPS}} \times 100$$

$$\text{For 2061/62} = \frac{2.81}{100}$$

= 2.81% and so on……..

Appendix 16

Calculation of return on total deposit

Fiscal Year	Total deposit	Net income	ROD
2060/61	994817000	1362001	0.14
2061/62	1778786000	15291289	0.86
2062/63	2754632000	46695000	1.70
2063/64	5586803000	84865000	1.52
2064/65	7893300000	133991000	1.70

$$\text{Return on total deposit} = \frac{\text{Net income}}{\text{Total deposit}} \times 100$$

$$\text{For 2060/61} = \frac{1362001}{994817000} \times 100$$

= 0.14% and so on……..

Appendix 17

Calculation of return on total deposit

Fiscal Year	Total assets	Net income	ROA
2060/61	1104377361.83	1362001	0.12
2061/62	2399857094.10	15291289	0.64
2062/63	3448634251.00	46695000	1.35
2063/64	6456460820.59	84865000	1.31
2064/65	9069830401.31	133991000	1.48

$$\text{Return on total assets} = \frac{\text{Net income}}{\text{Total assets}} \times 100$$

$$\text{For 2060/61} = \frac{1362001}{1104377361.83} \times 100$$

$$= 0.12\% \text{ and so on……..}$$

Appendix 18

Calculation of Return on capital employed

Fiscal Year	Fixed Deposits (Rs.)	Total SHS	Total	Net Income	ROCE
2060/61	736224000	79544033.08	815768033.08	1362001	0.17
2061/62	921632000	501705897.84	1423337897.84	15291289	1.07
2062/63	1227280000	554221843.14	1781501843.14	46695000	2.62
2063/64	1914763000	637739384.31	2552502384.31	84865000	3.32
2064/65	2604900000	931091357.00	3535991357.00	133991000	3.79

$$\text{Return on capital employed} = \frac{\text{NI}}{\text{Fixed deposit} + \text{Shareholders' equity}} \times 100$$

For 2060/61 $= \frac{1362001}{736224000 + 79544033.08} \times 100$

= 0.17 % and so on……..

Appendix 19

Calculation of Return on shareholders' equity

Fiscal Year	Total SHS	Net Income	ROSE
2060/61	79544033.08	1362001	1.71
2061/62	501705897.84	15291289	3.05
2062/63	554221843.14	46695000	8.43
2063/64	637739384.31	84865000	13.31
2064/65	931091357.00	133991000	14.39

Return on shareholders' equity $= \frac{\text{Net income}}{\text{Total SHS}} \times 100$

For 2060/61 $= \frac{1362001}{79544033.08} \times 100$

= 1.71 % and so on……..

Appendix 20

Calculation of earning yield

Fiscal Year	EPS	MVPS	Percentage
2060/61	1.00	100	1.00
2061/62	2.81	100	2.81
2062/63	8.49	125	6.79
2063/64	15.43	256	6.03
2064/65	18.74	320	5.86

Earning yield $= \frac{EPS}{MVPS} \times 100$

For 2061/62 $= \frac{2.81}{100} \times 100$

= 2.81 % and so on……..

Appendix 21

Calculation of dividend yield

Fiscal Year	DPS	MVPS	Percentage
2060/61	-	100	0
2061/62	-	100	0
2062/63	-	125	0
2063/64	-	256	0
2064/65	15.79	320	4.93

$$\text{Dividend yield} = \frac{\text{DPS}}{\text{MVPS}} \times 100$$

$$\text{For 2064/65} = \frac{15.79}{320} \times 100$$

= 4.93 % and so on……..

Appendix 22

Calculation of P/E ratio

Fiscal Year	EPS	MVPS	Times
2060/61	-	-	-
2061/62	2.81	100	35.59
2062/63	8.49	125	14.72
2063/64	15.43	256	16.59
2064/65	18.74	320	17.08

$$\text{P/E ratio} = \frac{\text{MVPS}}{\text{EPS}}$$

$$\text{For 2061/62} = \frac{100}{2.81} \times 100$$

= 35.59 times and so on……..

Appendix 23

Calculation of Correlation coefficient between DER in term of fixed deposit to net worth and return shareholders' equity (ROSE)

FY	X (DER)	Y (ROSE)	XY	X^2	Y^2
2060/61	925.56	1.71	1582.71	856661.31	2.92
2061/62	183.70	3.05	560.29	33745.69	9.30
2062/63	221.44	8.43	1866.74	49035.67	71.07
2063/64	300.24	13.31	3996.19	90144.06	177.16
2064/65	279.77	14.39	4025.89	78271.25	207.07
	1910.71	40.89	12031.82	1107857.98	467.52

N = 5

$\sum X = 1910.71$, $\sum Y = 40.89$, $\sum XY = 12031.82$, $\sum X^2 = 1107857.98$, $\sum Y^2 = 467.52$

Where,

N = No. of observation of X and Y

$\sum X$ = Sum of the observations in series X

$\sum Y$ = Sum of the observations in series Y

$\sum XY$ = Sum of the square of observations in series X

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

$\sum Y^2$ = Sum of the product of the observations in series X and Y

$$r = \frac{N\Sigma XY - \Sigma X \Sigma Y}{\sqrt{N\Sigma X^2 - (\Sigma X)^2} \times \sqrt{N\Sigma Y^2 - (\Sigma Y)^2}}$$

or, $$r = \frac{5 \times 12031.82 - 1910.71 \times 40.89}{\sqrt{5 \times 1107857.98 - (1910.79)^2} \times \sqrt{5 \times 467.52 - (40.89)^2}}$$

or, $$r = \frac{60159.10 - 78128.93}{\sqrt{5539289.90 - 3651118.42} \times \sqrt{2337.60 - 1672.}}$$

or, $$r = \frac{-17969.83}{\sqrt{1888171.48} \times \sqrt{665.60}}$$

or, $$r = \frac{-17969.83}{1374.12 \times 25.80}$$

or, $r = \frac{-17969.83}{35452.30}$

or, $r = -0.51$

$r^2 = (-0.51)^2$

or, $r^2 = 0.26$

$$t = \frac{r}{\sqrt{1-r^2}}\sqrt{n-2}$$

$$= \frac{-0.51}{\sqrt{1-0.26}}\sqrt{5-2}$$

$$= \frac{-0.51}{\sqrt{0.74}}\sqrt{3}$$

$= -1.03$

/t/ = 1.03

Degree of freedom (d.f.) = n-2 = 5-3 = 3

$\alpha = 5\% = 0.05$

Tabulated value of t for 3 d.f. at α = 5% level of significance for two tails test is 3.182.

Appendix 24

Calculation of Correlation coefficient between K_o & DER

FY	X (K_o)	Y (DER)	XY	X^2	Y^2
2060/61	8.96	925.56	8293.02	80.28	856661.31
2061/62	10.31	183.70	1893.95	106.30	33745.69
2062/63	13.31	221.44	2947.37	177.16	49035.67
2063/64	16.70	300.24	5014.01	278.89	90144.06
2064/65	19.45	279.77	5441.53	378.30	78271.25
	68.73	1910.71	23589.87	1020.93	1107857.99

N = 5

$\sum X = 68.73$, $\sum Y = 1910.71$, $\sum XY = 23589.87$, $\sum X^2 = 1020.93$, $\sum Y^2 = 1107857.99$

Where,

N = No. of observation of X and Y

$\sum X$ = Sum of the observations in series X

$\sum Y$ = Sum of the observations in series Y

$\sum XY$ = Sum of the square of observations in series X

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

$\sum Y^2$ = Sum of the product of the observations in series X and Y

$$r = \frac{N\Sigma XY - \Sigma X \Sigma Y}{\sqrt{N\Sigma X^2 - (\Sigma X)^2} \times \sqrt{N\Sigma Y^2 - (\Sigma Y)^2}}$$

or, $$r = \frac{5 \times 23589.87 - 68.73 \times 1910.71}{\sqrt{5 \times 1020.93 - (68.73)^2} \times \sqrt{5 \times 1107857.99 - (1910.71)^2}}$$

or, $$r = \frac{117949.35 - 131323.10}{\sqrt{5104.65 - 4723.81} \times \sqrt{5539289.95 - 3650812.70}}$$

or, $$r = \frac{-13373.75}{\sqrt{380.84} \times \sqrt{1888477.52}}$$

or $$r = \frac{-17973.10}{19.52 \times 1374.22}$$

or $$r = \frac{-17973.10}{26818.07}$$

or, $r = -0.67$

$$r^2 = (-0.67)^2$$

or, $r^2 = 0.45$

$$t = \frac{r}{\sqrt{1 - r^2}} \sqrt{n - 2}$$

$$= \frac{-0.67}{\sqrt{1 - 0.45}} \sqrt{5 - 2}$$

$$= \frac{-0.67}{\sqrt{0.55}}\sqrt{3}$$

$$= -1.56$$

/t/ = 1.56

Degree of freedom (d.f.) = n-2 = 5-3 = 3

$\alpha = 5\% = 0.05$

Tabulated value of t for 3 d.f. at α = 5% level of significance for two tails test is 3.182.

Appendix 25

Calculation of Correlation coefficient between EPS & Debt Capital

FY	X (total debt) in million	Y (EPS)	XY	X^2	Y^2
2060/61	1024.83	1.00	1024.83	1050276.53	1.00
2061/62	1898.15	2.81	5333.80	3602973.42	7.90
2062/63	2894.41	8.49	24573.54	8377609.25	72.08
2063/64	5818.72	15.43	89782.85	33857502.44	238.09
2064/65	8122.63	18.74	152218.09	65977118.12	351.19
	19758.74	46.47	272933.11	112865479.76	670.26

N = 5
$\sum X = 19758.74$, $\sum Y = 46.47$, $\sum XY = 272933.11$, $\sum X^2 = 112865479.76$, $\sum Y^2 = 670.26$

Where,

N = No. of observation of X and Y
$\sum X$ = Sum of the observations in series X
$\sum Y$ = Sum of the observations in series Y
$\sum XY$ = Sum of the square of observations in series X

$\sum X^2$ = Sum of the square of observations in series Y
$\sum Y^2$ = Sum of the product of the observations in series X and Y

$$r = \frac{N\Sigma XY - \Sigma X \Sigma Y}{\sqrt{N\Sigma X^2 - (\Sigma X)^2} \times \sqrt{N\Sigma Y^2 - (\Sigma Y)^2}}$$

or, $$r = \frac{5 \times 272933.11 - 19758.74 \times 46.47}{\sqrt{5 \times 112865479.76 - (19758.74)^2} \times \sqrt{5 \times 670.26 - (46.47)^2}}$$

or, $$r = \frac{1364665.55 - 918188.65}{\sqrt{564327398.5 - 390407806.3} \times \sqrt{3351.3 - 2159.46}}$$

or, $$r = \frac{446476.90}{\sqrt{173919592.2} \times \sqrt{1191.84}}$$

or $$r = \frac{446476.90}{13187.86 \times 34.52}$$

or $$r = \frac{446476.90}{455244.85}$$

or, $r = 0.98$

$$r^2 = (0.98)^2$$

or, $r^2 = 0.96$

$$t = \frac{r}{\sqrt{1 - r^2}} \sqrt{n - 2}$$

$$= \frac{0.98}{\sqrt{1 - 0.96}} \sqrt{5 - 2}$$

$$= \frac{0.98}{\sqrt{0.04}} \sqrt{3}$$

$$= 8.48$$

Degree of freedom (d.f.) = n-2 = 5-3 = 3

$\alpha = 5\% = 0.05$

Tabulated value of t for 3 d.f. at α = 5% level of significance for two tails test is 3.182.

Appendix 26

Calculation of Coefficient of regression between K_e & DER

FY	Y	X	Y^2	X^2	XY	$\hat{y}$	$(y-\hat{y})$	$(y-\hat{y})^2$
2060/61	1.00	1288.40	1.00	1659974.56	1288.40	4.07	-3.07	9.42
2061/62	2.81	378.34	7.90	143141.16	1063.14	4.85	-2.04	4.16
2062/63	6.79	522.25	46.10	272745.06	3546.08	4.73	2.06	4.24
2063/64	6.02	912.40	36.24	832473.76	5492.65	4.39	1.63	2.66
2064/65	5.86	872.38	34.34	761046.86	5112.15	4.43	1.43	2.04
	22.48	**3973.77**	**125.58**	**3669381.40**	**16502.42**			**22.52**

N = 5
$\sum X = 3793.77$, $\sum Y = 22.48$, $\sum XY = 16502.42$, $\sum X^2 = 3669381.40$, $\sum Y^2 = 125.58$

Simple regression equation of MBL

$Y = a = bX$

According to the least square method, two normal equation for estimating two numerical constant 'a' and 'b' are given by,

$\sum Y = Na + b\sum X$ ---------- (i)

$\sum XY = a\sum X + b\sum X^2$ ---------- (ii)

Putting the value of $\sum X$, $\sum Y$, $\sum XY$ and $\sum X^2$ in equations (i) and (ii), we get,

$22.48 = 5a + 3973.77b$ ---------- (iii)

$16502.42 = 3793.77a + 3669381.40b$ ---------- (iv)

Multiplying eq^n. no. (iii) by 3793.77 and eq^n. no. (iv) by 5, we get,

$85283.95 = 18968.85a + 15075569.41b$
$82512.10 = 18968.85a + 18346907b$
$2771.85 = -3271337.59b$

$$b = \frac{2771.85}{-3271337.59}$$

$\therefore$ **b = -0.00085**

Putting the value of b in eq^{n} no. 3, we get,

$22.48 = 5a + 3973.77b$

or, $22.48 = 5a + 3973.77 \times (-0.00085)$

or, $22.48 = 5a - 3.38$

or, $5a = 22.48 + 3.38$

or, $5a = 25.86$

or, $a = \frac{25.86}{5}$

$\therefore$ **a = 5.17**

Putting the value of 'a' and 'b' on Y = a + bX model, we get,

$Y = 5.17 - 0.00085X$

$H_o : b_1 = 0$, the regression model of Y on X_1 is not significant.

$H_1 : b_1 \neq 0$, the regression model of Y on X_1 is significant.

Testing t-statistic

$$t = \frac{b_1}{Sb_1}$$

Where,

$$Sb_1 = \frac{S}{\sqrt{\Sigma(x - \bar{x})^2}}$$

$$S = \sqrt{\frac{SSE}{n-2}}$$

$$SSE = \sum (y - \hat{y})^2$$

$$S = \sqrt{\frac{\Sigma(y - \hat{y})^2}{n-2}}$$

$$= \sqrt{\frac{22.52}{5-2}}$$

$$= \sqrt{\frac{22.52}{5-2}}$$

$$= \sqrt{7.51}$$

$\therefore$ **S = 2.74**

$$Sb_1 = \frac{S}{\sqrt{\Sigma(x - \bar{x})^2}}$$

$$= \frac{2.74}{\sqrt{2253097.17}}$$

$$= \frac{2.74}{1501.03}$$

$$= 0.0018$$

$$t = \frac{b_1}{Sb_1}$$

$$= \frac{-0.00085}{0.0018}$$

$$= -0.47$$

/t/ = 0.47

Degree of freedom (d.f.) = n-2 = 5-3 = 3

α = 5% = 0.05

Tabulated value of t for 3 d.f. at α = 5% level of significance for two tails test is 3.182.

Appendix 27

Calculation of Trend Values of Interest Coverage Ratio of MBL

Fiscal Year (t)	Actual Value (%) (y)	x = t – mid year	xy	Y = 1.94 + 0.46X
2060/61	1.21	-2	-2.42	1.02
2061/62	1.98	-1	-1.98	1.48
2062/63	2.08	0	0	1.94
2063/64	2.20	1	2.20	2.40
2064/65	2.24	2	4.48	2.86
N = 5	∑y = 9.71	∑x = 0	∑xy = 2.28	

The equation of the straight-line trend is,

Y = a + bX……(1)

Since, a = ∑y / N = 9.71 / 5 = **1.94**

b = ∑xy / N = 2.28 / 5 = **0.46**

Now putting the value of a and b in the equation (1), we have,

Y = 1.94 + 0.46X, is the straight line trend equation-

Therefore, $Y_{f/y\ 2060/61\ (1)}$ = 1.94 + 0.46× (-2) = 1.02 & so on…..

Trend value of interest coverage ratio for next 3 years-

Fiscal Year (t)	X = t – 3	Trend Values (Y) = 1.94 + 0.46X
2006/07	3	1.94 + 0.46×3= 3.32
2007/08	4	1.94 + 0.46×4= 3.78
2008/09	5	1.94 + 0.46×5= 4.24

Appendix 28

Calculation of trend value of BV & MV of MBL

Fiscal Year (t)	Total Book Value (y)	x = t – mid year	xy	Y=540860457.2+367812171.2X
2060/61	79540858	-2	-159081716	-194763885
2061/62	501728428	-1	-501728428	173048286
2062/63	554235000	0	0	540860457
2063/64	637725000	1	637725000	908672628
2064/65	931073000	2	1862146000	1276484800
N = 5	∑y = 2704302286	∑x = 0	∑xy = 1839060856	

The equation of the straight-line trend is,

$$Y = a + bX \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Since, $a = \sum y / N = 2704302286 / 5 =$ **540860457.2**

$b = \sum xy / N = 1839060856 / 5 =$ **367812171.2**

Now putting the value of a and b in the equation (1), we have,

Y = 540860457.2 + 367812171.2X, is the straight line trend equation-

Therefore, $Y_{f/y\ 2060/61\ (1)} = 540860457.2 + 367812171.2\times(-2)$

= -194763885.2 & so on…..

Trend value of BV for next 3 years-

Fiscal Year (t)	X = t – 3	Trend Values (Y) = 540860457.2+367812171.2X
2065/66	3	540860457.2+367812171.2×3= **1644296971**
2066/67	4	540860457.2+367812171.2×4= **2012109142**
2067/68	5	540860457.2+367812171.2×5= **2379921313**

Calculation of trend value of MV of MBL

Fiscal Year (t)	Total Market Value (y)	x = t – mid year	xy	Y=1012774820+1033485160X
2060/61	136200100	-2	-272400200	-1054195500
2061/62	544174000	-1	-544174000	-20710340
2062/63	687500000	0	0	1012774820
2063/64	1408000000	1	1408000000	2046259980
2064/65	2288000000	2	4576000000	3079745140
N = 5	∑y = 5063874100	∑x = 0	∑xy = 5167425800	

The equation of the straight-line trend is,

Y = a + bX……(1)

Since, a = ∑y / N = 5063874100 / 5 = **1012774820**

b = ∑xy / N = 5167425800 / 5 = **1033485160**

Now putting the value of a and b in the equation (1), we have,

Y = 1012774820 + 1033485160X, is the straight line trend equation-

Therefore, $Y_{f/y\ 2060/61\ (1)}$ = 1012774820 + 1033485160×(-2)

= -1054195500 & so on…..

Trend value of MV for next 3 years-

Fiscal Year (t)	X = t – 3	Trend Values (Y) = 1012774820 + 1033485160X
2065/66	3	1012774820+1033485160×3=**4113230300**
2066/67	4	1012774820+1033485160×4=**5146715460**
2067/68	5	1012774820+1033485160×5=**6180200620**