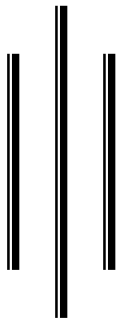
DIVIDEND PATTERN OF NEPALESE COMMERCIAL BANKS



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Biratnagar, Nepal
January 2010

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VIVA – VOCE SHEET

We have conducted the viva-voce examination of the thesis presented by

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Dividend Pattern of Nepalese Commercial Banks

and found the thesis to be original work of the student and written according to the prescribed format. We recommend the thesis to be accepted as partial fulfilment of the requirement for

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DECLARATION

I hereby declare that the work reported in this thesis entitled "**DIVIDEND PATTERN OF NEPALESE COMMERCIAL BANKS**" submitted to Office of the Dean, Faculty of Management, Tribhuvan University, is my original research work, which is prepared as the partial fulfillment of the requirement for the Master's Degree in Business Studies (MBS), under the supervision of **Dev Raj Shreshtha,** Thesis Supervisor, Post Graduate Campus, Biratnagar, T. U.

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LIST OF ABBREVIATION

a	:	Constant Number
A.D.	:	Anno Domino
ANOVA	:	Analysis of Variance
b	:	Regression Co-efficient / Retention Ratio
BOK	:	Bank of Kathmandu
C.V.	:	Co-efficient of Variation
d. f.	:	Degree of Freedom
DPS	:	Dividend Per Share
EBL	:	Everest Bank Limited
Ed.	:	Edition
eg.	:	For example
EPS	:	Earning Per Share
F/Y	:	Fiscal Year
i.e.	:	That is
MPS	:	Market Price Per Share
n	:	Number of Items
NBBL	:	Nepal Bangladesh Bank Limited
NEPSE	:	Nepal Stock Exchange
NIBL	:	Nepal Investment Bank Limited
No.	:	Number
NSCBL	:	Nepal Standard chartered Bank Limited
P.E.	:	Probable Error
Re.	:	Rupee
REPS	:	Retained Earning Per Share
Rs.	:	Rupees
S.D.	:	Standard Deviation
S.N.	:	Serial Number
SEBON	:	Security Board of Nepal
SEE	:	Standard Error of Estimation
VIZ.	:	Namely
Vol.	:	Volume
www	:	World Wide Web

CHAPTER – 1
INTRODUCTION

1.1 General Background

Dividend is the earning or profit distributed to shareholders by a company. It may be in cash, shares and securities or a combination of these.

Generally there are two types of shares, common stock and preferred stock. Common stock popularly known as equity share and it was preferred at the time of issue of stock. Preferred stock is known as hybrid security because this type of stock is issued for certain time period and the dividend is fixed as determined in advance. Therefore preferred stock is known as preference share. Dividend paid on preferred stock is called preferred dividend, which is generally fixed and paid before making payment to equity shareholders.

Every firm after making profit either retain the money for further investment or distributed it among the shareholders. The profit made by the firm, which is distributed, to the shareholders is termed as dividend. The firm should decide whether to keep the money as retained earning or pay the dividend. In order to finance its development and diversification the required fund will be retained and rest of the fund can be distributed as dividend. The pattern of a company on the division of its profits between distributions to shareholders as dividend and retention for its investment is known as dividend pattern. In this case the company should made decision regarding the payment of dividend as cash dividend and stock dividend is secondly it has to determine how much it should be. The percentage, timing and method of dividend are included in dividend pattern and stability of dividend.

It is not necessary that after business organization follow same dividend pattern. Dividend pattern of different organization may be same or different. But, the pattern followed by the firm should be suitable for both the shareholders as well as the firm itself. There is reciprocal relation between retained earnings and dividend. If dividend is paid, retained earnings decrease while if the profit is retained, shareholders' wealth minimized.

Dividend policy is the major decision of financial management. It is in the sense that the firm has to choose between distributing profits to shareholders and plugging them back into the business. The decision depends upon the objective of the management for wealth maximization. The firm will use the net profit for paying dividend to the shareholders if the payment will lead to maximization of wealth of the owners. If not it is better to retain them for finance investment programmes. The relation between dividend and value of the firm should therefore be the criteria for decision-making. '

One of the major reasons for which public is interested to invest their money or the shares of commercial banks or other institutions for dividend. Normally, business running at profit is capable to pay it. The amount, which is distributed as dividend, should be adequate to meet the normal expectation of shareholders.

The financial market in recent year becomes the most important part in corporate development of a country, mainly the banking sector. Banking sector are those financial institutions, which deals with the activities relating to trade, commercial industry and agriculture. Banking sector also plays important role in mobilizing idle scattered resource in productive sector. The commercial bank collect the scattered idle fund by issuing different type of securities and for this public are offered certain percentage of earning in this investment in form of dividend. So, every business entity including bank required to set policy regarding retention and distribution of profit.

Commercial banks contribute significantly in the mobilization of internal capital and development efforts. The main objective of commercial bank is to mobilize idle resources in particular productive uses after collecting them from scattered sources. In the early 1980 when government permitted to establishment of foreign joint venture companies. Then three joint venture banks namely Nepal Grindlays Bank Ltd, Nepal Arab Bank Ltd, Nepal Indossuez Bank Ltd, were established. Later on democratically elected government adopted liberalization and open market oriented economic policy, and then numbers of joint venture banks have been increased continuously.

It is an important decision of financial management. "By a dividend we mean some kind of consistent approach to the distribution versus retention decision, rather than making the decision on the purely adios basis from period to period" [1]. It is thus rewarding to have clear understanding on the specific dividend pattern by the participants of the capital market.

Dividend pattern may be defined as the way of acting of corporations with regard to providing returns to the investors in return to their investment in the shares. Corporate sector is small and it is at early stage of growth in Nepal. This sector has shown new momentum in the sense that a number of public limited companies are coming up in the capital market. Investors are investing their funds in the shares of public companies encouragingly. This trend plays a significant role for the development and expansion of the capital market and it will continue only when dividend pattern is directed to the interest of shareholders.

This research work will look into all relevant factors of dividend and dividend pattern of commercial banks of NSCBL, NIBL, EBL, NBBL and BOK.

1.2 Statement of the Problem

There is no any uniformity in the dividend pattern on Nepal among the different corporations. The government is unable to receive dividends from the public enterprises as documented in past several years' budget speeches and economic surveys published by HMG, Ministry of Finance.

The past decade had witnessed impressive establishment and growth of joint venture companies, mostly joint venture bank in Nepal. In the year 2005 on various categories, numbers of share transaction, amount traded and market capitalization most of the commercial banks ranked in the top ten companies. Most of them ranked as category 'A' companies in NEPSE. Dividend the most inspiring factor for the investment on share of the company is thus desirable from the

1. Hunt Pearson, M. William Charles and Gordon Donaldson, *Basic Business Finance.* Richard D. Irwin, Inc. Homewood, Illinois 1972, P. 405.

stockholders point of view. But, Nepalese commercial bank has no satisfactory result about dividend pattern.

It is partly due to the various government rules and regulations. But there is no limit to the identification of the problem about dividend pattern that is visible in Nepalese commercial banks while keeping this in mind - selected problems of commercial banks with regard to dividend pattern that can be quantified are taken.

Dividend pattern of commercial banks is not matching with the earnings. Similarly, there is no proper relationship between dividend and quoted market price of share exists. Earnings of firm are treated as financing sources. When the firm pays, dividends it may need to raise capital through capital market, which adulterate ownership control. In the later case, the firm takes loan or raises debenture. Which ultimately affect on risk of the firm, however, dividend is necessary for the attraction of investors and it reflects firm's healthy position in the market.

The banking sector is the major factor that plays the most significant role for the reviving whole economy that accumulates funds from various units of the society and transfers it to the productive sector. It tends to increase employment opportunity, industrial activities, and trade business. The country is facing huge crisis because of the political instability and other reasons. So, the study is purely involved to show the clear picture of the banking sector.

Even through there are various studies done previously; the question might arise that why is this study needed? There are rapid changes taken place in Nepalese banking sector in last few years. So, the earlier studies on dividend pattern need to be updated and validated. Most of the previous study had been applied financial tools only with less number of observations. Less observation means more variation between objectives and the result drawn. for that purpose, I have tried to carry out the analysis of latest data using different statistical tools as well as financial and accounting ratios along large number of observations; so the result will be near to objectives. This study carries out the secondary data from 2003/04 to 2007/08 of five years, which covers with five important commercial banks.

Research Problems:

(i) Are the selected banks paying the dividend uniformly?

(ii) What is the dividend pattern in Nepalese commercial banks?

(iii) What is the relationship between dividend per share with earning per share, market price per share and retained earnings in the commercial banks?

(iv) Does the dividend per share affected by the earning per share, market price per share and retained earnings?

1.3 Objectives of the Study

The objectives of the study are as follows.

(i) To analyse and identify the dividend pattern.

(ii) To analyse the relationship between dividend per share with earning per share, market price per share and retained earnings in the commercial banks.

(iii) To study whether the dividend per share affected by the earning per share, market price per share and retained earning.

(iv) To provide recommendation.

1.4 Significance of the Study

In recent time people are attracted to invest in share more than other sector, this may be due to fall in interest rate in the market other factors or desire of getting higher return. So dividend behaviour in recent year become one of the most inspiring factor for investor to attract beside other factors like current status, future prospective, sound financial achievement etc. that has been proved from the Bank of Asia's, Sunrise bank's and Citizen bank's share application ratio. Dividend pattern is not only effective way to retain old shareholders but also to attract new investor and maintain goodwill and controlling position in firm.

Dividend pattern of Nepalese companies is important now a day because it is getting considerable attention in financial management. Dividend pattern of the companies determines and analysis the division of earnings between payments to stockholders and reinvestment in the firm. This study mainly analysis the factors that influence the allocation of

earnings to dividends or retained earnings in Nepalese companies. It also discusses the relationship dividends payments and share prices; earnings and dividends payments; and market price and earnings.

Corporate sector is an expanding one but there is an information gap between the management of Nepalese companies and the Nepalese investors who are eager to invest in the shares. Moreover, they are investing in the shares in the trial and error methods. Therefore, the clear picture of dividend pattern can be an effective way to attract new investors along with keeping presents investors' happy and maintaining reputation of the companies.

This study is devoted to analysis, interpretation and compare of various applicable variables. The study will be descriptive and inferential analysis. Thus, it provides important guidelines to the management in setting suitable dividend policies in their respective corporations. It also helps regulatory body in counselling investors to make rational decisions while investing in shares. It is also hoped that it will provide relevant and pertinent literature for future research on the area of dividend policy of managerial finance. Thus, the study of "Dividend Pattern in Nepal" may be very respectful and rewarding.

This research is believed to have multi-dimensional significance for policy makers, shareholders, concerned people and institutions to see the comparative financial structure and health of institutions. Despite this, research will be also helpful to several outsiders such as financial agents, stockbrokers and students of finance and free-lancer researcher for their study further more about the concerned study. The conclusion derived from research will open to all interested persons and parties.

1.5 Limitations of the Study

A research is a vast study investigating the subject matter for solving perceived research problems. Each and every study has its own limitations. No study can be free from constraints, such as economic resources, time etc. And this study too is not an exception. Therefore, the following are the main limitations of the study.

(i) The study is mainly based on the secondary data.

(ii) Due to the time constraint, not all the related areas are possible to cover in depth.

(iii)The number of listed companies in the Nepalese stock market is small and the number of the companies whose securities are traded

regularly in the market is even smaller. The sample for the study has been selected from such companies is, therefore, very small.

(iv) The study covers only five-year period i.e. from the 2003/04 to 2007/08.

(v) Due to the unavailability of latest data for the study.

(vi) Lack of literature and the study about corporate dividend pattern.

(vii) The study covers only five banks. Therefore the conclusion may or mayn't be relevant for other sectors of Nepalese industries.

(viii) Data related to cash dividend are analysed and interpreted.

In addition, there are couples of limitations, which weaken the generalization e.g. time taken, reliability of statistical tools. Thus, while using the findings of the study one should be careful and use the same judiciously by considering the various limitations.

1.6 Organization of the Study

The study has been organized into five chapters; each chapter deals some important factors of dividend pattern. The titles of each of these chapters are listed below.

Chapter I : - Introduction of the study.
Chapter II : - Review of literature.
Chapter III : - Research methodology.
Chapter IV : - Presentation and Analysis of data.
Chapter V : - Summary, Conclusion and Recommendation.

Chapter I : - This is the introduction chapter of the study. This chapter includes general background, statement of the problem, objectives of the study, significance of the study, limitations of the study and organization of the study.

Chapter II : - This chapter is the review of literature deals with conceptual framework of the dividend policy. In this part research history of dividend policy will present in brief. Review of major studies will be also presented.

Chapter III : - This chapter contains the research methodology. This chapter deals with research design, sources of data, data collection techniques and data analysis tools.

Chapter IV : - This chapter deals with the presentation and analysis and major finding of the study on dividend pattern.

Chapter V : - This chapter includes summary, conclusion and recommendations.

The bibliography and appendices are at the end of the study.

CHAPTER – 2
REVIEW OF LITERATURE

The introduction part of this study has been presented in the first chapter. In this chapter an attempt has been made to review the various relevant literatures in relation to support the study to receive some ideas for developing a research design.

This research aims to analyze the dividend policy and practices of commercial banks especially five commercial banks viz. Nepal standard chartered bank ltd (NSCBL), Nepal Investment bank ltd (NIBL), Everest bank ltd (EBL), Nepal Bangladesh bank ltd (NBBL) and Bank of Kathmandu (BOK). For this purpose, it is helpful to review related literatures in this concerned area, which will help to get clear ideas, opinions and other concepts. 'What others have said?, What others have done? And what others have written?' all these and other related questions are reviewed, which has provided useful inputs in this research work. This chapter emphasizes on the literatures, which are concerned with this connection. Therefore, in this chapter, conceptual frameworks given by different authors and intellectuals on this area, books, journals, research works, and previous thesis related to dividend, dividend policies and practices and dividend behaviour are reviewed. Moreover, rules regarding to dividend policy are reviewed and an attempt has been made to present them properly.

2.1 Conceptual Framework

2.1.1 Background

In simple words, dividend refers to a portion of earning, which is distributed to shareholders in return of their investment in share capital. Dividend policy of a firm is one of the third major decision making areas of financial management. It is regarded as a tool to determine the appropriate allocation of profits between dividend payments and the amount to be retained in the firm. It deals with how much should pay to shareholders from the earnings. Dividend payout reduces the amount of earnings retained in the business, which affects the internal financing of

the firm. Generally, dividend is paid in cash because of which the assets of cash balance of the firm is reduced but by the payment of dividend, enterprise can collect the funds to finance its investment opportunity. Dividend behavior affects the financial structure, the flow of funds, corporate liquidity and investor's attitudes. It is a matter of interest for all the stakeholders. Thus, it is one of the central decision area related to policies seeking to maximize the value of firm's common stock.

Expected cash dividends are the key return variable from which owners and investors, determines share price. So, it is necessary for the enterprise to adopt an effect and relevant dividend pattern. Manager of the enterprise has to meet periodically to decide whether to pay dividends and to determine the amount and firms of dividend payment.

Iqbal Mathur defines the dividend and dividend policy as: "Dividends refer to that portion of retained earnings that is paid to stockholders while dividend policy refers to the policy or guidelines that management uses in establishing the portion of retained earnings that is to be paid in dividends."[2]

"Dividend policy is a consistent approach to the distribution versus retention decision. Adequate dividend determines the amount of earnings to retain and payout by the firm. A dividend payment is distribution to the shareholder of something belonging to the corporation and specifically to the stockholders themselves as owner of corporation."[3]

What and how much is desirable to pay dividend, is always a matter of dispute because shareholders expect higher dividend from company, as it tends to increase their current wealth whereas retention of earning is desirable for the growth of firm. These two objectives of the dividend policy are always in conflict. There is not yet consensus on whether the firms should follow certain pattern to distribute dividend and retain earnings. However, there are different decision models developed to analyse the situation and reach a decision. These decision models are conflicting and consider the different aspects of the firm. One school of

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[2] Iqbal Mathur, *Introduction to Financial Management,* MacMillion Publishing Company, New York, 1999, P. 297.

[3] Hunt Pearson, M. William Charles and G. Donaldson, *Basic Business Finance,* (3rd Ed.), The Dryden Press, New York, 1966, P. 278.

thought argues that dividend payment has no impact on valuation of a firm whereas other theories of dividend decision argues dividend to be active variable in valuation of firm.

"Dividend policy is recording evidence of shareholders filling case against the corporation imposing restriction in dividend payment as a matter of nature of separation between ownership and control. Since, dividend would be more attractive to shareholders. One might think that there would be tendency for corporation to increase distribution but one might well equally pressure the gross dividend would be reduced somewhat with and increase in retained earnings for the corporation."[4] Therefore, "Dividend policy is a wise policy to maintain a balance between shareholders interests with that the corporation growth from internally generated fund."[5]

"The fund could not be used up due to lack of investment opportunities, should be better to pay as dividends since shareholders might have investment opportunities to employ the fund elsewhere. Financial management is therefore concerned with the activities of corporation that affects the well - being of shareholders. That well - being can be partially measured by the dividends received but a more accurate measurement is the market value of stock."[6]

The dividend policy adopted by the firm should be such that it strikes a proper balance between the financial decision and wealth maximization decision. There is an inverse relation between retain earnings and cash dividend. When the firm retained the earnings providing necessary equity, the amount of dividend decreased, which may affects the market price of share adversely. However, this leads to increase the future earnings per share. Thus, dividend or indirectly determined and affects the maximization of the wealth of owners or shareholders.

If the company pays the earning as a dividend, they are beneficial directly and if company retains in the business to finance the business

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[4] D. T. Smith, *Relief from Double Taxation of Dividend Income*, Harward Business School, Boston, 1977, pp. 90 – 91.

[5] M. K. Shrestha, "Public Enterprises: Have They Dividend Paying Ability?", *The Nepalese Journal of Public Administration* Vol. 16, No. 2, Kathmandu, 1981, pp. 19 – 20.

[6] H. D. William, *Financial Management*, The Dryden Press, New York, 1973, P. 1.

opportunities they are benefited indirectly through the investment of market price of share i.e. capital gain. In both of the case shareholders get benefit. But how much should be retained in business in not a simple question. Since dividends would be more attractive to shareholder, one might not hesitate to say that dividends weight more than retention in the perception of the shareholders. But one might equally pressure that gross dividend would be reduced somewhat with an increase in net after tax dividend. Because tax dividend still a major decision of financial manager available to shareholders so it would be wise policy to maintain balance between shareholders interest with that of corporate growth from initially generated fund. So in conclusion it can be said that dividend decision is a major decision of financial management.

Thus this study aims to focus on all the relevant factors, prevailing practice and pattern of selected banks regarding dividend, dividend policy and their payment.

2.1.2 Statutory Limitations of Dividends

Often an uninformed criticism is made that corporate profits should not be allowed to be fritter away by the distribution of large dividends. This impression has gained currency mostly due to dividends being declared at seemingly large percentage in relation to companies' paid-up capital, which is not the correct base for calculation. Dividends, as a matter of reality, should be examined in relation to the net worth or total capital employed in an undertaking.

Investors with a view to earning a good return on their savings contribute capital in companies. Corporate managements can hardly afford to this legitimate expectation of the shareholders. The very basis of equity investment is the investor's expectation that he will receive back as dividend a reasonable share of profits, not merely by way of interest on capital but also a return for risk bearing implicit in such investment.

Moreover, when there is no guarantee of a minimum dividend the question of maximum limit would certainly create a feeling in the investors that equity investment is not attractive. The investors rightly expect a large return in times of higher profits since they have to be

contended with inadequate return or even no return of times of adversity. The hazards of industrial investment are long and real and frequently the waiting involved is most trying. Good years are inevitably followed by lead years. Such ups and downs are inherent in equity investment. To fetter investors' expectation by arbitrary government action is to drive them away from venture capital.

Any attempt to formulate public policy of control on dividends that fails to take into account the basic character of equity investment would be a retrograde step. It would upset the whole capital market and promote many undesirable trends in the finance for the private sector. It would also encourage wasteful expenditure on the part of the corporate undertaking. Instead of encouraging investment through retained earnings, it may act as an impediment to economic growth.

The normal method of dealing with high dividends is taxation. The ceiling of dividends will have disastrous effects on the share market and act as a disincentive for future investment in the private sector. As a rule, the decision regarding dividend distribution may well be left to the corporate management to deal with it in a flexible manner. Dividend distribution is not an isolated but an integral problem of joint-block enterprise. It cannot be an industry is itself a difficult problem, which is only made more difficult if arbitrary action is taken to limit dividend distribution.

Most companies prefer to depend upon internal resources for expansion rather than rely on costly borrowed funds. Secondly, liberal dividends have not been paid in order to minimize the tax liability of big and controlling shareholders who have to pay tax on their dividend income at a rate higher than that on corporate profits. Thirdly, the right capital market conditions have given an encouragement to the companies to depend more and more upon internal resources. Fourthly, the stringent credit policy has also led there to reduce dividends in order to maintain high liquidity.

In fact, there has grown a genuine grievance on the part of the shareholder that the full benefits of expansion financed by retained profits are not passed on to them in the form of a fair return on their investments.

There has been a den and for higher dividends on the part of shareholders in several leading companies which have responded to this demand by stepping up their dividends. Attention of management has been drawn to the unfair dividend policies in the conferences of shareholders. The shareholder's associations can play an important role in keeping an eye of vigilance on management to follow correct dividend policies.

2.1.3 Concept of Dividend

The various concepts of dividend, defined in various books of finance, are discussed below:

- **Discretionary concept**

When the board of directors declares the amount of dividend, it is known as discretionary dividend. According to this concept, dividend payment is one of directors' decisions and so they use discretion in declaration of dividend. Corporations' charter vested powers to board of directors and it is up to their discretion that determines what and how much to pay by way of dividends to stockholders.

"The power to declare dividends is lodged in the board of directors of the corporation. At a meeting of the board, in accordance with the charter and corporate by-laws, the board passes a resolution declaring the amount of dividend, the period which it covers, the payable date, and the record date of ownership." [7]

Even in the context of Nepalese corporations, the decision regarding the payment of dividend is purely vested in the board of directors of corporation, and it is also insisted by the corporate acts. There are not any legal rights to demand any part of profit in the form of dividends by the ordinary shareholders because profits are the property of the corporations and not of individual shareholders.

- **Pro-Rata Distribution Concept**

"A dividend is a pro-rata distribution of cash, other assets, promises to pay, or additional stock to the shareholders of a corporation

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[7] Gilbert W. Cooke and Edwin C. Bomeli, *Business Financial Management,* Houghton Miffin Company, New York, 1967, P. 180.

chargeable against its surplus accounts or (for certain liquidating dividends only) against its capital stock accounts."[8]

The pro-rata distribution refers to proportionate share of all outstanding stock, or all shares of a given class, which participate equally in whatever is distributed. Thus, under this concept, all shareholders enjoy equal right on the profit distributed by the corporations, according to their proportion of shares.

- **Residual Concept**

"Dividend is the residue left after meeting all obligations and adjusting for retention of earnings and other provisions. It is a residue since shareholders get dividends only when there exists balance of earnings after paying fixed obligations such as operating expenses, interest, provisions for depreciation, and setting."[9]

Under this concept, dividend policy is a residual firm investment policy and dividends are paid only after financing all investment opportunities. So, dividend policy is totally passive in nature. "When we treat dividend policy as strictly a financing decision, the payment of cash dividends is a passive residual."[10]

- **Liability Concept**

Dividend once declared by the board of directors, becomes a liability of the corporation. When the board of directors of a solvent corporation declares cash dividend, the amount declared becomes an obligation to pay. If the directors avoid payment of dividend after declaration, the shareholders would have a right to take action against the directors to force payment. The dividends declared are treated as liabilities in the balance sheet if the shareholders do not come to claim in time.

2.1.4 Conflicting Theories on Dividends

Basically, there are two schools of thoughts on dividend, which have been expressed, in the theoretical literature of finance. One school,

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[8] Gilbert W. Cooke and Edwin C. Bomeli, *Business Financial Management,* Houghton Miffin Company, New York, 1967, P. 180.

[9] James C. Van Horne, *Financial management and Policy,* Prentice Hall of India Pvt. Ltd., New Delhi, 1993, P. 327.

[10] Ibid.

associated with Myron Gordon and John Lintner, holds the view that capital gains expected to result from earnings retention are riskier than dividend expectations. In other words, dividend yield is less risky than the expected capital gain. It also says that investors give more emphasis to the present dividend than future capital gain. Investors are not indifferent between current dividend and retention of earnings with the prospects of future dividends, capital gain and both. Accordingly, these theorists suggest that the earnings of a firm with a low payout ratio are typically capitalized at higher rates than the earnings of a high payout firm, other things held constant.

Another school of thought, associated with Merton Miller and Franco Modigliani, holds the view that investors are basically indifferent to returns in the form of current dividends or retention of earnings with the prospects of future dividends, capital gain. When firms raise or lower the dividends, their stock prices tend to rise or fall in like manner. They argue that, given the investment decision of the firm, the value of firm is determined safely by the firms earning power and that the manner in which the earnings split between dividends and retained earnings does not affect the value of firm. In other words, when investment decision of the firm is given, dividend decision, the split of earnings between dividends and retained earnings, is of no significance in determining the value of firm.

2.1.5 Types of Dividend

The firm uses different types of dividend to the shareholders to implement their objectives and policies, which they implement. "The type of dividend that corporations follow is partly a matter of attitude of directors and partly a matter of the various circumstances and financial constraints that bound corporate plans and policies."[11]

According to the changing needs of corporations, dividend is being distributed in several forms viz. cash dividend, stock dividend (bonus share issue), scrip dividend, property dividend, optional dividend and

[11] M. K. Shrestha, *Financial management: Theory and practice*, Curriculum Development Centre, T.U., Kathmandu, 1980, P. 670.

bond dividend. But in Nepal and India only two types of dividend namely cash dividend and stock dividend are being practiced.

Some of the major types of dividends are as follows:

- **Cash Dividend**

Cash dividend is the form of dividend, which is distributed to shareholders in cash out of earnings of company. The cash account and the reserves account of a company will be reduced when the cash dividend is paid. Thus, "Both the total assets and the net worth of the company are reduced when the cash dividend is distributed. The market price of the share drops in most cases by the amount of the cash dividend distributed."[12] So the companies should wisely make decisions regarding payment of cash dividend.

The major motive of paying cash dividend is to convey information to investor that the company is doing well. The firm has to maintain adequate balance of cash for the payment of cash dividend if not funds need to be borrowed, which is paying a stable dividend cash planning is useful.

In the context of Nepal, cash dividend is the most popular form of dividend so it is very popular in commercial banks and other firms. However it depends upon the earning of firm, management decision, and Government policy, Nepal Rastra Bank policy and other various internal and external factors.

- **Stock Dividend**

If additional shares are issued to existing shareholders instead of cash dividend is known as stock dividend. “A stock dividend simply is the payment of additional stock to stockholders nothing more than a recapitalization of the company; a stock holder's proportional ownership remains unchanged.”[13] It is also called bonus share. This has the effect of increasing the number of outstanding shares of the company. The declaration of the stock dividend will increase the paid up share capital

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[12] P.G. Hasting, *The Management of Business Finance*, Von Nostrand Company, New York, 1996, P. 370.

[13] James C. Van Horne, *Dividend Policy: Theory and Practices, Financial Management & Policy, (10th Ed.),* Prentice Hall of India Pvt. Ltd., New Delhi, 1997, P. 334.

but reduces the reserves and surplus of the firm. It doesn't affect the ownership of the company.

- **Scrip Dividend**

A scrip dividend is issued when company has been suffering from the cash problem and does not permit the cash dividend, but has earned profit. A dividend paid in promissory notes is called a scrip dividend. Scrip is a form of promissory notes promising to pay the holder at specified later date. Under this form of dividend, company issues and distributes transferable promissory notes to shareholders, which may be interest bearing or non - interest bearing. The use of scrip dividends is desirable only when corporations have really earned profit and have only to wait for the conversion of other current assets into cash. Therefore, in order to overcome the temporary shortage of cash, sometimes company uses scrip dividends.

- **Property Dividend**

It is also known by the name of liquidating dividends. It involves a payment of assets / property in any form other than cash. Such form of dividend may be followed whenever there are assets that are no longer necessary in the operation of the business or in extra ordinary circumstances. Companies own products and the securities of subsidiaries are the examples that have been paid as property dividend.

- **Optional Dividend**

The optional dividend is, in fact, not a kind of dividend but simply a choice of dividend given to the shareholders to accept either cash or stock dividend. But the shareholders consider the comparative value of stock dividend with the amount of optional cash. "If the two are very nearly the same, as it often the case, the cash option may be a convenience to the small shareholder, who thus avoids the case and expense of selling either whole or fraction of shares he does not wish to keep."[14]

- **Bond Dividend**

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[14] W.C. Waring, Jr., "Fractional Shares Under Stock Dividend Declarations," *Harvard Law Review*, Boston, 1931, P. 404.

Bond dividend is a dividend that is distributed to the shareholders in form of bond. When the company generates more profit for a long time, it is better to issue bonds. These are given when the company firms unable to take the burden of interest of loan. In other words, corporation declares dividend in form of its own bond with a view to avoid cash outflows. If is issued for existing shareholders.

2.1.6 Theories of Dividend

2.1.6.1 Residual Theory of Dividend

"The residual dividend policy suggests that dividend paid by the firm should be viewed as a residual amount left after all acceptable investment opportunities have been undertaken."[15]

According to this theory, dividend policy is a firm's policy in which dividend are paid only after all acceptable investments have been financed. So, payment of dividend depends on its investment policy. In other words, the firms use earnings to finance the investment opportunities having good returns. If the firm has earnings left after financing all acceptable investment opportunities these earnings would then be distributed to shareholders in the form of dividend. If not, there would be no dividends. It assumes that the internally generated funds (i.e. retained earnings) are comparatively cheaper than the funds obtained from external sources (i.e. issuing new shares). It is because the retained earning or internally generated fund does not imply any flotation cost as in the external sources by selling equity shares.

So, under this theory, dividend policy is determined by the following two major factors:

- Company's investment opportunities.
- Availability of internally generated funds i.e., retained earnings.

According to this concept, "Dividend policy is totally passive in nature. 'When we treat dividend policy as strictly a financing decision, the payment of cash dividend is a passive residual."[16].

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[15] Lawrance J. Gitman, *Principle of Managerial Finance, (7th Ed.),* Harper Collin's College Publishers, New York, 1988, P. 537.

By the analysis of residual theory, it can be concluded that the company's investment of the opportunity as well as the availability of internally generated capital determines the dividend is paid regularly, and then the dividend policy is stability.

2.1.6.2 Stability of Dividend

Stability of dividends means regularity in paying some dividend annually, even though the amount of dividend may fluctuate from year to year and may not be related with earnings.

Stability or regularity of dividends is considered as a desirable policy by the management of most companies. Shareholders also generally prefer stable dividends because all other things being the same, stable dividends may have a positive impact on the market price of the share.

By stability, we mean maintaining its position in relation to a dividend trend line, preferably one that is upward slopping. In other words, the term dividend stability refers to the consistency or lack of variability in the stream of dividends. Precisely, it means that a certain minimum amount of dividend is paid out.

A) Forms of Stability Dividend

Dividend can be stable in any of the following forms;

- **Constant dividend per share**

According to this form of stable dividend policy, a company follows a policy of paying a certain fixed amount per share as dividend. The fixed dividend amount would be paid year after year, irrespective of fluctuation in the earnings. In other words, fluctuations in earnings would not affect the dividend payment. In fact, when a company follows such a dividend policy it will pay dividends to the shareholders even when it suffers loss. It should be clearly noted that this policy does not imply that the dividend per share or dividend rate will never be increase. The dividend per share is increased over the years when the company reaches

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[16] James C. Van Horne, *Financial Management and Policy,* Prentice Hall of India Pvt. Ltd., New Delhi, 1993, P. 327.

new levels of earnings and expects to maintain it. Of course, if the increase is expected to be temporary, the annual dividend per share is not changed and remains at the existing level.

It is easy to follow this policy when earnings are stable. If the earning pattern of a company shows wide fluctuations, it is difficult to maintain such policy. Investors who have dividends as the only source of their income prefer the constant dividend policy.

- **Constant payout ratio**

Constant / target payout ratio is a form of stable dividend policy followed by some companies. The term payout ratio refers to the ratio of dividend to earnings or the percentage share of earnings used to pay dividend. With constant / target payout ratio, a firm pays a constant percentage of net earnings as dividend to the shareholders. In other words, a stable dividend payout ratio implies that the percentage of earnings paid out each year is fixed. Accordingly, amount of dividend will fluctuate in direct proportion to earnings and are likely to be highly volatile in the wake of wide fluctuations in the earrings of the company.

This policy is related to a company's ability to pay dividends. If the company incurs loss, no dividends shall be paid regardless of the desires of shareholders. Internal financing with retained earnings is automatic when this policy is followed. At any given payout ratio the amount of dividends and the additions to retained earnings increase with increasing earnings and decrease with decreasing earnings. This policy simplifies the dividend decision, and has the advantage of protecting a company against over and under payment of dividend. It ensures that dividends are paid when profits are earned, and avoided when it incurs loss.

- **Stable rupee dividend plus extra dividend (low regular dividend plus extras)**

A policy of paying a low regular dividend plus a year-end extra amount in good years is a compromise between the previous two policies. Under this policy, a firm usually pays fixed dividend to the shareholders and in years of marked prosperity, additional or extra dividend is paid over and above the regular dividend. As normal conditions return, the firm cuts the extra dividend and pays the normal dividend per share.

It gives the firm flexibility, but it leaves investors with somewhat uncertainty about what their dividend income will be. If a firm's earnings and cash flows are quite volatile, this policy might be the best choice.

B) Reasons for Following Stable Dividend Policy

There are several reasons why investors prefer stable dividend.

- **Desire for current income**

The investors always have desire for current income. The investors such as retired persons and widows view dividends as the source of income so; they are ready to pay high price for their shares to avoid erratic dividend payments, which disrupt their investment.

- **Information contents**

The investors prefer stable dividend because they use dividend and change in dividend as the source of information about the firm's profitability. If the investors know that the firm will change dividends only if the management foresees a permanent earning change, then the level of dividends informs investors about management's expectations concerning the company's earnings.

- **Requirement of institutional investors**

The institutional investors such as life insurance companies, general insurance companies prefer to invest in those companies that have stable dividends. So, stable dividend policy is desirable.

2.1.7 Factors Affecting Dividend Decision

The main aspects of dividend decision are to determine the amount of earnings to be distributed to shareholders and to be retained in the enterprises. Retained earnings are most significant internal sources of finance of growth firm. Dividends are desirable to its shareholders because it tends to increase their current wealth whereas retained earnings are desirable for the firm to exploit investment opportunities as the internal source of financing. So, in order to develop a long-term dividend policy, the directors should aim at bringing a balance between the desire of shareholders and the needs of the company. Here, an attempt has been focused to discuss the some of those factors that influence the dividend decision of enterprises.

- **Legal Rules**

The dividend policy of the firm has to evolve with the legal framework and restrictions. Certain legal rules may limit amount of dividends that a firm may pay. First statutory restrictions may prevent a company from paying dividends while specific limitations vary by state, generally a company may not pay dividend.

a. If the firm's liabilities exceeds its assets,
b. If the amount of dividend exceeds the accumulated profits (retained earnings), and
c. If dividend is being paid from capital invested in the firm. Legal rules are significant in what they provide the framework within which dividend policies can be formulated.

- **Stockholders Desire**

Being the owner of the enterprises, stockholders should be considered and interested while formulating dividend policy. Stockholders who are high income tax bracket may be more interested in capital gain than dividend. Stockholders who have low-income sources are move interested in dividend than capital gain.

- **Liquidity Position**

Profit held as retained earnings are generally invested in assists required for the conduct of the business. Retained earnings from proceeding years are already invested in plant and equipment, inventories and other assets; they are not able to pay cash dividends because of its liquidity position. Indeed, a growing firm, even a very profitable one, typically has a pressing need for funds. in such a situation the firm may elect not too pay cash dividends.

- **Need to Repay Debt**

When a firm has sold debt to finance expansion or to substitute for other forms of financing, it is faced with two alternatives. It can refund the debt at maturity by replacing it with another form of security, or it can make provisions for paying off the debt. If the decision is to retire the debt, this will generally require for retention of earnings.

- **Restriction on Loan Agreement**

Restriction on loan agreement directly affects on dividend policy of a firm. Such restrictions are designed to protect the position of lender and preference shareholders. Restrictions on debt contracts may specify that dividend may be paid out of earning generated after signing the loan amount agreement and only when net working capital is above a specified amount certain amount of earning to reinvest as well.

- **Stability of Earning**

A firm that has relatively stable earnings is often able to predict approximately what its future earnings will be. Such a firm is therefore more likely to payout a higher percentage of its earnings than is a firm with fluctuating earnings. The unstable firm is not certain that in subsequent years the hope for earnings will be realized, so it is likely to retain a high proportion of current earnings. A lower dividend will be easier to maintain if earnings fall off in the future.

- **Rate of Assets Expansion**

The more rapid the rate at which the firm is growing, the greater is its need for financing assets expansion. The greater the future need for funds, the more likely the firm is to retain earnings rather than pay them out. If a firm seeks to raise funds externally, natural sources are the present shareholders, who already know the company. But if earnings are paid out as dividend and are subjected to high personal income tax rates, only a portion of them will be available for reinvestment.

- **Profit Rate**

The rate of return on assets determines the relative attractiveness of paying out earnings in the form of dividends to stockholders who will use them in the current enterprise or some elsewhere.

- **Access the Capital Market**

All firms do not have equal access to the capital market. A large well established firm with record of profitability and stability of earning has easy access to capital markets and other forms of external financing. Easy accessibility to the capital market provides flexibility to the management in paying dividend as well as in meeting the corporate obligation. Thus a fast growing firm having tight liquidity position will

not face any difficulty in paying dividends if it has access to the capital market.

- **Control**

The objective of maintaining control over the company by the existing management group or the body of shareholders can be an important variable in influencing the company's dividend policy. When a company pays large dividends, its cash position is affected. As a result, the company will have to issue new shares to raise funds to finance its investment programs. The control of the existing shareholders will be diluted if they don't want or can't buy additional shares. Under this circumstance, the payment of dividends may be withheld and earnings may be retained to finance the firm's investment opportunities.

- **Inflation**

In an indirect way inflation costs act as a constraint on paying dividends. Our accounting system is based on historical costs. Depreciation is charged on the basis of original costs at which assets were acquired. As a result, with raising prices funds saved on account of depreciation may be inadequate to replace obsolete equipment. Those firms have to rely upon retained earnings as a source of funds to make up the shortfall. This aspect becomes more important if the assets are to be replaced in the near future. Consequently, their dividend payment tends to be low during periods of inflation.

- **Financial Needs of the Company**

It is another consideration, which also influences on the establishment of an appropriate dividend policy. Mature companies that have few investment opportunities may generally have high payout ratios. On the other hand, growth companies may have low payout ratios. They are continuously in need of funds to finance their fast growing fixed assets. The distribution of earnings will reduce the funds of the company.

2.1.8 Rules Regarding Dividend Practices in Nepal

There are no clear-cut legal provisions regarding dividend policy in Nepal. The responsibility to undertake required actions to protect shareholder's interest is given to Nepal Stock Exchange which is stated on

the Security Exchange Act 1983. But this organization has not been so able to protect shareholders interest since interest and attitude of the board of directors play dominant role in management of public limited companies and they are generally in majority who are nominated by government.

According to Corporation Act, corporations must set aside a certain part of profit as reserves before the declaration of dividend. Moreover, corporations have to separate the tax provisions prior to dividend declaration.

Likewise, Commercial Bank Act 2031 has also made some provisions for distributing dividend. Section 18 of this act states about the restrictions for dividend distribution. According to this section, before providing the whole expenses by the bank for preliminary expenses, loss incurred in last year, capital reserve, risk beard fund reserve fund, the bank shall not declare and distribute the dividend to shareholders.

Similarly, Company Act 1997 makes some legal provisions regarding dividend distributions, which are discussed below.

According to this act, board of directors can fix dividend payout rate but such rate should be proposed, first for the discussion and approval in the annual general meeting of shareholders, the general meeting can reduce the rate determined by board of directors but can't increase. Some other legal provisions for dividend payment are made by the Nepal Company Act 1997 are as follows:

- **Section (2) (m)** states that bonus shares mean shares issued in the form of additional shares to shareholders by capitalizing the surplus from the profits on the reserve fund of a company. The term also denotes an increase in the paid up values of the shares after capitalizing surplus or reserve funds.
- **Section (47)** has prohibited company from purchasing its own shares. This section states that no company shall purchase its own shares or supply loans against the security of its own shares.
- **Section (137)** bonus shares and **sub-section (1)** states that the company must inform the office before issuing bonus shares under sub-

section (1); this may be done only according to a special resolution passed by the general meeting.

- **Section (140)** Dividends and sub-sections of this section are as follows:

1. Except in the following circumstances, dividend shall be distributed among the shareholders within 45 days from the date of decision to distribute them.
   a) In case any law forbids, the distribution of dividends.
   b) In case the right to dividend is disputed.
   c) In case dividends can't be distributed within the time limit mentioned above owing to circumstances beyond anyone's control and without any fault on the part of the company.
2. In case, dividends are not distributed within the time limit, mentioned in subsection (1), this shall be done by adding interest at the prescribed rate.
3. Only the person whose name stands registered in the register of existing shareholders at the time of declaring the dividend shall be entitled to it.

The above indicates that Nepalese law prohibits repurchase of stock, which is against the theory of finance. But the reason for this kind of provision is still unknown.

Similarly, followings are decisions regarding dividend payment by the government corporations dated June 14, 1998.

1) Dividend should be paid in profitable years. Even though there are cumulative losses, dividend is to be paid if cash flow is sufficient to distribute dividend.
2) In case of un-audited accounts, interim dividend should be paid on the basis of provisional financial statement.
3) Dividend rate will not be less than the interest rate on fixed deposit of commercial bank of government owned. Incase of insufficiency of profit amount to distribute dividend in above mentioned rate, concerned corporation should send proposal of new distribution rate to the Finance Ministry through liaison ministry and should do what so ever decision is given there of.

4) Those corporations operating in monopoly situation should repay all amounts of profits to the government except the amount of bonus, tax and the amount needed to expand and develop the business. The amount separated for the expansion and development of business will not be more than 20 percent of profit of the year and this amount will not be more than total paid up capital. The amount so separated should all be paid as dividend if it is not used within 3 years.
5) Decision regarding distribution of annual net profit shall not be made without prior acceptance of Finance Ministry. All incentives, except those to be paid by law, shall not be distributed unless the amount of dividend is not paid to government.
6) Concerned BOD and top management will be held responsible for implementation of these dividend policies.
7) Ministry of Finance will make necessary arrangements regarding fixation of dividend percentage coordinating all concerned corporations and ministries.

2.1.9 Directives Issued by Nepal Rastra Bank for the Financial Institution:[17]

To make the net profit and dividend system regular, transparent and systematic the central bank has issued this directive under Nepal Rastra Bank Act 2058 (Section 79).

1. Net profit distribution (Appropriation):

The company can distribute the net earning only for the following purpose, remaining with in the boundary of existing law.

a) To transfer into ordinary reserved capital.
b) To declare and distribute dividend.
c) To distribute bonus share.
d) To create surplus and reserve for the company.
e) To transfer into balance sheet as the retained earnings.

2. Restriction for clearing and distributing dividend:

[17] Directives no. 13, *The directives issued by Nepal Rastra Bank to Financial Institutional*, Kathmandu, 2058, P. 47.

The company cannot declare dividend unless and until the following conditions are fulfilled.

a) The company cannot pay dividend until the price of the shares in promoter's name is paid.
b) Unless the company is registered in Nepal stock exchange after the shares to the general public as mentioned in memorandum and articles of association.

[Explanation: - In this case dividend only confines to cash but also include bonus share and other profit capitalization].

3. Restriction for providing facilities:

The company cannot provide other financial facilities except dividend without the prior consent of bank and financial institution regulation division of Nepal Rastra bank.

4. The action to be taken for not following the directives for net profit and dividend:

If the company does not follow the directives, the bank can take any action mentioned in Nepal Rastra Bank Act 2058, (Section 100).

2.2 Review of Related Studies

This section is devoted to the review of the major studies in general concerning dividends. Therefore now the researcher is going to review the various studies conducted in different places by the different experts and authors.

- **Lintner's Study[18] :**

John Lintner, (1956), conducted a study on corporate dividend policy in the American context. He investigated a partial adjustment model as he tested the dividend patterns of 28 companies. According to John Lintner's study, dividends are 'sticky' in the sense that they are slow to change and lay behind shifts in earnings by one, or more periods. According to J. Lintner, dividend is a function of earnings of that year, existing dividend rate, target payout ratio and speed of adjustment.

[18] J. Lintner, "Distribution of Incomes of Corporations Among Dividends, Retained Earnings and Taxes," *The American Economic Review*, Vol. 46, May 1956, pp. 99 – 113.

The followings were the basic objectives of the study.

I. To identify occasions when a change in dividends might well have been under active consideration even though no change was made.
II. To determine the factors existing most actively into dividends.

He concluded that a major portion of a firm's dividend could be expressed in the following equation.

$$DIV_t^* = P\ EPS_t \text{ ----------(1)}$$

and $$DIV_t - DIV_{t-1} = a+b\ (DIV_t^* - DIV_{t-1}) + e_t \text{ ----------(2)}$$

Adding, DIV_{t-1} on both sides of equation (2)

$$DIV_t = a+b\ DIV_t^* + (1-b)\ DIV_{t-1} + e_t \text{ ----------(3)}$$

Where,

DIV_t^* = Firm's desired payment

EPS_t = earnings

P = Targeted payout ratio

a = constant relating to dividend growth

b = adjustment factor relating to the previous period's dividend and new desired level of dividends where, $b < 1$.

The major findings of this study were as follows:

I. Firms generally think in terms of proportion of earnings to be paid out.
II. In order to modify the pattern of dividend, investment opportunities, liquidity position and funds flows are not considered.
III. Firms generally have target pay out ratios in view while determining change in divided rate or dividend per share.

- **Modigliani and Miller Study[19] :**

[19] F. Modigliani, and M. H. Miller, "Dividend Policy, growth and the Valuation of Shares," *Journal of Business*, Vol. 32, No. 2, 1961, pp. 411 – 433.

F. Modigliani and M. H. Miller, (1961), conducted a study on the irrelevance of dividend. This is popularly known as MM approach. It is sometimes termed as Dividend Irrelevance Model.

According to MM, dividend policy of a firm is irrelevant, as it does not affect the wealth of the shareholders. They argue that the value of the firm depends on the earning power of the firm's assets or its investment policy. Thus, when the investment policy is given, the dividend decision - splitting the earnings into packages of retentions and dividends does not influence the value of equity shares. In other words, the division of earnings between dividend and retained earning is irrelevant from shareholders viewpoint.

In general, the argument supporting the irrelevance of dividend valuation is that dividend policy of the firm is a part of its financing decisions. As a part of the financing decision of the firm, the dividend policy of the firm is a residual decision and dividends are passive residual.

The MM approach of irrelevance dividend is based on the following critical assumptions:

I. The firms operate in perfect capital market where all investors are rational. Information is freely available to all. Securities are infinitely divisible and no investor is large enough to influence the market price of securities.
II. There are no flotation costs. The securities can be purchased and sold without payment of any commission or brokerage etc.
III. Taxes do not exist.
IV. The firm has a definite (fixed) investment policy, which is not subject to change.
V. Risk of uncertainty does not exist. Investors are also able to forecast future prices and dividends with certainty, and one discount rate is appropriate for all securities and all time periods. Thus r = k = kt for all time.

Modigliani and Miller provide the proof in support of their argument in the following manner.

- **Step – 1 :**

The market price of a share of the firm in the beginning the period is equal to the present value of dividends paid at the end of the period plus the market price of the share at the end of the period.

Symbolically,

$$P_0 = \frac{D_1 + P_1}{1 + k_e} \text{ ---------- (1)}$$

Where,

P_0 = Current market price of a share (market price at the beginning or at the Zero period).

K_e = the cost of equity capital (Assumed constant).

D_1 = the dividend per share to be received at the end of the period one.

P_1 = the market price of the share at the end of the period one.

- **Step – 2 :**

Multiply both sides of equation (1) by the number of shares outstanding (n) to obtain the total value of the firm if no new financing exists.

Symbolically,

$$nP_0 = n\frac{(D_1 + P_1)}{1 + k_e} \text{ ---------- (2)}$$

Where,

n = no. of outstanding shares at zero period.

- **Step – 3 :**

If the firm issues (sells) number of new shares (Δn) to finance the new investment needs of the fund at a price of P1, the value of the firm at time zero will be as follows;

Symbolically,

$$nP_0 = \frac{[nD_1 + P_1(n + \Delta n) - \Delta n P_1]}{1 + k_e} \text{ ---------- (3)}$$

Where,

Δn = no. of equity shares issued at the end of the period.

- **Step – 4 :**

The investment proposals of a firm, in a given period of time can be financed, either by retained earning or the issuance of new shares or both. Thus the amount of new issued will be as follows;

Symbolically,

$\Delta nP_1 = I - (E - nD_1)$

Or, $\Delta nP_1 = I - E + nD_1$ ---------- (4)

Where,

I = Investment needs.

E = Earning available.

$(E - nD_1)$ = Retained Earning.

- **Step – 5 :**

By substituting the value of mp1 from equation (4) to equation (3), we get,

$$nP_0 = \frac{nD_1 + P_1(n + \Delta n) - (I - E + nD_1)}{1 + k_e}$$

OR, $$nP_0 = \frac{nD_1 + P_1(n + \Delta n) - I + E - nD_1}{1 + k_e}$$

OR, $$nP_0 = \frac{P_1(n + \Delta n) - I + E}{1 + k_e} \text{ ---------- (5)}$$

- **Step – 6 : Conclusion,**

There is no role of dividend in above equation. So, MM concluded that dividend policy has no effect on the share price. According to the study, under conditions of perfect capital markets, rational investors, absence of tax discrimination between dividend income and capital appreciation, given the firm's investment policy, its dividend policy may have no influence on the market price of the shares. However, the view that dividend is irrelevant is not justified, once the assumption is modified to consider the realities of the world. in practice, every firm follows one kind of dividend policy or next. The selection of a certain dividend policy depends on the age and nature of the firm.

In case of Nepal, MM approach is not relevant since its assumption scientifically deviate when it is applied because the assumption of perfect capital market and rational investors prove faulty assumption in case of Nepal. Transaction cost, flotation cost and tax effect on the capital gain is neglected by MM approach, which is not sound. An arbitrage argument as described by MM applies only when these are very sensitive investors but in Nepal these types of investors are not enough. By the MM approach that investors are indifferent between dividend and retained earnings. It holds true for unconscious investors. It can firmly be said the Nepalese investors prefer dividend to retained earnings.

- **Gordon's Study[20]**

Myron J. Gordon, (1962), has conducted a study on the stock valuation using the dividend capitalization approach. Gordon concludes that dividend policy does affect the value of shares even when the return on investment and required rate of return are equal. He explains that investors are not indifferent between current dividend and retention of earnings with the prospect of future dividends, capital gain and both. The conclusion of this study is that investors have a strong preference for present dividends to future capital gains under the condition of uncertainty. It is assumed that current dividend is less risky than the

[20] M. J. Gorden, "The Investment Financing and Valuation of Corporation", *Home Wood III*, Illinois, 1962, pp. 264 – 272.

expected capital gain. His argument stresses that an increase in dividend payout ratio leads to increase in the stock price for the reason that investors consider the dividend yield (D1/Po) is less risky than the expected capital gain.

Gordon's model is also described as "a bird in hand argument". It supports the arguments, which are popularly known as a bird in hand is worth two in the bush. What is available at present is preferable than what may be available in the future. That is to say current dividends are considered certain and risk less. So rational investors as compared to deferred dividend prefer it in future. The future is uncertain. The investors would naturally like to avoid uncertainty. So the current dividends are given more weight than expected future dividend by the investors. So the value per share increases if dividend payout ratio is increasing. This means there exist positive relationship between the amount of dividend and stock prices.

Basic assumptions of this model are as follows:

I. The firm uses equity capital only.
II. Internal rate of return (r) and cost of capital (ke) are constant.
III. The firm and its stream of earnings are perpetual.
IV. There are no taxes on corporate income.
V. The retention ratio (b) once decided upon is constant. Thus the growth rate, (g= br) is constant forever.
VI. K_e must be greater than g (br) to get meaningful value.
VII. The source of financing for new investment is only retained earning. No external financing is available.

Gordon's model is also known as Growth Model. Based on assumption, the Gorden provided the following formula to determine the market value per share.

$$P = \frac{EPS(1-b)}{k_e - br} = \frac{DPS}{k_e - g}$$

Where,

P = Market value per share / Price of share.

EPS = Earning per share.

DPS = Dividend per share.

b = Retention ratio / percentage of retained earning.

K_e = Capitalization rate / Cost of capital.

br = g, or, growth rate in r, (i.e., rate of return on investment of an all equity firm).

Gordon contends that the dividend decision has a bearing on th e market price of share in situations where $r > K_e$, the market price of the share is favourably affected with more retentions. The reverse holds true when $r < K_e$, i. e. more retentions lead to decline in market price. Retentions do not affect the market price of share when $r = K_e$.

According to this model following important facts are revealed.

- **1st case: Growth Firm ($r > k_e$);**

In the case of growth firm, the value of a share will increase as the retention ratio (b) increases and the value of a share will decrease as the retention ratio (b) decreases. I.e. high dividend corresponding to earnings leads to decrease in share prices and low dividend corresponding to earning leads to increase in share prices. So, dividends and stock prices are negatively correlated in growth firm i.e., r > k firm.

- **2nd Case: Normal Firm ($r = k_e$);**

Dividend payout ratio does not affect the value of share in normal firm. In other words, share value remains constant regardless of changes in dividend policies. It means dividend and stock price are free from each other in normal firm i.e., r = k firm.

- **3rd Case: Declining Firm ($r < k_e$);**

In case of declining firm, share price tends to enhance with increase in payout ratio, or decrease in retention ratio. So, dividends and stock prices are positively correlated with each other in declining firm i.e., r < k firm.

- **Friend and Puckett's Study**[21]

Irwin Friend and Marshall Puckett, (1964), conducted a study on the relationship between dividends and stock prices. They used the regression analysis on the data of 110 firms from five industry samples, viz., chemicals (n=20), electronics (n=20), electric utilities (n=25), foods (n=25), and steels (n=20), in each of two years, 1956 and 1958. The industries were selected to permit a distinction to be made between the results for growth and non-growth industries and to provide a basis for comparison with results by other authors for earlier years. Both cyclical and non-cyclical industries were covered. The periods covered include a boom year for the economy when stock prices leveled off after a substantial rise (1956) and a somewhat depressed year for the economy when stock prices, however, rose strongly (1958).

They used two-regression model of price function and dividend supply function. In price function, dividends, retained earnings & price earnings ratio are independent variables, whereas, earnings, last year's dividends and price earning ratio are independent variables in dividend supply function. Symbolically, their price function and dividend supply function can be written as:

Price function;

$$P_t = a + b\,D_t + c\,R_t + d\,(E/P)_{t-1}$$

Where,

P_t = Per share price at time t.

D_t = Dividends at time t.

R_t = Retained earnings at time t.

$(E/P)_{t-1}$= Lagged earnings price ratio.

And, Dividend supply function;

$$D_t = e + f\,E_t + g\,D_{t-1} + h\,(E/P)_{t-1}$$

Where,

E_t = Earnings per share at time t.

D_{t-1} = Last year dividend.

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[21] I. Friend and M. Puckett, "Dividend and stock Price", *The American Economic Review,* Vol. 54, 1964, pp – 656-682.

The followings were the basic assumptions of their study:

I. Dividends do react to year-to-year fluctuations in earnings.
II. Price does not contain speculative components.
III. Earnings fluctuations may not sum zero over the sample.

The regression $P_t = a + b\ D_t + c\ R_t$ presents the usual simple linear relationships between average prices and dividends and retained earnings to show with the data. They found the customary strong dividend and relatively weak retained earnings effect in three of five industries i.e., chemicals, foods, and steels.

By adding lagged earnings price ratio to the above equation, they got the following results.

$$P_t = a + b\ D_t + c\ R_t + d\ (E/P)_{t-1}$$

They tested this equation and found the following results.

Dividends have a predominant influence on stock prices in the same three out of five industries but the differences between the dividends and retained earnings coefficients were not quite so marked as in the first set of regressions. The dividends and retained earnings coefficients were closer to each other for all industries in both years except for steels in 1956, and the correlations are higher, again except for steels.

They also calculated the dividend supply equation, i.e.,

$D_t = e + f\ E_t + g\ D_{t-1} + h\ (E/P)_{t-1}$ and derived price equation for four industry groups in 1958. The derived price equation show no significant changes from those obtained from the single equation approach as explained above, reflecting the fact that stock price, or more accurately the price earnings ratio, does not seem to have a significant effect on dividend payout. On the other hand, they noted that, in three of the four cases tested, the retained earnings effect is increased relatively. Moreover, their result suggested that price effects on dividend supply are probably not a serious source of bias in the customary derivation of dividend and retained earnings effects on stock prices, though such a bias might be masked if the distributing effects of short run income movements are sufficiently great.

Further, they used lagged price as a variable instead of lagged earnings price ratio. They found that retained earnings received greater relative weight than dividends in the majority of the cases. The only exceptions were steels and foods in 1958. Chemicals, electronics, and utilities were considered as growth industries and the retained earnings effect was larger than the dividend effect for both years covered. For the other two industries (steels and foods) there no longer seems to be any significant systematic differences between the retained earnings and dividend coefficients.

Similarly, they tested the regression of

$$P_t = a + b\,D_t + c\,R_t$$

by using normalized earnings again. They obtained normalized retained earnings by subtracting dividends from normalized earnings. That normalization procedure was based on the period 1950 - 1961. Again, they added prior year's normalized earnings price variable and they compared the result. Comparing the result, they found that there was significant role of normalized earnings and retained earnings but effects of normalized price earnings ratio were constant. After examining the later equation, they found that the difference between dividend and retained earnings coefficients disappeared. Lastly, they come to know a conclusion that management might be able to increase prices somewhat by raising dividends in foods and steel industries.

They concluded more detailed examination of chemical samples. Tat examination disclosed that the result obtained largely reflected the undue regression weighting given the three firms with price deviation most from the average price in the sample of 20 firms and retained earnings as a price determinant.

At last, Friend and Puckett found a conclusion that, it is possible that management might be able, at least in some measure, to increase stock prices in non-growth industries by raising dividends, and in growth industries by greater retention, i.e. smaller (lower) dividends.

- **Walter's Study;**[22]

[22] J. E. Walter, "Dividend Policies and Common Stock Price", *Journal of Finance*, Vol. 11, 1966, pp. 29 – 41.

James E. Walter, (1966), conducted a study on dividend and stock prices. He proposed a model for share valuation. According to him, the dividend policy of the firm affects the value of the shares. So, the dividends are relevant. He argues that the choice of dividend policies always affect the value of enterprise.

His study shows clearly the importance of the relationship between internal rate of return (r) and its cost of capital (k) in determining the dividend policy.

The assumptions of the Walter's model are as follows:

I. Firm finances all investment through retained earning. The external funds (i.e. debt, new equity) are not used for new investment.
II. All earning on the firm's investment (r) and the cost of capital (k) are constant.
III. All earnings are either distributed as dividend or reinvested internally.
IV. The values of EPS and DPS are assumed to remain constant forever in determining a given value.
V. The firm has a perpetual or infinite life.

Based on these above assumptions, Walter has given following formula of valuation of equity share.

$$P = \frac{DPS}{k_e} + \frac{\frac{r}{k_e}(EPS - DPS)}{k_e}$$

Where,

P = market value of an equity share (Market price per share).
DPS = Dividend per Share.
EPS = Earning Per Share.
r = The rate of return on the firm's investment.
ke = Cost of capital / Capitalization rate

According to Walter's model, the optimum dividend policy depends on the relationship between the firm's internal rate of return (r)

and its cost of capital (k). Walter referred different dividend policy for different types of the firm, which can be summarized as follows.

- **Growth Firm (r > k);**

Growth firms are those firms, which expand rapidly. Because of ample investment opportunities yielding return (r) is higher than the opportunity cost of capital (k). So, firms having r > k are referred as growth firms which are able to reinvest earnings at a rate which is higher than the rate expected by shareholders. They will maximize the value per share if they follow a policy of retaining all earnings for internal investment. Thus, the correlation between dividend and stock price is negative, and the optimum payout ratio for a growth firm is zero. The market value per share (P), increases, as payout ratio declines when r > k.

- **Normal Firm (r = k);**

If the internal rate of return is equal to cost of capital, the dividend payout does not affect the value of share, i.e. dividends are indifferent from stock prices. In other words, there is no role of dividends on stock prices. Such a firm can be called as a normal firm. Whether the earnings are retained or distributed as dividend, it is a matter of indifference for a normal firm. The market price of share will remain constant for different dividend payout ratio from zero to 100. Thus, there is no unique optimum payout ratio for a normal firm. One dividend policy is good as other and the market value per share is not affected by the payout ratio when r = k.

- **Declining Firm (r < k);**

If the internal rate of return (R) is less than cost of capital (k), it indicates that the shareholders can earn a higher return by investing elsewhere. In such a case for maximizing the value of shares, dividend also should be maximized. By distributing the entire earning as dividend, the value of share will be at optimum value. In other words, the market value per share of a declining firm with r < k will be maximum when it does not retain earnings at all. The relation between dividends and stock price is positive. The optimum payout ratio for a declining firm is 100

percent and the market value per share increases as payout ratio increases when r < k.

Thus in Walter's model, the dividend policy of firm depends on the availability of investment opportunities and relationship between the firm's internal rate of return (r) and cost of capital (k). The firm should use earnings to reinvest if r > k, should distribute all earnings where r < k and remain indifferent if r = k. Thus, dividend policy is a financing decision when dividend policy is treated, as a financing decision the payment of cash dividend is passive residual.

Criticism of Walter's Model

(i) No external financing

This model is based on assumption that the investment opportunities of the firm are financed by retained earnings finance the investment opportunities of the firm only no external financing i.e., debt or equity is used for the purpose. When such a situation exist either the firm's investment or its dividend policy or both will be sub-optimum.

(ii) Constant rate of return (r) & opportunity cost of capital (k)

This model assumes that rate of return (R) and opportunity cost of capital or discount rate (k) is constant. In fact, rate of return (r) changes with increase and decrease of investment, i.e., r decreases as more investment occurs and cost of capital (k) changes directly with the risk borne by the firms.

- **Van Horne And Mc-Donald's Study;**[23]

J. C. Van Horne and J. Mc-Donald, (1971), conducted a study on dividend policy and new equity financing. The purpose of this study was to investigate the combined effect of dividend policy and new equity financing decision on the market value of the firm's common stocks.

Empirical tests are performed with year-end 1968 cross sections for two industries, using a well-known valuation model. For there investigation, they employed two samples of firms viz. the 86 electric

[23] J. C. Van Horne, and J. Mc-Donald, *Dividend Policy and New Equity Financing: Financial Management,* Prentice Hall of India Pvt. ltd., New Delhi, 1971.

utilities in the continental U.S. which are included on the COMPUSTAT utility data tape; and 39 companies in the electronics and electric component industries as listed on the COMPUSTAT industrial data tape in 1968.

They tested three regression models, first two equations for the utilities industries and 3rd one equation for electronics and electronic components industries.

- **1st equation;**

$$\frac{P_0}{E_0} = a_0 + a_1(\text{g}) + a_2\left(\frac{D_0}{E_0}\right) + a_3(\text{Lev}) + \text{u} \text{ ---------- (i)}$$

Where,

$\frac{P_0}{E_0}$ = Closing market price in 1968 dividend by average EPS for 1967 and 1968.

g = Expected growth rate, measured by the compound annual rate of growth in assets per share for 1960 through 1968.

$\frac{D_0}{E_0}$ = Dividend payout measured by cash dividend in 1968 dividend by in earnings in 1968.

Lev = Financial risk, measured by interest charges dividend by the difference of operating revenues and operating expenses.

u = Error term.

- **2nd equation;**

$$\frac{P_0}{E_0} = a_0 + a_1(\text{g}) + a_2\left(\frac{D_0}{E_0}\right) + a_3(\text{Lev}) + a_4(F_a) + a_5(F_b) +$$
$$a_6(F_c) + a_7(F_d) + \text{u} \text{ ---------- (ii)}$$

Where,

F_a, F_b, F_c and F_d = Dummy variables corresponding to 'New Issue Ratio' (NIR).

It is noted that they had grouped the firms in five categories A, B, C, D and E by NIR. For each firm the value of dummy variables representing its NIR group is one and the values of remaining dummy variables are zero.

- **3rd equation;**

$$\frac{P_0}{E_0} = a_0 + a_1(\text{g}) + a_2\left(\frac{D_0}{E_0}\right) + a_3(\text{Lev}) + a_4(\text{OR}) + \text{u} \text{ ---------- (iii)}$$

Where,

OR = Operating risk, measured by the standard error for the regression of operating earnings per share on time for 1960 through 1968 and rest are as in first model above.

By using different methodology, they compared the results obtained for firms, which both pay dividends and engage in new equity financing with other firms in an industry sample.

They concluded that for electric utility firms in 1968, share value was not adversely affected by new equity financing in the presence of cash dividends, except for those firms in the highest new issue group and it made new equity a more costly form of financing than the retention of earnings.

They also indicated that the "Cost" disadvantages of new equity issues relatives to retained earnings widens as relatively large amounts of new equity are raised, so that the payment of dividends through excessive equity financing reduces share prices. For forms in the electronics-electronic component industry, a significant relationship between new equity financing and value was not demonstrated.

- **Chawla and Srinivasan's Study[24]**

Deepak Chawla and G. Srinivasan, (1987), conducted a study on the impact of dividend and retention on share price. They selected 18 chemicals and 13 sugar companies and estimated cross-sectional relationship for the years 1969 and 1973. They collected the required data

[24] D. Chawla, and G. Srinivasan, "Impact of Dividend and Retention on Share Price: An Economic Review", *Decision,* Vol. 14, No. 3, Bombay, 1987, pp. 137 – 140.

from the official directory of Bombay Stock Exchange. They used two stages least square technique for estimation. They also used lagged, earnings price ratio instead of lagged price earnings ratio, i.e. $P/E_{(t-1)}$.

The followings were the prime objectives of their study.

I. To, test the hypothesis of dividends and retained earnings.
II. To, estimate a model to explain share price, dividends and retained earnings relationship.
III. To, examine the structural changes in estimated relations over time.

In order to achieve (attain) these objectives, they used simultaneous equation model as developed by Friend and Puckett (1964). The following was the model in its unspecified form.

1. Price function:

$$P_t = f\,[D_t, R_t, P/E_{(t-1)}]$$

2. Dividend supply function:

$$D_t = f\,[E_t, D_{(t-1)}, P/E_{(t-1)}]$$

3. Identity:

$$E_t = D_t + R_t$$

Where,

P = Market price per share.
D = Dividend per share.
R = Retained earning per share.
E = Earning per share.
P/E = Deviation from the sample, (average of price earning ratio).
t = Subscript of time.

It was found, from the result of their two stages least square estimation, that the estimated coefficients had the correct sign and the coefficients of determination of all the equations were very high in case of chemical industry. It implies that the stock price and dividend supply

variation can be explained by their independent variables. But in case of sugar industry, they found that the sign for retained earnings is negative in both years and left for further analysis of sugar industry.

It was observed that the coefficient of dividend was very high as compared to retained earnings for chemical industry. They also found that coefficient of dividend was significant at one percent level in both years whereas coefficient of retained earnings was significant at ten percent level in1969 and one percent level in 1973.

Finally, they concluded that dividend hypothesis holds well in the chemical industry. Both dividend and retained earnings significantly explain the variation in share price in chemical industry. They also stressed that the impact of dividend is more pronounced than that of the retained earnings but the market has started shifting towards more weight for retained earnings.

- **Pandey's Study;**[25]

I. M. Pandey, (1990), studied on Corporate Dividend Behavior and Analysis of dividend Policy in Practice. Case of CARSEN and TOUBRO. It has been conducted based on the data from 1976 to 1987.

A stable payout ratio results fluctuating dividend per share pattern, which could be a cause of uncertainty for investors. In practices; firms express their dividend policy either in terms of dividend per share or dividend rate. Does this mean that payout ratio is not considered important by firma while determining their dividend policies? Winter in this study conducted in context of U.S.A., found that firms generally think kin terms of proportion of earnings to be paid out. Investment requirements are not considered for modifying the pattern of dividend behaviour. Thus firms generally have target payout ratios in view while determining change in dividend per share (or dividend rate). Let us assume that a firm has 'EPS', as the expected earning per share in the current year and 'p' as the payout ratio. If the firm strictly follows stable payout policy, the expected dividend per share DIV_1 is:

$$DIV_1 = p\ EPS_1 \text{ ---------- (i)}$$

[25] I. M. Pandey, *Corporate Dividend Behavior, Financial Management,* (5th Ed.), Vikash Publishimg House pvt. Ltd., New Delhi, 1990, pp. 783 – 786.

And dividend change (as compared to the dividend per share of the previous year, DIV_0) will be:

$$DIV_1 - DIV_0 = p\ EPS_1 - DIV_0 \text{ ---------- (ii)}$$

But in practice, firms do not change the dividend per share (or dividend rate) immediately with change in the earning per share. Shareholders like a steadily growing dividend per share. Thus the firm changes their dividends slowly and gradually even when there are large increases in earnings. This implies that firms have standards regarding the speed with which they attempt to move towards the full adjustment of payout of earnings. Pandey has therefore suggested the following eqation to explain the change in dividends of firms in practice.

$$DIV_1 - DIV_0 = b\ (p\ EPS_1 - DIV_0) \text{ ---------- (iii)}$$

Where 'b' is the speed of adjustment. A conservative company will move slowly towards its target payout.

The implication of equation (iii) are (a) that firms stabiles their dividends in accordance with the level of current earnings and (b) that the change in dividends over time do not correspond exactly with change in earnings in the immediate time period. In other words, dividend per share depends on the firm's current earnings (EPS_1) as well as the dividend per share of the previous year (DIV_0): the previous year's dividend per share depends on the year's earning per share and the dividend per share in the year before.

- **Holder, Longrehr and Hxter's Study;**[26]

A study by **Mark E. Holder, Fredrick W. Longrehr and J. L. Hexter,** (19980, made an investigation of influences of stakeholder theory with respect to dividend policy determinants. They investigated the influences of these stakeholders on firm's dividend policy be examining the interaction between the dividend and investment policies

[26] M. E. Holder, F. W. Langrehr, and J. L. Hexter, "Dividend Policy Determinants; An Investigation of the Influances of Stakeholder Theory", *Financial Management:* Vol. 27, No. 4, 1998, pp. 73 – 82.

and also they proposed that no investors, stakeholders and capital supplies have an impact on a firm's dividend policy.

Regarding the study topic describe the economic model and the variables used in the study. To find the relationship between the NOC of a firm and following regression equation model was used in the study;

$$DP_{it} = \beta_0 + \beta_1 FS_{it} + \beta_2 LSALES_{it} + \beta_3 INS_{it} + \beta_4 LCSHR_{it} + \beta_5 + FCF_{it} + \beta_6 GROW_{it} + \beta_7 STD_{it} + E_{it}$$

Where,

DP_{it} = Smoothed dividend payout ratio for firm I in year t.

FS_{it} = Measure of the focus of firm I in year t.

$LSALES_{it}$ = Natural log of sale of firm I in year t.

INS_{it} = Residual of insider ownership for firm I in year t regressed on LSALES.

$LCSHR_{it}$ = Residual of natural log of No. of common shareholders for firm I in year t regressed on LSALES.

FCF_{it} = Free cash flow for firm I in yea t.

$GROW_{it}$ = Sales growth of firm I in year t using price 5 years.

STD_{it} = Standard deviation of monthly returns of firm I in year t.

They used above mentioned regression equation as the basis for testing their hypothesis of relationship between the NOC (Net Organizational Capital) of a firm and its dividends payout. They developed model with data from 477 firms over an eight-year period (i.e. 1983 - 1990) for a total of 3816 observations, and used a pooled time series cross sectional analysis.

The major findings of the study were:

- The coefficient of corporate focus on NOC is negative and statistically significant indicating a negative inference on dividend payout ratio.
- Large firms tend to have higher payout ratios, compared to smaller firms larger firms have easier access to the capital market and are therefore less dependent on internal funds. Therefore, they can afford to pay higher dividends.

- Insider ownership negatively and payout. Firms with a higher percentage of stock held by insider will have lower agency costs and lower dividend payout ratio.
- Insider levels of free cash flow have higher agency costs and need higher dividend payout ratios to reduce those agency costs.
- Dividend payout ratio is lower for higher risks firms.
- Sales growth is negatively and significantly related to dividend payout ratio.

- **Koch and Shenoy's Study;**[27]

A study made by **P. D. Koch and C. Shenoy,** (1999), haaave examined information effect of dividend charges for firms with different value of Tobin's. They explained the previous more predictive information regarding future cash flow for under investing and over investing firm than value maximizing firms changes in dividend and capital structure policy convey information to the stock market about the future performance of firm. They analyzed two stages. Gewette Feedback Measures (GFMS) for each firm in the sample. Each Gewette Feedback Measures the incremental predictive information about the future cash flow provided by a firm's dividend and capital structure policy in the first stage of three-time series analysis. In the second stage, they regressed each collecting of feedback measures (on Tobin's q and q^2) to see. Both dividend and capital structure policies vary substantially across firms including many firms for which dividend and capital structure policies provide no significance predictive information.

In the second stage, the result reveals a distinct V-shaped relation between Tobin's and amount of predictive information contained at a firm's dividends and capital structure policies with a minimum at a q value near one. This empirical evidence is consistent with the free cash flow hypothesis and it suggested that dividend and under investing firm than for value maximizing firms.

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[27] P. D. Koch, and C. Shenoy, "The Information Continent of Dividend and Capital Structure Policy", *Financial Management:* Vol. 28, No. 4, 1999, pp. 34 – 40.

The findings of the above mentioned studies conducted in dividend and big capital market may or may not applicable in Nepal where capital market is small and is emerging one as well as may not be directly comparable to that of Nepal. So here, attempts are made to review same major studies that are being carried out in Nepal.

- **Shrestha's Study;**[28]

An article, "Public enterprises: Have they divided paying ability?" Was published in 1981 by **Dr. Manohar Krishna Shrestha,** which gives short glimpse of the dividend performance of some public enterprises of that time in Nepal.

Dr. Shrestha has highlighted following issues in his article:

- HMG Expects two things from the public enterprises:

i. They should be in a position to pay minimum dividend and
ii. The public enterprises should be self-supporting in financial matters in future years to come, but none of these two objectives are achieved by the public enterprises.

- One reason for this efficiency is caused by excessive government interference in day-to-day affairs. On the other hand, high-ranking officials of HMG appointed on directors of Board do nothing but simply shows their bureaucratic personalities. Bureaucracy has been the enemy of efficiency and Lead Corporation to face losses. Losing corporations are therefore not in position to pay dividend to government.

- Another reason is the lack of self-criticism and self-consciousness. The lack of favorable leaders is one of the biggest constraints to institution building moreover corporate leadership comes managers of corporations have not been able to identify themselves regarding what they can contribute as manager of corporations. So HMG

[28] M. K. Shrestha, "Public Enterprises: Have They Paying Dividend Ability?", *The Nepalese Journal of Public Administration:* Vol. 16, No. 2, 1981, pp. 19 – 20.

must be in a position to drop a financial target in corporate investment by imposing financial obligation.

- The article point out irony of government biasness that government has not allowed banks to follow an independent dividend policy and HMG is focused to have pressurized on dividend payment in case of Nepal Bank Ltd, regardless of profit. But it has let off Rastriya Banijya Bank from dividend obligation in spite of considerable profit.

- Need of criteria suggested by Dr. Shrestha are:

i. Adopt a criteria-guided policy to drain resources from corporations through the medium of dividend payment.
ii. Realization by managers about the cost of equity and dividend obligation.

- If HMG wants to tap resources through dividend the following criteria should be followed:

i. Circulating the information to all the public enterprises about the minimum rate of dividend.
ii. Proper evaluation of public enterprises in term of capability of paying dividend should be made through corporation coordination committee.
iii. Imposition of fixed rate of dividend by government to financially sound public enterprises.
iv. Specifying performance criteria such as profit target in terms of emphasis, priorities, timing and plans. Developing a strategic plan, which is not just a statement of corporation aspiration but must be done to convert the aspiration into reality.
v. Identification of corporation objectives in corporation Act, company Act or special character so as to clarify the public enterprise managers regarding their financial obligation to dividend to HMG.

- **Pradhn's Study;**[29]

Radhe Shyam Pradhan, (1993), has conducted the study on stock market behavior, collecting data of seventeen enterprises from the year 1986 to 1990 to fulfill the following objectives:

i. To access the stock market behavior in Nepal.
ii. To examine the relationship of market equity, market value to book value, price earnings and dividends with liquidity, profitability, leverage assets turnover and interest coverage.

He has reported the following findings in connection with dividend behavior.

i. Higher the earnings on stock, larger the ratios of dividend per share to market price per share.
ii. Dividend per share and market price per share are positively correlated.
iii. Positive relationship between the ratio of dividend per share to market price per share and interest coverage.
iv. Positive relationship between dividend payout and liquidity.
v. Negative relationship between dividend payout and leverage ratio.
vi. Positive relationship between dividend payout and profitability.
vii. Positive relationship between dividend payout and turnover ratios.
viii. Positive relationship between dividend payout and interest coverage.
ix. Liquidity and leverage ratios are more variable for the stock paying lower dividends.
x. Earnings assets turnover and interest coverage are more variable for the stock paying higher dividends.

- **Manandhar's Study;**[30]

Kamal Das Manandhar, (2001), has carried out a study based on the data collected for eleven years from 1987 to 1998. The analysis

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[29] R. S. Pradhan, "Stock Market Behaviour In a Small Capital Market; A Case of Nepal", *The Nepalese Management Review:* Vol. 9, No. 1, 1993, pp. 23 – 49.

[30] K. D. Manandhar, "Bonus Share and Dividend Changes Empirical Analysis in Nepalese Context", *Management Dynamics: A Journal of Management:* Vol. 2, No. 1, 2001, pp. 4 – 18.

covers 35 observations pre-bonus dividend rate and 29 post-bonus dividend rates of 12 samples of the Nepalese corporate firms selected from the NEPSE. The sample corporate firms include 5 from banking, 3 from insurance and finance company and 4 from manufacturing, trading and airlines.

The study is made to analyze the actual dividends behavior of Nepalese corporate firms after an issue of bonus share. The major findings of the research work are:

i. The announcement of bonus share issue has a significant impact in market price per shares which ultimately the wealth of the stockholders.
ii. In overall, corporate management have not found considering its effect on dividend distribution in future as reflected by absence of the systematic dividend paying practices before and after bonus share issue.
iii. There is no systematic policy of dividend distribution after the issue.
iv. There is diversity in the increase in dividend rate and the total dividend payment after the issue. Which means dividend increase does not follow the bonus after issue in Nepalese corporate firm's dividend behavior.
v. The relationship between existing dividend and several of bonus share issue ratio is not found significant in Nepalese corporate firms.

CHAPTER – 3
RESEARCH METHODOLOGY

This chapter presents the research methodology used to study dividend pattern of the commercial banks and tried to find out the relationship between dividend per share and other financial indicators earning per share, market price per share and retained earnings. The following research methodologies are used in this chapter.

a. Research Design

The analysis of the study is based on certain research design keeping in mind on the objectives of the study. The research design is less descriptive but more prescriptive because the historical secondary data have been used to analyze using variables which is related to dividend pattern or behavior of the commercial banks.

The main objective of this research work is to evaluate the dividend pattern of Nepal standard chartered bank ltd (NSCBL), Nepal Investment bank ltd (NIBL), Everest bank ltd (EBL), Nepal Bangladesh bank ltd (NBBL) and Bank of Kathmandu (BOK). To complete this study, following design and format has been adopted.

First of all, information and data (the annual reports published by the related banks and financial statements of the banks published by NEPSE Ltd.) are collected for the F/Y 2003/04 to F/Y 2007/08, for the analytical purpose. The important information and data are selected. Then data are arranged in useful manner. After that, data are analysed by using appropriate financial and descriptive and analytical tools. In analysis part, interpretation and comments are also made wherever necessary.

3.2 Population and Sample

Until May 2009, 25 commercial banks (including government owned, private and joint venture) are operating in Nepal, which are regarded as size of population. Due to the limited time and resources

factors too, it is not possible to study all of them, so sampling has been done. Among the 25 commercial banks, the study has been confined to only 5 commercial banks (that represents 20%)via judgmental sampling method**.**

The sample banks to be selected are as follows:

(i) Nepal standard chartered bank ltd (NSCBL).

(ii) Nepal Investment bank ltd (NIBL).

(iii) Everest bank ltd (EBL).

(iv) Nepal Bangladesh bank ltd (NBBL).

(v) Bank of Kathmandu (BOK).

3.3 Nature and Sources of Data

The study is primarily based on secondary sources of data. The required data have been collected from financial statements of listed companies which have located at www.nepalstock.com and official website of Nepal stock exchange Ltd.

Financial data of previous six years of the selected banks are downloaded from www.nepalstock.com . Different books from library, periodicals, newspaper cuttings, companies' magazines will also be used whenever required. Needless to say that this study is associated with past phenomena, therefore, only the secondary data will be used to carry out the whole calculations. Thus, the historical data from the NEPSE'S website shall be used which obviously the secondary sources and past phenomena nature.

3.4 Period of the Study

The study is based on five years financial data of sample banks (i.e., Nepal standard chartered bank ltd, Nepal Investment bank ltd, Everest bank ltd, Nepal Bangladesh bank ltd and Bank of Kathmandu) from fiscal year 2003/04 to 2007/08.

3.5 Data Processing Technique

After collecting the necessary data relevant facts and figure have taken and tabulated under the different heading. Such table and formats are subjected to interpretation and explanation as necessary. Scientific calculator and simple microcomputer has been used to compute data.

3.6 Method of Data Analysis

The facts and figures collected are to be systematically processed with a view to reducing them to manageable proportion; so that, the statistical treatment and meaningful interpretation can be done to formulate theory or findings. Thus, the data analysis process comprises of editing, coding, categorization & tabulation and performing statistical analysis.

The data has been analyzed according to the pattern of data available. Wide verities of methodology have been applied according to the reliability and consistency of data. Before using the analytical tools to compare result, the data containing in the financial statements have been grouped and rearranged so as to make comparison easy. For the data of five years were taken as sample from 2003/04-2007/08. The data were analyzed in ways as:

- Financially
- Statistically

The results and the findings from the findings from the two types of analysis were jointly interpreted.

3.6.1 Financial Tools

(A) Dividend Per Share (DPS)

Dividend per share indicates the rupee earnings actually distributed to common stockholders per share held by them. It measures the dividend distribution to each equity shareholders.

The dividend per share simply shows the portion of earning distribution to the shareholders on per share basis. Generally, the higher

dividend per share creates positive attitude of the shareholders toward the bank, which consequently helps to increase the market value of the shares. And it also works as the indicator of better performance of the bank management.

It is defined as the result received by dividing the total dividend distributed to equity shareholders by the total number of equity shares outstanding. Thus,

$$\left(DPS = \frac{\text{Total amount of dividend paid to ordinary shareholders}}{\text{Number of ordinary shares outstanding}}\right)$$

(B) Earning Per Share (EPS)

Earning per share refers the rupee amount earned per share of common stock outstanding. It measures the return of each equity shareholders. It is also identified to measure the profitableness of the shareholders investment. The earning per share simply shows the profitability of the banks on a per share basis. The higher earning indicates the better achievements of the profitability of the banks by mobilizing their funds and vice versa. In other words, higher earning per share denotes the strength and lower earning per share indicates the weakness of the banks.

Earning per share is computed to know the earnings capacity and to make comparison between concerned banks. This ratio can be computed by dividing the earning available to common shareholders by the total number of common stock outstanding of banks. Thus,

$$\left(EPS = \frac{\text{Total earnings available to ordinary shareholders}}{\text{Number of ordinary shares outstanding}}\right)$$

(C) Market Price Per Share (MPS)

Market price per share is the current price at which the stock is traded. Market price of common stock is the function of the current and expected future dividend of the company and the perceived risk of the stock on the part of investors.

Nepal stock exchange ltd. has been traded MPS on closing MPS. Therefore the researcher has been applied the MPS in closing MPS.

(D) Retained Earning, Per Share (REPS)

Generally company distributed one portion of its profit as dividend to the shareholders and remaining are retained to carryout for further investment opportunities. The retained amounts of total earnings are called as retained earnings. Retained earning per share (REPS) is calculated by dividing the total amount of retained by the number of common stock outstanding or by subtracting dividend per share (DPS) from earning per share (EPS). Thus,

$$\left(REPS = \frac{\text{Total amount of retained earnings}}{\text{Number of ordinary shares outstanding}}\right)$$

OR, REPS = EPS – DPS

3.6.2 Statistical Tools

Different historical tools (i.e. mean, standard deviation, coefficient of variation, correlation coefficient, regression analysis, coefficient of determination, standard error of estimation, T-statistics and F-statistics) have been applied to give reasonable result to the model discussed in subsection 3.7.1. The tools applied here are discussed below.

(A) Arithmetic Mean or Average ($\overline{X}$)

Arithmetic mean or average is the set of observation that present the entire data, its value lies some where in between the extremes. For this reason and average is frequently referred to as a measure of central tendency. It is denoted by $\overline{X}$. Symbolically,

$$\overline{X} = \frac{X_1 + X_2 + X_3 + \ldots\ldots\ldots\ldots\ldots + X_n}{N} = \frac{\sum X}{N}$$

Where,

$\overline{X}$ = Arithmetic mean or Average

X_1, X_2, X_3, X_n = Values of variables

$\sum X$ = Sum of the values of variables

N = Total number of observation

(B) Standard Deviation (¢)

The measurement of the scatter necessary of the data from mass of figure in a series able an average is known as dispersion. The standard deviation measures the absolute dispersion. If the amount of dispersion is greater than standard deviation is also greater. The small standard deviation means a high degree of uniformity of the observation well as homogeneity of a series and vice-versa. It is denoted by ¢ . Symbolically,

$$¢ = \sqrt{\frac{\sum\left(X - \overline{X}\right)^2}{N}}$$

Where,

¢ = Standard deviation

$\sum\left(X - \overline{X}\right)^2$ = Sum of the mean deviation squared

N = Total number of observation

(C) Coefficient of Variation (C.V.)

The c.v. is the relative measure of dispersion, comparable across which is defined as the ratios of the standard deviation to the mean expressed percent. Symbolically,

$$C.V. = \frac{¢}{\overline{X}} \times 100\ \%$$

Where,

C.V. = Coefficient of variation

¢ = Standard deviation

$\overline{X}$ = Arithmetic mean or Average

(D) Correlation Coefficient (r)

Correlation analysis is the statistical tools that can be used to describe the degree to which one variable is linearly related to another. The correlation coefficient measures the degree of relationship between two sets of figures. In this study, correlation coefficient is used to determine the relationship between different factors, as like as, dividend

per share, earning per share and market price per share. Correlation coefficient is must widely used in practice correlation can either be positive or it can be negative. It is denoted by r. Symbolically,

$$r = \frac{n\sum XY - \sum X \sum Y}{\sqrt{n\sum X^2 - \left(\sum X\right)^2}\sqrt{n\sum Y^2 - \left(\sum Y\right)^2}}$$

Where,

r = Correlation Coefficient $(r_{12})^2$

n = Number of Observation

[Note: - It is used for calculation of Simple Correlation Coefficient.]

And, $R_{123} = \sqrt{\frac{(r_{12})^2 + (r_{13})^2 - 2 r_{12} r_{23} r_{13}}{1 - (r_{23})^2}}$

Where,

R_{123} = Multiple Correlation Coefficient Between Variables 1, 2 and 3.

r_{12} = Simple Correlation Coefficient Between Variables 1 and 2.

r_{23} = Simple Correlation Coefficient Between Variables 2 and 3.

r_{13} = Simple Correlation Coefficient Between Variables 1 and 3.

[Note: - It is used for calculation of Multiple Correlation Coefficient.]

The value of the correlation coefficient obtained by the above formula shall always lie between –1 and +1. When r = -1, it means, there is perfect negative relationship between the variables and when r = +1, it means, there is perfect positive relationship between the variables. However, in practice such values of r is +1, -1 and 0 are rare.

(E) Regression Analysis

Correlation coefficient tells the relationship and direction of movement but it does not tell the relative movement in the variables under study. Regression analysis helps us to know the relative movement

in the variables. Regression analysis of the following variables have been calculated and interpreted.

(i) Simple regression analysis

- **Simple regression analysis of DPS on EPS**

$$Y = a+bX_1$$

Where,

Y = DPS

a = Regression constant

b = Regression coefficient

X_1 = EPS

This model has been applied to examine the relationship between DPS and EPS of the banks over the study period.

- **Simple regression analysis of MPS on DPS**

$$Y = a+bX_2$$

Where,

Y = MPS

a = Regression constant

b = Regression coefficient

X_2 = DPS

This model has been applied to examine the relationship between the MPS and DPS of the banks over the study period.

(i) Multiple regression analysis

- **Multiple regression analysis of MPS on EPS and DPS**

$$X_1 = a+ b_1X_2+b_2X_3$$

Where,

X_1 = MPS

a = Regression constant

b_1 , b_2 = Regression coefficient

X_2 = EPS

X_3 = DPS

This given multiple regression analysis model has been applied to determine where the variables of EPS and DPS have strong relation to the MPS.

(F) Regression Constant (a)

The regression constant synonymous with the numerical constant which determines the distance of the fitted line directly above of below origin (i.e. Y-intercept) is said as regression constant. It is better to understand that 'a ' (constant) indicates the mean or average effect on dependent variable if all the variables omitted from the model. In other word, the value of constant is the intercept of the model, when the independent variables are zero; it indicates the average level of dependent variable. To, find out the regression constant (a), we can use the following formula;

$$a = \overline{Y} - b\,\overline{X}$$

Where,

a = Regression Constant

$\overline{Y}$ = Mean or Average of Y

b = Regression Coefficient

$\overline{X}$ = Mean or Average of X

(G) Regression Coefficient (b_1, b_2, ……)

The regression coefficient of each independent variable (b_1, b_2, ……) shows the marginal relationship between the dependent variable and those variables, holding constant effect of all other independent variables in the regression model. In other words, the coefficients explain how changes in independent variables affect the values of dependent variables estimate. It is also known that the numerical constant which determines the change in dependent variable per unit change in independent variable. To, find out the regression coefficient (b), we can use the following formula;

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2}$$

Where,

b = Regression Coefficient

n = Number of Observation

(H) Coefficient of Determination (r^2)

The coefficient of determination (r^2) is a measure of degree of linear association of correlation between two variables, one being dependent variable and other being an independent variable. In other words, the coefficient of determination is the fraction of the total variation explained by the regression line. It is the ratio of explained variation to the dependent variables related to independent variables.

The coefficient of determination (r^2) ranges from 0 to 1. If r^2 is equal to 1, it means that the value of the explained variation is zero, which means that all the data points in scatter diagram exactly fall on the regression line. If the $r^2 = 0$; then there is no correlation between the two variables.

(I) Probable Error [P. E. (r)]

The probable error of the coefficient of correlation helps in interpreting its value. It helps to determine the reliability of the value of coefficient. To cross check the validity of the result, we can take help of following formula:

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

Where;

P. E. (r) = Probable error of r.

r = correlation coefficient between X and Y

- If the value of r is less than 6 times, the probable error i.e. r < 6 P.E. (r). There is no significant relation between X and Y.
- If the value of r is more than 6 times the probable error i.e. r > 6 P.E. (r), there is most significant correlation between X and Y.
- If P.E. (r) < 6 P.E(r), there is moderate relation between X and Y.

In the present study, probable error has been calculated to determine the reliability of coefficient of DPS on EPS and MPS on DPS.

(J) Standard Error of Estimation (S.E.E.)

With the help of regression equations perfect practically impossible. The standard error of estimate measures the dispersion about an average line. It also measures the accuracy of the estimated figures. The smaller the value of SEE the closer will be the dots to the regression line better the estimate based on the equation for the line. if standard error of estimate is zero then there is no variation about the line and the correlation will be perfect. With the help of standard error of estimate, it is possible for us to ascertain how goes and representative the regression line is as description of the average relationship between two series. For Standard Error of Estimation (S.E.E.), we can use the following formula;

$$\text{S.E.E.} = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$

Where,

S.E.E. = Standard Error of Estimation

a = Regression Constant

b = Regression Coefficient

n = Number of Observation

[Note: - It is used for calculation of Simple Standard Error of Estimation (S.E.E.).]

And, $\text{S.E.E.}_{123} = \sqrt{\frac{\sum X_1^2 - a\sum X_1 - b_1\sum X_1X_2 - b_1\sum X_1X_3}{n-2}}$

Where,

S.E.E._{123} = Standard Error of Estimation Between Variables 1, 2 and 3.

a = Regression Constant

b_1 and b_2 = Regression Coefficient

n = Number of Observation

[Note: - It is used for calculation of Multiple Standard Error of Estimation (S.E.E._{123}).]

(K) T-statistics

It is used to test the validity of assumption of the study for small sample. It is very difficult to make clear-curt distinction between small samples and large samples. Generally, a sample is termed as small, if n<30 from practical point of view. For applying t-distribution, the t-values are calculated first and compared with critical values at a certain level of significance for given degree of freedom. If the computed value of (t) exceeds the table value (say to 0.05), it is known that the difference is significance at 5% level of significance but if t-values are less corresponding critical values of the t-distribution, the difference is not treated as significant. T value is calculated as follows;

$$\text{T-value } |t| = \frac{b}{S_b}$$

Where,

b = Regression Coefficient

S_b = Standard Error of Beta Coefficient

[Note: - Standard Error of Beta Coefficient (S_b) = $\frac{S.E.E.}{\sqrt{\sum\left(X - \overline{X}\right)^2}}$]

(L) F-statistics

Fisher's F-distribution is defined as a distribution of the ratio of two independent chi-square variables each divided by the corresponding degrees of freedom. It is clear that F-distribution has a single mode. Note that the shape of F-distribution depends on the degrees of freedom and the value of F lies between zeros to infinity. The F-test sometimes called ratio test, based on F-distribution. In order to test of goodness of fit of the regression model, F-test is used.

$$\text{F-value} = \frac{\text{Mean Sum of Square Between Samples}}{\text{Mean Sum of Square Within Samples}}$$

(M) Test of Hypothesis

The statement of the relationship between two or more variable is called hypothesis. Hypothesis statement should be able to show the

relationship between variables. At the same time they should carry clear implications for testing the stated relations. The research on thesis strongly holds the hypothesis criteria. In this research work, it has been tried to find whether the dependent variables (MPS) have statistically significant relationship with independent variable (EPS and DPS) or not. The test is based on the **F-value**, which is calculated in *Appendix – III* of the sample banks for the five years of study period. The hypothesis of this research work is as following;

Null Hypothesis (H_0): $b_1 = b_2 = 0$. The regression equation of X_1 on X_2 and X_3 is not significant. In other words, there is no relationship between dependent variable X_1 (MPS) and independent variables X_2 (EPS) and X_3 (DPS).

Alternative Hypothesis (H_1): $b_1 \neq b_2 \neq 0$ (i.e. at least one $b_1 \neq 0$). The regression equation of X_1 on X_2 and X_3 is significant. In other words, there is a relationship between dependent variable X_1 (MPS) and independent variable X_2 (EPS) and X_3 (DPS).

UNIT – 4
PRESENTATION AND ANALYSIS OF DATA

This chapter consists presentation and analysis of secondary data related with different variables using both financial and statistical tools explained in the third chapter. The prime objective of this chapter is to achieve the objectives, which are set in the first chapter. In order to achieve these objectives, the gathered data are presented, compared and analyzed with the help of different tools.

4.1 Analysis of Dividend Payout Practice of the Selected Banks

In this section an attempt has been made to analyze the financial indicators that are relevant directly or indirectly to the dividend payments of the banks. This helps to understand the dividend practices of these banks in the absence of complicated information. This analysis includes as;

- Dividend Per Share (DPS)
- Earning Price Share (EPS)
- Market Price Per Share (MPS)
- Retained Earning Per Share (REPS)

4.1.1 Dividend Per Share (DPS)

Dividend per share is the amount of dividend distributed to the shareholders for the single unit of share. Higher the amount of DPS retains the shareholder for long-term.

The study topic concerned to the dividend of selected banks. It has taken the dividend paid by five samples banks for the five different fiscal years. So it is very important at this stage to look over the relevant data on dividend for the purpose of this analysis. However, only cash dividend distributed to the shareholders of sample banks are presented in the following table.

Table – 1
Dividend Per Share (In Rs.)

Bank / Year	NIBL	NSCBL	NBBL	EBL	BOK	Composite Bank Ave.	Yearly Ave.
2003/04	15	110	-	20	10		**31**
2004/05	12.5	120	-	0	15		**29.50**
2005/06	20	130	-	25	18		**38.60**
2006/07	5	80	-	10	20		**21**
2007/08	7.5	80	-	20	2.11		**21.92**
Total	**60**	**520**	-	**75**	**65.11**		
Average($\overline{X}$)	**12**	**104**	-	**15**	**13.02**	**28.80**	
S.D. (¢)	**5.34**	**20.59**	-	**8.94**	**6.41**		
C.V.	**44.50**	**19.80**	-	**59.60**	**49.23**		

(Source: Annual Reports of Selected Banks)

In above table, is evident that, NIBL has paid highest cash dividend of Rs. 20 in F/Y 2005/06 and lowest cash dividend of Rs. 5 in F/Y 2006/07. The average DPS of NIBL is Rs.12 has been noted during the study period. The S.D. and C.V. of DPS for the bank are 5.34% and 44.50% respectively. The C.V. indicates that there is only 44.50% fluctuation in the variables and there is only 55.50% consistency in DPS. Cross-sectional analysis shows that the bank has paid below yearly average in all the years.

NSCBL has paid highest cash dividend of Rs. 130 in F/Y 2005/06. In F/Y 2006/07 and F/Y 2007/08 the bank has paid only Rs. 80 each year, which is least. On average the bank has paid highest DPS i.e. Rs. 104. The bank seems in the first position among selected banks. The S.D. and C.V. of DPS for the bank are 20.59% and 19.80% respectively. The C.V. indicates that there is low fluctuation in variables and high consistency in DPS. Cross-sectional analysis shows that the bank has paid above yearly average in all the years.

NBBL has not paid any cash dividend to the shareholders in the study period. So, the bank is in the last position among the selected banks.

EBL has paid highest cash dividend of Rs. 25 in F/Y 2005/06 and lowest cash dividend of Rs. 0 in F/Y 2004/05. It means EBL has not paid cash dividend in F/Y 2004/05. In, average, EBL paid cash dividend of Rs.15 in the entire period taken for research. The S.D. and C.V. of DPS for the bank are 8.94% and 59.60% respectively. The C.V. indicates that there is 59.60% fluctuation in variables and 40.40% consistency in DPS. Cross-sectional analysis shows that the bank has paid below yearly average in all the years.

BOK has increasing trend of DPS in first four year and decrease in last year of the study period. The bank has paid highest cash dividend of Rs. 20 in F/Y 2006/07 and lowest cash dividend of Rs. 2.11 in F/Y 2007/08. The average DPS of BOK during the study period is Rs. 13.02. The S.D. of DPS is 6.41% and C.V of DPS is 49.23% for the bank. The C.V. indicates that the DPS of BOK is highly fluctuating. Cross-sectional analysis shows that the bank has paid below yearly average in all the years.

From the above analysis it is seen that only one bank i.e. NSCBL has paid dividend over the composite bank average DPS as Rs 28.80. NSCBL is paying average DPS of Rs 104. Thus taking as a whole due to lack of sustainable strategic dividend policy, the dividend payments of the most companies are fluctuating. We can better present the comparative DPS of the banks with the help of bar diagram and graph as follows:

Figure – 1

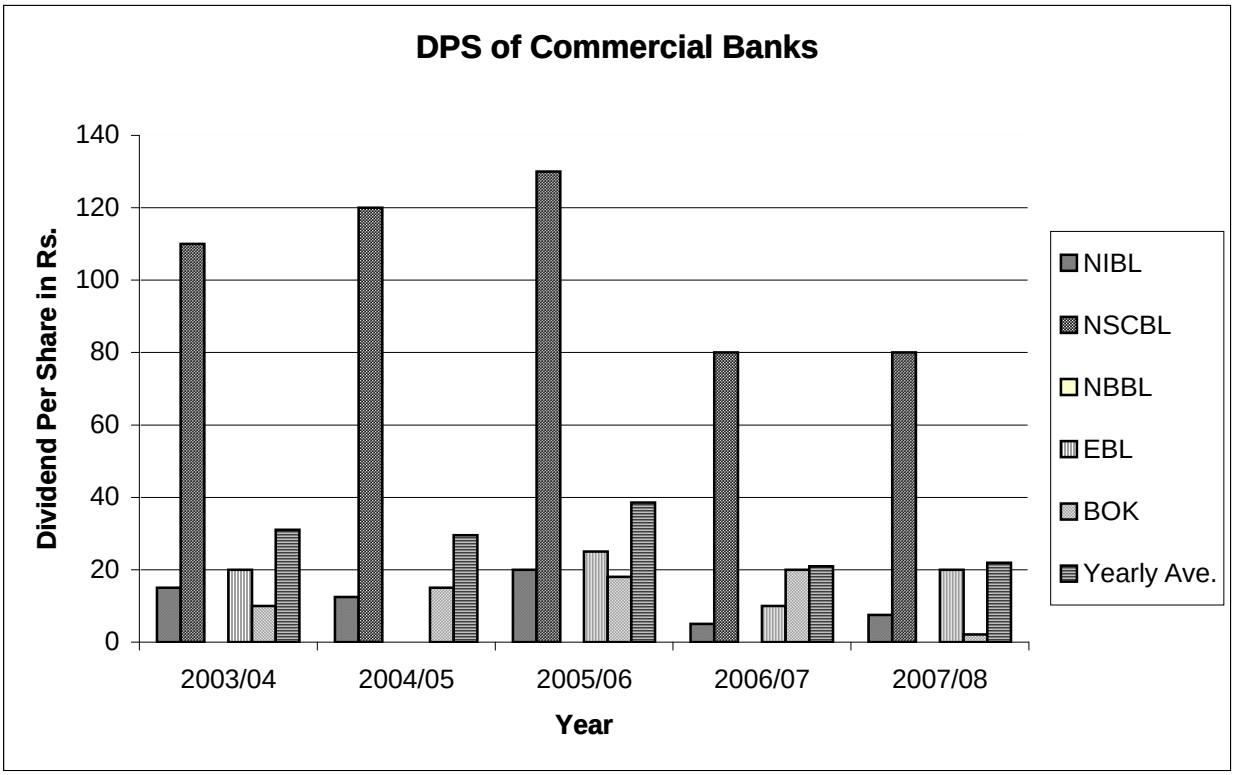
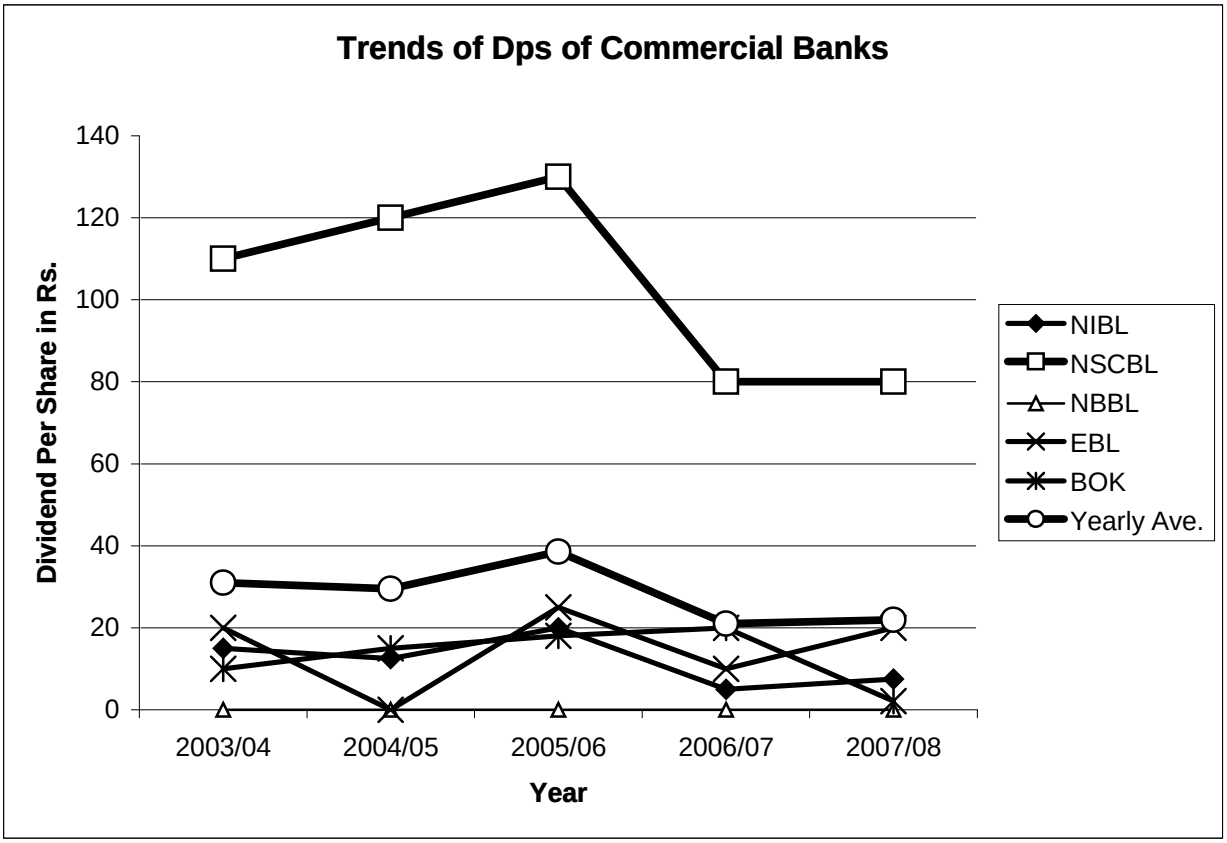


Figure – 2



4.1.2 Earning Price Share (EPS)

Normally the performance and achievement of business organization are measured in terms of earning capacity to generate earning. Higher earning shows the higher strength while lower earning shows weaker strength of business organization. EPS is the amount of earning of the share invested in the company. So higher the EPS better the position is seen in stock market. The earning per share of selected banks under the study are tabulated as follows:

Table – 2

Earning Per Share (In Rs.)

Bank / Year	NIBL	NSCBL	NBBL	EBL	BOK	Composite Bank Ave.	Yearly Ave.
2003/04	51.70	143.55	0.74	45.60	27.50		**53.82**
2004/05	39.50	143.14	- 104.12	54.20	30.10		**32.56**
2005/06	59.35	175.84	- 249.65	62.80	43.67		**18.40**
2006/07	62.57	167.47	- 147.47	78.40	43.50		**40.89**
2007/08	57.87	131.92	72.83	91.82	59.94		**82.88**
Total	**270.99**	**761.92**	**- 427.67**	**332.82**	**204.71**		
Average($\overline{X}$)	**54.20**	**152.38**	**- 85.53**	**66.56**	**40.94**	**45.71**	
S.D. (¢)	**8.15**	**16.49**	**112.82**	**16.64**	**11.60**		
C.V.	**15.04**	**10.82**	**- 132.91**	**0.25**	**28.33**		

(Source: Annual Reports of Selected Banks)

According to the table – 2, it is seen that, the EPS of NIBL ranged from Rs. 39.50 in the F/Y 2004/05 to Rs. 62.57 in the F/Y 2006/07. The average EPS of NIBL is Rs. 54.20.The S.D. and C.V. of EPS are 8.15% and 15.04% respectively for the bank. The C.V. clearly indicates a moderate fluctuation in the EPS of the bank. Cross sectional analysis shows that the bank has earned above yearly average in all the years except first and last years of the study period.

The highest EPS of NSCBL is Rs.175.84 in F/Y 2005/06 and lowest EPS of NSCBL is Rs.131.92 in F/Y 2007/08. The average EPS of the bank is Rs. 152.38, which is maximum average EPS among the selected banks. The S.D. of EPS is 16.49% and C.V. of EPS is 10.82%.

According to the C.V. the EPS of NSCBL is moderate fluctuation or more consistence. Cross sectional analysis shows that the bank has earned above yearly average in all the years.

NBBL has not earned any profit in F/Y 2004/05, F/Y 2005/06 and F/Y 2006/07. The bank has EPS of Rs. 0.74 in F/Y 2003/04 and Rs. 72.83 in F/Y 2007/08. The bank has EPS of Rs. – 249.65 in F/Y 2005/06, which is least. The average EPS of the bank is – 85.53. The S.D. and C.V. of EPS are 112.82% and – 132.91% respectively. The C.V. indicates that the EPS is not fluctuating for the bank. Cross sectional analysis shows that the bank has earned below yearly average in all the years except the last year of the study period.

EBL has increasing trend of EPS in all the years of the study period. The EPS of EBL ranged from Rs. 45.60 in F/Y 2003/04 to Rs. 91.82 in F/Y 2007/08. The average EPS of EBL during study period is Rs. 66.56, S.D. of EPS is 166.64% and C.V. of EPS is 25%. The C.V. indicates that there is only 25% fluctuation in the variable and 75% consistency in EPS. Cross sectional analysis shows that the bank has earned above yearly average in the all years except first year of the study period.

The EPS of BOK has increasing trend in all the years except in F/Y 2006/07. The highest EPS of BOK is Rs. 59.94 in F/Y 2007/08 and lowest EPS of BOK is Rs. 27.50 in F/Y 2003/04. On average the bank has earned EPS of Rs. 40.94. The S.D. of EPS and C.V. of EPS are 11.60% and 28.33% respectively. The C.V. 28.33% means that there is 71.67% consistency in EPS of BOK. Cross sectional analysis shows that the bank has earned below yearly average in all the years except first two years of the study period.

From the above analysis, it is evident that, NSCBL only has found to be maintained composite bank average of Rs. 45.71 in all the years. Other banks were can't maintained composite bank average in all the years. NSCBL has average EPS of Rs. 152.38. So, compare of sample banks selected for the study in respect of EPS, NSCBL has good performance. We can better present the comparative EPS of sample banks with the help of following bar diagram and graph:

Figure – 3

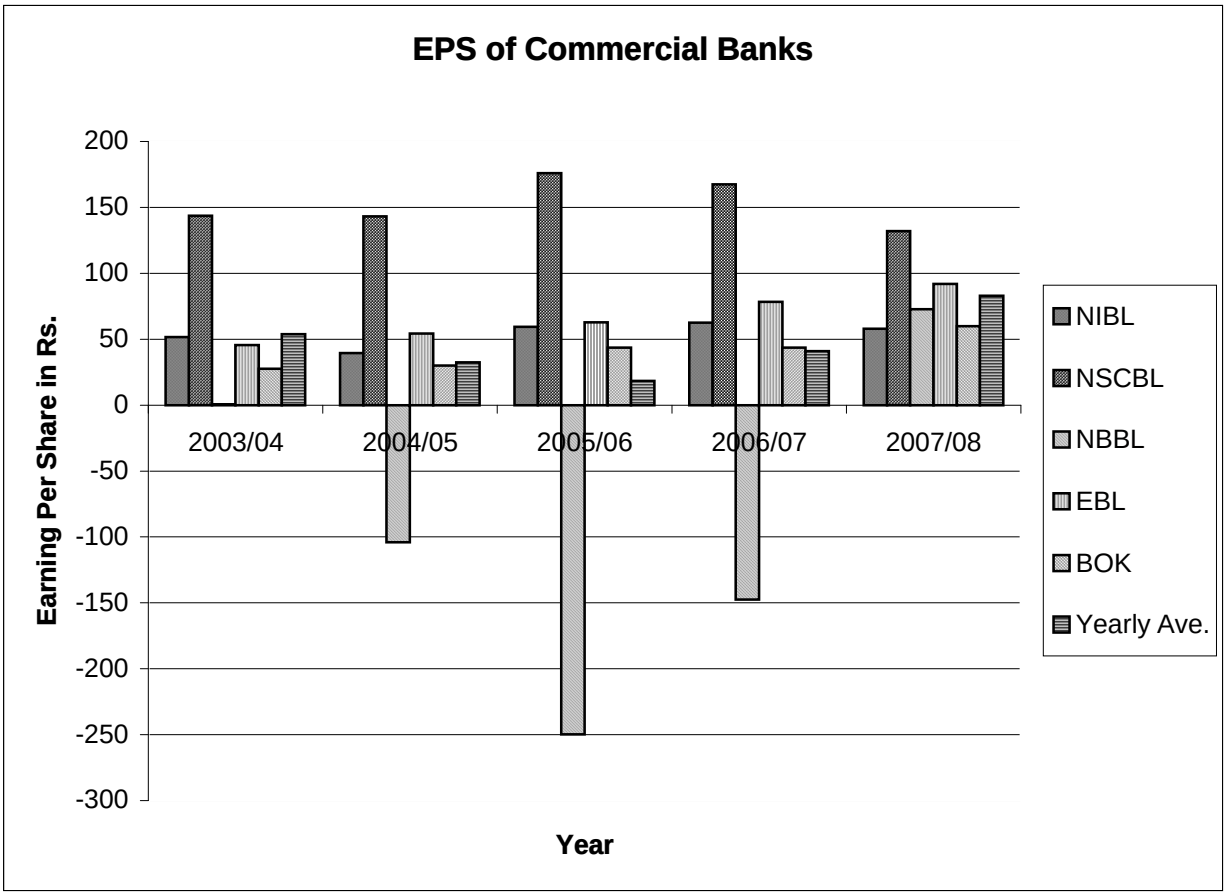
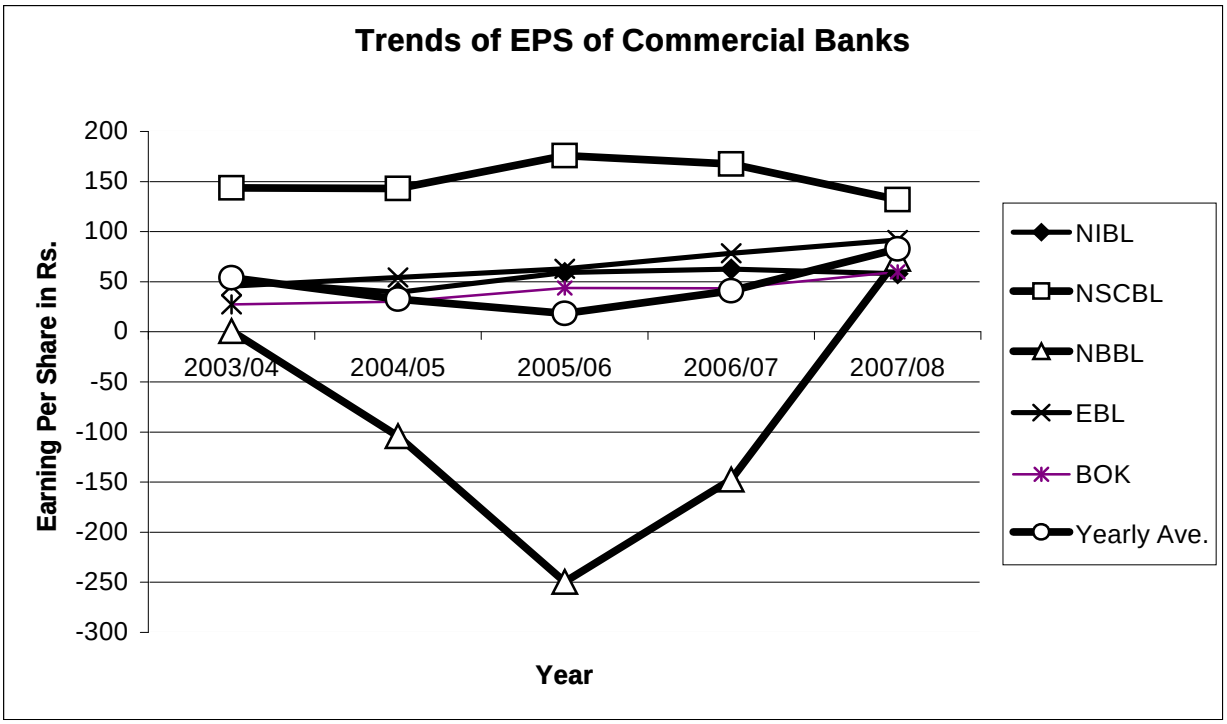


Figure – 4



4.1.3 Market Price Per Share (MPS)

Market price per share is the current price at which the stock is traded. Market price of common stock is the function of the current and expected future dividend of the company and the perceived risk of the stock on the part of investors. The market price per share of selected banks is presented in the following table.

Table – 3
Market Price Per Share (In Rs.)

Bank / Year	NIBL	NSCBL	NBBL	EBL	BOK	Composite Bank Ave.	Yearly Ave.
2003/04	940	1745	354	680	295		**802.80**
2004/05	800	2345	265	870	430		**942**
2005/06	1260	3775	199	1379	850		**1492.60**
2006/07	1729	5900	550	2430	1375		**2396.80**
2007/08	2450	6830	565	3132	2350		**3065.40**
Total	**7179**	**20595**	**1933**	**8491**	**5300**		
Average($\overline{X}$)	**1435.80**	**4119**	**386.60**	**1698.20**	**1060**	**1739.92**	
S.D. (¢)	**599.26**	**1970.93**	**48.03**	**939.77**	**746.94**		
C.V.	**41.74**	**47.85**	**38.29**	**55.34**	**70.47**		

(Source: Annual Reports of Selected Banks)

Table no. 3 seen that the MPS of NIBL has in increasing trend in all the years except second year during the study period. The MPS of NIBL ranged from Rs. 800 in F/Y 2004/05 to Rs. 2450 in F/Y 2007/08. The bank has average MPS of Rs. 1435.80 during the study period. The S.D. and C.V. of MPS are 599.26% and 41.74% respectively for the bank. The C.V. clearly indicates that there is 41.74% fluctuation in variable and 58.26% consistency in MPS. Cross sectional analysis shows that the MPS of NIBL was below yearly average all the years except in first year in study period.

NSCBL has increasing trend of MPS in all the years of the study period. The MPS of NSCBL ranged from Rs. 1745 in F/Y 2003/04 to Rs.

6830 in F/Y 2007/08. On average, the MPS of NSCBL was highest i.e. Rs. 4119. So, the bank seems in the first position among the selected banks. The S.D. of MPS is 1970.93% and C.V. of MPS is 47.85%. The C.V. indicates that the MPS was more competence of the bank. Cross sectional analysis shows that the MPS of NSCBL was above yearly average all the years of the study period.

The highest MPL of NBBL is Rs. 565 in F/Y2007/08 and lowest MPS of NBBL is Rs. 199 in F/Y 2005/6. The average MPS of NBBL is Rs. 386.60, which is least. So, the bank seems in last position among the selected banks. The S.D. and C.V. of MPS for the bank, during the study period are 148.03% and 38.29% respectively. According to the C.V., MPS of the bank was least fluctuation. Cross sectional analysis shows that the MPS of NBBL was below yearly average in all the years.

EBL has increasing trend of MPS in all the years of study. The MPS of EBL ranged from RS .680 in F/Y 2003/04 to Rs. 3132 in F/Y 2007/08. The average MPS of the bank is Rs. 1698.20; S.D. of MPS is 939.77% and C.V. of MPS is 55.34% .The C.V. indicates that the MPS of EBL was high fluctuating. Cross sectional analysis shows that the MPS of the bank was below yearly average in all the years except last two years of the study period.

BOK has also increasing trend of MPS in all the years of study period. The bank has lowest MPS of Rs. 295 in F/Y 2003/04 and highest MPS of Rs. 2350 in F/Y 2007/08. On average, the bank has MPS of Rs. 1060, S.D. of MPS is 746.94% and C.V. of MPS is 70.47%. The C.V. clearly shows that the MPS of BOK is high fluctuating and low consistence. Cross sectional analysis shows that the MPS of BOK was below yearly average in all the years of study period.

Comprising of sample banks selected for the study in respect of MPS, the NSCBL only has found to be maintained composite bank average MPS of Rs. 1739.92 in all the years. Other banks were can't maintained composite bank average MPS in all the years. NSCBL has highest average MPS of Rs. 4119, during the study period. So, the bank is in top position among the sample banks. We can better present the comparative MPS of sample banks with the help of diagram and graph as follows:

Figure – 5

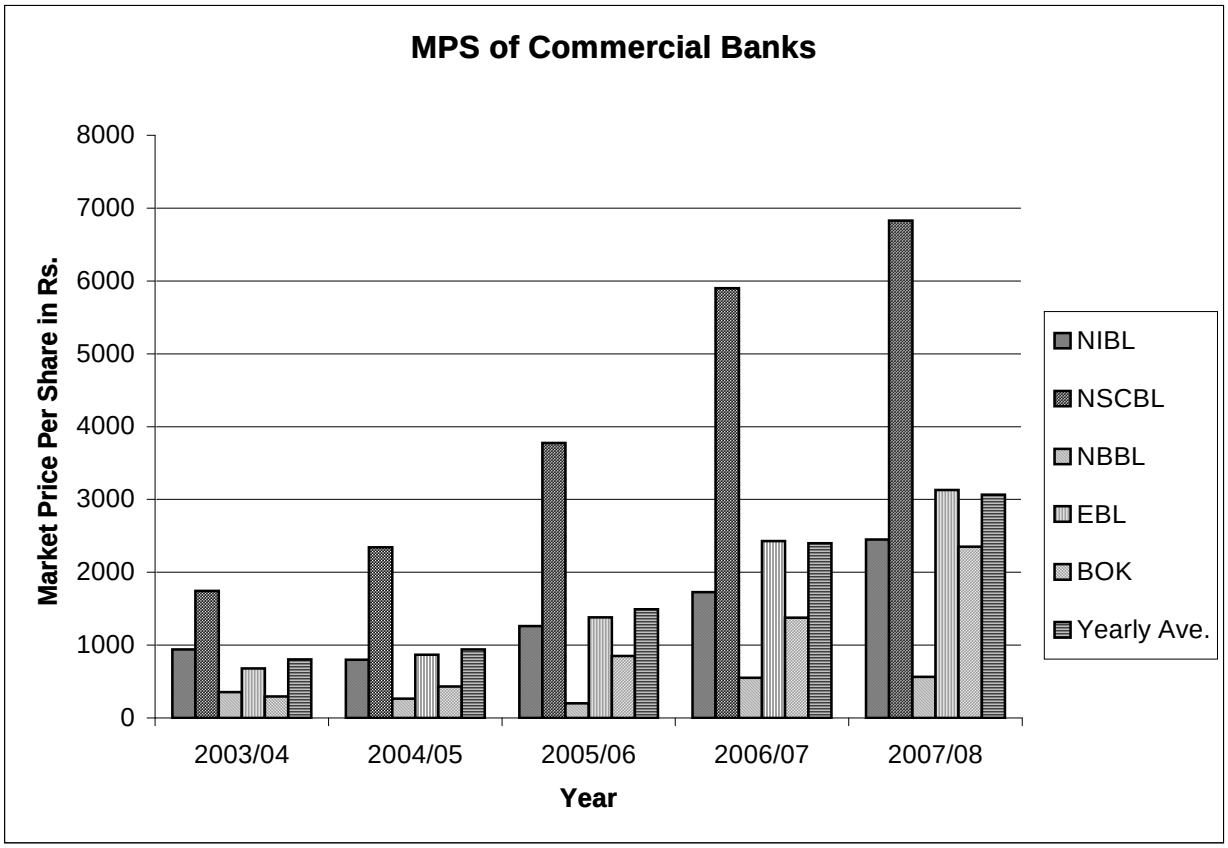
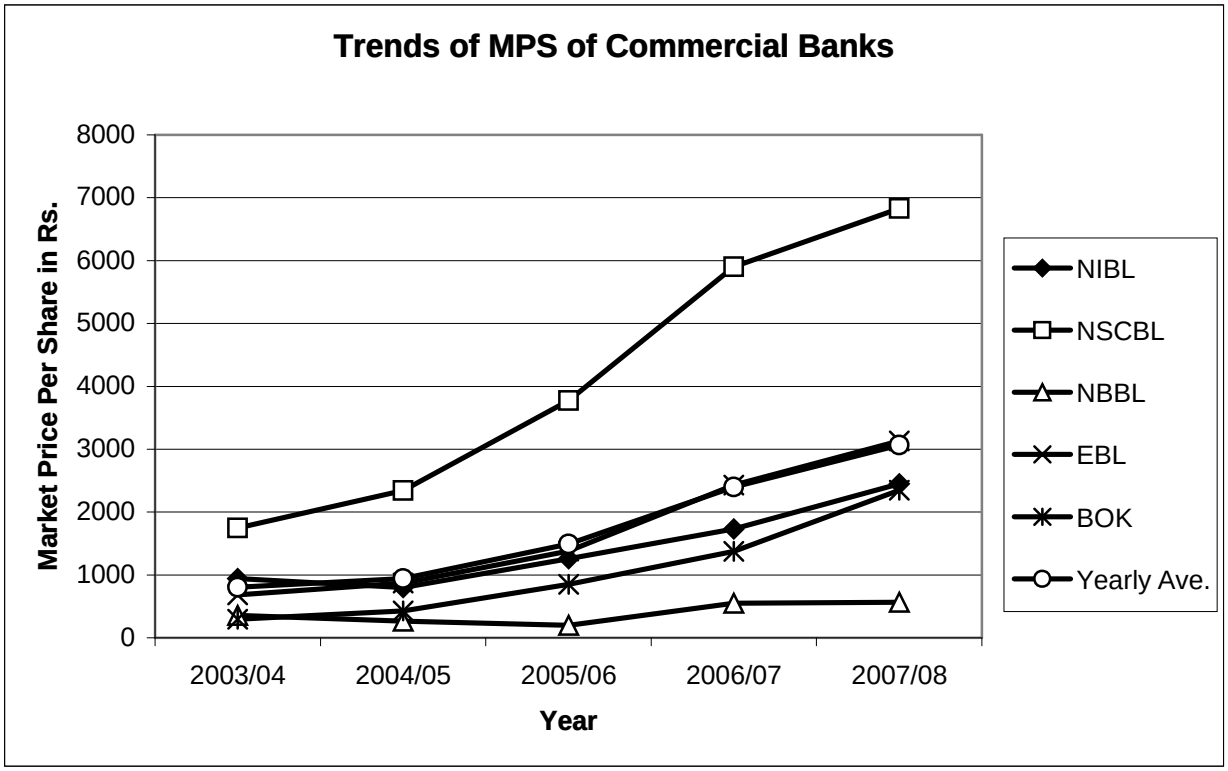


Figure – 6



4.1.4 Retained Earning Per Share (REPS)

Generally company distributed one portion of its profit as dividend to the shareholders and remaining are retained to carryout for further investment opportunities. The retained amounts of total earnings are called as retained earnings. The retained earning per share of selected banks is presented in the following table.

Table – 4

Retained Earning Per Share (In Rs.)

Bank / Year	NIBL	NSCBL	NBBL	EBL	BOK	Composite Bank Ave.	Yearly Ave.
2003/04	36.70	33.55	0.74	25.60	17.50		**22.82**
2004/05	27	23.14	- 104.12	54.20	15.10		**3.06**
2005/06	39.35	45.84	- 249.65	37.80	25.67		**- 20.20**
2006/07	57.57	87.87	- 147.47	68.40	23.50		**17.97**
2007/08	50.37	51.92	72.83	71.82	57.83		**60.95**
Total	**210.99**	**242.32**	**- 427.67**	**257.82**	**139.6**		
Average($\overline{X}$)	**42.20**	**48.46**	**- 85.53**	**51.56**	**27.92**	**16.92**	
S.D. (¢)	**10.70**	**22.07**	**112.82**	**17.69**	**15.44**		
C.V.	**25.36**	**45.54**	**- 1.32**	**34.31**	**55.30**		

(Source: Annual Reports of Selected Banks)

The above table no. 4, evident that the REPS of the sample banks. Here the researcher used the amount of retained earning in the format of per share, because there are not available of the number of outstanding shares for the Nepal Bangladesh Bank Limited. So, the researcher makes the same format for all the sample banks.

In above table, NIBL has lowest REPS of Rs. 27 in F/Y 2004/05 and highest REPS of Rs. 57.57 in F/Y 2006/07. The average of REPS was Rs. 42.20, S.D. of REPS was 10.70% and C.V. of REPS was 25.36% for the bank. The C.V. clearly indicates that there is only 25.36% fluctuation in variables and 74.64% competence in REPS. Cross sectional analysis shows that the retained amount of NIBL is below yearly average in all the years except in last year of the study period.

NSCBL has retained highest amount of Rs. 87.87 per share in F/Y 2006/07. In F/Y 2004/05 the bank has retained only Rs. 23.14 per share, which is least. The average REPS of NSCBL is Rs. 48.46, which seems the bank is in second position among the selected banks. The S.D. and C.V. of REPS are 22.07% and 45.54%. The C.V. indicates that 45.54% fluctuations in variables and remaining 54.46% consistency in REPS. Cross sectional analysis shows that the retained amount of NSCBL is above yearly average in all the years except in last year during the study period.

NBBL has not paid any cash dividend during the study period so, it is remain all the earnings in first and last years of study period. Remaining three years the bank has operating in loss. So, it has retained same as in EPS.

EBL has increasing trend of REPS in all the years. It means EBL has retained more amount to invest in good opportunities then previous year during the study period. The REPS of EBL ranged from Rs. 25.60 to RS. 71.82. The average REPS of the bank is RS. 51.56, which is highest average retained amount among the sample banks. The S.D. and C.V. of REPS of the bank is 17.69% and 34.31%. The C.V. indicates that there is low fluctuation in REPS. Cross sectional analysis shows that the REPS of EBL was above yearly average in all the years.

The highest REPS of BOK is Rs. 57.83 in F/Y 2007/08 & lowest REPS of BOK is Rs. 15.10 in F/Y 2004/05. The average of REPS for BOK was Rs. 27.92, during the study period. The S.D. and C.V. of REPS are 15.44% and 55.30% respectively for the bank. According to the C.V. of 55.30%, there is only 44.70% consistency in REPS. Cross sectional analysis shows that the BOK has retained above yearly average in all the years except first and last years of the study period.

From the above analysis, it is seen that there is three banks (NIBL, NSCBL and EBL) were retained over the composite bank average REPS of Rs. 16.92. BOK has can't maintained it in F/Y 2004/05 only. NBBL has negative retain in three years and maintained it in last year of the study period. So, compare of sample banks selected for the study in respect of REPS, EBL was in the top position among the selected banks.

We can better present the comparative REPS of sample banks with the help of following bar diagram and graph.

Figure – 7

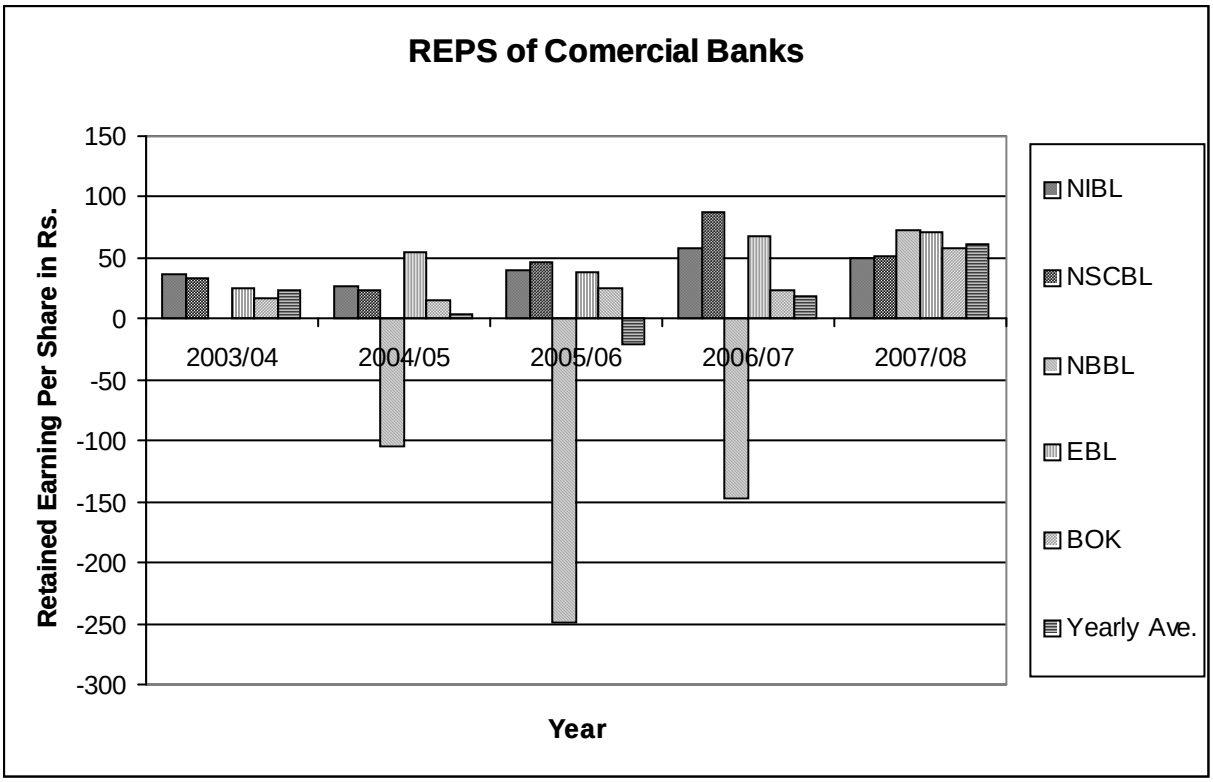
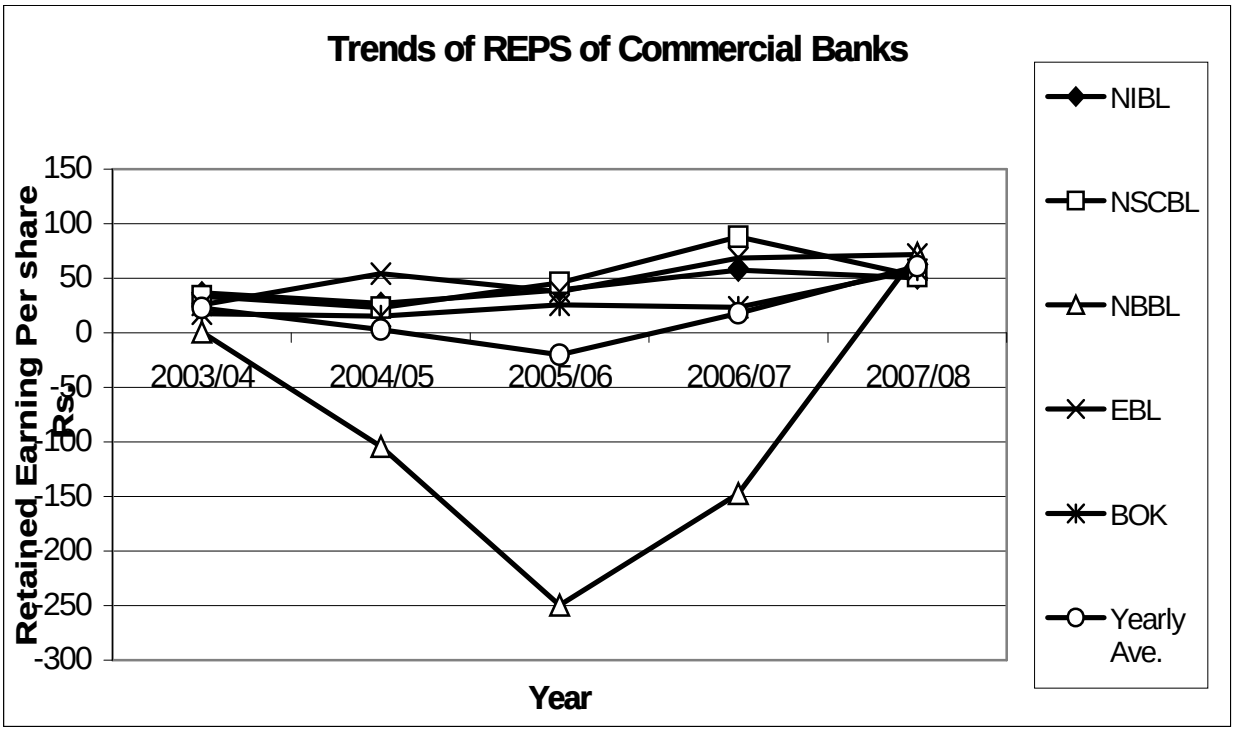


Figure – 8



4.2 Analysis of Correlation Coefficient

Correlation analysis is the statistical tools that we can use to describe the degree to which one variable is linearly related to other variables.

- Analysis of Simple Correlation Coefficient
- Analysis of Multiple Correlation Coefficient

4.2.1 Analysis of Simple Correlation Coefficient

Simple Correlation Coefficient analysis helps us to find out the degree to which one variable is linearly related to another variable. The simple correlation coefficient measures the degree of relationship between two sets of figures.

4.2.1.1 Simple Correlation Coefficient Between DPS on EPS

The factors of correlation coefficient between DPS on EPS of sample banks calculated in *Appendix – I* are summarized below.

Table - 5
Correlation Coefficient Between DPS on EPS

Banks	r	Relation	r^2	P. E.	6 P. E.	Remarks
NIBL	-0.2240	-ve (Indirect)	0.0502	0.2865	1.719	Insignificant
NSCBL	-0.0506	-ve (Indirect)	0.0026	0.3009	1.8054	Insignificant
NBBL	0	No relation	0	0.3016	1.8096	Insignificant
EBL	0.1480	+ve (Direct)	0.0219	0.2950	1.77	Insignificant
BOK	-0.4212	-ve (Indirect)	0.1774	0.1482	1.4892	Insignificant

(Source: Appendix - I)

The Table - 5 helps to depict the relationship between Dividend Per Share (DPS) and Earning Per Share (EPS) of sample banks.

The correlation coefficient (r) between DPS on EPS of NIBL, NSCBL and BOK is negetive, which indicates that the negative relationship between DPS and EPS. It means that the DPS increases with the decrease in EPS for these three banks. EBL has positive relationship

between DPS and EPS, because of correlation coefficient (r) between DPS and EPS is positive. It means that the DPS increases with the increase in EPS for EBL. NBBL has no relationship between DPS and EPS because NBBL has not paid any dividend during the study period. Simple coefficient of determination is the measure of the degree of linear association or correlation between two variables. The value of r^2 of NIBL is 0.0502, which indicates that 5.02% of variation is explained in the dependent variable DPS due to the change in the value of independent variable EPS. The value of r^2 of NSCBL is 0.0026, which indicates that 0.26% of variation is explained in the dependent variable DPS due to the change in the value of independent variable EPS. The value of r^2 of NBBL is 0, which indicates that no variation is explained in the dependent variable DPS due to the change in the value of independent variable EPS. The value of r^2 of EBL is 0.0219, which indicates that 2.19% of variation is explained in the dependent variable DPS due to the change in the value of independent variable EPS. The value of r^2 of BOK is 0.1774, which indicates that 17.74% of variation is explained in the dependent variable DPS due to the change in the value of independent variable EPS. However, the lower 'r' value of NIBL (–0.2240), NSCBL (–0.0506), NBBL (0) and BOK (–0.4212) than 6 P.E. of NIBL (1.719), NSCBL (1.8054), NBBL (1.8096) and BOK (1.4892), indicates that the relationship between DPS and EPS is insignificant and reveals that it is not necessary that DPS always decline with the increase in EPS for these banks. Likewise, the lower 'r' value of EBL (0.1480) than 6 P.E. (1.77) also indicates that the relationship between DPS and EPS is insignificant and reveals that it is not necessary that DPS always increase with the increase in EPS for EBL.

4.2.1.2 Simple Correlation Coefficient Between MPS on DPS

The factors of correlation coefficient between MPS on DPS of sample banks calculated in *Appendix – II* are summarized below.

Table - 6
Correlation Coefficient Between MPS on DPS

Banks	r	Relation	r^2	P. E.	6 P. E.	Remarks
NIBL	-0.6144	-ve (Indirect)	0.3775	0.1878	1.1268	Insignificant
NSCBL	-0.7854	-ve (Indirect)	0.6169	0.1155	0.693	Insignificant
NBBL	0	No relation	0	0.3016	1.8096	Insignificant
EBL	0.1820	+ve (Direct)	0.0331	0.2917	1.7502	Insignificant
BOK	-0.4952	-ve (Indirect)	0.2452	0.2277	1.3662	Insignificant

(Source: Appendix - II)

The Table - 6 helps to depict the relationship between Market Price Per Share (MPS) and Dividend Per Share (DPS) of sample banks.

The correlation coefficient (r) between MPS on DPS of NIBL, NSCBL and BOK is negetive, which indicates that the negative relationship between MPS and DPS. It means that the MPS increases with the decrease in DPS for these three banks. EBL has positive value of correlation coefficient (r) between MPS and DPS, it seems that there is positive relationship between MPS and DPS. It means that the MPS increases with the increase in DPS for EBL. NBBL has no relationship between MPS and DPS because NBBL has not paid any dividend during the study period. Simple coefficient of determination is the measure of the degree of linear association or correlation between two variables. The value of r^2 of NIBL is 0.3775, which indicates that 37.75% of variation is explained in the dependent variable MPS due to the change in the value of independent variable DPS. The value of r^2 of NSCBL is 0.6169, which indicates that 61.69% of variation is explained in the dependent variable MPS due to the change in the value of independent variable DPS. The value of r^2 of NBBL is 0, which indicates that no variation is explained in the dependent variable MPS due to the change in the value of independent variable DPS. The value of r^2 of EBL is 0.0331, which indicates that 3.31% of variation is explained in the dependent variable MPS due to the change in the value of independent variable DPS. The value of r^2 of BOK is 0.2452, which indicates that 24.52% of variation is

explained in the dependent variable MPS due to the change in the value of independent variable DPS. However, the lower 'r' value of NIBL (–0.6144), NSCBL (–0.7854), NBBL (0) and BOK (–0.4952) than 6 P.E. of NIBL (1.1268), NSCBL (0.693), NBBL (1.8096) and BOK (1.3662), indicates that the relationship between MPS and DPS is insignificant and reveals that it is not necessary that MPS always decline with the increase in DPS for these banks. Likewise, the lower 'r' value of EBL (0.1820) than 6 P.E. (1.7502) also indicates that the relationship between MPS and DPS is insignificant and reveals that it is not necessary that MPS always increase with the increase in DPS for EBL.

4.2.2 Analysis of Multiple Correlation Coefficient

Multiple Correlation Coefficient analysis helps us to find out the degree to which one variable is linearly related to other variables. The multiple correlation coefficient measures the degree of relationship between more than two sets of figures.

4.2.2.1 Multiple Correlation Coefficient Between MPS on EPS and DPS

The factors of correlation coefficient between MPS on EPS and DPS of sample banks calculated in *Appendix – III* are summarized below.

Table - 7
Correlation Coefficient Between MPS on EPS and DPS

Banks	R_{123}	Relation	$(R_{123})^2$	P. E.	6 P. E.	Remarks
NIBL	0.6523	+ve (Direct)	0.4263	0.1731	1.0386	Insignificant
NSCBL	0.8295	+ve (Direct)	0.6881	0.0941	0.5646	Significant
NBBL	3.3807	+ve (Direct)	10.9457	-3.0001	-18.0042	Significant
EBL	0.9938	+ve (Direct)	0.9876	0.0037	0.0222	Significant
BOK	0.9707	+ve (Direct)	0.9423	0.0174	0.1044	Significant

(Source: Appendix - III)

The Table - 7 helps us to depict the relationship between Market Price Per Share (MPS), Earning Per Share (EPS) and Dividend Per Share (DPS) of sample banks.

The correlation coefficient (R_{123}) between MPS on EPS and DPS of all sample banks (NIBL, NSCBL, NBBL, EBL and BOK) are positive, which indicates that the positive relationship between MPS, EPS and DPS. It means that the MPS increases with the increase in EPS and DPS for these sample banks. Multiple coefficient of determination is the measure of the degree of linear association or correlation between more than two variables. The value of $(R_{123})^2$ of NIBL is 0.4263, which indicates that there is 42.63% of variation is explained in the dependent variable MPS due to the change in the value of independent variables EPS and DPS. The value of $(R_{123})^2$ of NSCBL is 0.6881, which indicates that there is 68.81% of variation is explained in the dependent variable MPS due to the change in the value of independent variables EPS and DPS. The value of $(R_{123})^2$ of NBBL is 10.9457 [˙.˙Note: - NBBL has not paid any dividend and has EPS in negative, so the value of $(R_{123})^2$ is irrelevance.], which indicates that there is 1094.57% of variation is explained in the dependent variable MPS due to the change in the value of independent variables EPS and DPS. The value of $(R_{123})^2$ of EBL is 0.9876, which indicates that there is 98.76% of variation is explained in the dependent variable MPS due to the change in the value of independent variables EPS and DPS. The value of $(R_{123})^2$ of BOK is 0.9423, which indicates that there is 94.23% of variation is explained in the dependent variable MPS due to the change in the value of independent variables EPS and DPS. However, the lower 'R_{123}' value of NIBL (0.6523) than 6 P.E. (1.0386), indicates that the relationship between MPS, EPS and DPS is insignificant and reveals that it is not necessary that MPS always increase with the increase in EPS and DPS for NIBL. Likewise, the higher 'R_{123}' of NSCBL (0.8295), NBBL [3.3807 (˙.˙Note: - NBBL has not paid any dividend and has EPS in negative, so the value of 'R_{123}' is irrelevance.)], EBL (0.9938) and BOK (0.9707) than

6 P.E. of NSCBL (0.5646), NBBL [-18.0042 (˙.˙Note: - NBBL has not paid any dividend and has EPS in negative, so the value of $'R_{123}'$ is irrelevance.)], EBL (0.0222) and BOK (0.1044), indicates that the relationship between MPS, EPS and DPS is significant and reveals that it is necessary to that MPS always increase with the increase in EPS and DPS for NSCBL, NBBL, EBL and BOK.

4.3 Regression Analysis

Regression Analysis is an estimating mathematical equation that relates to dependent variable with independent variables.

- Simple Regression Analysis
- Multiple Regression Analysis

4.3.1 Simple Regression Analysis

When we take only one independent variable predict the value of the dependent variable through the appropriate regression line the analysis is known as simple regression analysis.

4.3.1.1 Simple Regression Analysis Between DPS on EPS

The major outcome of simple regression analysis between DPS on EPS of the sample banks based on the data are shown as follows.

Table - 8
Regression Analysis Between DPS on EPS

Banks	No. Of Years	Constant (a)	Regression Coefficient (b)	SEE	S_b	T-value
NIBL	5	19.9457	-0.1466	6.7166	0.0202	7.2574
NSCBL	5	113.6304	-0.0632	26.7964	0.0197	3.2081
NBBL	5	0	0	0	0	0
EBL	5	9.7085	0.0795	11.4196	0.0082	9.6951
BOK	5	22.5508	-0.2328	7.5116	0.0112	20.7857

(Source: Appendix - I)

The table – 8, helps us to found out the mathematical equation that relates to dependent variable (DPS) with the independent variable (EPS). The simple regression equation between DPS on EPS calculated in the *Appendix I* is: - **Y= a+ b X**

Let the dependent variable **DPS** is denoted by **Y** and independent variable **EPS** is denoted by **X**, than the equation is: - **DPS = a + b EPS**

Now,

$$\mathbf{DPS_{NIBL} = 19.9457 - 0.1466\ EPS_{NIBL}}$$

$$\mathbf{DPS_{NSCBL} = 113.6304 - 0.0632\ EPS_{NSCBL}}$$

$$\mathbf{DPS_{NBBL} = 0 + 0\ EPS_{NBBL}}$$

$$\mathbf{DPS_{EBL} = 9.7085 + 0.0795\ EPS_{EBL}}$$

$$\mathbf{DPS_{BOK} = 22.5508 - 0.2328\ EPS_{BOK}}$$

From the above table – 8, the beta (regression) coefficient of NIBL is –0.1466, which indicates that one rupee increase in independent variable (EPS) leads to an average Rs. 0.1466 decrease in dependent variable (DPS), if the constant (a), 19.9457 remains same. Since calculated T-value of NIBL (7.2574) is higher than the tabulated T-value (2.78) at 5% level of significance and 4 degree of freedom, so the result is statistically significant.

In the case of NSCBL, the beta (regression) coefficient is –0.0632, which indicates that one rupee increase in independent variable (EPS) leads to an average Rs. 0.0632 decrease in dependent variable (DPS), if the constant (a), remains same at 113.6304. Since calculated T-value of NSCBL (3.2081) is higher than the tabulated T-value (2.78) at 5% level of significance and 4 degree of freedom, so the result is statistically significant.

NBBL has not paid any dividend during the study period; so it has the beta (regression) coefficient of 0 and the calculated T-value is also 0. It indicates that the result for NBBL from the above calculation is insignificant.

In the case of EBL, the beta (regression) coefficient is 0.0795, which indicates that one rupee increase in independent variable (EPS) leads to an average Rs. 0.0795 increase in dependent variable (DPS), if the constant (a), 9.7085 remains same. Since calculated T-value of EBL

(9.6951) is higher than the tabulated T-value (2.78) at 5% level of significance and 4 degree of freedom, so the result is statistically significant.

BOK has the beta (regression) coefficient of –0.2328, which indicates that one rupee increase in independent variable (EPS) leads to an average Rs. 0.2328 decrease in dependent variable (DPS), if the constant (a), remains same at 22.5508. Since calculated T-value of BOK (20.7857) is higher than the tabulated T-value (2.78) at 5% level of significance and 4 degree of freedom, so the result is statistically significant.

4.3.1.2 Simple Regression Analysis Between MPS on DPS

The major outcome of simple regression analysis between MPS on DPS of the sample banks based on the data are shown as follows.

Table - 9
Regression Analysis Between MPS on DPS

Banks	No. Of Years	Constant (a)	Regression Coefficient (b)	SEE	S_b	T-value
NIBL	5	2263.4208	-68.9684	610.3855	4.2834	16.1013
NSCBL	5	11937.6472	-75.1793	1574.8749	0.7429	101.1971
NBBL	5	386.60	0	534.4365	∞	0
EBL	5	1411.325	19.125	1192.9714	2.9824	6.4126
BOK	5	1810.9741	-57.6785	837.8949	4.0756	14.1523

(Source: Appendix - II)

The table – 9, helps us to found out the mathematical equation that relates to dependent variable (MPS) with the independent variable (DPS). The simple regression equation between MPS on DPS calculated in the *Appendix II* is: - **Y= a+ b X**

Let the dependent variable **MPS** is denoted by **Y** and independent variable **DPS** is denoted by **X**, than the equation is: - **MPS = a + b DPS**

Now,

$$\mathbf{MPS_{NIBL} = 2263.4208 - 68.9684\ DPS_{NIBL}}$$
$$\mathbf{MPS_{NSCBL} = 11937.6472 - 75.1793\ DPS_{NSCBL}}$$
$$\mathbf{MPS_{NBBL} = 386.60 + 0\ DPS_{NBBL}}$$
$$\mathbf{MPS_{EBL} = 1411.325 + 19.125\ DPS_{EBL}}$$
$$\mathbf{MPS_{BOK} = 1810.9741 - 57.6785\ DPS_{BOK}}$$

According to the above table – 9, the beta (regression) coefficient of NIBL is –68.9684, which indicates that one rupee increase in independent variable (DPS) leads to an average Rs. 68.9684 decrease in dependent variable (MPS), if the constant (a), 2263.4208 remains same. Since calculated T-value of NIBL (16.1013) is higher than the tabulated T-value (2.78) at 5% level of significance and 4 degree of freedom, so the result is statistically significant.

In the case of NSCBL, the beta (regression) coefficient is –75.1793, which indicates that one rupee increase in independent variable (DPS) leads to an average Rs. 75.1793 decrease in dependent variable (MPS), if the constant (a), remains same at 11937.6472. Since calculated T-value of NSCBL (101.1971) is higher than the tabulated T-value (2.78) at 5% level of significance and 4 degree of freedom, so the result is statistically significant.

NBBL has not paid any dividend during the study period; so it has the beta (regression) coefficient of 0, but NBBL has the positive constant (a) of 386.60. The calculated T-value is also 0. It indicates that the result for NBBL from the above calculation is insignificant.

In the case of EBL, the beta (regression) coefficient is 19.195, which indicates that one rupee increase in independent variable (DPS) leads to an average Rs. 19.195 increase in dependent variable (MPS), if the constant (a), remains same at 1411.325. Since calculated T-value of EBL (6.4126) is higher than the tabulated T-value (2.78) at 5% level of significance and 4 degree of freedom, so the result is statistically significant.

Likewise, BOK has the beta (regression) coefficient of –57.6785, which indicates that one rupee increase in independent variable (DPS) leads to an average Rs. 57.6785 decrease in dependent variable (MPS), if

the constant (a), remains same at 1810.9741. Since calculated T-value of BOK (14.1523) is higher than the tabulated T-value (2.78) at 5% level of significance and 4 degree of freedom, so the result is statistically significant.

4.3.2 Multiple Regression Analysis

The simple regression coefficient simply tells that the affect on one variable (dependent) of the other variable (independent). It doesn't tell the whole story that how much other independent variables affect the dependent variable. So, multiple regression coefficient analysis is used to avoid the weakness of the simple regression analysis. In this section, MPS (dependent variable) is regressed against the EPS and DPS (independent variables).

4.3.2.1 Multiple Regression Analysis Between MPS on EPS and DPS

The major outcome of multiple regression analysis between MPS on EPS and DPS of the sample banks based on the data are shown as follows.

Table – 10

Regression Analysis Between MPS on EPS and DPS

Banks	No. Of Years	Constant (a)	Regression Coefficient (b)		SEE	F-value
			EPS (b_1)	DPS (b_2)		
NIBL	5	-43.67	39.58	-55.47	455.4974	21.9254
NSCBL	5	7701.22	33.63	-83.71	1430.9582	6.6172
NBBL	5	766.04	4.44	0	$\sqrt{-38092.64}$	21.9209
EBL	5	-2072.18	55.79	3.77	134.2205	12.4457
BOK	5	-1203.58	59.27	-12.51	231.4914	7.6527

(Source: Appendix - III)

The table – 10, helps us to found out the mathematical equation that relates to dependent variable (MPS) with the independent variables

(EPS and DPS). The multiple regression equation between MPS on EPS and DPS calculated in the *Appendix III* is: - $\mathbf{X_1 = a + b_1X_2 + b_2X_3}$

Let the dependent variable **MPS** is denoted by $\mathbf{X_1}$ and independent variables **EPS** is denoted by $\mathbf{X_2}$ and **DPS** is denoted by $\mathbf{X_3}$, than the equation is: - $\mathbf{MPS = a + b_1\ EPS + b_2\ DPS}$

Now,

$$\mathbf{MPS_{NIBL} = -43.67 + 39.58\ EPS_{NIBL} - 55.47\ DPS_{NIBL}}$$
$$\mathbf{MPS_{NSCBL} = 7701.22 + 33.63\ EPS_{NIBL} - 83.71\ DPS_{NSCBL}}$$
$$\mathbf{MPS_{NBBL} = 766.04 + 4.44\ EPS_{NIBL} + 0\ DPS_{NBBL}}$$
$$\mathbf{MPS_{EBL} = -2072.18 + 55.79\ EPS_{NIBL} + 3.77\ DPS_{EBL}}$$
$$\mathbf{MPS_{BOK} = -1203.58 + 59.27\ EPS_{NIBL} - 12.51\ DPS_{BOK}}$$

According to the above table – 10, the multiple regression line of MPS on EPS and DPS states that the beta (regression) coefficient of EPS (39.58) is positive and DPS (–55.47) is negative in NIBL, which means that a percent rise in EPS impacts to MPS (dependent variable) positively by 39.58 times but DPS impacts negatively by 55.47 times, if the constant (a) is –43.67, and remains same. Since, the calculated F-value of NIBL (21.9254) is greater than tabulated F-value (3.89) at 5% level of significance for (2, 12) degree of freedom. So, the Null Hypothesis (H_0) is rejected and Alternative Hypothesis (H_1) is accepted. Therefore, we can conclude that the regression equation of X_1 on X_2 and X_3 is significant. In other words, there is a linear relationship between dependent variable X_1 (MPS) and two independent variables X_2 (EPS) and X_3 (DPS).

Likewise, the multiple regression line of MPS on EPS and DPS shows that the beta (regression) coefficient of EPS (33.63) is positive and DPS (–83.71) is negative in NSCBL, which clearly indicates that a percent increase in EPS impacts to MPS (dependent variable) increasing by 33.63 times but DPS impacts decreasing by 83.71 times, if the constant (a) remains same at 7701.22. Since, the calculated F-value of NSCBL (6.6172) is greater than tabulated F-value (3.89) at 5% level of significance for (2, 12) degree of freedom. So, the Null Hypothesis (H_0) is rejected and Alternative Hypothesis (H_1) is accepted. Therefore, we can conclude that the regression equation of X_1 on X_2 and X_3 is significant. In

other words, there is a linear relationship between dependent variable X_1 (MPS) and two independent variables X_2 (EPS) and X_3 (DPS).

In the case of NBBL, the multiple regression line of MPS on EPS and DPS states that the beta (regression) coefficient of EPS (4.44) is positive and it has not beta (regression) coefficient of DPS (0), because NBBL has not paid any dividend during the study period, which indicates that a percent increase in EPS only impacts to MPS (dependent variable) increasing by 4.44 times and there is no impact of DPS to MPS, if the constant (a) remains same at 766.04. Since, the calculated F-value of NBBL (21.9209) is greater than tabulated F-value (3.89) at 5% level of significance for (2, 12) degree of freedom. So, the Null Hypothesis (H_0) is rejected and Alternative Hypothesis (H_1) is accepted. Therefore, we can conclude that the regression equation of X_1 on X_2 and X_3 is significant. In other words, there is a linear relationship between dependent variable X_1 (MPS) and two independent variables X_2 (EPS) and X_3 (DPS).

Likewise, the multiple regression line of MPS on EPS and DPS shows that the beta (regression) coefficient of EPS (55.79) is positive and DPS (3.77) is also positive for EBL, which clearly indicates that a percent increase in EPS impacts to MPS (dependent variable) increasing by 55.79 times and also DPS impacts increasing by 3.7 times, if the constant (a) is –2012.18, and remains same. Since, the calculated F-value of EBL (12.4457) is greater than tabulated F-value (3.89) at 5% level of significance for (2, 12) degree of freedom. So, the Null Hypothesis (H_0) is rejected and Alternative Hypothesis (H_1) is accepted. Therefore, we can conclude that the regression equation of X_1 on X_2 and X_3 is significant. In other words, there is a linear relationship between dependent variable X_1 (MPS) and two independent variables X_2 (EPS) and X_3 (DPS).

However, the multiple regression line of MPS on EPS and DPS states that the beta (regression) coefficient of EPS (59.27) is positive and DPS (-12.51) is negetive, for BOK, which clearly indicates that a percent increase in EPS impacts to MPS (dependent variable) increasing by 59.27 times but DPS impacts decreasing by 12.51 times, if the constant (a) is –1203.58, and remains same. Since, the calculated F-value of BOK (7.6527) is greater than tabulated F-value (3.89) at 5% level of

significance for (2, 12) degree of freedom. So, the Null Hypothesis (H_0) is rejected and Alternative Hypothesis (H_1) is accepted. Therefore, we can conclude that the regression equation of X_1 on X_2 and X_3 is significant. In other words, there is a linear relationship between dependent variable X_1 (MPS) and two independent variables X_2 (EPS) and X_3 (DPS).

4.4 Major Findings

To accomplish specific results different statistical tools and models were used. After analysis of the different variables through the application of various financial as well as statistical models provide different kinds of result. The major findings of the study are revealed below:

4.4.1 Findings based on comparative study of Financial Indicators

1. Dividend Per Share (DPS)

- DPS of the sample banks in average shows that there are no regularity in dividend payment.
- The average DPS of NSCBL (Rs. 104) is higher than other sample banks. Higher DPS creates positive attitude of the shareholders towards the bank, which consequently helps to increase the market value of share. Similarly, the C.V. analysis of DPS in NSCBL (19.80%) is more consistent as compared to other sample banks.
- In comparison of standard deviation of all sample banks suggests that the NIBL (5.34%) has less fluctuation in DPS than other sample banks.

2. Earning Per Share (EPS)

- The average EPS of the sample banks under this study shows that a positive result, except NBBL. But the C.V. indicates that there is no consistency in EPS.
- The average EPS of NSCBL (Rs. 152.38) is higher than other sample banks. But, the C.V. analysis of EPS in EBL (19.80%) is more consistent as compared to other sample banks.

- In comparison of standard deviation of all sample banks suggests that the NIBL (8.15%) has less fluctuation in EPS than other sample banks.

3. Market Price Per Share (MPS)

- The MPS of sample banks during the study period clearly indicates that increasing trend of MPS in all sample banks, except NBBL.
- The average DPS of NSCBL (Rs. 4119) is higher than other sample banks, which indicates that there is greater chance of gaining capital gain in NSCBL for investor. But the C.V. indicates that there is no consistency in MPS.
- In comparison of standard deviation of all sample banks suggests that the NBBL (148.03%) has less fluctuation in MPS than other sample banks.

4. Retained Earning Per Share (REPS)

- The average REPS of EBL (Rs. 51.56) is higher than other sample banks, which means there are more chance to gain profit from further investment opportunities.
- In comparison of standard deviation of all sample banks suggests that the NIBL (10.70%) has less fluctuation in REPS than other sample banks. But the C.V. analysis of REPS in NIBL (-1.32%) is more consistent as compared to other sample banks, because NBBL has not paid any dividend during the study period.

4.4.2 Findings based on comparative study of Statistical Indicators

1. Findings based on Correlation Analysis

- The correlation coefficient analysis indicates that the relationship between DPS and EPS of EBL is positive, no relationship in NBBL and negative relationship in NIBL, NSCBL, and BOK. And also found results are insignificant for all sample banks.
- The correlation coefficient analysis indicates that the relationship between MPS and DPS of EBL is positive, no relationship in NBBL and negative relationship in NIBL, NSCBL, and BOK. And also found results are insignificant for all sample banks.

- The correlation coefficient analysis indicates that the relationship between MPS on EPS and DPS of all sample banks are positive, and also found results are significant for all sample banks except NIBL.

2. Findings based on Regression Analysis

- The regression line of DPS on EPS, the beta coefficient is positive in EBL, negative in NIBL, NSCBL and BOK and 0 in NIBL. EBL might be able to pay higher DPS than other sample banks because of higher beta coefficient; if one rupee of EPS increased in the entire sample banks at the same time.
- The T-value between DPS and EPS clearly shows that the results are statistically significant for all sample banks except NBBL.
- The regression line of MPS on DPS, the beta coefficient is positive in EBL, which gives directly positive impact to market value of share. Negative in NIBL, NSCBL and BOK, which give directly negative impact to market value of share. And 0 in NIBL, which can't gives any impact to market value of share. EBL might be able to have higher MPS than other sample banks because of higher beta coefficient; if one rupee of DPS increased in the entire sample banks at the same time.
- The T-value between MPS and DPS clearly shows that the results are statistically significant for all sample banks except NBBL.
- The regression line of MPS on EPS and DPS reveals that EPS has positive impact in all the sample banks on MPS whereas DPS has negative impact in NIBL, NSCBL and BOK, no impact in NBBL and positive impact in EBL.
- The F-value between MPS on EPS and DPS states that there is linear relationship between MPS, EPS and DPS or the regression equation of MPS on EPS and DPS is significant for all of the sample banks.

UNIT – 5
SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter presents the summary of the study and draws conclusions from the study based on analysis made in the previous charters. The suggestions are provided to the sample banks so that they can improve the policy and pattern they are following.

5.1 Summary

Dividends are payments made to shareholders from a firm's earnings in return to their investment. Thus, dividend policy is to determine the amount of earnings to be distributed to shareholders and the amount to be retained or reinvest in the firm. Dividend payment to shareholder is taken as best in such a condition because shareholder have investment opportunities elsewhere. In the other hand paying dividends to shareholders is an effective way to lure new investors and to pour their funds in the shares. In the changed context of encouraging secondary market, it is time to study influences of other factors on dividend and application of dividend on market price per shares. The study has tried to cover some such factors. However, it is not enough due to some limitations.

This paper attempts to analyse the dividend practices of commercial banks. Considering time and resource constraints only five commercial banks namely NIBL, NSCBL, NBBL, EBL and BOK have been selected as sample banks in study to fulfill the objective of studying dividend pattern and other factors related to dividend. The study period covers only last five fiscal years from 2002/03 to 2006/07. The available secondary data have been analyzed using various financial and statistical tools in this study. So, the reliability of the conclusions of this study is determined on the accuracy of secondary data.

The market price of share is affected by the financial position and the dividend paid by the firms. In this regards the MPS of the sample banks is seem to be fluctuated. It denoted Nepalese investors are not

treated fairly. The lack of financial knowledge and the market inefficiency has affected the market price of the share in all the sample banks.

Dividends effect on the earning price and market price of the shares has been a vital issue. In order to assess the impact of dividend on MPS, available information from different sectors were reviewed and analysed. Simple and multiple regression analysis have been done to make the research more reliable. At last, testing of hypothesis has been done. In this research the results are tested at 5 percent level of significance.

Ever since, Nepal opted liberal and open market policy in 1984. Public enterprises have grown rapidly, in the last twenty years. There have been a lot of failures of public companies as well as successes. The enthusiasm of investors have waxed and waned with the economic cycles in common with the general trend of stock markets worldwide. The stockholders have a high desire for their shares to have high market price and their shares to earn a high dividend. So, the distribution of dividend is one of the main factors to keep shareholders happy.

The specific objective of the research work was to find out dividend practice currently applied by commercial banks in Nepalese context, examine the relationship of dividend with different financial indicators as well as providing workable suggestions for all rational managers and other interested parties. The study is expected to be significant for the promotion of industrialization through the sound condition of enterprises and industry with the help of efficient financial management.

This study is organized in five chapters, viz, i) Introduction, ii) Review of Literature, iii) Research Methodology, iv) Data Presentation and Analysis and v) Summary, Conclusion and Recommendations.

5.2 Conclusion

In this section, the gaps perceived in this study are presented as conclusions. The issues related to dividend and other relevant factors found while analysing the variables are also presented here. Then, possible causes to perceive this gap will be scrutinized as far as possible.

- There is lack of rules and regulations that bind companies to pay dividend every year. Not only the companies do not have dividend policy but also the government does not have any clear policy towards dividend.

- Dividend payment (pattern) does not show any stability and co-ordination with other variables. These banks don't have any strategic dividend policy.
- There seems instability and consistency in dividend payment by the banks.
- EPS and MPS seem to be highly fluctuating in every year. The C.V. of EPS has ranged from –1.32% to 28.33%. Similarly, C.V. of MPS has ranged from 38.29% to 70.47%. These short of fluctuation cause no faith from public towards the banks.
- Shareholders in Nepal are not conscious. Taking the advantage of unconscious shareholders, the company management does not show the commitment promised in prospectors'
- while raising capital. Promoters lure investor mentioning to pay attractive dividends, when company makes profit. However in reality, most of the companies are deviated from their statement as promised in prospectus.
- On the basis of secondary data analysis, it can be concluded that NSCBL has higher earning capacity than other sample banks and paying more dividend in rupees than that of other sample banks.
- The investors of EBL are investing higher amounts in the market than that of other sample banks in order to gain per rupee earning.
- NSCBL remained more successful than other sample banks in satisfying its shareholder through distributing cash dividend, generating higher amount of earning per share, maintaining higher market value of its share. However, EBL remained more generous in keeping good relationship between DPS, EPS and MPS.

Finally, summarizing all those major findings of the study, the selected banks are not following unique distribution policy of dividend even though they have got sufficient earnings. Different enterprises are following different policies maintaining their own rules and regulations regarding dividend. Market price of share is traded on high prices and highly fluctuated. It depends highly dividend per share and earning per share differently in different banks. There is no uniformly dividend distribution pattern opted by the sample banks.

5.3 Recommendations

Based on the analysis, the following recommendations and suggestions are recommended to the concerned parties:

- It is necessary to enact legal rules that bind. Companies' today dividend the legal rule for the treatment of dividend is most for the smooth growth of the enterprises as well as growth of national economy. For this purpose Nepal Government, NEPSE, SEBON and other concerned parties should work together.
- The bank should consider the existing conditions and expectations of shareholders while distributing dividends so that the distributed dividend should meet the interests or expectations of the shareholders as far as possible.
- The bank should study about the strategy to attract the ordinary or small or low level investors so that the interest or the expectation of shareholders will not be destroyed even the bank can't pay the dividend in some year.
- Banks are playing on the public money. So in this regard, they are advised to have target rate of return (earnings) and target payout ratio that will help the banks to build good image in stock market and investors will be benefited on making investment decision.
- It would be better to fix the amount of dividend in the annual general meeting of shareholders. This is important not only from the point of view of adequate return to shareholders but also to generate stable and increasing market value per share, long run survival of bank, efficient management and socially acceptable distribution of income.
- There is no clear-cut legal provision regarding dividend payments. So the government should act in favor of investors and should bind through such legal provisions or distinct rules so that the profit earning companies should distribute certain percent of their earnings as dividend.
- Banks should have long term vision regarding earnings and dividend payments that helps to cope with challenging competitive

situation of present world. Various internal and external factors should be considered before taking decision.

- Each and every company should provide the information regarding their activities and performance, so that investor can analyze the situation and invest their money in the best company.
- The payment of dividend is highly fluctuating, which is neither static nor constantly growing. Such inconsistency and irregularity in the dividend payment may create more confusion and miss-conception about that firm. Due to higher degree of risk and uncertainty, such fluctuations impact the firm's market price per share adversely. So these banks are advised to follow either static or constantly growing dividend payment policy. Similarly, according to the changing context and shareholders interest and expectation, the predetermined policies should be reviewed.

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Appendix – I

1. DPS on EPS of NIBL

X (EPS)	Y (DPS)	X^2	Y^2	XY	$(X-\bar{X})^2$
51.7	15	2672.89	225	775.5	6.25
39.5	12.5	1560.25	156.25	493.75	216.09
59.35	20	3522.4225	400	1187	26.5225
62.57	5	3915.0049	25	312.85	70.0569
57.87	7.5	3348.9369	56.25	434.025	13.4689
$\sum X =$ **270.99**	$\sum Y =$ **60**	$\sum X^2 =$ **15019.5043**	$\sum Y^2 =$ **862.5**	$\sum XY =$ **3203.125**	$\sum (X-\bar{X})^2 =$ **332.3883**

$$\bar{X} = \frac{\sum X}{n} = \frac{270.99}{5} = \mathbf{54.20} \qquad \bar{Y} = \frac{\sum Y}{n} = \frac{60}{5} = 12$$

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

$$r = \frac{5 \times 3203.13 - (270.99 \times 60)}{\sqrt{5 \times 15019.50 - (270.99)^2}\ \sqrt{5 \times 862.50 - (60)^2}}$$

r = **-0.2240**

Coefficient of Determination (r^2) = **0.0502**

Standard Error of correlation coefficient, S.E. (r) = $\frac{1-r^2}{\sqrt{n}} = \frac{1-0.0502}{\sqrt{5}}$

= **0.4248**

Probable error of correlation coefficient, P.E. (r) = $0.6745 \times \frac{1-r^2}{\sqrt{n}}$

$= 0.6745 \times 0.4248$

= **0.2865**

Regression equation of Y on X, Y= a+ b X

Where,

a = regression constant

b = Regression coefficient (slope of the regression line)

According to the principle of least square, two normal equations for estimating numerical constant a and b are given by,

$\sum Y = n.a + b\sum X$ And $\sum XY = a\sum X + b\sum X^2$

Solving two normal equations, we get

b = $\frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} = \frac{5 \times 3203.13 - \left(270.69 \times 60\right)}{5 \times 15019.50 - \left(270.99\right)^2}$ = **-0.1466**

a = $\overline{Y}$ - b $\overline{X}$ = 12 – [(-0.1466)× 54.20] = **19.9457**

Hence the required simple regression equation as follows:

Y= 19.9457 + (-0.1466 X)

Standard Error of Estimate (S.E.E.) = $\sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$

$= \sqrt{\frac{862.50 - (19.9457 \times 60) - [(-0.1466) \times 3203.13]}{5-2}}$

= **6.7166**

Standard Error of Beta Coefficient (S_b) = $\frac{S.E.E.}{\sqrt{\sum \left(X - \overline{X}\right)^2}}$

$= \frac{6.7166}{332.3883}$ = **0.0202**

T-value $|t| = \frac{b}{S_b} = \frac{0.1466}{0.0202}$ = **7.2574**

2. DPS on EPS of NSCBL

X (EPS)	Y (DPS)	X^2	Y^2	XY	$\left(X - \overline{X}\right)^2$
143.55	110	20606.6025	12100	15790.5	77.9689
143.14	120	20489.0596	14400	17176.8	85.3776
175.84	130	30919.7056	16900	22859.2	550.3716
167.47	80	28046.2009	6400	13397.6	227.7081
131.92	80	17402.8864	6400	10553.6	418.6116
$\sum X$ = **761.92**	$\sum Y$ = **520**	$\sum X^2$ = **117464.455**	$\sum Y^2$ = **56200**	$\sum XY$ = **79777.7**	$\sum \left(X - \overline{X}\right)^2$ = **1360.0378**

$\overline{X} = \frac{\sum X}{n} = \frac{761.92}{5}$ = **152.38** $\overline{Y} = \frac{\sum Y}{n} = \frac{520}{5}$ = **104**

Coefficient of Correlation (r) = $\frac{n\sum XY - \sum X \sum Y}{\sqrt{n\sum X^2 - \left(\sum X\right)^2}\sqrt{n\sum Y^2 - \left(\sum Y\right)^2}}$

$$r = \frac{5 \times 79777.70 - (761.92 \times 520)}{\sqrt{5 \times 117464.455 - (761.92)^2}\ \sqrt{5 \times 56200 - (5200)^2}}$$

r = **-0.0506**

Coefficient of Determination (r^2) = **0.0026**

Standard Error of correlation coefficient, S.E. (r) = $\frac{1 - r^2}{\sqrt{n}} = \frac{1 - 0.0026}{\sqrt{5}}$

= **0.4461**

Probable error of correlation coefficient, P.E. (r) = $0.6745 \times \frac{1 - r^2}{\sqrt{n}}$

= 0.6745×0.4461

= **0.3009**

Regression equation of Y on X, Y= a+ b X

Where,

a = regression constant

b = Regression coefficient (slope of the regression line)

According to the principle of least square, two normal equations for estimating numerical constant a and b are given by,

$\sum Y = n.a + b\sum X$ And $\sum XY = a\sum X + b\sum X^2$

Solving two normal equations, we get

b = $\frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} = \frac{5 \times 79777.70 - (761.92 \times 520)}{5 \times 117464.455 - (761.92)^2}$ = **-0.0632**

a = $\overline{Y}$ - b $\overline{X}$ = 104 – [(-0.0632)× 152.38] = **113.6304**

Hence the required simple regression equation as follows:

Y= 113.6304 + (-0.0632 X)

Standard Error of Estimate (S.E.E.) = $\sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$

= $\sqrt{\frac{56200 - (113.6304 \times 520) - [(-0.0632) \times 79777.70]}{5-2}}$

= **26.7964**

Standard Error of Beta Coefficient (S_b) = $\frac{S.E.E.}{\sqrt{\sum\left(X-\overline{X}\right)^2}}$

= $\frac{26.7964}{1360.0378}$ = **0.0197**

T-value $|t| = \frac{b}{S_b}$ = $\frac{0.0632}{0.0197}$ = **3.2081**

3. DPS on EPS of NBBL

X (EPS)	Y (DPS)	X^2	Y^2	XY	$\left(X-\overline{X}\right)^2$
0.74	0	0.5476	0	0	7443.203076
-104.12	0	10840.9744	0	0	345.439396
-249.65	0	62325.1225	0	0	26934.06146
-147.47	0	21747.4009	0	0	3836.068096
72.83	0	5304.2089	0	0	25079.1565
$\sum X$ = **-427.67**	$\sum Y$ = **0**	$\sum X^2$ = **100218.2543**	$\sum Y^2$ = **0**	$\sum XY$ = **0**	$\sum\left(X-\overline{X}\right)^2$ = **63637.92852**

$\overline{X} = \frac{\sum X}{n}$ $\frac{-427.67}{5}$ = **-85.53** $\overline{Y} = \frac{\sum Y}{n} = \frac{0}{5}$ = **0**

Coefficient of Correlation (r) = $\frac{n\sum XY - \sum X \sum Y}{\sqrt{n\sum X^2 - \left(\sum X\right)^2}\sqrt{n\sum Y^2 - \left(\sum Y\right)^2}}$

r = $\frac{5\times 0 - [(-427.67)\times 0]}{\sqrt{5\times 100218.2543 - (-427.67)^2}\ \sqrt{5\times 0 - (0)^2}}$

r = **0**

Coefficient of Determination (r^2) = **0**

Standard Error of correlation coefficient, S.E. (r) = $\frac{1-r^2}{\sqrt{n}}$ = $\frac{1-0}{\sqrt{5}}$

= **0.4472**

Probable error of correlation coefficient, P.E. (r) = $0.6745\times\frac{1-r^2}{\sqrt{n}}$

= $0.6745\times$ 0.4472

= **0.3016**

Regression equation of Y on X, Y= a+ b X

Where,

a = regression constant

b = Regression coefficient (slope of the regression line)

According to the principle of least square, two normal equations for estimating numerical constant a and b are given by,

$\sum Y = n.a + b\sum X$ And $\sum XY = a\sum X + b\sum X^2$

Solving two normal equations, we get

$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} = \frac{5\times 0 - [(-427.67)\times 0]}{5\times 10218.2543 - \left(-427.67\right)^2} = \mathbf{0}$

$a = \overline{Y} - b\,\overline{X} = 0 - [0\times (-85.53)] = 0$

Hence the required simple regression equation as follows:

Y= 0 + 0 X

Standard Error of Estimate (S.E.E.) $= \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$

$= \sqrt{\frac{0 - (0\times 0) - (0\times 0)}{5-2}}$

$= \mathbf{0}$

Standard Error of Beta Coefficient (S_b) $= \frac{S.E.E.}{\sqrt{\sum \left(X - \overline{X}\right)^2}}$

$= \frac{0}{63637.92852} = \mathbf{0}$

T-value $|t| = \frac{b}{S_b} = \frac{0}{0} = \mathbf{0}$

4. DPS on EPS of EBL

X (EPS)	Y (DPS)	X^2	Y^2	XY	$(X-\bar{X})^2$
45.6	20	2079.36	400	912	439.489296
54.2	0	2937.64	0	0	152.868496
62.8	25	3943.84	625	1570	14.167696
78.4	10	6146.56	100	784	140.090896
91.82	20	8430.9124	400	1836.4	637.865536
$\sum X =$ **332.82**	$\sum Y =$ **75**	$\sum X^2 =$ **23538.3124**	$\sum Y^2 =$ **1525**	$\sum XY =$ **5102.4**	$\sum (X-\bar{X})^2 =$ **1384.48192**

$$\bar{X} = \frac{\sum X}{n} = \frac{332.82}{5} = \mathbf{66.56} \qquad \bar{Y} = \frac{\sum Y}{n} = \frac{75}{5} = \mathbf{15}$$

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

$$r = \frac{5 \times 5102.40 - (332.82 \times 75)}{\sqrt{5 \times 23538.3124 - (332.82)^2}\ \sqrt{5 \times 1525 - (75)^2}}$$

r = **0.1480**

Coefficient of Determination (r^2) = **0.021904**

Standard Error of correlation coefficient, S.E. (r) = $\frac{1-r^2}{\sqrt{n}} = \frac{1-0.021904}{\sqrt{5}}$

= **0.4374**

Probable error of correlation coefficient, P.E. (r) = $0.6745 \times \frac{1-r^2}{\sqrt{n}}$

$= 0.6745 \times 0.4374$

= **0.2950**

Regression equation of Y on X, Y= a+ b X

Where,

a = regression constant

b = Regression coefficient (slope of the regression line)

According to the principle of least square, two normal equations for estimating numerical constant a and b are given by,

$\sum Y = n.a + b\sum X$ And $\sum XY = a\sum X + b\sum X^2$

Solving two normal equations, we get

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} = \frac{5 \times 5102.40 - (332.82 \times 75)}{5 \times 23538.3124 - (332.82)^2} = \mathbf{0.0795}$$

$$a = \bar{Y} - b\bar{X} = 15 - (0.0795 \times 66.56) = \mathbf{9.7085}$$

Hence the required simple regression equation as follows:

Y= 9.7085 + 0.0795 X

$$\text{Standard Error of Estimate (S.E.E.)} = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$

$$= \sqrt{\frac{1525 - (9.7085 \times 75) - (0.0795 \times 5102.40)}{5-2}}$$

$$= \mathbf{11.4196}$$

$$\text{Standard Error of Beta Coefficient } (S_b) = \frac{S.E.E.}{\sqrt{\sum \left(X - \bar{X}\right)^2}}$$

$$= \frac{11.4196}{1384.48192} = \mathbf{0.0082}$$

$$\text{T-value } |t| = \frac{b}{S_b} = \frac{0.0795}{0.0082} = \mathbf{9.6951}$$

5. DPS on EPS of BOK

X (EPS)	Y (DPS)	X^2	Y^2	XY	$\left(X - \bar{X}\right)^2$
27.5	10	756.25	100	275	180.687364
30.1	15	906.01	225	451.5	117.548964
43.67	18	1907.0689	324	786.06	7.441984
43.5	20	1892.25	400	870	6.543364
59.94	2.11	3592.8036	4.4521	126.4734	360.924004

$\sum X =$ **204.71** $\sum Y =$ **65.11** $\sum X^2 =$ **9054.3825** $\sum Y^2 =$ **1053.4521** $\sum XY =$ **2509.0334** $\sum \left(X - \bar{X}\right)^2 =$ **673.14568**

$$\bar{X} = \frac{\sum X}{n} = \frac{204.71}{5} = \mathbf{40.94} \qquad \bar{Y} = \frac{\sum Y}{n} = \frac{65.11}{5} = \mathbf{13.02}$$

$$\text{Coefficient of Correlation (r)} = \frac{n\sum XY - \sum X \sum Y}{\sqrt{n\sum X^2 - \left(\sum X\right)^2}\sqrt{n\sum Y^2 - \left(\sum Y\right)^2}}$$

$$r = \frac{5 \times 2509.0334 - (204.71 \times 65.11)}{\sqrt{5 \times 9054.3825 - (204.71)^2}\ \sqrt{5 \times 1053.4521 - (65.11)^2}}$$

r = **-0.4212**

Coefficient of Determination (r^2) = **0.1774**

Standard Error of correlation coefficient, S.E. (r) = $\frac{1 - r^2}{\sqrt{n}} = \frac{1 - 0.1774}{\sqrt{5}}$

= **0.3679**

Probable error of correlation coefficient, P.E. (r) = $0.6745 \times \frac{1 - r^2}{\sqrt{n}}$

= $0.6745 \times$ 0.3679

= **0.2482**

Regression equation of Y on X, Y= a+ b X

Where,

a = regression constant

b = Regression coefficient (slope of the regression line)

According to the principle of least square, two normal equations for estimating numerical constant a and b are given by,

$\sum Y = n.a + b\sum X$ And $\sum XY = a\sum X + b\sum X^2$

Solving two normal equations, we get

b = $\frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} = \frac{5 \times 2509.0334 - (204.71 \times 65.11)}{5 \times 9054.3825 - (204.71)^2}$ = **-0.2328**

a = $\overline{Y}$ - b $\overline{X}$ = 13.02 – [(-0.2328)$\times$ 40.94] = **22.5508**

Standard Error of Estimate (S.E.E.) = $\sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$

= $\sqrt{\frac{1053.4521 - (22.5508 \times 65.11) - [(-0.2328) \times 2509.0334]}{5-2}}$

= **7.5116**

Standard Error of Beta Coefficient (S_b) = $\frac{S.E.E.}{\sqrt{\sum \left(X - \overline{X}\right)^2}}$

= $\frac{7.5116}{673.14568}$ = **0.0112**

T-value $|t| = \frac{b}{S_b} = \frac{0.2328}{0.0112}$ = **20.7857**

Appendix - II

1. MPS on DPS of NIBL

X (DPS)	Y (MPS)	X^2	Y^2	XY	$(X-\bar{X})^2$
15	940	225	883600	14100	9
12.5	800	156.25	640000	10000	0.25
20	1260	400	1587600	25200	64
5	1729	25	2989441	8645	49
7.5	2450	56.25	6002500	18375	20.25
$\sum X =$ **60**	$\sum Y =$ **7179**	$\sum X^2 =$ **862.5**	$\sum Y^2 =$ **12103141**	$\sum XY =$ **76320**	$\sum (X-\bar{X})^2 =$ **142.5**

$$\bar{X} = \frac{\sum X}{n} = \frac{60}{5} = \mathbf{12} \qquad \bar{Y} = \frac{\sum Y}{n} = \frac{7179}{5} = \mathbf{1435.80}$$

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

$$r = \frac{5 \times 76320 - (60 \times 7179)}{\sqrt{5 \times 862.50 - (60)^2}\ \sqrt{5 \times 12103141 - (7179)^2}}$$

r = **-0.6144**

Coefficient of Determination (r^2) = **03775**

Standard Error of correlation coefficient, S.E. (r) = $\frac{1-r^2}{\sqrt{n}} = \frac{1-0.3775}{\sqrt{5}}$

= **0.2784**

Probable error of correlation coefficient, P.E. (r) = $0.6745 \times \frac{1-r^2}{\sqrt{n}}$

= $0.6745 \times$ 0.2784

= **0.1878**

Regression equation of Y on X, Y= a+ b X

Where,

a = regression constant

b = Regression coefficient (slope of the regression line)

According to the principle of least square, two normal equations for estimating numerical constant a and b are given by,

$\sum Y = n.a + b\sum X$ And $\sum XY = a\sum X + b\sum X^2$

Solving two normal equations, we get

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} = \frac{5 \times 76320 - (60 \times 7179)}{5 \times 862.50 - (60)^2} = \textbf{-68.9684}$$

$$a = \bar{Y} - b\bar{X} = 1435.80 - [(-68.9684) \times 12] = \textbf{2263.4208}$$

Hence the required simple regression equation as follows:

Y= 2263.4208 + (-68.9684 X)

$$\text{Standard Error of Estimate (S.E.E.)} = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$

$$= \sqrt{\frac{12103141 - (2263.4208 \times 7179) - [(-68.9684) \times 76320]}{5-2}}$$

$$= \textbf{610.3855}$$

$$\text{Standard Error of Beta Coefficient } (S_b) = \frac{S.E.E.}{\sqrt{\sum \left(X - \bar{X}\right)^2}}$$

$$= \frac{610.3855}{142.50} = \textbf{4.2834}$$

$$\text{T-value } |t| = \frac{b}{S_b} = \frac{68.9684}{4.2834} = \textbf{16.1013}$$

2. MPS on DPS of NSCBL

X (DPS)	Y (MPS)	X^2	Y^2	XY	$\left(X - \bar{X}\right)^2$
110	1745	12100	3045025	191950	36
120	2345	14400	5499025	281400	256
130	3775	16900	14250625	490750	676
80	5900	6400	34810000	472000	576
80	6830	6400	46648900	546400	576
$\sum X =$ **520**	$\sum Y =$ **20595**	$\sum X^2 =$ **56200**	$\sum Y^2 =$ **104253575**	$\sum XY =$ **1982500**	$\sum \left(X - \bar{X}\right)^2 =$ **2120**

$$\bar{X} = \frac{\sum X}{n} = \frac{520}{5} = \textbf{104} \qquad \bar{Y} = \frac{\sum Y}{n} = \frac{20595}{5} = \textbf{4119}$$

$$\text{Coefficient of Correlation (r)} = \frac{n\sum XY - \sum X \sum Y}{\sqrt{n\sum X^2 - \left(\sum X\right)^2}\sqrt{n\sum Y^2 - \left(\sum Y\right)^2}}$$

$$r = \frac{5 \times 19825200 - (520 \times 20595)}{\sqrt{5 \times 56200 - (520)^2}\ \sqrt{5 \times 104253575 - (20595)^2}}$$

r = **-0.7854**

Coefficient of Determination (r^2) = **0.6169**

Standard Error of correlation coefficient, S.E. (r) = $\frac{1-r^2}{\sqrt{n}} = \frac{1-0.6169}{\sqrt{5}}$

= **0.1713**

Probable error of correlation coefficient, P.E. (r) = $0.6745 \times \frac{1-r^2}{\sqrt{n}}$

= $0.6745 \times$ 0.1713

= **0.1155**

Regression equation of Y on X, Y= a+ b X

Where,

a = regression constant

b = Regression coefficient (slope of the regression line)

According to the principle of least square, two normal equations for estimating numerical constant a and b are given by,

$\sum Y = n.a + b\sum X$ And $\sum XY = a\sum X + b\sum X^2$

Solving two normal equations, we get

b = $\frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} = \frac{5 \times 1982500 - (520 \times 20595)}{5 \times 56200 - (520)^2}$ = **-75.1793**

a = $\overline{Y}$ - b $\overline{X}$ = 4119 – [(-75.1793)$\times$ 104] = **11937.6472**

Hence the required simple regression equation as follows:

Y= 11937.6472 + (-75.1793 X)

Standard Error of Estimate (S.E.E.) = $\sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$

= $\sqrt{\frac{104253575 - (11937.6472 \times 20595) - [(-75.1793) \times 1982500]}{5-2}}$

= **1574.8749**

Standard Error of Beta Coefficient (S_b) = $\frac{S.E.E.}{\sqrt{\sum\left(X-\overline{X}\right)^2}}$

$= \frac{1574.8749}{2120}$ = **0.7429**

T-value $|t| = \frac{b}{S_b}$ = $\frac{75.1793}{0.7429}$ = **101.1971**

3. MPS on DPS of NBBL

X (DPS)	Y (MPS)	X^2	Y^2	XY	$\left(X-\overline{X}\right)^2$
0	354	0	125316	0	0
0	265	0	70225	0	0
0	199	0	39601	0	0
0	550	0	302500	0	0
0	565	0	319225	0	0
$\sum X$ = **0**	$\sum Y$ = **1933**	$\sum X^2$ = **0**	$\sum Y^2$ = **856867**	$\sum XY$ = **0**	$\sum\left(X-\overline{X}\right)^2$ = **0**

$\overline{X} = \frac{\sum X}{n} = \frac{0}{5}$ = **0** $\overline{Y} = \frac{\sum Y}{n} = \frac{1933}{5}$ = **386.60**

Coefficient of Correlation (r) = $\frac{n\sum XY - \sum X \sum Y}{\sqrt{n\sum X^2 - \left(\sum X\right)^2}\sqrt{n\sum Y^2 - \left(\sum Y\right)^2}}$

r = $\frac{5\times 0 - (0\times 1933)}{\sqrt{5\times 0 - (0)^2}\ \sqrt{5\times 856867 - (1933)^2}}$

r = **0**

Coefficient of Determination (r^2) = **0**

Standard Error of correlation coefficient, S.E. (r) = $\frac{1-r^2}{\sqrt{n}} = \frac{1-0}{\sqrt{5}}$

= **0.4472**

Probable error of correlation coefficient, P.E. (r) = $0.6745\times\frac{1-r^2}{\sqrt{n}}$

= $0.6745\times$ 0.4472

= **0.3016**

Regression equation of Y on X, Y= a+ b X

Where,

a = regression constant

b = Regression coefficient (slope of the regression line)

According to the principle of least square, two normal equations for estimating numerical constant a and b are given by,

$\sum Y = n.a + b\sum X$ And $\sum XY = a\sum X + b\sum X^2$

Solving two normal equations, we get

$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} = \frac{5\times 0 - (0\times 1933)}{5\times 0 - (0)^2}$ = **0**

a = $\overline{Y}$ - b $\overline{X}$ = 386.60 – (0× 0) = **386.60**

Hence the required simple regression equation as follows:

Y= 386.60 + 0 X

Standard Error of Estimate (S.E.E.) = $\sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$

$= \sqrt{\frac{856867 - (0\times 1933) - (0\times 0)}{5-2}}$

= **534.4365**

Standard Error of Beta Coefficient (S_b) = $\frac{S.E.E.}{\sqrt{\sum\left(X-\overline{X}\right)^2}}$

$= \frac{534.4365}{0} = \infty$

T-value $|t| = \frac{b}{S_b} = \frac{0}{\infty}$ = **0**

4. MPS on DPS of EBL

X (DPS)	Y (MPS)	X^2	Y^2	XY	$\left(X-\overline{X}\right)^2$
20	680	400	462400	13600	25
0	870	0	756900	0	225
25	1379	625	1901641	34475	100
10	2430	100	5904900	24300	25
20	3132	400	9809424	62640	25
$\sum X$ = **75**	$\sum Y$ = **8491**	$\sum X^2$ = **1525**	$\sum Y^2$ = **18835265**	$\sum XY$ = **135015**	$\sum\left(X-\overline{X}\right)^2$ = **400**

$\overline{X} = \frac{\sum X}{n} = \frac{75}{5}$ **= 15** $\overline{Y} = \frac{\sum Y}{n} = \frac{8491}{5}$ **= 1698.20**

Coefficient of Correlation (r) = $\frac{n\sum XY - \sum X \sum Y}{\sqrt{n\sum X^2 - \left(\sum X\right)^2}\sqrt{n\sum Y^2 - \left(\sum Y\right)^2}}$

$$r = \frac{5 \times 135015 - (75 \times 8491)}{\sqrt{5 \times 1525 - (75)^2}\ \sqrt{5 \times 18835265 - (8491)^2}}$$

r = **0.1820**

Coefficient of Determination (r^2) = **0.0331**

Standard Error of correlation coefficient, S.E. (r) = $\frac{1-r^2}{\sqrt{n}} = \frac{1-0.0331}{\sqrt{5}}$

= **0.4324**

Probable error of correlation coefficient, P.E. (r) = $0.6745 \times \frac{1-r^2}{\sqrt{n}}$

$= 0.6745 \times 0.4324$

= **0.2917**

Regression equation of Y on X, Y= a+ b X

Where,

a = regression constant

b = Regression coefficient (slope of the regression line)

According to the principle of least square, two normal equations for estimating numerical constant a and b are given by,

$\sum Y = n.a + b\sum X$ And $\sum XY = a\sum X + b\sum X^2$

Solving two normal equations, we get

b = $\frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} = \frac{5 \times 135015 - (75 \times 8491)}{5 \times 1525 - (75)^2}$ **= 19.125**

a = $\overline{Y}$ - b $\overline{X}$ = 1698.20 – (19.125 × 15) = **1411.325**

Hence the required simple regression equation as follows:

Y= 1411.325 + 19.125 X

Standard Error of Estimate (S.E.E.) = $\sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$

$= \sqrt{\frac{18835265 - (1411.325 \times 8491) - (19.125 \times 135015)}{5-2}}$

= **1192.9714**

Standard Error of Beta Coefficient (S_b) = $\frac{S.E.E.}{\sqrt{\sum \left(X - \overline{X}\right)^2}}$

$= \frac{1192.9714}{400}$ = **2.9824**

T-value $|t| = \frac{b}{S_b}$ = $\frac{19.125}{2.9824}$ = **6.4126**

5. MPS on DPS of BOK

X (DPS)	Y (MPS)	X^2	Y^2	XY	$\left(X - \overline{X}\right)^2$
10	295	100	87025	2950	9.13248
15	430	225	184900	6450	3.91248
18	850	324	722500	15300	24.78048
20	1375	400	1890625	27500	48.69248
2.11	2350	4.4521	5522500	4958.5	119.07174

$\sum X$ = **65.11** $\sum Y$ = **5300** $\sum X^2$ = **1053.4521** $\sum Y^2$ = **8407550** $\sum XY$ = **57158.5** $\sum \left(X - \overline{X}\right)^2$ = **205.5896**

$\overline{X} = \frac{\sum X}{n} = \frac{65.11}{5}$ = **13.02** $\overline{Y} = \frac{\sum Y}{n} = \frac{5300}{5}$ = **1060**

Coefficient of Correlation (r) = $\frac{n\sum XY - \sum X \sum Y}{\sqrt{n\sum X^2 - \left(\sum X\right)^2}\sqrt{n\sum Y^2 - \left(\sum Y\right)^2}}$

r = $\frac{5 \times 57158.50 - (65.11 \times 5300)}{\sqrt{5 \times 1053.4521 - (65.11)^2}\ \sqrt{5 \times 8407550 - (5300)^2}}$

r = **-0.4952**

Coefficient of Determination (r^2) = **0.2452**

Standard Error of correlation coefficient, S.E. (r) = $\frac{1-r^2}{\sqrt{n}} = \frac{1-0.2452}{\sqrt{5}}$

= **0.3376**

Probable error of correlation coefficient, P.E. (r) = $0.6745 \times \frac{1-r^2}{\sqrt{n}}$

$= 0.6745 \times 0.3376$

= **0.2277**

Regression equation of Y on X, Y= a+ b X

Where,

a = regression constant

b = Regression coefficient (slope of the regression line)

According to the principle of least square, two normal equations for estimating numerical constant a and b are given by,

$\sum Y = n.a + b\sum X$ And $\sum XY = a\sum X + b\sum X^2$

Solving two normal equations, we get

b = $\frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} = \frac{5\times 57158.50 - (65.11\times 5300)}{5\times 1053.4521 - (65.11)^2}$ = **-57.6785**

a = $\overline{Y}$ - b $\overline{X}$ = 1060 – (-57.6785 × 13.02) = **1810.9741**

Hence the required simple regression equation as follows:

Y= 1810.9741 + (-57.6785 X)

Standard Error of Estimate (S.E.E.) = $\sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$

$= \sqrt{\frac{8407550 - (1810.9741\times 5300) - [(-57.6785)\times 57158.50]}{5-2}}$

= **837.8949**

Standard Error of Beta Coefficient (S_b) = $\frac{S.E.E.}{\sqrt{\sum\left(X-\overline{X}\right)^2}}$

$= \frac{837.8949}{205.58968}$ = **4.0756**

T-value $|t| = \frac{b}{S_b} = \frac{57.6785}{4.0756}$ = **14.1523**

Appendix – III

1. MPS on EPS and DPS of NIBL

X_1 (MPS)	X_2 (EPS)	X_3 (DPS)	X_1^2	X_2^2	X_3^2	X_1*X_2	X_2*X_3	X_1*X_3
940	51.7	15	883600	2672.89	225	48598	775.5	14100
800	39.5	12.5	640000	1560.25	156.25	31600	493.75	10000
1260	59.35	20	1587600	3522.4225	400	74781	1187	25200
1729	62.57	5	2989441	3915.0049	25	108183.53	312.85	8645
2450	57.87	7.5	6002500	3348.9369	56.25	141781.5	434.025	18375
$\sum X_1 =$	$\sum X_2 =$	$\sum X_3 =$	$\sum X_1^2 =$	$\sum X_2^2 =$	$\sum X_3^2 =$	$\sum X_1X_2 =$	$\sum X_2X_3 =$	$\sum X_1X_3 =$
7179	**270.99**	**60**	**12103141**	**15019.5043**	**862.5**	**404944.03**	**3203.125**	**76320**

$$\overline{X_1} = \frac{\sum X_1}{n} = \frac{7179}{5} = \mathbf{1435.80} \quad \overline{X_2} = \frac{\sum X_2}{n} = \frac{270.99}{5} = \mathbf{54.20} \quad \overline{X_3} = \frac{\sum X_3}{n} = \frac{60}{5} = \mathbf{12}$$

$$\text{Coefficient of Correlation } (r_{12}) = \frac{n\sum X_1X_2 - \sum X_1 \sum X_2}{\sqrt{n\sum X_1^2 - \left(\sum X_1\right)^2}\sqrt{n\sum X_2^2 - \left(\sum X_2\right)^2}}$$

$$= \frac{5 \times 404944.03 - (7179 \times 270.99)}{\sqrt{5 \times 12103141 - (7179)^2}\sqrt{5 \times 15019.5043 - (270.99)^2}}$$

$$= \mathbf{0.6491}$$

$$\text{Coefficient of Correlation } (r_{23}) = \frac{n\sum X_2X_3 - \sum X_2 \sum X_3}{\sqrt{n\sum X_2^2 - \left(\sum X_2\right)^2}\sqrt{n\sum X_3^2 - \left(\sum X_3\right)^2}}$$

$$= \frac{5 \times 3203.125 - (270.99 \times 60)}{\sqrt{5 \times 15019.5043 - (270.99)^2}\sqrt{5 \times 862.5 - (60)^2}} = \mathbf{-0.2240}$$

$$\text{Coefficient of Correlation } (r_{13}) = \frac{n\sum X_1X_3 - \sum X_1 \sum X_3}{\sqrt{n\sum X_1^2 - \left(\sum X_1\right)^2}\sqrt{n\sum X_3^2 - \left(\sum X_3\right)^2}}$$

$$= \frac{5 \times 76320 - (7179 \times 60)}{\sqrt{5 \times 12103141 - (7179)^2}\sqrt{5 \times 862.5 - (60)^2}} = \mathbf{-0.6144}$$

Now, Calculations of Multiple Correlation Coefficient:

$$\text{Multiple Correlation Coefficient } (R_{123}) = \sqrt{\frac{(r_{12})^2 + (r_{13})^2 - 2r_{12}r_{23}r_{13}}{1 - (r_{23})^2}}$$

$$= \sqrt{\frac{(0.6491)^2 + (-0.6144)^2 - [2 \times 0.6491 \times (-0.2240) \times (-0.6144)]}{1 - (-0.2240)^2}}$$

$$= \mathbf{0.6529}$$

Multiple Coefficient of Determination $(R_{123})^2$ = **0.4263**

Standard Error of correlation coefficient, S.E.(r) = $\frac{1-(R_{123})^2}{\sqrt{n}} = \frac{1-0.4263}{\sqrt{5}}$

= **0.2566**

Probable error of correlation coefficient, P.E. (r) = $0.6745 \times \frac{1-(R_{123})^2}{\sqrt{n}}$

$= 0.6745 \times 0.2566$

= **0.1731**

Regression equation of X_1 on X_2 and X_3 $\quad X_1 = a + b_1X_2 + b_2X_3$

Dependent Variable = X_1 (MPS)

Independent Variables = X_2 (EPS) and X_3 (DPS)

The general formula of multiple regression equation is given case is:

$X_1 = a + b_1X_2 + b_2X_3$ ---------- (i)

Where,

a = regression constant

b_1 and b_2 = Regression coefficient (slope of the regression line)

Required normal equations to find the value of **a, b_1** and **b_2** can be written as under as:

$\sum X_1 = n.a + b_1 \sum X_2 + b_2 \sum X_3$ ---------- (ii)

$\sum X_1X_2 = a \sum X_2 + b_1 \sum X_2^{\,2} + b_2 \sum X_2X_3$ ---------- (iii)

$\sum X_1X_3 = a \sum X_3 + b_1 \sum X_2X_3 + b_2 \sum X_3^{\,2}$ ---------- (iv)

Substituting the corresponding values in equations (ii), (iii) and (iv), we get:

$7179 = 5\,a + 270.99\,b_1 + 60\,b_2$ ---------- (v)

$404944.03 = 270.99\,a + 15019.5043\,b_1 + 3203.125\,b_2$ ----------(vi)

$76320 = 60\,a + 3203.125\,b_1 + 862.50\,b_2$ ---------- (vii)

Solving the above equations (v), (vi) and (vii), we get:

a = **-43.67**

b_1 = **39.58**

b_2 = **-55.47**

Hence the required multiple regression equation as follows:

X_1 = -43.67 + 39.58 X_2 + (-55.47 X_3)

Standard Error of Estimated is X_1 on X_2 and X_3 given by

$$S.E.E._{123} = \sqrt{\frac{\sum X_1^2 - a\sum X_1 - b_1\sum X_1X_2 - b_2\sum X_1X_3}{n-2}}$$

$$= \sqrt{\frac{12103141 - (-43.67 \times 7179) - (39.58 \times 404944.03) - (-55.47 \times 76320)}{5-2}}$$

= **455.4974**

Now, Calculation of F value (F-ratio)

$$\text{F-Ratio} = \frac{\text{Mean Sum of Square Between Samples}}{\text{Mean Sum of Square Within Samples}}$$

(i) Grand Total (T) = $\sum X_1 + \sum X_2 + \sum X_3$ = 7179 + 270.99 +60 = **7509.99**

(ii) Correction Factor (C. F.) = $\frac{T^2}{N} = \frac{(7509.99)^2}{15}$ = **3759996.65**

(iii) Total Sum of Square (T. S. S.) = $\sum X_1^2 + \sum X_2^2 + \sum X_3^2 - C.F.$

= 12103141 + 15019.50 + 862.50 – 3759996.65 = **8359026.35**

(iv) Sum of Square Between Samples (S. S. C.) =

$$= \frac{\left(\sum X_1\right)^2}{n_1} + \frac{\left(\sum X_2\right)^2}{n_2} + \frac{\left(\sum X_3\right)^2}{n_3} - C.F.$$

$$= \frac{(7179)^2}{5} + \frac{(270.99)^2}{5} + \frac{(60)^2}{5} - 3759996.65 = \textbf{6563018.67}$$

(v) Sum of Square Within Samples (S. S. W.) = T. S. S. – S. S. C.

= 8359026.35 – 6563018.67 = **1796007.68**

One Way ANOVA Table

Source of Variation	Sum of Square	Degree of Freedom	Mean Sum of Square	F-Ratio
Between Samples	**6563018.67**	3 – 1 = 2	$\frac{6563018.67}{2}$ = **3281509.34**	$\frac{3281509.34}{149667.31}$ = **21.9254**
Within Samples	**1796007.68**	12	$\frac{1796007.68}{12}$ = **149667.31**	
Total	**8359026.35**	15 – 1 = 14		

2. MPS on EPS and DPS of NSCBL

X_1 (MPS)	X_2 (EPS)	X_3 (DPS)	X_1^2	X_2^2	X_3^2	X_1*X_2	X_2*X_3	X_1*X_3
1745	143.55	110	3045025	20606.6025	12100	250494.75	15790.5	191950
2345	143.14	120	5499025	20489.0596	14400	335663.3	17176.8	281400
3775	175.84	130	14250625	30919.7056	16900	663796	22859.2	490750
5900	167.47	80	34810000	28046.2009	6400	988073	13397.6	472000
6830	131.92	80	46648900	17402.8864	6400	901013.6	10553.6	546400
$\sum X_1 =$	$\sum X_2 =$	$\sum X_3 =$	$\sum X_1^2 =$	$\sum X_2^2 =$	$\sum X_3^2 =$	$\sum X_1X_2 =$	$\sum X_2X_3 =$	$\sum X_1X_3 =$
20595	**761.92**	**520**	**104253575**	**117464.455**	**56200**	**3139040.65**	**79777.7**	**1982500**

$$\overline{X_1} = \frac{\sum X_1}{n} = \frac{20595}{5} = \mathbf{4119} \qquad \overline{X_2} = \frac{\sum X_2}{n} = \frac{761.92}{5} = \mathbf{152.38}$$

$$\overline{X_3} = \frac{\sum X_3}{n} = \frac{520}{5} = \mathbf{104}$$

$$\text{Coefficient of Correlation } (r_{12}) = \frac{n\sum X_1X_2 - \sum X_1 \sum X_2}{\sqrt{n\sum X_1^2 - \left(\sum X_1\right)^2}\sqrt{n\sum X_2^2 - \left(\sum X_2\right)^2}}$$

$$= \frac{5 \times 3139040.65 - (20595 \times 761.92)}{\sqrt{5 \times 104253575 - (20595)^2}\sqrt{5 \times 117464.455 - (761.92)^2}} = \mathbf{0.0043}$$

$$\text{Coefficient of Correlation } (r_{23}) = \frac{n\sum X_2X_3 - \sum X_2 \sum X_3}{\sqrt{n\sum X_2^2 - \left(\sum X_2\right)^2}\sqrt{n\sum X_3^2 - \left(\sum X_3\right)^2}}$$

$$= \frac{5 \times 79777.77 - (761.92 \times 520)}{\sqrt{5 \times 117464.455 - (761.92)^2}\sqrt{5 \times 56200 - (520)^2}} = \mathbf{0.3169}$$

$$\text{Coefficient of Correlation } (r_{13}) = \frac{n\sum X_1X_3 - \sum X_1 \sum X_3}{\sqrt{n\sum X_1^2 - \left(\sum X_1\right)^2}\sqrt{n\sum X_3^2 - \left(\sum X_3\right)^2}}$$

$$= \frac{5 \times 1982500 - (20595 \times 520)}{\sqrt{5 \times 104253575 - (20595)^2}\sqrt{5 \times 56200 - (520)^2}} = \mathbf{-0.7854}$$

Now, Calculations of Multiple Correlation Coefficient:

$$\text{Multiple Correlation Coefficient } (R_{123}) = \sqrt{\frac{(r_{12})^2 + (r_{13})^2 - 2r_{12}r_{23}r_{13}}{1 - (r_{23})^2}}$$

$$= \sqrt{\frac{(0.0043)^2 + (-0.7854)^2 - [2 \times 0.0043 \times 0.3169 \times (-0.7854)]}{1 - (0.3169)^2}} = \mathbf{0.8295}$$

Multiple Coefficient of Determination $(R_{123})^2$ = **0.6881**

Standard Error of correlation coefficient, S.E.(r)= $\frac{1-(R_{123})^2}{\sqrt{n}} = \frac{1-0.6881}{\sqrt{5}}$

= **0.1395**

Probable error of correlation coefficient, P.E. (r) = $0.6745 \times \frac{1-(R_{123})^2}{\sqrt{n}}$

$= 0.6745 \times 0.1395$

= **0.0941**

Regression equation of X_1 on X_2 and X_3 $\quad X_1 = a + b_1X_2 + b_2X_3$

Dependent Variable = X_1 (MPS)

Independent Variables = X_2 (EPS) and X_3 (DPS)

The general formula of multiple regression equation is given case is:

$X_1 = a + b_1X_2 + b_2X_3$ ---------- (i)

Where,

a = regression constant

b_1 and b_2 = Regression coefficient (slope of the regression line)

Required normal equations to find the value of **a, b_1** and **b_2** can be written as under as:

$\sum X_1 = n.a + b_1 \sum X_2 + b_2 \sum X_3$ ---------- (ii)

$\sum X_1X_2 = a\sum X_2 + b_1 \sum X_2^{\,2} + b_2 \sum X_2X_3$ ---------- (iii)

$\sum X_1X_3 = a\sum X_3 + b_1 \sum X_2X_3 + b_2 \sum X_3^{\,2}$ ---------- (iv)

Substituting the corresponding values in equations (ii), (iii) and (iv), we get:

20595 = 5 a + 761.92 b_1 + 520 b_2 ---------- (v)

3139040.455 = 761.92 a + 117464.455 b_1 + 79777.7 b_2 ----------(vi)

1982500 = 520 a + 79777.7 b_1 + 56200 b_2 ---------- (vii)

Solving the above equations (v), (vi) and (vii), we get:

a = **7701.22**

b_1 = **33.63**

b_2 = **-83.71**

Hence the required multiple regression equation as follows:

$$X_1 = 7701.22 + 33.63\ X_2 + (-83.71\ X_3)$$

Standard Error of Estimated is X_1 on X_2 and X_3 given by

$$S.E.E._{123} = \sqrt{\frac{\sum X_1^2 - a\sum X_1 - b_1\sum X_1X_2 - b_2\sum X_1X_3}{n-2}}$$

$$= \sqrt{\frac{104253575 - (7701.22 \times 20595) - (33.63 \times 3139040.65) - (-83.71 \times 1982500)}{5-2}}$$

$$= \mathbf{1430.9582}$$

Now, Calculation of F value (F-ratio)

$$\text{F-Ratio} = \frac{\text{Mean Sum of Square Between Samples}}{\text{Mean Sum of Square Within Samples}}$$

(i) Grand Total (T) = $\sum X_1 + \sum X_2 + \sum X_3$ = 20595 + 761.92 + 520 = **21876.92**

(ii) Correction Factor (C. F.) = $\frac{T^2}{N} = \frac{(21876.92)^2}{15}$ = **3190641.91**

(iii) Total Sum of Square (T. S. S.) = $\sum X_1^2 + \sum X_2^2 + \sum X_3^2 - C.F.$

= 104253575 + 117464.455 + 56200 – 3190641.91= **101236597.50**

(iv) Sum of Square Between Samples (S. S. C.) =

$$= \frac{\left(\sum X_1\right)^2}{n_1} + \frac{\left(\sum X_2\right)^2}{n_2} + \frac{\left(\sum X_3\right)^2}{n_3} - C.F.$$

$$= \frac{(20595)^2}{5} + \frac{(761.92)^2}{5} + \frac{(520)^2}{5} - 3190641.91 = \mathbf{53094347.51}$$

(v) Sum of Square Within Samples (S. S. W.) = T. S. S. – S. S. C.

= 101236597.50 – 53094347.51 = **48142249.93**

One Way ANOVA Table

Source of Variation	Sum of Square	Degree of Freedom	Mean Sum of Square	F-Ratio
Between Samples	**53094347.51**	3 – 1 = 2	$\frac{53094347.51}{2}$ = **26547173.76**	$\frac{26547173.76}{4011854.17}$ = **6.6172**
Within Samples	**48142249.93**	12	$\frac{48142249.93}{12}$ = **4011854.17**	
Total	**101236597.50**	15 – 1 = 14		

3. MPS on EPS and DPS of NBBL

X_1 (MPS)	X_2 (EPS)	X_3 (DPS)	X_1^2	X_2^2	X_3^2	X_1*X_2	X_2*X_3	X_1*X_3
354	0.74	0	125316	0.5476	0	261.96	0	0
265	-104.12	0	70225	10840.9744	0	-27591.8	0	0
199	-249.65	0	39601	62325.1225	0	-49680.35	0	0
550	-147.47	0	302500	21747.4009	0	-81108.5	0	0
565	72.83	0	319225	5304.2089	0	41148.95	0	0
$\sum X_1 =$	$\sum X_2 =$	$\sum X_3 =$	$\sum X_1^2 =$	$\sum X_2^2 =$	$\sum X_3^2 =$	$\sum X_1X_2 =$ -	$\sum X_2X_3 =$	$\sum X_1X_3 =$
1933	**-427.67**	**0**	**856867**	**100218.2543**	**0**	**116969.74**	**0**	**0**

$$\overline{X_1} = \frac{\sum X_1}{n} = \frac{1933}{5} = \mathbf{386.60} \qquad \overline{X_2} = \frac{\sum X_2}{n} = \frac{-427.67}{5} = \mathbf{-85.534}$$

$$\overline{X_3} = \frac{\sum X_3}{n} = \frac{0}{5} = \mathbf{0}$$

Coefficient of Correlation (r_{12}) $= \dfrac{n\sum X_1X_2 - \sum X_1 \sum X_2}{\sqrt{n\sum X_1^2 - \left(\sum X_1\right)^2}\sqrt{n\sum X_2^2 - \left(\sum X_2\right)^2}}$

$$= \frac{5\times 116969.74 - [1933\times(-427.67)]}{\sqrt{5\times 856867 - (1933)^2}\sqrt{5\times 100218.25 - (-427.67)^2}} = \mathbf{3.3807}$$

Coefficient of Correlation (r_{23}) $= \dfrac{n\sum X_2X_3 - \sum X_2 \sum X_3}{\sqrt{n\sum X_2^2 - \left(\sum X_2\right)^2}\sqrt{n\sum X_3^2 - \left(\sum X_3\right)^2}}$

$$= \frac{5\times 0 - [(-427.67)\times 0]}{\sqrt{5\times 100218.25 - (-427.67)^2}\sqrt{5\times 0 - (0)^2}} = \mathbf{0}$$

Coefficient of Correlation (r_{13}) $= \dfrac{n\sum X_1X_3 - \sum X_1 \sum X_3}{\sqrt{n\sum X_1^2 - \left(\sum X_1\right)^2}\sqrt{n\sum X_3^2 - \left(\sum X_3\right)^2}}$

$$= \frac{5\times 0 - (1933\times 0)}{\sqrt{5\times 856867 - (1933)^2}\sqrt{5\times 0 - (0)^2}} = \mathbf{0}$$

Now, Calculations of Multiple Correlation Coefficient:

Multiple Correlation Coefficient (R_{123}) $= \sqrt{\dfrac{(r_{12})^2 + (r_{13})^2 - 2r_{12}r_{23}r_{13}}{1-(r_{23})^2}}$

$$= \sqrt{\frac{(3.3807)^2 + (0)^2 - [2\times 3.3807\times 0\times 0]}{1-(0)^2}} = \mathbf{3.3807}$$

Multiple Coefficient of Determination $(R_{123})^2 = \mathbf{10.9457}$

Standard Error of correlation coefficient,S.E.(r)= $\frac{1-(R_{123})^2}{\sqrt{n}} = \frac{1-10.9457}{\sqrt{5}}$

= **-4.4487**

Probable error of correlation coefficient, P.E. (r) = $0.6745 \times \frac{1-(R_{123})^2}{\sqrt{n}}$

= $0.6745 \times$ (-4.4487) = **-3.0007**

Regression equation of X_1 on X_2 and X_3 $X_1 = a + b_1X_2 + b_2X_3$

Dependent Variable = X_1 (MPS)

Independent Variables = X_2 (EPS) and X_3 (DPS)

The general formula of multiple regression equation is given case is:

$X_1 = a + b_1X_2 + b_2X_3$ ---------- (i)

Where,

a = regression constant

b_1 and b_2 = Regression coefficient (slope of the regression line)

Required normal equations to find the value of **a, b_1** and **b_2** can be written as under as:

$\sum X_1 = n.a + b_1 \sum X_2 + b_2 \sum X_3$ ---------- (ii)

$\sum X_1X_2 = a \sum X_2 + b_1 \sum X_2^2 + b_2 \sum X_2X_3$ ---------- (iii)

$\sum X_1X_3 = a \sum X_3 + b_1 \sum X_2X_3 + b_2 \sum X_3^2$ ---------- (iv)

Substituting the corresponding values in equations (ii), (iii) and (iv), we get:

1933 = 5 a + (-427.67 b_1) + 0 b_2 ---------- (v)

116969.74 = (-427.67 a)+ 100218.25 b_1 + 0 b_2 ----------(vi)

0 = 0 a + 0 b_1 + 0 b_2 ---------- (vii)

Solving the above equations (v), (vi) and (vii), we get:

a = **766.04**

b_1 = **4.44**

b_2 = **0**

Hence the required multiple regression equation as follows:

X_1 = 766.04 + 4.44 X_2 + 0 X_3

Standard Error of Estimated is X_1 on X_2 and X_3 given by

$$\text{S.E.E.}_{123} = \sqrt{\frac{\sum X_1^2 - a\sum X_1 - b_1\sum X_1X_2 - b_2\sum X_1X_3}{n-2}}$$

$$= \sqrt{\frac{856867 - (766.04\times 1933) - (4.44\times 116969.74) - (0\times 0)}{5-2}}$$

$$= \sqrt{-380926.64}$$

Now, Calculation of F value (F-ratio)

$$\text{F-Ratio} = \frac{\text{Mean Sum of Square Between Samples}}{\text{Mean Sum of Square Within Samples}}$$

(i) Grand Total (T) = $\sum X_1 + \sum X_2 + \sum X_3$ = 1933 + (-427.67) + 0 = **1505.33**

(ii) Correction Factor (C. F.) = $\frac{T^2}{N} = \frac{(1505.33)^2}{15}$ = **151067.89**

(iii) Total Sum of Square (T. S. S.) =

$\sum X_1^2 + \sum X_2^2 + \sum X_3^2 - C.F.$

= 856867 + 100218.25 + 0 – 151067.89 = **806017.36**

(iv) Sum of Square Between Samples (S. S. C.) =

$$= \frac{\left(\sum X_1\right)^2}{n_1} + \frac{\left(\sum X_2\right)^2}{n_2} + \frac{\left(\sum X_3\right)^2}{n_3} - C.F.$$

$$= \frac{(1933)^2}{5} + \frac{(-427.67)^2}{5} + \frac{(0)^2}{5} - 151067.89 = \textbf{632810.24}$$

(v) Sum of Square Within Samples (S. S. W.) = T. S. S. – S. S. C.

= 806017.36– 632810.24 = **173207.12**

One Way ANOVA Table

Source of Variation	Sum of Square	Degree of Freedom	Mean Sum of Square	F-Ratio
Between Samples	**632810.24**	3 – 1 = 2	$\frac{632810.24}{2}$ = **316405.12**	$\frac{316405.12}{14433.93}$ = **21.9209**
Within Samples	**173207.12**	12	$\frac{173207.12}{12}$ = **14433.93**	
Total	**806017.36**	15 – 1 = 14		

4. MPS on EPS and DPS of EBL

X_1 (MPS)	X_2 (EPS)	X_3 (DPS)	X_1^2	X_2^2	X_3^2	X_1*X_2	X_2*X_3	X_1*X_3
680	45.6	20	462400	2079.36	400	31008	912	13600
870	54.2	0	756900	2937.64	0	47154	0	0
1379	62.8	25	1901641	3943.84	625	86601.2	1570	34475
2430	78.4	10	5904900	6146.56	100	190512	784	24300
3132	91.82	20	9809424	8430.9124	400	287580.24	1836.4	62640
$\sum X_1 =$	$\sum X_2 =$	$\sum X_3 =$	$\sum X_1^2 =$	$\sum X_2^2 =$	$\sum X_3^2 =$	$\sum X_1X_2 =$	$\sum X_2X_3 =$ **5**	$\sum X_1X_3 =$ **1**
8491	**332.82**	**75**	**18835265**	**23538.3124**	**1525**	**642855.44**	**102.4**	**35015**

$$\overline{X_1} = \frac{\sum X_1}{n} = \frac{8491}{5} = \mathbf{1698.20} \qquad \overline{X_2} = \frac{\sum X_2}{n} = \frac{332.82}{5} = \mathbf{66.56}$$

$$\overline{X_3} = \frac{\sum X_3}{n} = \frac{75}{5} = \mathbf{15}$$

Coefficient of Correlation (r_{12}) = $$\frac{n\sum X_1X_2 - \sum X_1 \sum X_2}{\sqrt{n\sum X_1^2 - \left(\sum X_1\right)^2}\sqrt{n\sum X_2^2 - \left(\sum X_2\right)^2}}$$

$$= \frac{5\times 642855.44 - (8491\times 332.82)}{\sqrt{5\times 18835265 - (8491)^2}\sqrt{5\times 23538.31 - (332.82)^2}} = \mathbf{0.9932}$$

Coefficient of Correlation (r_{23}) = $$\frac{n\sum X_2X_3 - \sum X_2 \sum X_3}{\sqrt{n\sum X_2^2 - \left(\sum X_2\right)^2}\sqrt{n\sum X_3^2 - \left(\sum X_3\right)^2}}$$

$$= \frac{5\times 5102.4 - (332.82\times 75)}{\sqrt{5\times 23538.31 - (332.82)^2}\sqrt{5\times 1525 - (75)^2}} = \mathbf{0.1480}$$

Coefficient of Correlation (r_{13}) = $$\frac{n\sum X_1X_3 - \sum X_1 \sum X_3}{\sqrt{n\sum X_1^2 - \left(\sum X_1\right)^2}\sqrt{n\sum X_3^2 - \left(\sum X_3\right)^2}}$$

$$= \frac{5\times 135015 - (8491\times 675)}{\sqrt{5\times 18835265 - (8491)^2}\sqrt{5\times 1525 - (75)^2}} = \mathbf{0.1820}$$

Now, Calculations of Multiple Correlation Coefficient:

Multiple Correlation Coefficient (R_{123}) = $$\sqrt{\frac{(r_{12})^2 + (r_{13})^2 - 2r_{12}r_{23}r_{13}}{1-(r_{23})^2}}$$

$$= \sqrt{\frac{(0.9932)^2 + (0.1820)^2 - [2\times 0.9932\times 0.1480\times 0.1820]}{1-(0.1480)^2}}$$

$$= \mathbf{0.9938}$$

Multiple Coefficient of Determination $(R_{123})^2$ = **0.9876**

Standard Error of correlation coefficient, S.E. (r) $= \frac{1-(R_{123})^2}{\sqrt{n}} = \frac{1-0.9876}{\sqrt{5}}$

$= \mathbf{0.0055}$

Probable error of correlation coefficient, P.E. (r) $= 0.6745 \times \frac{1-(R_{123})^2}{\sqrt{n}}$

$= 0.6745 \times 0.0055 = \mathbf{0.0037}$

Regression equation of X_1 on X_2 and X_3 $\quad \mathbf{X_1 = a + b_1X_2 + b_2X_3}$

Dependent Variable = X_1 (MPS)

Independent Variables = X_2 (EPS) and X_3 (DPS)

The general formula of multiple regression equation is given case is:

$X_1 = a + b_1X_2 + b_2X_3$ ---------- (i)

Where,

a = regression constant

b_1 and b_2 = Regression coefficient (slope of the regression line)

Required normal equations to find the value of **a, b_1** and **b_2** can be written as under as:

$\sum X_1 = n.a + b_1 \sum X_2 + b_2 \sum X_3$ ---------- (ii)

$\sum X_1X_2 = a \sum X_2 + b_1 \sum X_2^{\,2} + b_2 \sum X_2X_3$ ---------- (iii)

$\sum X_1X_3 = a \sum X_3 + b_1 \sum X_2X_3 + b_2 \sum X_3^{\,2}$ ---------- (iv)

Substituting the corresponding values in equations (ii), (iii) and (iv), we get:

$7179 = 5\ a + 270.99\ b_1 + 60\ b_2$ ---------- (v)

$404944.03 = 270.99\ a + 15019.5043\ b_1 + 3203.125\ b_2$ ----------(vi)

$76320 = 60\ a + 3203.125\ b_1 + 862.50\ b_2$ ---------- (vii)

Solving the above equations (v), (vi) and (vii), we get:

a = **-2072.18**

b_1 = **55.79**

b_2 = **3.77**

Hence the required multiple regression equation as follows:

$$X_1 = -2072.18 + 55.79\,X_2 + 3.77\,X_3$$

Standard Error of Estimated is X_1 on X_2 and X_3 given by

$$S.E.E._{123} = \sqrt{\frac{\sum X_1^{\,2} - a\sum X_1 - b_1\sum X_1X_2 - b_2\sum X_1X_3}{n-2}}$$

$$= \sqrt{\frac{18835265 - (-2072.18 \times 8491) - (55.79 \times 642855.44) - (3.77 \times 135015)}{5-2}}$$

$$= \mathbf{134.2205}$$

Now, Calculation of F value (F-ratio)

$$\text{F-Ratio} = \frac{\text{Mean Sum of Square Between Samples}}{\text{Mean Sum of Square Within Samples}}$$

(i) Grand Total (T) = $\sum X_1 + \sum X_2 + \sum X_3$ = 8491 + 332.82 + 75 = **8898.82**

(ii) Correction Factor (C. F.) = $\frac{T^2}{N} = \frac{(8898.82)^2}{15}$ = **5269266.49**

(iii) Total Sum of Square (T. S. S.) = $\sum X_1^{\,2} + \sum X_2^{\,2} + \sum X_3^{\,2} - C.F.$
= 18835265 + 23538.31 + 1525 – 5269266.49 = **13581061.82**

(iv) Sum of Square Between Samples (S. S. C.) =
$$= \frac{\left(\sum X_1\right)^2}{n_1} + \frac{\left(\sum X_2\right)^2}{n_2} + \frac{\left(\sum X_3\right)^2}{n_3} - C.F.$$
$$= \frac{(8491)^2}{5} + \frac{(332.82)^2}{5} + \frac{(75)^2}{5} - 5269266.49 = \mathbf{9163428.54}$$

(v) Sum of Square Within Samples (S. S. W.) = T. S. S. – S. S. C.
= 13581061.82 – 9163428.54 = **4417633.28**

One Way ANOVA Table

Source of Variation	Sum of Square	Degree of Freedom	Mean Sum of Square	F-Ratio
Between Samples	**9163428.54**	3 – 1 = 2	$\frac{9163428.54}{2}$ = **4581714.27**	$\frac{4581714.27}{368136.11}$ = **12.4457**
Within Samples	**4417633.28**	12	$\frac{4417633.28}{12}$ = **368136.11**	
Total	**13581061.82**	15 – 1 = 14		

5. MPS on EPS and DPS of BOK

X_1 (MPS)	X_2 (EPS)	X_3 (DPS)	X_1^2	X_2^2	X_3^2	X_1*X_2	X_2*X_3	X_1*X_3
295	27.5	10	87025	756.25	100	8112.5	275	2950
430	30.1	15	184900	906.01	225	12943	451.5	6450
850	43.67	18	722500	1907.0689	324	37119.5	786.06	15300
1375	43.5	20	1890625	1892.25	400	59812.5	870	27500
2350	59.94	2.11	5522500	3592.8036	4.4521	140859	126.4734	4958.5
$\sum X_1 =$	$\sum X_2 =$	$\sum X_3 =$	$\sum X_1^2 =$	$\sum X_2^2 =$	$\sum X_3^2 =$	$\sum X_1X_2 =$	$\sum X_2X_3 =$	$\sum X_1X_3 =$
5300	**204.71**	**65.11**	**8407550**	**9054.3825**	**1053.4521**	**258846.5**	**2509.0334**	**57158.5**

$$\overline{X_1} = \frac{\sum X_1}{n} = \frac{5300}{5} = \mathbf{1060} \quad \overline{X_2} = \frac{\sum X_2}{n} = \frac{204.71}{5} = \mathbf{40.94}$$

$$\overline{X_3} = \frac{\sum X_3}{n} = \frac{65.11}{5} = \mathbf{13.02}$$

Coefficient of Correlation (r_{12}) $= \dfrac{n\sum X_1X_2 - \sum X_1 \sum X_2}{\sqrt{n\sum X_1^2 - \left(\sum X_1\right)^2}\sqrt{n\sum X_2^2 - \left(\sum X_2\right)^2}}$

$$= \frac{5 \times 258846.50 - (5300 \times 204.71)}{\sqrt{5 \times 8407550 - (5300)^2}\sqrt{5 \times 9054.38 - (204.71)^2}} = \mathbf{0.9658}$$

Coefficient of Correlation (r_{23}) $= \dfrac{n\sum X_2X_3 - \sum X_2 \sum X_3}{\sqrt{n\sum X_2^2 - \left(\sum X_2\right)^2}\sqrt{n\sum X_3^2 - \left(\sum X_3\right)^2}}$

$$= \frac{5 \times 2509.03 - (204.71 \times 65.11)}{\sqrt{5 \times 9054.38 - (204.71)^2}\sqrt{5 \times 1053.45 - (6.11)^2}} = \mathbf{-0.4212}$$

Coefficient of Correlation (r_{13}) $= \dfrac{n\sum X_1X_3 - \sum X_1 \sum X_3}{\sqrt{n\sum X_1^2 - \left(\sum X_1\right)^2}\sqrt{n\sum X_3^2 - \left(\sum X_3\right)^2}}$

$$= \frac{5 \times 57158.50 - (5300 \times 65.11)}{\sqrt{5 \times 8407550 - (5300)^2}\sqrt{5 \times 1053.45 - (65.11)^2}} = \mathbf{-0.4952}$$

Now, Calculations of Multiple Correlation Coefficient:

Multiple Correlation Coefficient (R_{123}) $= \sqrt{\dfrac{(r_{12})^2 + (r_{13})^2 - 2r_{12}r_{23}r_{13}}{1 - (r_{23})^2}}$

$$= \sqrt{\frac{(0.9658)^2 + (-0.4952)^2 - [2 \times 0.9658 \times (-0.4212) \times (-0.4952)]}{1 - (-0.4212)^2}}$$

$$= \mathbf{0.9707}$$

Multiple Coefficient of Determination $(R_{123})^2$ = **0.9423**

Standard Error of correlation coefficient, S.E.(r)= $\frac{1-(R_{123})^2}{\sqrt{n}} = \frac{1-0.9423}{\sqrt{5}}$

= **0.0258**

Probable error of correlation coefficient, P.E. (r) = $0.6745 \times \frac{1-(R_{123})^2}{\sqrt{n}}$

= 0.6745×0.0258 = **0.0174**

Regression equation of X_1 on X_2 and X_3 $\quad X_1 = a + b_1X_2 + b_2X_3$

Dependent Variable = X_1 (MPS)

Independent Variables = X_2 (EPS) and X_3 (DPS)

The general formula of multiple regression equation is given case is:

$X_1 = a + b_1X_2 + b_2X_3$ ---------- (i)

Where,

a = regression constant

b_1 and b_2 = Regression coefficient (slope of the regression line)

Required normal equations to find the value of **a, b_1** and **b_2** can be written as under as:

$\sum X_1 = n.a + b_1 \sum X_2 + b_2 \sum X_3$ ---------- (ii)

$\sum X_1X_2 = a\sum X_2 + b_1 \sum X_2^{\,2} + b_2 \sum X_2X_3$ ---------- (iii)

$\sum X_1X_3 = a\sum X_3 + b_1 \sum X_2X_3 + b_2 \sum X_3^{\,2}$ ---------- (iv)

Substituting the corresponding values in equations (ii), (iii) and (iv), we get:

$5300 = 5\,a + 204.71\,b_1 + 65.11\,b_2$ ---------- (v)

$258846.50 = 204.71\,a + 9054.38\,b_1 + 2509.03\,b_2$ ----------(vi)

$57158.50 = 65.11\,a + 2509.03\,b_1 + 1053.45\,b_2$ ---------- (vii)

Solving the above equations (v), (vi) and (vii), we get:

a = **-1203.58**

b_1 = **59.27**

b_2 = **-12.51**

Hence the required multiple regression equation as follows:

$$X_1 = -1203.58 + 59.27\ X_2 + (-12.51\ X_3)$$

Standard Error of Estimated is X_1 on X_2 and X_3 given by

$$S.E.E._{123} = \sqrt{\frac{\sum X_1^2 - a\sum X_1 - b_1\sum X_1X_2 - b_2\sum X_1X_3}{n-2}}$$

$$= \sqrt{\frac{8407550 - (-1203.58\times 5300) - (59.27\times 258846.50) - (-12.51\times 57158.50)}{5-2}}$$

$$= \mathbf{231.4914}$$

Now, Calculation of F value (F-ratio)

$$\text{F-Ratio} = \frac{\text{Mean Sum of Square Between Samples}}{\text{Mean Sum of Square Within Samples}}$$

(i) Grand Total (T) = $\sum X_1 + \sum X_2 + \sum X_3 = 5300 + 204.71 + 65.11$
= **5569.89**

(ii) Correction Factor (C. F.) = $\frac{T^2}{N} = \frac{(5569.89)^2}{15}$ = **20681912.99**

(iii) Total Sum of Square (T. S. S.) = $\sum X_1^2 + \sum X_2^2 + \sum X_3^2 - C.F.$
= 8407550 + 9054.38 + 1053.45 – 20681912.99 = **8359026.35**

(iv) Sum of Square Between Samples (S. S. C.) =

$$= \frac{\left(\sum X_1\right)^2}{n_1} + \frac{\left(\sum X_2\right)^2}{n_2} + \frac{\left(\sum X_3\right)^2}{n_3} - C.F.$$

$$= \frac{(5300)^2}{5} + \frac{(204.71)^2}{5} + \frac{(65.11)^2}{5} - 20681912.99 = \mathbf{3559036.11}$$

(v) Sum of Square Within Samples (S. S. W.) = T. S. S. – S. S. C.
= 8359026.35 – 3559036.11 = **2790428.74**

One Way ANOVA Table

Source of Variation	Sum of Square	Degree of Freedom	Mean Sum of Square	F-Ratio
Between Samples	**3559036.11**	3 – 1 = 2	$\frac{3559036.11}{2}$ = **1779518.06**	$\frac{1779518.06}{232535.73}$ = **7.6527**
Within Samples	**2790428.74**	12	$\frac{2790428.74}{12}$ = **232535.73**	
Total	**8359026.35**	15 – 1 = 14		

EVEREST BANK LIMITED ANNUAL REPORT
2007/2008

MAIN INDICATORS Schedule 4.31

Particulars Indicator	2003/2004	2004/05	2005/06	2006/07	2007/08
1 Net Profit/Total Income %	18.3	19.9	22.2	21.6	24.2
2 Per share Earning Rs.	45.58	54.22	62.78	78.42	91.82
3 Market price per share Rs.	680	870	1379	2430	3132
4 Price/Earning Ratio	14.93	16.04	21.97	30.99	34.11
5 Dividend on share-					
Bonus share %	20		30	30	
6 Cash Dividend %	20		25	10	20
7 Interest Income/Loans					
& advances %	9.2	8.0	7.6	6.9	7.1
8 Employee expenses/Total					
operating expenses %	10.3	12.4	11.5	11.0	15.4
9 Interest expenses/Total on					
deposit&borrowing %	3.9	2.9	2.8	2.7	2.6
10 Exchange Income/total Income %	3.5	3.2	2.2	2.1	3.5
11 Staff bonus/total employee					
expenses %	48.2	46.3	48.7	52.8	41.7
12 Net Profit/Loans & advances %	2.4	2.2	2.3	2.1	2.4
13 Net Profit/Total Assets %	1.5	1.4	1.5	1.4	1.7
14 Total Loans &advances/					
Total Deposits %	75.6	78.2	73.4	77.4	78.6
15 Total operating expenses/					
total Assets %	6	4.1	3.9	3.6	3.7
16 Capital Adequacy Ratio:					
a) Core Capital %	9.58	8.88	8.21	7.82	9.04
b) Supplementary Capital %	1.49	4.69	4.11	3.38	2.40
c) Total Capital Funds %	11.07	13.57	12.32	11.20	11.44
17 Cash Reserve Ratio (CRR) %	1.6	1.9	1.9	2.9	3.4
18 NPAs/Total Loans & advances %	1.7	1.63	1.27	0.80	0.68
19 Weighted Average Interest					
Rate Spread %	3.98	4.06	3.99	3.91	4.34
20 Book Networth					
(Amount in Lacs) Rs.	5403	6926	8228	11066	15812
21 Total Shares Number	3150000	3150000	3780000	3780000	4914000
22 Total Employee Number	250	257	306	393	449
23 Others-					
- Per Employee Business					
(Rs. in Lakh) Rs.	566.6	700.3	782.3	821.1	954
- Employee expenses/Total Income %	6.2	7.1	6.7	6.3	8.5

Note : CRR have been calculated on the basis of year end figures.

5 Years Principal Indicators

Schedule 31

Particulars	Indicators	F/Y 2003/04 (060/61)	F/Y 2004/05 (061/62)	F/Y 2005/06 (062/63)	F/Y 2006/07 (063/64)	F/Y 2007/08 (064/65)
1. Percent of Net Profit/ Gross Income	%	16.71	20.26	23.99	25.07	25.33
2. Earning Per Share	Rs.	51.70	39.50	59.35	62.57	57.87
3. Market Value Per Share	Rs.	940	800	1,260	1,729	2,450
4. Price Earning Ratio	Ratio	18.18	20.25	21.23	27.63	42.33
5. Dividend (including bonus) on share capital	%	15	12.5	55.46	30	40.83
6. Cash Dividend on Share Capital	%	15	12.5	20	5 7.5	7.5
7. Interest Income/ Loan & Advances	%	9.03	7.36	7.32	7.33	6.93
8. Staff Expenses/ Total operating Expenses	%	37.52	34.65	38.77	37.39	37.41
9. Interest Expenses on Total Deposit and Borrowings	%	2.74	2.43	2.52	2.71	2.79
10.Exchange Gain/ Total Income	%	9.63	8.95	6.77	6.77	6.03
11.Staff Bonus/ Total Staff Expenses	Percent	28.66	38.22	41.84	49.76	54.50
12.Net Profit/Loan and Advances	%	2.08	2.22	2.66	2.82	2.53
13.Net Profit/Total Assets	Ratio	1.13	1.42	1.61	1.79	1.77
14.Total Credit/Deposit	Percent	63.68	73.33	69.63	72.56	79.91
15.Total Operating Expenses** / Total Assets	Percent	1.78	1.71	1.43	1.38	1.27
16.Adequacy of Capital Fund on Risk Weigted Assets	Percent					
a. Core Capital	Percent	7.22	8.52	7.97	7.90	7.71
b. Supplementary Capital	Percent	4.02	3.06	4.01	4.26	3.57
c. Total Capital Fund	Percent	11.18	11.58	11.97	12.17	11.28
17.Liquidity (CRR)	Percent	9.19	9.78	13.61	10.47	10.91
18.Non-performing credit/ Total credit	Ratio	2.47	2.69	2.07	2.37	1.12
19.Weighted Average Interest Rate Spread	Percent	5.98	4.30	3.90	3.99	4.00
20.Book Net-worth	Rs. in '000	729,048	1,180,173	1,415,440	1,878,124	2,686,786
21.Total Shares	No.	2952930	5877385	5905860	8013526	12039154
22.Total Staffs	No.	325	353	390	514	622
23.Others						

** Total Operating Expenses = Staff Expenses+ Office Operating Expenses

SCHEDULE 31

PRINCIPAL INDICATORS

Particulars	Indicators	FY 03/04	FY 04/05	FY 05/06	FY 06/07	FY 07/08
1. Percent of Net Profit/ Gross Income	Percent	3 0.03%	27.13%	35 .11%	3 8.75%	41.89%
2. Earning Per Share	NPR	27.50	30.10	43.67	43.50	59.94
3. Market Value Per Share	NPR	295.00	430.00	850.00	1,375.00	2,350.00
4. Price Earning Ratio	Ratio	7.20	14.29	19.46	31.61	39.21
5. Dividend (including bonus) on Share Capital	Percent	1 0.00%	15 .00%	48.00%	20.00%	42.11%
6. Capital Adjustment Reserve	Percent	10.00%	10.00%	10.00%	10.00%	-
7. Cash Dividend on Share Capital	Percent	10.00%	15 .00%	18.00%	20.00%	2.11%
8. Interest Income/ Loan and Advances	Percent	10.04%	10.27%	9 .89%	8.71%	8.30%
9. Staff Expenses/ Total Operating Expenses	%	9 .17%	10.18%	10.50%	11 .08%	12.64%
10. Interest Expenses/ Total Deposit & Borrowing	%	3.31%	2.70%	2.74%	2.55%	2.59%
11. Exchange Gain/ Total Income	Percent	8.82%	9 .54%	8.91%	7.98%	7.32%
12. Staff Bonus/ Total Staff Expenses	Percent	42.99%	42.17%	50.95%	54.98%	58.27%
13. Net Profit/ Loan and Advances	%	2.26%	2.36%	2.79%	2.79%	2.90%
14. Net Profit/ Total Assets Ratio		1.34%	1.42%	1.65%	1.80%	2.04%
15. Total Credit/ Deposit	%	77.61%	68.87%	71.42%	78.25%	80.51%
16. Total Operating Expenses/ Total Assets	Percent	5 .48%	5 .36%	4.59%	4.32%	4.05%
17. Adequacy of Capital Fund on Risk Weighted Assets						
(a) Core Capital	**Percent**	**10.14%**	**10.02%**	**10.71%**	**9.43%**	**9.57%**
(b) Supplementary Capital	**%**	**1.02%**	**1.00%**	**3.81%**	**3.18%**	**2.37%**
(c) Total Capital Fund (a+b)	**%**	**11.16%**	**11.02%**	**14.52%**	**12.62%**	**11.93%**
18. Liquidity (CRR)	Percent	7.19%	7.56%	7.64%	8.02%	7.57%
19. Non-performing credit/ Total Credit Ratio		6.66%	4.99%	2.72%	2.51%	1.86%
20. Weighted Average Interest Rate Spread	Percent	3 .41%	3 .95%	3 .37%	4.04%	4.35%
21. Book Net-worth per share	NPR	218.38	213.60	230.67	164.68	222.51
22. Total Shares	No.	4,635,809	4,635,809	4,635,809	6,031,413	6,031,413
23. Total Staff	No.	167	171	177	179	390

Schedule 4.31: Key Indicators

Particulars	Indicators	FY 2003/04	FY 2004/05	FY 2005/06	FY 2006/07	FY 2007/08
1. Net Profit/Gross Income	%	33.95	34.01	37.06	34.55	34.94
2. Earning Per Share	Rs.	143.55	143.14	175.84	167.37	131.92
3. Market Value Per Share	Rs.	1,745	2,345	3,775	5,900	6,830
4. Price Earning Ratio	Ratio	12.16	16.38	21.47	35.25	51.77
5. Dividend (including bonus) on Share Capital	%	110	120	140	130	130
6. Cash Dividend on Share Capital	Percent	110	120	130	80	80
7. Interest Income/Loan & Advances	Percent	8.83	7.43	6.23	6.49	6.20
8. Staff Expenses/Total Operating Expenses	%	19.51	22.53	24.29	23.75	24.28
9. Interest Expenses on Total Deposit and Borrowings	%	1.30	1.31	1.31	1.65	1.59
10. Exchange Fluctuation Income/ Total Income	Percent	17.24	17.32	15.95	15.44	14.75
11. Staff (statutory) Bonus/Total Staff Expenses	Percent	38.96	37.38	35.83	33.71	34.63
12. Net Profi t/Loan and Advances	%	8.51	6.85	7.63	6.75	6.24
13. Net Profi t/Total Assets	%	2.27	2.46	2.56	2.42	2.46
14. Total Credit/Deposit	%	31.63	43.49	39.92	43.78	46.95
15. Total Operating Expenses/ Total Assets	Percent	2.92	3.03	2.69	2.94	2.78
16. Adequacy of Capital Fund on Risk Weighted Assets						
a. Core Capital	Percent	13.76	13.99	12.99	13.77	12.15
b. Supplementary Capital	%	1.81	2.07	1.94	1.94	1.85
c. Total Capital Fund	Percent	15.57	16.06	14.93	15.71	14.00
17. Liquidity (CRR) Ratio		9.46	8.77	6.86	5.46	5.84
18. Non-performing Credit/ Total Credit	Percent	3.77	2.69	2.13	1.83	0.92
19. Weighted Average Interest Rate Spread	Percent	3.76	3.70	4.10	3.95	4.01
20. Book Net-worth	Rs'000	1,495,739	1,582,415	1,754,139	2,116,353	2,492,548
21. Total Shares	No.	3,746,404	3,746,404	3,746,404	4,132,548	6,207,840
22. Total Staff	No.	263	302	345	351	377

Nepal Stock Exchange Ltd.					
Singhdubar Plaza, Kathmandu					
Some Key Figures of B/S And P/L Account with brief financial indicators					
of Nepal Bangladesh Bank Ltd.					
	Audited	Audited	Audited	Audited	Unaudited *
	2060/61	2061/62	2062/63	2063/64	2064/65
	2003/04	2004/05	2005/06	2006/07	2007/08
Brief Financial Indicators					
Networth Per Share	182.42	-32.59	-217.07	-364.54	-317.03
Earning Per Share	0.74	-104.12	-249.65	-147.47	72.83
Dividend Per share	-	-	-	-	-
Dividend Payout Ratio	-	-	-	-	-
Earning Yield	-	-	-	-	-
Price Earning Ratio (In case of old co)	478.38	-	-	-	-
Market Price	354	265	199	550	565
Current Market Price (11 May 08)	680				
Capital Structure	Rs. In Million	Rs. In Million	Rs. In Million	Rs. In Million	Rs. In Million
Authorised Capital	1500.00	1500.00	1500.00	1500.00	1500.00
Issued Capital	1000.00	1000.00	1000.00	1000.00	1000.00
Liabilities					
Issued and Paid up capital	359.92	719.86	719.86	719.86	744.13
Debenture	-	-	-	-	-
Reserve & Surplus	296.65	-485.28	-2,282.44	-3,344.02	-3,103.26
Deposits	12807.38	12,125.58	13,015.14	9,385.95	9,801.44
Others	794.02	916.99	256.73	492.76	2,947.76
Total	14257.97	13277.15	11709.29	7254.55	10390.07
Cash & Bank Balance	1436.47	1,401.77	7,694.68	1,164.05	735.53
Investment	2699.17	2,411.72	2,691.86	1,084.56	829.01

Loan, advances & overdraft	8648.74	7,787.69	6,460.26	4,409.01	6,379.40
Fixed Assets	191.18	189.30	172.33	140.81	150.94
Others	1282.41	1,486.67	690.16	456.12	2,295.19
Total	14257.97	13,277.15	17,709.29	7,254.55	10,390.07
Profit and Loss Account					
Interest Income	1095.50	876.51	758.13	982.20	530.51
Other income	231.69	206.67	468.68	302.31	630.32
Total Income	1327.19	1,083.18	1,226.81	1,284.51	1,160.83
Expenditures:					
Interest Expenses	625.36	547.94	518.09	432.22	294.93
Overhead Expenses(Employees)	76.62	95.88	140.66	112.55	93.42
Operating expenses(office mgmt,)	113.76	161.34	119.90	114.33	79.40
Non-operational expenses	-	-	11.11	-	-
Loan loss provision	400.73	905.15	1882.28	1502.80	-
Provision for bonus	11.07	22.39	-	-	63.01
Others	-	-	271.57	-	-
Total Expenditure	1227.54	1732.70	2943.61	2161.90	530.76
Profit before tax	99.65	-649.52	-1716.8	-877.39	630.07
Tax provision	97.00	100.00	80.35	184.20	88.11
Net profit after tax(PAT)	2.65	-749.52	-1797.15	-1061.59	541.96
* 9 Months Report					