# CHAPTER – I

## INTRODUCTION

### 1.1 Background of Study:

Nepal is a country which is in phase of developing its economy for the development of which the financial sector play a great and a very important role, thus, various financial institutions from this sector have to play an significant role in the economic development of the country. The participation of the private sector plays even more important role for the economic development. In Nepal commercial banks are playing vital role in the economic development of the country. They collect deposits from different sources under different account, create capital and mobilize the resources in productive area.

Nepal is popularly known as a developing nation where the financial market is still in infancy stage. Its economy is known progressive economy. The degree of resources utilization to produce goods and services with development of market to consume them are the major indicators of the economic development of a country.

There are two types of market on the basis of nature of product, commodity market and the financial market. The market where the activities of exchanging money, trading of security etc. are performed called financial market. Financial market can be divided into money market and capital market. In money market short-term funds are traded where in capital market long-term funds are traded.

The overall development of a country largely depends upon the economic development. Development of capital market and money market is essential to develop the country economically. Banks, finance companies and other financial institutions help to develop the money market as well as the capital market by

mobilizing the deposit amount, which are collected from public, and investing the sum total of small investors. Commercial banks are those financial institutions that are established to use the scattered financial resources to the productive and commercial areas to earn the profit. Financing in the different economic fields like, industries, trade, agricultural etc. to generate profit is the main objectives of the commercial banks. In addition to the primary function of receiving deposits and lending to others, it undertakes a wide variety of functions to assist the customers by performing agency function like, collection of cheques, bills, dividend etc. or behalf of the customers' payment of insurance premium, subscriptions of rent, salary etc. on the behalf of customers; transfer of funds, purchase and sale of the securities etc.

A part from the agency functions, the commercial banks also provide certain general utility services; like custody deposit and safe deposits, lockers facilities, issuing of travelers' cheque, credit cards, letter of credits and gift chouse or voucher. A commercial bank also acts as a referee and guarantor of its customers to third parties.

All the business companies are established to earn more profit. Equity shareholders are the real owner of the company who invest their money for generating more income. Shareholders of the company get dividend from out of profit and benefited directly. Instead of paying dividend a firm can retain the funds to exploit other growth opportunities. The shareholders can expect benefit indirectly through future increase in the price of the share. Thus, shareholders wealth can be increased though either dividend or capital gains. So the dividend policy involves the decision to pay out the earnings versus retaining them for the reinvestment in the firm. The sharing out of the earning made to the shareholders

who provide equity to these institutions is referred to as dividend. Divined can also referred as the proportion of the net earning of a corporation distributed to stockholders, representing the profit in the enterprises.

The policy of a company on the division of its profit between distributions to its shareholders and retention for its reinvestment is known as dividend policy. Dividend policy is an integral part of the firms financing decisions. The dividend policy of the firm is regarded as a tool to determine the appropriate allocation of profits between dividend payments and the amount to be retained in the firms. Dividends refer to that portion of a firm's net earnings, which are paid out to the shareholders. Retained earnings are the most significant internal source of the financing for the growth of the firm. Dividend policy is a major decision of the firm under which it is determined that what percentage of the earnings is retained in the firm which formulated with consistent approach instead of making decision. Retention of earning is desirous for the growth of the firm where as shareholders are interested to get some sort of return in the form of dividend.

Thus, this study aims to focus on prevailing practice and policies of some commercial banks regarding the dividend payments. The profit is the basic factor for the existence of any business firm, if there is no profit business cannot sustain in long run, this profit can be distributed among the owner as dividend. Dividend implies to the portion of earning that is paid to the shareholders while dividend policy refers to the guidance that management uses in establishing portion of retained earning that is paid to the shareholders. Dividend conveys pro-rata distribution of retained earnings either in the forms of cash or additional stock in accordance with the proportionate shareholding. Now days, it is mostly interpreted in terms of left over earning after financing all acceptance investment

opportunities and theses are used for the payment of dividend. In this way, dividend is just the means of distributing unused funds or paying out whatever funds left after making all attractive investments, furthermore, it is stated simply as the by-product of the firm's capital budgeting decision and borrowing decision.

In the context of Nepal cash and stock are the forms of distributing of dividend. Companies distribute the dividend annually in Nepal. Some companies paid the whole income amount as dividend for good image; some of then retained all income amounts for the reinvestment and some partially paid the amount as dividend. In Nepal partial dividend payment is in real practice. In Nepal there are few numbers of companies, which pay stable dividend. Others are not stable in the payment of dividends and some companies are not paying any dividend because they have lack of profit. In case of joint venture commercial banks they are paying dividend to attract the investors and they are the leading companies in the capital market as their number of transactions and market price per share is usually high. They bring the trend to distribute the dividend, which encourage the investors to invest in the companies and mobilize the funds.

So, the study aims to mobilize the fun prevailing the practice and policies, relevant factors of four Nepalese listed commercial banks regarding to the difference in the policy adopted by them considering size of dividend and its impact on the share price. In Nepal only few company are able to pay dividend. Dividend becomes payable when declared by board of directors.

**1.2 Profiles of Selected Companies**:
There are 163 companies listed in Nepal Stock Exchange (NEPSE). There are few companies whose share are traded actively in the stock market and pay some

amount as dividend out of their earnings. Out of 163 listed companies, only 59 companies have declared to pay dividends in terms of cash or stock dividend in the fiscal year 2009/10. Out of these companies the following companies are selected for the study, belongs to the 'A' class financial institutions as classified by Nepal Rastra Bank. Out of which only four joint venture commercial banks are selected for study. The study focuses on the HBL, BOKL, SCBNL & NABIL banks regarding payments of dividend.

### 1.2.1 Himalayan Bank Limited (HBL):

Himalayan Bank was established in 1993 in joint venture with Habib Bank Limited of Pakistan. Himalayan bank limited was incorporated in 1992 with an authorized capital of Rs 1 billion, issued capital of Rs 650 million and paid up capital of Rs 1216.22 millions. Himalayan Bank Limited has 9 branches in Kathmandu valley and 16 branches outside Kathmandu valley. HBL is the biggest inward remittance handling bank in Nepal. Himalayan Bank has access to the worldwide correspondent network. The bank provides services like 'Any Branch Banking Facility', Internet Banking and SMS Banking. The ownership composition or holding pattern of share capital of bank is promoter shareholders 51 %, Habib Bank Ltd., Pakistan 20 %, Financial institution ( Employees provided fund ) 14 % & Nepalese public 15 % , it is the first commercial bank of Nepal whose maximum share are held by the Nepalese private sector.

### 1.2.2 Bank of Kathmandu Limited (BOKL):

BOKL was incorporated in 1993 however it came in to the operation in 1995 with an authorized capital of Rs. 1 billion  issued capital of Rs. 0.5 billion and paid up capital of Rs. 603.14 million.  BOKL is currently providing its services throughout the kingdom 32 branches. Bank of Kathmandu Limited (BOKL) has

today become a landmark in the Nepalese banking sector by being among the few commercial banks which is entirely managed by Nepalese professionals and owned by the general public. BOKL relies on Information & Communication Technology (ICT), for a quick, reliable, efficient system. Banking operations are powered by Finale, which is listed among the top 40 companies that have reshaped the global economy as per the Wired Magazine. Bank of Kathmandu Limited was got "The Banker" Technology Award 2004. Because of the variability in the net profit over the past years, the company also changes its dividend payment decision.

### 1.2.3 Standard Chartered Bank Nepal Limited (SCBNL):

Standard Chartered Bank Nepal Limited (SCBNL) is the leading wholesale bank in the country. SCBNL is one of the best bank in Nepal. It came into operation in Nepal in 1987. The bank is an integral part of standard chartered group having an ownership of 75 % and the balance owned by the largest international bank currency operating in Nepal. Standard Chartered bank has a history of over 150 years in the banking and operation in many of the world's fastest- growing markets in over 70 countries. With 16 points of representation, 17 ATM and more than 350 local staff's SCBNL.  It has an authorized capital of Rs 1 billion, issued capital of Rs 0.5 billion and paid up capital of Rs 931.97 million. SCBNL is operating and serving its customers with large domestic network. It has 13 branches which include 4 extension counters & Bank of the Year 2009 Nepal.

SCBNL enjoyed higher investment opportunities in 2000 and 2001. It had maintained an average of 14 % capital adequacy over the period of six years. SCBNL had maintained slow growth in its revenue. The percentage changes in net income were positive over the period of six years. Because of the increasing net

profit and by realizing the interest of shareholders SCBNL paid dividends to its existing shareholders at higher amount every year.

## 1.2.4 NABIL Bank Limited:

Nepal Arab Bank Ltd. Is the first joint venture bank with foreign investment of Nepal from Dubai Bank Limited. It was established in 1984 A.D. The ownership of Dubai Bank Ltd. was transferred to Emirate Bank International Ltd. was 50% when the bank was established. Its main objectives were to develop the economy of the country by increasing foreign trade, increase the earning of foreign currency helping on importing advance banking technologies. Head office of NABIL is in Kantipath, Kathmandu and it has 32 branches and counter all over the country. NABIL has authorized capital of Rs. 0.5 billion, Issued capital Rs.49, 16 54,400 and paid up capital of Rs.965.75 million till fiscal year 2010. It has listed in secondary market in1986. Nabil Bank registered a historic Rs. 1.09 billion profit before bonus and taxes and Rs.674 million profit after tax in the year 2008/09. The 100% cash dividend along with 40% stock dividend that the Bank has distributed this year was a record high in the annals of banking history in Nepal. This is in line with our commitment to increase paid-up capital of the bank to a minimum of Rs. 1.6 billion by mid July 2013. Furthermore, 36% return on shareholders' funds and 2.72% return on bank's average assets denote superior rate of profitability and puts amongst the highest in the banking sector of the nation. The Bank has doubled the size of its loan portfolio in 5 years. Nabil bank capital adequacy at 12.04%, which is well above international standard. Nabil continues to be among the largest tax payers in the banking industry, with the payment of NRs. 321 million corporate taxes during 2008/09.

## 1.3 Statement of the Problem:

Dividend, the most inspiring factor for the investment on share of the corporation, is an important aspect of financial management. While dividend policy the division of earning between payments to stockholders and reinvestment in the firm to exploit growth opportunities. Dividend decision is a major part of managerial finance. There are many concepts and theories propounded for the dividend payment. But, still dividend decision is controversial as well as crucial in the sense that investors invest their money in equity capital for extra income, which they can achieve from getting dividend or capital gain. Their priority and companies' priority must match with regarding dividends; otherwise investor may withdraw their money. The impact of dividend decision is seen in many areas like market price per share, earning capacity, expanding activities, leverage etc.

Dividend policy determines the divisions in profit between payments to stockholders and reinvestment in the firm. Retained earnings are one of the most significant sources of funds for financing corporate growth, but dividends constitute the cash flows that accrue to stockholders wealth. There is inverse relationship between retained earning and cash dividends. Thus, the alternative uses of the net earnings, cash dividends and retained earning are competitive and conflicting. There are different companies of thoughts on dividend policy in the theoretical literature of finance. One company of thought holds that capital gains expected to result from earnings retention are more risky than dividend expectations. Another companies of though holds that investors are basically indifferent to returns in the form of dividends or capital gains. Many theories and empirical findings concerning dividend policy have been evolved in the literature of finance yet; the dividend policy is still a crucial and probably a most structure,

the flow of funds, corporate liquidity, stock price and investors' satisfactions. It is clearly an important aspect of financial management.

In the contest of Nepal, there are 163 companies listed in Nepal Stock Exchange Limited. These companies are not seen so serious regarding the dividend decisions since most of them do not have any consistent and clear out policy on dividend distribution. In connection to Nepalese public enterprises dividend decisions is still considered as the unintended strategy or the non-payable obligation at a time when government of Nepal is not in a position to impose the public limited companies to pay minimum rate of dividend on the equity capital contributed. Some Nepalese acts like Company Act 2063, Bank and Financial Institutions Act 2063 and other regulating acts are also silent regarding dividend payments. Because of these reasons, different companies are adopting different dividend payment decisions. There is common trend that dividend is decided by the company management instead of by shareholders meeting. There is no limit to the identification of the problem about dividend policies and practices that occurs in the different public listed companies. Under the prevalence of these situations, this study has tried to deal with the following problems.

➢ What are some legal provisions and its practices of dividend policy?

➢ Whether there is a relationship between dividend policy and other financial indicators.

➢ Whether or not the prevailing dividend policy affects corporate liquidity and stock prices of selected companies?

➢ Whether there is significant relationship or not between the DPS, EPS and DPR on the stock price of the selected companies.

➢ What are the prevailing practices of the Nepalese listed companies regarding their dividend policies?

## 1.4 Objectives of the Study:

The study primarily focuses on the divided policy adopted by the sample banks with a view to provide workable suggestion, which may be helpful to the formulation of optimal dividend policy and maximize the stock price and to take some other appropriate dividend strategies. The basic objectives of the study is to assess the prevailing practices of the Nepalese listed companies regarding the dividend and to test whether or not the dividend decision is influencing factors of financial indicators, liquidity, stocks prices and investors satisfactions. Following are the main objectives of this study:

➢ To provide suggestions for the improvement of sample companies dividend policy on the basis of findings.

➢ To identify the relationship dividend policy and other financial indicators.

➢ To examine whether there is significant difference or not among DPS, EPS and DPR of the selected companies.

➢ To assess the prevailing dividend policy adopted by the listed sample companies.

## 1.5 Limitation of the Study:

All the researchers are bound with some limitations. Like wise, this study has also limitations. Basically this study will be done for the partial fulfillment of the requirement of M.B.S. the time given in this research work is not enough. This research might not be fully reliable because of luck of research experience. Similarly, reliability of statistical tools also affects this research work.

Dividend decision is a major decision area of any business concern. In Nepal, there are few studies on the topic. So this study aims to highlight some issues

regarding dividend decision in Nepalese listed companies. There are some limitations of the study, which are as follows.

➢ The study covers the period only from fiscal year 2005/06 to 2009/10.

➢ The main limitations are time framework, financial problem and lack of research experience.

➢ The secondary data are not verified and based on the related listed companies.

➢ Only four listed commercial banks are taken under the study.

➢ The study has employed the secondary data published by and collected from the selected companies.

➢ In some extent, the data published on the website of related banks has been taken.

## 1.6 Significance of the Study/ Importance of the study :

Dividend is an income of shareholder, so shareholders have been interest in it dividend policy and practices are the controversial topic of finance management. It may affect the value of form. Moreover, the most common objective of the form is to maximize the shareholders wealth. So, management may adopt the appropriate the dividend policy and practices, if it has possessed adequate knowledge regarding the dividend decision.

The dividend is an important part of financial management. The dividend policy has become an effective way to attract the new potential investors and to keep present investors happy and to maintain the goodwill of the company. When any new company floats shares through capital market, investors apply for owner's certificate without thinking. It indicates peoples' expectations are higher on investment in share. After adopting the privatization and liberalization policy, the corporate sector of Nepal is in developing. The securities market is in

developing stage after the establishment of NEPSE and SEBO/N. Nepalese investors are attracted towards the banking and financial sectors for the purpose of getting more earning. In capital market investors can get earning by investing in shares in two ways.

➢ By capital gains (i.e. increase in purchased price)

➢ By ordinary gains (i.e. periodic dividend payment)

Due to the lack of enough knowledge, the people are investing hit or miss in shares. It is necessary to establish clear conceptions about the return that results from investing in securities. In Nepal, there are almost none of the companies adopting dividend policy. There would be many reasons behind it for which there is not enough study. The study will be undertaken which will help to meet deficiency of the literature relating to dividend decision and factors effecting the division policy. So the study of dividend policies and practices are of considerable importance. I believe that so many persons and parties such as shareholders, management of banks financial institutions, public, depositors, potential customers & investors etc.

Therefore, considering all these facts the study is undertaken which will help to meet deficiency of the literature relating to dividend decision and factors affecting dividend policy, so this study will be beneficial to the investors, dividend policy makers, managers, ordinary people, researchers and for all the stakeholders. This study will be helpful to the government for policy making and monitoring and supervising purpose. So, the study of dividend policy is of considerable importance. I believe that so many persons and parties such as shareholders, management of bank financial institutions, public, depositors, potential customers, and investors. Shareholders are more concerned with the amount of the dividend paid by business organization. Most of the investors tend to invest in profitable

firm, expecting high dividend of highly valued firm. It is an effective tool to attract new investors, maintain present investors and controlling position of the firm.

## 1.7 Focus of the Study:

Banking is a specialized service oriented industry, which accepts the deposits and channels the money into lending activities. Banks plays an important role in the economic development of a country by mobilizing saving and channeling them into productive investment for the development of trade, commerce and the industry of the country. Banks play an important role in the development of Nepal though the proper utilization of the saving of individuals. They mobilize the idle resources in particular related sector after collecting them from different sources. Therefore, commercial banks contribute significantly in the development of Nepalese economy. Paudel (2002) stated that commercial banks have grown as the most lucrative sectors of investment for the Nepalese investors. They have the largest volume of transactions from past many years. It is not surprising that commercial banks' shares have continued to appear as the most attractive investment alternatives since the opening of the floor of NEPSE in 1994. The annual turnover of the shares of commercial banks in NEPSE in stood a large proportion of total turnover. These indicators reveal that the shares of commercial banks have a dominant role in determining the key indicators of the NEPSE. As the Nepalese investors are highly interested to invest in the stocks on the commercial banks, the objectives of this study, therefore, is to study some of the relevant factors, which affect the dividend payout ratio of the commercial banks in Nepal.

**1.8 Organization of the Study:**

Initially, viva-voce sheet, declaration, acknowledgement and contents along with the list of the tables and figures are organized.

This study is composed following five chapters:-

**Chapter 1:- Introduction**

The first chapter of the study is the introduction of the study topic. It deals the importance of the study, profiles of sample banks, statement of problems, objectives of the study; limitations of the study and organization of the study itself, all are enclosed in this chapter.

**Chapter 2:- Review of Literature**

Chapter two deals with review of literature. It has mainly two parts. One is conceptual framework and another is review of related studies. The first part includes review of related books of finance and others. It gives the information about the dividend policy and different theories about it. The next part goes though reviewing of journals review from prevailing acts and review of the past studies.

**Chapter 3:- Research Methodology**

Chapter three is research methodology. It gives the idea of research design, information of the population and samples used to achieve the objectives of the study, sources of data, tools and techniques of presentation and analysis of data.

**Chapter 4:- Data Presentation and Analysis**

Chapter four is the main part of the study. It presents the data and information collected from different sources. It also deals with analysis and interpretation of data using different financial and statistical tools and major finding of the study.

**Chapter 5:- Summary, Conclusion and Recommendations**

Chapter five includes summery and conclusions of the study and some recommendations and that were found relevant to suggest and recommend from the study are also included in this part.

# CHAPTER–II
## REVIEW OF LITERATURE

### 2.1 Background:

Review of literature refers to a glance to the past studies and progress on the similar fields. Review of literature deals with review of available literature. It includes review of books, review of report and unpublished master level dissertation. It also includes the past conclusions and deficiency be known and further research can be conducted. The researcher has reviewed various books, journals. Related past studies were found while studying about the comparative dividend policy in Nepal. These reviews are necessary to show how the problem under investigation relates to previous research with in theoretical framework. All these studies are categorized in two parts. First is the conceptual framework, which includes meaning of dividends, forms of divided, theories of dividend, procedure of dividend, theories of dividend, procedure of dividend payment, factors affecting the dividend policy etc. Second part is the reviews of related studies include the review of journals, related past studies and related rules and regulations.

### 2.2 Conceptual Framework:

Dividend is a periodic payment made to the stockholders to compensate them for the use of risk to their investment funds. Finance is the money used to run a business, and activity or a project. Financial management is the activities of identifying the necessary financial resources for a firm, utilize the collected finance effectively and monitoring and controlling it. Financial management is that science which manages the fund effectively needed by a firm. In this management capitalization structure of capital, capital collection distribution of

profit, financial planning, controlling etc. are included. A firm can finance their needed long term capital mainly by three sources: common stock, preference show and long term debt (bond/debenture) financing. Common stock includes both external equity and retained earning. Retained earnings may be the cheapest and easiest source of financing for the firms that there may be less support from the investors while the firm need high amount for financing. Like the two major decisions of a firm, the investment and the financing decision, the third major decision is the divided decision.

Dividend is the percentage or portion of earning which is paid to the shareholders of the firm in return of their investment in share capital. Here, the dividend does not focus on the fixed dividend to preference share. When there is the discussion on dividend, the retained earnings cannot detach with it. Thus, the same portion of the net profit is distributed to the common stockholders and some portion is retained in the firm for future investment opportunities. The retained earnings is an easily available internal source of financing than debenture/bond, common stock (external equity), preferred stock etc. There is, thus a type of reciprocal relationship between retained earnings and cash dividends; larger retentions, lesser dividend; smaller retentions, larger dividend (Van Horne, 1995:180).

Dividend payout reduces the amount of earnings retained in the firm and affects the total amount of internal financing. Internal financing, in the form of retained earning, plays a vital role on the maximizing the value of firm and ultimately on the value of the Shareholder's wealth. Shareholder's wealth can be maximized by both dividend payment and capital gain by retention of the earning and investing them in the firm for further growth of the firm. In both of the cases,

shareholders get benefited but how much should be paid out and how much should be retained in the business, is not a simple question. Dividend payout decision is affected by numerous factors. But ultimately the goal of dividend payment is to maximize the shareholders wealth. Given the objective of financial management of maximizing present value, the firm should be guided by the consideration as to which alternative use is consistent with the goal of wealth maximization. The firm should use the net profit for distributing dividends to shareholders if the payment will lead to the maximization of the wealth of the owner. Here, maximization of wealth of the owner not only focuses on the present wealth maximization, it also gives emphasis to the future wealth generation. The relationship between dividend and value of the firm should be the criterion for taking decision.

In order to assess the significance of dividend policy in financial decision one must examine as to what extent dividend policy influences share prices because the financial objective of the firm is maximization of share value. The dividend policy must be formulated with the basic objective in mind maximizing the wealth of the firm's owners and providing for the sufficient financing.

In another hand dividend payment not consider the future wealth maximization of owners but it is also affected by other factors like availability of future preference etc. So, a firm is always in the collusion on between the firm's limitations and its desires or goal. So, this chapter is purpose to present the different theoretical aspects of dividend policy and study or research of different author's or researcher.

**2.2.1 Forms of Dividend:**

Dividend may be classified according to changing needs of corporations dividend is being distributed in the different forms. The policy and objectives of a corporation determines which form of dividend they distributed. In Nepalese context corporation used to distribute cash dividend and stock dividend (bonus share). The types of dividend that a corporation follows are affected by the decision of financial management followed by different plans, policies and circumstances. We shall cough our discussion in term of these kinds of dividend.

**i) Cash dividend:**

Most company pay dividend in cash. Sometimes cash dividends may be supplemented by a bonus issue (stock dividend). A company should have enough cash in its account when cash dividend is declared. Cash dividend is a major form of dividend which is distributed by corporation to their shareholders in cash out of the earnings of a company. The cash dividend is distributed to shareholders from the company which will reduce the cash balance and reserve fund. Therefore, when cash dividend is distributed both total assets and net worth of the company are reduced. The market price of the share drops in most cases by the amount of the cash dividend distributed. There must be enough needs to prepare cash budged including cash payment as cash dividend to ensure the regular distribution of cash dividend, if the company adopts stable cash dividend policy.

**ii) Stock Dividend (Bonus share):**

A stock dividend is paid in shareholders receive additional share of the company instead of cash dividend. A stock dividend is the result pf decision takes by the board of directors to distribute the common share to the existing shareholders. Stock dividend increases the number of share outstanding and reduces retained earnings or reserve fund. Also, it may increase paid in capital

(share premium) and normally reduces the market price per share, earning per share and dividend per share, it does not affect the ownership of the company. Stock dividend requires an accounting entry transfer from the retained earnings account to the common stock and paid in capital accounts. Thus, their will be merely an adjustment in the firm's capital structure in terms of both the book value and the market price of the common stock.

### iii) Interim Dividend:

Normally dividend is declared at the end of the financial period which is called regular divided. But, the dividend which is declared before the end of financial period is called interim dividend. Interim divided can be paid in monthly, quarterly, semi–annually etc.

### iv) Property Dividend:

In property dividend pays dividends in the form of assets other than cash. Instead of cash dividend if dividend payment is made inform of property or assets is called property dividend. When there are excess of assets, which is not further necessary for operation of business, then property dividend is used to pay dividend. This type of paying dividend is rarely used.

### v) Bond Dividend:

A firm can also distribute the dividend in the firm of corporate bond which may be of long-term, dividend are not paid immediately in bond dividend, instead, company promises to pay dividends at future date and to that effect issues bonds to stockholders in place of cash. The purpose of both bond and script dividend is alike i.e. postponement of dividend payment. If a corporation earns profit but

cannot afford the risk of interest on the loan. It issues bond dividend for existing show holders.

**vi) Script Dividend:**

Sometimes a corporation use to pay script divided which is a promissory note on which corporation promise to pay a certain amount of dividend on specified date. This type of dividend is paid by a corporation which is suffering from cash problems but earns sufficient profit. Script dividends are mainly of short-term which are payable within 9 months.

**vii) Other forms:**

There are other forms of divided which can be uses by a corporation. They may be composite dividend etc. The dividend which is partly paid in the form of cash and partly in the form of property is known as composite dividend. Instead of giving composite dividend company can give option to its shareholders to take dividend in the form of cash or in property is called option dividend. If any extra dividend given to the shareholders with regular dividend is known as special dividend.

**2.2.2 Dividend payment Procedure:**

Company makes dividend decision with considering number of factors. Dividend payment includes a systematic process and every company follows this procedure. The process includes different dates and such are declaration date, holder of record date, ex-dividend date and payment date. A firm usually pays its earnings as dividend on periodic basis in accordance with the following payment procedures.

**i) Declaration Date:**

Board of director of the company controls the company. Board of directors meet and with the help of the management, declares the dividend what the company is going to distribute. In the declaration date, the board of directors declares the dividend amount to be paid, the holders of record date and the payment date.

**ii) Holder of Record Date:**

It is a date until which a person, who has bought shares before ex-dividend date, must register his/her name in the company. Holders of record date is a final date to transfer the title, meaning that the seller's name should be replaced by the buyer's name in the company's register till this date. In this date the company closes its stock transfer books and makes up a list of the shareholders as of the date.

**iii) Ex-Dividend Date:**

It is the date on and after which right to the current dividend no longer goes to the stock. The ex-dividend no longer goes to the stock. The ex-dividend date varies country to country and may also determine by the companies themselves. In Nepalese capital market companies published notice of book closer date and the book closer date is the ex-dividend date. This date normally is the four days before the holder of record date.

**iv) Payment Date:**

In this date the company actually starts to payout the declared dividend to its holders.

The follows is an example of dividend payment procedure:

| Oct.01 | Oct.11 | Oct.15 | Oct. 31 |
|--------|--------|--------|---------|
| Declaration Date | Ex-Dividend Date | Record Date | Holder of Payment |
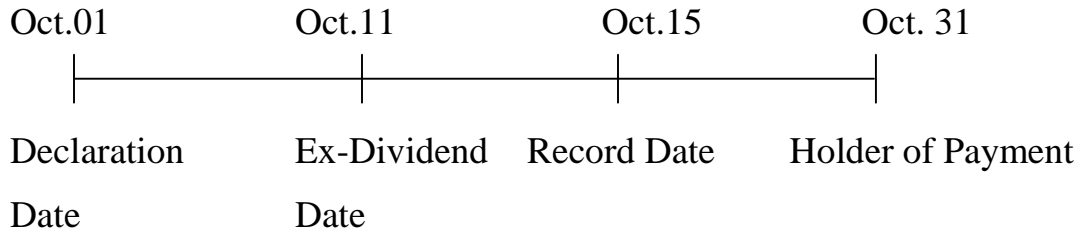
## 2.2.3 Theories of Dividend Policy:

Different dividend theories have been advanced by now and thus, have lead to the controversy regarding these theories as they consider the dividend decision to be both relevant and irrelevant. Some of the relevant and irrelevant theories have been discussed below.

## 2.2.3.1 Residual Theory of Dividend:

Residual theory of dividend suggests that only residual earnings should be distributed as dividend, which is left after accepting all the profitable investment opportunities, which depend upon the investment policy of the firm. According to this theory, the dividend is distributed if there exist a balance of earning after paying fixed obligations and investment opportunities. If the firms have investment opportunity with higher return than required, then firm will invest the earnings to that project, and if there are only earnings left after accepting all the investment opportunities then it will be distributed to stock holders as cash dividend. When the firm has potential investment opportunities in profitable sector at first, they prefer the internally generated fund (i.e. Retained earning) rather than externally generated fund which is comparatively expensive due to the flotation and other cost at the time of issue of securities. So, the amount of dividends fluctuates time to time in keeping with availability of acceptable investment opportunity of the firm. Although the residual theory of divided

appears to make further analysis of divided policy unnecessary. It is not clear that dividends are solely a means of disbursing excess fund (Rao, 1992:458).

Thus, we can conclude that the company's investment opportunity as well as the availability of internally generated fund determines the dividend amount of a firm.

## 2.2.3.2 Stability of Dividend:

Stability of dividend means to the regularity in paying dividend even though the amount of dividend may fluctuate from year to year. By Stability of dividends is considers as a desirable policy by the management of most companies. Shareholders also generally favor this policy and value stable dividends higher than the fluctuating ones. All other things remain the same, stable dividends name a positive impact on the market price of the share (Pandey, 1995:302).

There are three major types of dividend policies developed (established) under dividend stability. Which are as follows.

## i) Constant Dividend per Share:

Under this policy, the company which follows this policy pays a fixed amount per share as dividend every year, irrespective of the fluctuation in the earnings, it is easy to follow this policy when earnings are stable but if it fluctuates, and the company faces difficulties to maintain such policy. This policy does not imply that the dividend per share will never be increased. When the company reaches new level of earnings and expects to maintain it, the annual dividend per share may be increased.

The dividend policy of paying a constant amount of dividend per year treats common shareholders without giving any consideration to investment opportunities within the firm and opportunities available to shareholders (Bandit, 1972:7). This policy is generally preferred those persons and institutions that depend upon the dividend income to meet their living and operating expenses because of the amount of dividend they received (Bandit, 1972:8).

## ii) Constant payout ratio:

Under this policy, constant payout ratio refers to the paying a fixed percentage of net earnings every year as dividend. According to this form of constant payout ratio a corporation pays a constant percentage of earning payout each year is fixed. Since earning fluctuates, following this policy necessarily means that the rupee amount of dividends will fluctuate. Very few firms follow this constant payout ratio policy. The constant dividend payout policy do not help to maximize the value of corporation's stock because it results is unreliable signals to the market about the future prospects of the firm and because it may interface with investment policy. Constant payout ratio policy ensures that dividends are paid when profits are armed and avoided when loss incurs. When earnings increase to a new level, a corporation increases dividends only when it feels it can maintain the increase earnings. At any payout ratio the amount of dividend and the additions to retained earnings increase with increasing earnings and vice versa. Hence this policy is not likely to maximize the value of firm's stock.

## iii) Low Regular Dividend per Share plus Extra:

Under this policy, a corporation in period of its increase earnings is to declare can extra dividend in addition to the regular dividend. As soon as normal condition return the firms cuts the extra dividend and pays the normal dividend

per share. The company having fluctuating earnings follows this policy. In the period of prosperity extra dividend is paid to prevent investors from expecting that the dividend represent an increase in the established dividend amount. This type of policy enables a company to pay constant amount of dividend regularly without a default and allows a great deal of flexibility for supplementing the income of shareholders only when the company's earnings are higher than the usual, without committing itself to make larger payments as a part the future dividend (Pandey, 1995:304). Some shareholders like this policy because of the certain amount of dividend with surprise extra dividend. Under this policy investors may expect the extra dividend on future continuously. Properly managed extra dividend conveys positive information about the company to the market.

There are several reasons why investors prefer stable dividend policy and pay a higher price for a firm's shares. Firstly some investors desire current income as a stable dividend, for instant retired persons for meeting their current living expenses. So income conscious investors may desire on stable dividend. When the dividend is not sufficient to meet their current needs, investors can always sell a portion of their stock for income. Secondly, when earning drop and a corporation does not cut its dividend, the markets have more confidence in the stock than it would have, if dividend is cut. So, with stable dividend may convey management's view that future of the company is better than the drop in earnings. Thirdly, factor encouraging stable dividend is the requirement of institutional investors like life insurance companies, pension funds, trustees, saving banks and soon to invest in companies which have a record of continuous and stable dividend.

## 2.2.3.3 Factors Affecting Dividend Policy:

The company's decision regarding the dividend payment may (extremely) affect by different factors. Therefore, it is desirable to consider some of the factors that influence dividend policy. Which are as follows.

### i) Legal Restrictions:

A corporation is bound by certain legal constrains for dividend payments. Dividend policy is largely affected by the legal provisions and restrictions mentioned in different corporation's act. Some status and percentages made by the court above the dividend may prevent a company from paying dividend. In our country, the act related to corporation restricts a firm to pay divided other than from earnings. The act restricts to pay dividend without maintaining preliminary expenses, losses due up to previous year, capital fund, risk bearing fund and general resource fund. The insolvency rule states that dividend must not be paid if the firm's liabilities exceed its assets in another words, if company is insolvent or if a payment would result in insolvency, the dividend must not be paid. To pay dividend under such condition would mean giving stockholders funds that rightfully belong to the creditors. Main legal constraints are:

➢ Dividend cannot be paid if the amount of dividend to be distributed exceeds net profit.

➢ Company cannot pay dividend if the liabilities of company exceeds assets.

➢ Company can pay dividend from the earning of only current or past year.

➢ Dividend cannot be paid from the capital invests in the firm.

### ii) Liquidity position:

High liquidity position of a company has great ability to pay dividend. A corporation is bound by certain legal constrains for dividend payments. Even a

company having higher retained earning does not have enough cash to make dividend payment because retained earnings are invested on purchasing fixed assets. Therefore, a company must have adequate cash as well as retained earnings to pay dividend, A growing company has a pressing need for funds even though it is very profitable one. In this situation a company cannot pay cash dividend because it needs funds for further expansion and development. The greater cash position and overall liquidity of a company, the greater is the ability to pay dividend. Generally growing firm faces the problem of liquidity even though it makes good profit but it needs funds for its expansion. So a company is allowed to pay or declare dividends only out of the profits either current or past.

### iii) Investment Opportunities:

The dividend policy of a company is greatly influenced by the financial needs of the company. If any profitable project, found, company invests it's earning to that project found, company invests its earning to that project rather than paying dividend. A growing firm gives precedence to the retention of earnings over the payment of dividend in order to finance its expanding activities. But the firm having portion of its earning trends will prefer to pay larger portion of its earning as dividend (Pandey, 1995:304). When the investment opportunities arise infrequently, company follows a policy of paying dividend and raises external funds when the investment opportunity occurs.

### iv)  Access to capital market:

A company having insufficient cash can pay dividend, if it is stable to raise fund in capital market. They can generate fund from the capital market whenever required. Easy accessibility to the capital market provides flexibility to the

management in paying dividends as well in meeting corporate obligation. Thus, greater the ability of the firm to raise funds in the capital market, the greater will be its ability to pay dividends even it is not liquid (Pandey, 1995:301).

**v) Control:**

This is the factor that influences the company's dividend policy. If company follows liberal dividend policy, the present shareholders always try to maintain the controlling power by right of voting. Financing by issuing new common stock reduces the controlling power of present shareholders and issue of new debt increases the risk of fluctuating earnings to the present owners of the company. To maintain the controlling power, easier way is to finance through retained earnings by law dividend payout ratio which is also known as internal financing. Reliance on internal financing in order to maintain control reduces the dividend payout. This policy is defended on the ground that rising funds by selling additional common stock dilutes the control of the dominant group in that company.

**vi) Inflation:**

This is another constraint that influences the company's decision on paying dividend. Because of inflation the cost of replacing assets increases substantially true to inflation and the funds generated by depreciation would be inadequate to replace the assets. So, the greater profit retention may required for the companies on order to make replacement or to maintain the capital intact which will reduce the dividend payment. If there is high inflation, firms have to relay on retained earning to maintain shortfall of cash by reducing the dividend payout.

**vii) Stability of Earnings:**

A firm having relatively stable earnings is often able to predict its approximate future earnings. Such firm is therefore likely to pay out higher percentage of its

earning. Those firms can pay a longer portion of its earning as dividend. A firm with fluctuating is not certain that in subsequent years the hope for earning 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 of in the future, a firm with fluctuating earnings also retained a large amount of the profits to ensure that enough money is available for investment projects when needed.

**viii) Need to Repay Debt:**

The need for repaying debt is also one of the factors that restrict the company from paying dividend. If the expansion of the firm has been done by selling debt, the company either can refund the debt at maturity by replacing it with another security or can make provisions for paying off the debt. But if the companies decide to retire the debt, than the company requires the retention of the earnings.

**ix) Restrictions in Debt Contracts:**

Debt contracts, which are made at the time of issuing debt security, any also restrict to pay dividend without maintaining the certain conditions. These restrictions may include that i) the dividend can be paid only out of the earnings after paying the creditors on specific level of profitability, ii) the dividend cannot be paid when net working capital is below a certain level, iii) the retained earning cannot be used to reinvest. Similarly, preferred stock agreement can also restrict to pay cash dividend before paying the all accrued preference dividend to preferred stockholders.

**x) Rate of Assets Expansion:**

As a firm is growing rapidly, a high rate of asset expansion creates a need to retain funds rather than to pay dividend. If a firm seeks to raise funds externally,

natural sources are the present shareholders, who already know the company. But if earnings are period out as dividend and are subjected to high personal income tax rates, only a portion of them will be available for reinvestment.

**xi) Profit Rate:**

A high profit on assets makes it desirable to retain earnings than to pay them out, if the investor will earn less on them. The high expected rate of return on net worth attracts the stockholders to retain their earnings in the firm because of future capital gain which will be more than they get from if they invest the dividend elsewhere.

**Xii) Tax position of stockholders:**

The tax position of a corporation's owners greatly influences to the desire for dividend co-operation owned by a few tax payers in high income tax brackets is likely to pay a relatively lower dividend payout, where as corporation owned by small investors tend towards the higher dividend payout. Sometimes, there is a conflict of interest between stockholders in high income tax brackets and those in low tax brackets. In this case, the dividend policy may be a compromise between low and a high payout with intermediate payout ratio.

**2.3 Review of Major Studies:**

**2.3.1 Walter's Study:**

According to the relevance theory, dividend policy can affect the values of a firm through investors' performance. Walter (1996) conducted a research in 1956 regarding dividend policy. In which he argues that values of firm always affected by the dividend policy adopted by the firm. In this approach, investment policy of

a firm is directly affected by the dividend policy, which is opposite to the Modigliani and Miller approach.

His study is mainly focused to find out the relationship between internal rate of return and firm's cost of capital. By analyzing these two factors firm can allocate the total earnings to dividend and retained earning.

The Walter's model is based on the following assumptions.

➢ All financing is done through retained earnings. i.e. external sources of financing like debt or new equity capital are not used.

➢ The firm's business risk does not charge for additional investment. It means, internal rate of return(r) and cost of capital (k) are constant.

➢ All earning are either distributed as dividend or reinvested immediately. i.e. no earnings one retained in form of cash.

➢ The value of EPS and DPS remains constant.

➢ The firm has perpetual or very long life.

Based on these assumptions Walter formulated the related factors to determine the market price of share.

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

Where,

        P     = Market price per

        DPS  = Dividend per share

        EPS  =Earning per share

        R     = Internal rate of return

        K     = Cost of capital

According to this model, the optimum dividend & policy depends on the relationship between IRR and its cost of capital. His view on the optimum dividend payout ratio can be summarized as follows:

### i) Growth firm:

When the firm is able to warn a return on investments greater than the required rate of return (V>K) the firm is known as growth firm. In growth firm the value of share is inversely related to the D/P ratio i.e. as the payout ratio increases, the value of share declines.

### ii) Normal firm:

The firm having equal internal rate to return and cost of capital is knows normal firm. For these firms dividend policy foes not affect the market value of share. There is no unique optimum payout ratio for a normal firm. One dividend policy is as good as other. The market value per share is no affected by the payout ratio (Walter, 1966:29).

### iii) Declining firm:

If a firm does not have profitable investment opportunities when R<K, the shareholders will be better off if earnings are paid out to them, so as tenable them to earn higher return by used the funds elsewhere. This kind of firm is called declining firm. In this firm, the D/P ratio and the value of shares are positively correlated, i.e., as payout increases, the market price of the sharers also increases. The optimum payout ratio for declining firm is 100%.
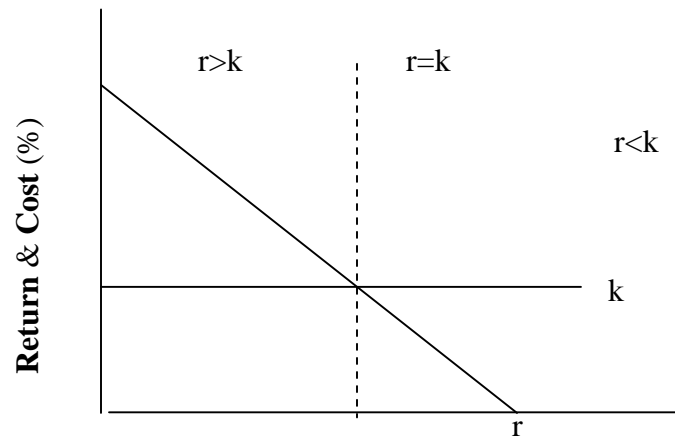
**Fig: 4 Firm's Investment Opportunities**

Earning**,** investment and New Financing

## 2.3.2 Gordon's Model:

Myron Gordon (1962) modified the Walter's morel for determining the market price of the stock. In his study he conducted that dividend policy has the direct relationship with market value of the stock. So, dividend policy affects the market value of the stock even when the internal rate of return (return on investment) is equal to the capitalization rate. This study suggests that investor prefer present dividend rather than future gains. So, the higher dividend field causes increase in market price of stock.

The Gordon's model is based on the following assumptions:

➢ Internal rate of return and appropriate discount rate are constant.

➢ The firm and its stream of earnings are perpetual.

➢ The corporate taxes do not exist.

➢ The retention ratios, b, once decide upon remains constant and thus, the growth rate (g) of the company also remains constant forever.

➢ The cost of capital (k) of the firm should always be greater than the growth rate (g) of the firm i.e. k>g or k>b×r. If this condition is not fulfilled. We can get meaningful value for the share.

Based on these assumptions, Gardon had derived a formula for determining the market value of share. According to his model, the market value of a share is equal to the present value of future streams of dividends. A simplified formula for Gordon had derived a formula for determining the market value of share. According to his model, the market value of a share is equal to the present value of future streams of dividends. A simplified formula for Gordon's model can be symbolically expressed as:

$$P = \frac{EPS(1-b)}{ke - br}$$

Where,

Where,

$P$ = Market price of share

EPS = Earning per share

l-b = Retention ratio

ke = Capitalization rate

br = g = Growth rate

**Limitations:**

Since the assumptions of both model are almost same. Some both have same conclusions. But their assumptions are far from the reality, like they assumed that rand k will not be constant rather in practice rand k will not constant rather it changes. They also assumed that firm is free from tax liability but in practice tax exists in any firm.

### 2.3.3 Modigliani and Miller Study:

Miller, M.H and Modigliani, F. (1961) studies on the favor of irrelevance of dividend is the major and important study, which argues that dividend policy is strictly a financial decision on which whether dividends and paid out of profits or earnings whether dividends are paid out of profits or earnings are retained, will depend upon the available investment opportunities. In other words, if a firm can earn a return(r) higher than, it's cost of capital (k) it will retain the earning to finance investment projects. If retained earnings fall short of the total funds required (r>k) it will raise external funds to make up the investors are indifferent between dividends and capital gains.

MM Hypothesis support irrelevance of dividends. MM hypothesis maintains that dividends policy has no effect on the share price of the firm, so not on the wealth of shareholders. MM argues that the value of firm is determined by the earning power of firm's assets or its investment policy and that the manner in which the earnings stream is split between dividends and retained earnings do not affect the value.

The MM Hypothesis is based on the arbitrage process of distributing the earnings to the share holders as dividend and rises and equal amount externally though the sale of new share for the purpose. The effect of dividend payment is exactly replaced by the effect of rising additional shone capital. The MM hypothesis is based on the following assumptions:

➢ There is perfect certainly by every investors as to future investments and profits of the firm (MM drop this assumption later)

➢ Perfect Capital market in which all investors are rational. Information available to all at no cost, instantaneous transaction without cost, infinitely divisible

serenities and no investor league enough to affect the market price of a security, there are not flotation costs.

➢ The world of no taxes. In other words, there are not differences in tax rates applicable to capital gains and dividends.

➢ A firm has a given investment policy which does change.

Modigliani and Miller provide following proofs for the support of their argument.

The market price of a Shone at the beginning of the period is equal to the present value of dividend paid at the end of the period plus the market price of the shone at the end of period.

Symbolically

$$P_0 = \frac{D_1 + P_1}{1 + Ke}$$

Where,

$P_O$ = Market price of the shone at the beginning of the period

$P_1$ = Market price of Shone at the end of 1 period

$D_1$ = Dividend per Shone at the end of 1 period

Ke = Cost of equity

According to MM model, if external financing exists the market value of the firm can be computed by multiplying both sides by number of shone outstanding. The total value of the firm is,

$$nP_0 = \frac{n(D_1 + P_1)}{1 + Ke}$$

Where,

n = No. of Share outstanding

At the end of the year the firm sells number of new Shares ($\Delta$n) at price $P_1$ and finances it investment opportunities. The value of the firm at time 0 will be,

$$nP_o = \frac{nD_1 + P_1(n + \Delta n)}{1 + Ke}$$

Where,

N =   No. of share at the beginning of the year

  n = No. of share issued at the end of the year

If the firm finances all investment proposals (Projects) either by issuance of new shares or by retained earning or both the amount of the new shares issued would be

  $nP_1 = I - (E - nD_1)$

Where,

  $nP_2$ = Amount obtained from the sale of new shone.

I = Amount required for new investment during the period.

E = Total earnings during the period

E – nD1 = Retained earning

Substituting the value of  $nP_1$

nPo = $\underline{nD_1 + P_1 (n + Dn) - I + E - nD_1}$

1 + Ke

or, nPo = $\underline{P_1 (n+Dn) - I + E}$

1 + Ke

**Conclusion:**

Since there is no existence of dividend in above equation MM concluded that amount of divided paid is irrelevant to the value of the firm. In other word, dividend policy does not affect the value of the firm.

**Limitations:**

MM theory of irrelevance is mainly based on simple assumptions, which are not well founded. Such as perfect capital market, which is hardly founded in practice? Their assumption about inexistence of tax is far from the reality. Investors have to pay tax on dividend received or capital gain earned. As the tax rate on capital gain is lesser then dividend received, so, investors do not remain indifferent between dividend and capital gains. In fact, dividends are relevant and influence the wealth of firm.

**2.3.4 Van Horne and Mc Donald's Study:**

Van Horne and Mc Donald concluded a comprehensive study of 86 electric Utility firms and 39 electronics and electric component industries by using cross sectional regression model in 1968 to know the combined effect of dividend policy and new equity financing decision on the market value of the firms' common stocks.

From their study they concluded that the market price of share was not affected by new equity financing in presence of cash dividend except for these in the highest new issue group and it made new equity more costly from of financing than retention of earning. They also indicated that the payment of dividend through excessive equity financing reduces the market price of share.

## 2.3.5 Friend and Puckett's Study:

Friend and Puckett (1964) concluded a study on the relationship between dividends and stock prices, by running regression analysis on the data of 110 firms from five industries in the year 1956 to 1958. These five industries were chemicals, electric utilities, electronics, food and steels. These industries were selected to permit a distinction made between the results for growth and non growth industries and to provide a basis for comparison with result by other authors for earlier years. They also considered cyclical and non cyclical industries which they covered. The study periods lovers a boom year for the economy when stock prices leveled off after rise (1956) and a somewhat depressed year for the economy when stock prices however rose strongly (1958).

They used dividends, retained earnings and price earning ratio as independent variables in their regression model of price ft function. They used supply function, i.e. dividend function also. In their dividend function, earnings, last year's dividend and price earning ratio are independent variables. They quoted that the dividend supply function was developed by adding to the best type of relationship developed by linter.

Symbolically, their price function and dividend supply function are,

Price Function,

$Pt = a + bpt + CRt + d(E/P)_{t-1}$

Where,

Pt= Share Price at time t

Dt= Dividend at time t

Rt= Retained earnings at time t

$(E/p)_{t-1}$= Lagged earning price ratio

Dividend supply function

Dt=e+FEt+ gDt-1 =h $(D/P)_{t-1}$


Where,

Et= Earning per share at time t

$D_{t-1}$= Last year dividend

Their study was based on the following assumptions:

➢ Dividends do react to year to year fluctuations in earnings,

➢ Price does not contain speculative components,

➢ Earnings fluctuations may not sum zero over the sample.


Their regression results based on the equation of Pt = a=bDt+cRt showed the customary strong dividend and relatively weak retained earnings effects in three of the five industries, i.e. chemicals, foods and steel. Again they tested other regression equations by adding lagged earnings price ratio to the above equation and resulted the following equation Pt = a+bPt+d$(E/P)_{t-1}$. They found the following results: they found that more than 80% if the venation in stock prices can be explained by three independent variables. Dividends have a predominant influence on stock prices in the same three out of five industries but they found the differences between the dividends and refined earnings coefficients are not quite so marked as in the first set of regressions. They also found that the dividends and retained earning coefficient are closer to each other for all industries in both years except for steels in 1956, and the correlation are higher, again except for steels.


They also calculated dividends supply equations i.e.

$D_t - e+fE_t+g\ D_{t-1}+h(E/P)_{t-1}$ and the dividend price equation for four industry groups in 1958. In their derived price equation it seems that there was no significant changes from those obtained from the singe equation approach as explained above. They argued that the stock prices or more accurately the price earning ratio does not have a significant effect on dividend payout. On the other hand, they argued that the stock prices or more accurately the price earning ratio does not have a significant effect on dividend payout. On the other hand, they noted that the retained earnings effect is increased relatively in three of the four cases tested. Further, they argued that their result suggests price effect on dividend supply are 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 market if the disturbing effect of short run income movements are sufficiently great.

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

Finally, friend and Puckett concluded that, it is possible that management might beadle, at least in some increasers, to increase the shone price in non growth industries by raising dividends and in growth industries greater retention, i.e. low dividends.

## 2.3.6 Chawala and shrinivasan,s study :

This study is also focused on the impact of dividend and retention on market price of stock. They estimated cross sectional relationship of 18 chemical and 13 sugar industries for the year 1963 to 1973. The basic objectives, of the study are.

➢ To set a model which explains the relationship between shone price, dividend and retained earnings

➢ To test the dividend, retained earning hypothesis

➢ To examine the structural changes in the estimated relations overtime

To achieve the above objectives, they used simultaneous equation model as developed by Friend and Puckett in 1964.

The unspecified form of the model is as follows

**Price function,**

$Pt = F (Dt, Rt, P/E_{t-1})$

**Dividend supply function,**

$Dt = F \{Ft, Dt_{-1}, (P/E)_{t-1}\}$

Identify,

$Et = Dt + Rt$

Where,

   P= Market price of share

   D= Dividend per share

   R= Retained earning per share

   E= Earning per share

    P/E= Deviation from sample, average of price earning ratio.

T= Subscript for time

They used two stage least square technique for estimation, They found that the estimated coefficient had a correct sign and coefficient of determination of all

equation was higher in case of chemical industry which implies that the stock price and dividend paid variation can be explained by their independent variables. But in the case of sugar industry the sign for earning is negative.

From their study they concluded that both dividend and retained earnings significantly explain the variations in share price of the industry.

**2.3.7 H.K. Baker, G.E. Farrelly and Richard B. Edelman's Study:**

H.K. Baker, G.E. Farrelly and Richard B. Edelman (1985) surveyed management view on the dividend policy. They asked corporate financial managers what they considered most important in determining their firm's dividend policy. The main objectives of their survey were as under.

➢ To company the determinate of dividend policy today with linter's behavioral model of corporate dividend policy and to assess management's agreement with Linter's findings.

➢ To examine management's perception of signaling and clientele effect and

➢ To determine whether managers in different industries shone similar views about the defer moments of dividend policy.

The firms they surveyed were listed on the New-York stock Exchange (NYSE) and classified four digit stranded industrial classification cotes. Total of 562 NYSE firms were selected from three industrial group, utility (150), manufacturing (309) and wholesale / retail (103).

They mailed questionnaire to obtain information about corporate dividend policy. The questionnaire consisted of three pants (i) 15 closed end statements about the importance of various factors that each firm used in determining its

dividend policy, (ii) 18 closed end statement about theoretical issues involving corporate dividend policy, and (iii) a respondents profile including such items as the firms dividends and earning per shone. They send the final survey instrument to the chief financial officer of 562 firms, followed by a second complete mailing to improve the response rate and reduce potential non-response bias.

The results of their survey on the aspect of determinants of dividend policy were as follows.

➢ The first mighty ranked determinants are the anticipated level of firm's further earnings and the second factor is the pattern of the past dividends. They found the high ranking of these two factors is consistent with Linter's findings.

➢ A third factor cited as important in determining dividend policy is the availability of cash.

➢ A fourth determinant is concerned about maintaining or increasing stock price. They found this factor is particularly strong among utilities that ranked this second in importance.


**2.4 Some legal provisions relating to dividend in Nepal**

**2.4.1 Bank and financial Institutions Act 2063:**

The bank and financial institutions Act 2063 is created by fusing the commercial bank Act 2031 Agriculture Development Bank Act 2024, Finance Company Act 2042 Nepal Industrial Development Act 2046 and Development Bank Act 2052. The main provisions about dividend on this act are as follows:

➢ According to the section 46, firm can not declare and distribute dividend with out maintaining all the preliminary expenses, cusses due up to the previous year, capital find and general reserve find (according to section 44) and without paid up of all listed shores sold to the public. Any firm should get pre-approval form Nepal Rastra Bank before 10 declaring and distributing the dividends.

➢ According to the section 82, if any authorized person does not come to claim dividend till 5 year the report of the shareholders dividend has to be submitted to the Nepal Rastra Bank. Also these reports have to be published in the national newspapers, at least three times.

### 2.4.2 Company Act 2063:

Some major provisions about dividend in the company at 2063 are as follows:

➢ According to the section 2, Bonus share (stock dividend) means share issued in the form of additional shares to share holders by capitalizing the surplus from profits or the reserve found of a company. The term also refers to an increase in paid up values of the share after capitalizing surplus or reserve found.

➢ The arrangement off bonus share (Stock divined) must be published and enclosed in a report before issuing securities.

➢ The company must not increase share capital or issue bonus share from re-evaluation of assets except from profit or a found created from profit.

➢ Profit distributed among the share holders will be discussed and taken design in AGM and the profit distribution rate must not be more than the rate determined by the board of directors.

➢ Special resolution must be presented in AGM to take decision of issuing bonus share (Stock dividend).

➢ The company must inform the company register office before issuing bonus share and paying dividends.

➢ Dividend must be distributed within 45 days to the share holders except in the following conditions.

- If any law prohibited to distributed dividend.
- If the rights to dividend is disputed.

- If dividends can not be distributed within the time limit, mentioned above owing to circumstances beyond anyone's control and without any failure the part of the company.

➤ Only the persons whose name stands registered in the register of exiting shareholders at the time of declaring the dividend shall be entitled to them.

## 2.5. Review of Journal and Articles:

### i) Prathan's and Adhikari's Study:

**Prof. Dr. Radhe Shyam Pradhan and Nav Raj Adhikari**

Published an article on 'A Journal of Management', Published by Association of Business students, central Department, Tribhuwan University in 2006. Their paper carried to ascertain cross sectional difference in performance of stock in terms of underlying behavior of dividend per share to earning per share. Polled cross –sectional linear regression was computed by using a data set of 00 – observation covering 233 listed companies. The findings revealed that performance of stocks paying lower dividends, findings also revealed that performance of stocks paying higher dividends are comparatively better than that of stocks paying lower dividends. Finding also reveled that performance is more variable for the stocks paying higher dividends.

The results of the cross –sectional analysis shows that stocks with larger ration of DPS to book value per share have higher liquidity, lower leverage, higher assets turnover and higher interest coverage. Likewise, the stocks with larger DPS to MPS have higher assets turnover and higher interest coverage. It is also indicated that liquidity, assets turnover, interest coverage, leverage and earning are more variables for the stocks paying higher dividends.

Similarly **Radhe Shayam Pradhan** conducted an outstanding study related to 'stock market behavior' in 1992. In his study he collected the data of 17 enterprises from the year 1986 to 1990. The objectives of the study are:

➢ To access the stock market behavior in Nepal.

➢ To examine the relationship of market equity market value price earning and dividend with liquidity, profitability, leverage assets turnover and interest turnover.

The conclusion of the study related to dividend behavior is as follows:

➢ Higher earning on stock leads the larger ratio of DPS.

➢ Stock with larger ratio of dividend per share to market price have lower leverage ratio.

➢ Positive relationship between dividend payout and turnover rations.

➢ Positive relationship between the rations of DPS to market price and interest coverage.

➢ Positive relationship between dividend payout and liquidity.

➢ Positive relationship between dividend payout and profitability.

➢ DPS and MPS are positively correlated.

**Dr. Manohar K. Shrestha** published an article on 'Management Dynamic' journal on management and economics published by Shanker Dev Campus on the topic 'A study of dividend policy and value of the firm in small stock market in 1998. On this research article following model is used.

$Y = F (X_1, X2, X3, X4, X5)$

Where,

$\quad$ Y = Value of a firm

$\quad X_1$ = Dividend Per Shone

$\quad X_2$ = Earning per Shone

$\quad X_3$ = Price / Earning ratio

$X_4$ = Return on equity (ROE)

$X_5$ = Dividend Yield


This study aimed to identify some of significant financial variables, which are significant to the value of firm. It helps to understand the dividend. Policy of sample companies and their effect on man value of the firm as represented by market capitalization and this understanding the relevancy and irrelevancy of dividend policy on market capitalization on stock market in Nepal. The financial variables taken under study to understand the dividend policy followed one DPS, EPS P/E ratio. Return on equity and dividend yield. It is found that DPS return on equity and dividend yield have the significant impact whereas EPS and P/E ratio have found no significant impact on market value.


Similarly **Dr. Manohar K. Shrestha's** study on Shareholders Democracy and AGM feedback deals with the policies and financial performance of some financial institution of Nepal, which contains Dr. Shrestha's view expressed in annual general meeting of financial institutions. The paper presented by him or fifth annual general meeting of Nepal. Arab Bank has been presented here.

In his view the common problems and constraints of the shone holder's one as follows.

➢ The cost push inflation at exorbitant rate has made the shone holders to expect higher return form their investment.

➢ Multiple decrease in the purchasing power of the Nepalese currency to the extent that higher return by way of dividend is just a natural economic consequence of it.

➢ Erosion in the unchanging power of the income of the income has made it clear that dividend payment must be directed to enhance shone holder's purchasing

power by raising dividend payment ratio on the basis of both earnings and cost theory.

➢ Indo-Nepal trade and transit deadlock has become a sort of economic welfare putting rise in the lost of living index to a considerable extent. This is the reason, which made share holders to expect higher demand for satisfactory dividend.

➢ The waiting of 5 years with payment dividend in previous years is equally a strong enforceable reason of the banks share holders to expect handsome dividend already assumed and committed in various reports if the earlier annual general meeting.

One way to encourage risk taking ability and preference is to have proper risk return trade off by banks management board is away that higher return must be the investment rule for higher risk takers that comprise banks shareholders. At the end of paper Mr. Shrestha states that the bank is trying its best to satisfy the share holders and employers as well.

Another article published by **Dr. Kamal Das Manadhar** describes about the relationship of dividend payout to other financial factors based on the data of 7 commercial banks, 5 finance and insurance companies, 2 trading companies, 2 service oriented companies and 1 manufacturing company for the year 1987 to 1998.

Following are the major finding of his study

➢ Significant relationship is found between change in dividend policy in terms of dividend Per Share and change in lagged earnings.

➢ Then is relationship between overall proportion of change dividend and the increase and decrease in EPS during the study period.

➤ In overall increase in EPS has resulted to increase in the dividend payment in 66.66 % of the cases while decrease in EPS resulted decrease in dividend payments, which come to equal to 33.34% of the case.

➤ It is found that Nepalese corporate firms have followed the practice of maintaining constant dividend payout per share or increase it irrespective of change in EPS as reflected by the total percentage of constant and increase dividend payment of 78.33 % of the case. In other words firms are reluctant to decrease dividend payment.

➤ In overall Nepalese corporate firms are found reluctant to decrease dividend either keeping dividend payment constant or higher to take the advantages of information contents and signaling effects of dividend relating to the firms continued progress and performance sound financial strength favorable investment environment, lower risk, ability to maintain sustained dividend rate and finally to increase the market price of the stocks in the stock market.

Similarly, **Mr. Rabindra Bhattarai** Published an article in 'New Business Age' on the topic 'Spilt Share to Benefit Small Investors'. On his article he explained that a well performing company reflects the performance in the market price which is beating up. Those companies whose dividend is higher like Stranded Chartered Bank, NABIL Bank Limited, Nepal Unilever Nepal Limited, Bishal Bazar Company have high market price. Although, their market price per shone is higher, the investors are willing to purchase the shone. But small investors can not afford to purchase the share because the market prices of these share are high stock split may be a good solution to drop town the prices of shone, which is affordable to small investors.

## 2.6 Review of Previous Thesis:

**Dhungana, D.R (2006**) conducted a study regarding the dividend policy of commercial banks and insurance companies. His objectives were and practice of bank and insurances companies. He also analyzed the relationship if dividend with various key such as EPS, net profit, net worth and stock price. Factors affecting dividend policy decision of banks and insurance a work cable suggestion and possible guidelines to over come various issues gaps based on the findings of the analysis.

He had conducted his research by taking 3 commercial banks and 3 insurance companies as sample. He used both primary and secondary shows. His major findings and conclusions shows, EPS and DPS of all selected companies are satisfactory except Nepal Bangladesh Bank Ltd. And Nepal Industrial and Commercial bank Ltd. The coefficient of venation showed that Nepal Bangladesh Bank Ltd. Has greater fluctuation in EPS and DPS where as the Himalayan Bank Ltd. has consistent in EPS and DPS, EPS and DPS of insurance companies were seen consistent. The correlation between EPS and DPS is Positive in case of HBL and NBBL (5% significant level). Coefficient of all the there insurance companies was positive with EPS and DPS (1% significant level). The analysis of correlation between current ration and DPS were positive. MPS and dividend of last year D (E-1) were positively correlated. EPS and MPS were negatively correlated. Corporation respondents gave the first priority to earnings, second to liquidity and third priority to past dividend.

**Sharma, R. (2002)** had conducted a study entitled ' Dividend Theories and Practice: An Empirical Analysis on Joint Venture Banks of Nepal.' He had sampled four banks, HBL, BOKL SCBNL, NABIL, and His objectives of the

study were to find dividend procedures followed by the JVBs of Nepal in the context of Nepal. The aim of the study was also to find out ability and attitude of paying dividend and analysis of variance in the payment of dividend between banks with similar profit range. Major factors affecting dividend policy of JVBs, legal aspects with analyzing practices of issuing bonus share

.

After conducting the different analysis his major findings slowed that the high dividend paying firms are found to be more financially strong in comparison to low dividend paying firms. The MPS was affected by the dividend policy while change in DPS affects the shone price of different firms differently. He did not find dividend payment is as regular phenomena in Nepalese companies but, still the major leading JVBs paying dividend (either cash or stock) regularly in order to meet the shone holder expectation. Dividend was not seen decreased and increased with accordance to the EPS net profit of the organization does not properly support the declaration of dividend. His findings also concluded that the MPS is considerably, highly then the actual net worth. This huge gap clearly indicated that investors do not have adequate knowledge about the actual financial status of the company. Managers preferred smooth dividend payments by moving only part way towards the target payout on each year. They tried to look in to the further when they set the payment.

**Parajuli, N.P (2006**) presented a research report entitled 'Dividend policies and practices of joint venture banks' and analyzed the dividend policy and practices with various factors DPS, MPS, Net worth Net earnings and book value of stock. He recommended possible future guideline and to suggest to the policy makers executive and investors to overcome various issues and gaps based on the findings of the analysis.

He included four banks as samples. His conclusion had shown that banks declare high dividend return on paid up capital. He found relationship between DPS and net earning was positive in these sample banks. He did not find uniformity in dividend policy. MPS had highly fluctuated and traded on high price. Change on DPS affects MPS. P/E ratio and dividend yield were in consistent. He did not find stable dividend policy adopted by these banks for a long period.

**Manandhar, K.D.** (2002) has submitted the thesis for the degree of Doctor of Philosophy on entitled 'corporate Dividend Policy and Practice in Nepal. His major objectives of the research were mentioned to study and highlight the dividend policy and practice of corporate firms, analysis the empirical testing of dividend policy and corporate firm. He also arrived to analysis the test the feedback of the opinion survey.

He had drawn the some major conclusion form the research. According to some selected conclusions he had found more deviation in dividend policy and practice in between the corporate firms under study. He also found that there was lack of following target dividend payout policy they realize to set it. He concluded that the corporate firms one paying regular dividend but at lower rate. Most of the corporate management attitude had not been positive towards shone holder. He had shown that dividend was not equally relevant in affecting the price in corporate firm.

Similarly**, Gautam, R.R. (1998**) had conducted a research work on Comparative study on dividend policy of Nepal Gridley's Bank Ltd. Indosuez

Bank Ltd. and NABIL Bank Ltd. for the partial fulfillment of master degree in 1998.

His objectives of the study were to identify the type of dividend followed by the banks, examine the impact of dividend on share price, and identify the relationship between DPS and other uniformity among DPS, EPS and D/P ratio of the sample companies.

His conclusions of the study had shown that there was not clearly defined dividend policy was found followed by sample companies. He did not see the market price of the share to be more or less dependent to EPS or DPS. He did not find significant relationship between DPS and other financial indicators. He did not find uniformity EPS but prominent difference in DPS and DPR.

A study conducted by **Prem Krishna Shrestha (2008)** in his thesis entitled "profitability Analysis of Standard Chartered Bank Nepal Limited & Nabil Bank Limited" found out the following:

➢ SCBNL had more consistent operating efficiency ratio than NABIL bank limited during the study period.

➢ Both of the banks data showed that more than 90% of their total liabilities paid interest. These banks showed that the smaller portion of their interest bearing liabilities paid as interest expenses.

➢ Both the banks weighted average cost of deposit ratio was found to be at decreasing rate.

➢ NABIL bank has lower EPS than SCBNL, which indicated that the performance of SCBNL was better than NABIL.

➢ SCBNL was paying more dividend than NABIL bank limited during the study period. The amount of dividend was almost double for SCBNL than NABIL. It

meant that NABIL was in need of found, so it was paying fewer dividend and adding more amounts under the head of retained earnings.

➢ Among the total income, more than 75% of the income came from interest sector. That indicated the main source of income was interest for both the banks.

➢ The operating expenses ratio over total expenses comprised of more than 40% for the both banks.

➢ NABIL had flustering return on total assets than SCBNL. SCBNL had higher return on equity than NABIL. Return on equity of NABIL was more fluctuating than that of SCBNL. SCBNL had higher return on equity ratio than that of NABIL.

➢ SCBNL had also higher interest earned to total asset ratio than NABIL.

➢ The total interest income to total earning assets ratio of both the banks were found decreasing over the years, which indicates a negative sign to the banks performance.

➢ NABIL banks net profit margin ratio was higher than that of SCBNL. Similarly, net interest margin of NABIL was also higher than that of SCBNL (Shrestha, 2007: 76-77).

**Basnet, P. (2005)** had conducted a study on the dividend policy entitled ' Dividend policy of listed companies in Nepal. She conducted this study to assess the prevailing practice of Nepalese listing companies regarding dividend; to highlight the prevailing dividend policy adopted by the listed companies; to assess the impact of dividend on market price of share of the selected companies. She analyzed the relationship between dividend in EPS, net profit and net worth and provides a useful workable suggestion.

Her major findings showed that, there was not uniformity of dividend distribution policy and practice in selected companies. A change in DPS and payout ratio affect the share prices differently in different sector companies. The relationship between DPS with EPS net profit and net worth were positive in all sectors companies. She suggests and recommended that there must have clearly defined dividend policy, legal rules must be enacted. She suggested that companies should have long term vision and establish the organization to promote and to protect activities in favor of investors. Further, she recommended that choice should be given to share holders whether they prefer stock dividend or cash dividend with using ton get rate of earnings i.e. profit planning and ton get payout rates. At last, she suggested that all activities and information regarding performance should be timely provided.

## 2.7 Review of Websites:

According to the website www.nepalstock.com there are 163 companies registered in Nepal Stock Exchange up to 2009/10. Out of them, 33 commercial banks, 30 development banks, 62 finance companies, 17 insurance companies, 18 manufacturing companies, 4 trading companies, Hydropower 3 and 6 other companies are registered in Nepal Stock Exchange. The history of Serenity market begins with the flotation of shares of Biratnagar Jute Mill Ltd. and Nepal Bank Limited in 1994 B.S. the security Exchange Company Ltd. was established in 2033 B.S. Its objectives are to facilitate and promote the growth of capital markets. At first, it had only performed capital market doing job of underwriting. But now it manages public issues, market making for government bonds and other various services. The Nepal Stock Exchange is a non-profit organization operate under, security Exchange Act 1983.

The security board was established in 1993 A.D. to increase public assess to shone ownership and operation of firm, assess the dividend and capital gain form shone investment up to public, supply the capital needed by industry and commerce at least intermediation investment etc. There are 6 board of directors on which Mr. Tanka Prasad Paneru is chairman and there are 23 employees involved in security board.

# CAPTER- III
## RESEACH METHODOLOGY

### 3.1 Introductions:

The objective of this study is to analyze and compare the dividend policy of commercial banks to find out the factors that protect the interest of investors. It also tries to find out the relationship between dividends with MVPS, EAT, EPS& NW of commercial bank. "Research Methodology is a systematic way to solve the research problem.'' In other words, Research Methodology describes the methods and process applied in the entire aspect of the study. This chapter is mainly associated with research design, sample design, period of the study, sources of data, data collection procedures, data processing and terms, methods, tools and techniques, theories that are employed in the interpretation.

### 3.2. Research Design:

A Research design is the outline of good research employed for the investigation of the required results. Research design helps the investigation to obtain answers to the questions of research and also helps him/her to control of the particular research problem and problem area to report writing with the help of collection, tabulation and interpretation of data. Defining total population selecting the sample and applying the appropriate techniques of analysis efficiently is the meaningful outcome of the good research design. It is a plan, structure and strategy of investigation so as to obtain answer to research questions and to control the variables. Research design stands in obtaining of information, the availability of skills of the research staff and or agencies, a detailed explanation of the way in which selected means of obtaining information will be organized the time and the cost of research (C. R. Kothari, 1990:25).This is a

small study going to be commercial by a single researcher and is also based on the data and the phosphoric of Nepalese capital market. Moreover, the research will be commenced on the concerned areas of dividend policy and its practices in selected commercial banks in Nepal.

## 3.3 Population and Sample:

Many joint venture commercial banks have been established in very shorter period after economic liberalization policy adopted in Nepal in mid of 1980s. As a result, many joint venture banks, financial institutions are running successfully. The population of this study will constitute the registered commercial banks in Nepal. There are many commercial banks traded actively in stock market. There are altogether 33 commercial banks are operation in Nepal.

From the above 33 Commercial banks, sampling may be defined as the selection of part of the population on the basis of which a judgment or inference about the universe is made. Here only four sample joint venture commercial banks have been taken out of 33 commercial banks.  Himalayan Bank Ltd, Bank of Kathmandu Ltd, Standard Chartered Bank Ltd., & Nabil Bank Ltd.are selected as sample for the purpose of this study. The selection of the above banks is not based on a particular opinion or knowledge but rather on judgmental sampling. (NRB: Banking & Financial Statistics 2066).

## 3.4. Nature and Sources of Data

Data from primary sources was collected through direct personal interview and with closed –end questionnaires by researcher himself.

Secondary data consists of information that already exists some where have been collected for another purpose. It was collected from various journals, periodicals,

literature, and online database prior research report and company profile. The secondary data are mainly gathered from the website of Himalayan Bank Ltd., Bank of Katmandu Ltd., Standard Chartered Bank Ltd. & Nabil Bank Ltd. From the employees of the banks by researcher himself.

The nature of required for this research work will primarily Secondary so that data will be collected from Secondary Sources. The data of different financial variable related with divided have been collected basically from the financial statement of sampled listed commercial banks. The supplementary data and information have been also obtained from the annual reports published by concerned banks. Besides the data have been acquired from other various sources like:

➢ Annual reports
➢ Publications of the concerned banks
➢ Nepal Stock Exchange
➢ Security Board of Nepal
➢ Central library of Tribhuvan University
➢ www.hbl.com.np
➢ www.bok.com.np
➢ www.nbl.com.np
➢ www.scb.com.np
➢ www.nepalstock.com
➢ www.nrb.org.np
➢ New paper and magazines.


**3.5 Tools and Techniques**:

The analysis of data has been same according to the pattern of data available. Wide varieties of methodology have been applied according to the reliability and consistency of data. Before using the analytical tools to compare the result, the

data containing in the financial statement have been grouped and rearranged so as to make comparison easy. Then only various appropriate tools such as percentage, financial ratio and statistical tools have been applied to interpret the result and draw up the sound conclusion. The finding will be presented using various charts and diagrams wherever possible and suitable. Mainly the analysis has been performed using the under mentioned tools.

### 3.5.1 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, 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 to find whether the independent variables have statistically significant relationship with dependent variable or not. The test is based on the data for the five years of the sample banks. The hypothesis of this research work is as follows:

Hypothesis Test-I

Null Hypothesis Ho: $b_1 = b_2 = 0$. 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 variable $X_2$(EPS) and $X_3$(DPS).

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

Hypothesis Test-II

Null Hypothesis H0: $b_1 = b_2 = 0$. That is the regression equation of $X_1$ (MPS) on $X_2$ (DPS) and $X_3$ (DPR) in not significant. In other words, there is no relationship between dependent variable $X_1$ (MPS) and two independent variable $X_2$ (DPS) and $X_3$ (DPR).

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

### 3.5.2 Financial Indicator/ Tools:

For the study purpose various financial tools have been analysis of this study is based on the following financial tools.

### i)  Market Price per Share ( MPS):

MPS refers to the rupees value of one share that is being transaction in NEPSE. It is affected by DPS of a firm. The capital market determines the MPS.

### ii) Earning per Share (EPS):

EPS is calculated to know the earning capacity and make the comparison between the commercial banks and insurance companies according to their respective sectors. EPS defined as the result received by dividing net profit after taxes by the number of common stock outstanding.

$$EPS = \frac{Net\,Profit\,After\,Tax}{No\ of\ Common\,Stock\,Outstanding}$$

### iii) Divided per Share (DPS)

DPS indicates the part of earning distributed to the shareholders on per share basis and calculated by dividing the total divided to equity shareholders by the total number of equity shares.

$$DPS = \frac{Total\ Dividend}{No.\ of\ Share\ Outstanding}$$

### iv) Divided Payout Ratio (D/P Ratio)

It is the percentage of profit that is distributed as divided. This ratio reflects what percentage of profit is distributed as a divider and what percentage is retained as reserve and surplus for the growth of the company. The divided payout ratio depends upon the earnings. Higher earning enhances the ability to pay more dividends and vise versa. There is an inverse relationship between dividends and retained earning. The higher the divided payout ratio the lower will be the proportion of retained earnings and vice versa. The capacity of internal financing of the firm is checked by the retention ratio. It is calculated by dividing the DPS by EPS.

$$DPS\ Ratio = \frac{DPS}{EPS}$$

### 3.5.3 Statistical Tools:

In the present study, certain statistical tools have been used to compare the figures and draw one meaningful conclusion there from. Short descriptions of the statistical tools have been presented various statistical tools are used in this study which is explained as follows.

**i.) Arithmetic Mean or Average:**

The must popular and wifely used measure of representing the entire data by one variable is the arithmetic mean. It is an envoy of the entire mass of homogeneous data. Generally the average lies somewhere in between the two streams, i.e. the largest and the smallest items. Mean values of the different variable represent the average value for study period. It is calculated as follows:

Arithmetic Mean $(\overline{X}) = \dfrac{\sum X}{N}$

Where,

$\sum X$ = Sum of the sizes of the items

N = No. of items in a series

**ii) Standard Deviation $(\sigma)$:**

The measurement of mass of figures in a series about an average is known as dispersion. The greater amount of dispersion greater will be the standard deviation. A small standard deviation means high degree of uniformity of the observation as well as homogeneity of senses, a longer standard deviation means just apposite.

Symbolically,

$\sigma = \sqrt{\dfrac{\sum X^2}{n} - \left(\dfrac{\sum X}{n}\right)^2}$

**iii) Coefficient of Determination ($R^2$):**

The coefficient of determination is a measure of degree (extant or strength) of linear association or correlation between two variables, one of which happened to

be independent and other being dependent variable (s). In other words, $R^2$ measuring the percentage total venation in independent variable explained by independent variable (s). The coefficient of determination can have value ranging from zero to one. A value of one can occur only if the unexplained venation is exactly on the regression line. In this study $R^2$ is calculated as the requirement of model.

## iv) Coefficient of Variation:

Coefficient of variation is the relative measure o dispersion, comparable across, which is defined as the ratios of the standard deviation to the mean expressed in percentage.

Symbolically

$$CV= /\mu \times 100\%$$

Where,

= S.D of popullation

$\mu$ = Popullation mean

## v) Correlation Analysis:

Correlation analysis is the statistical tools that can be used to describe the degree to which are variable is linearly related to another. The coefficient of correlation mea sung the direction of relationship between two sets of figure. It is the square root of the coefficient of determination. Correlation can either be positive or it can be negative. If both variables are changing in the same direction, the correlation is said to be positive but when the venations in the two variables take place in opposite direction, the correlation is term of coefficients are calculated.

Simple Correlation Coefficients are:

➢ Between divided per share and market price of share

➢ Between earning per share and divided per share

➢ Between earning per share and dividend per share

**vi) Regression Analysis:**

Correlation analysis tells the direction of movement but it dos not tell the relative movement in the variables movement in the variables. It is concerned with the study of the relationship between are variable called explained or explanatory variables. There are two types of regression analysis which is concerned with the study of the relationship between one variable called dependent or explained variable and one another variable called independent or explanatory variable. Other is called multiple – linear regression analysis, which is concerned with the study of the relationship between one variable and more than one other variables called independent or explanatory variable. The regression analysis the following two concepts:

a) Regression Constant (a):

The value of constant, which is intercept of the motel, indicates the average level of dependent variable when independent variables are zero. In other words, it is better to understand that 'a' indicates the mean or average affect or dependent variable if all the variables committed from the motel.

b) Regression Coefficient (b):

The regression coefficient of each independent variable indicates the marginal relationship between the variables and value of dependent variable, holding constant the effect of all other words, the coefficients describe how changes in independent variables in the regression motel. In order words, the coefficients

describe how changes in independent variables affect the value of dependent variables estimate.

c) Standard Error of Estimate (SEE):

With the helps of regression equation perfect prediction is practically impossible standard error of estimate is measure of reliability of the estimating equation indicating the variability of the observed values differ from their predicated values on the regression line. If see is zero, then there is no variation about the line and the correlation will perfect. Thus with the helps of see it is possible for us to ascertain how well and representative the regression line is as description of the average relationship between two series.

## vii) T- Statistics:

To test the validity of our assumption if sample size is less than 30.t-test used for applying t-test in the context of small sample, the "t" value is calculated first and then compared with the table value of "t" at a certain level of significance for given degree of freedom (in this study the "t" value are computed with the help of computer). If the calculated value of "t" exceed the table value (say t 0.05), we enterprise that the difference is significant at 5% level but if "t" value is less than the concerning table value of the "t" the difference is not treated as significant.

It can be calculated by using following formula:

$$t = \frac{\overline{X} - \sim}{\dfrac{s}{\sqrt{y}}}$$

# CHAPTER - IV
## DATA PRESENTATION AND ANALYSIS

### 4.1 Introduction:

In this chapter, the relevant data and information on dividend policy of commercial banks are presented and analyzed comparatively. In the beginning, the descriptive analysis of

1. Analysis of dividend per share
2. Analysis of Earning per share
3. Analysis of Market price of share
4. Analysis of Dividend Payout Ratio

The respective sample commercial banks are done first and thereafter analysis will be followed by explanatory and hypothetical analysis. Collecting the data is the connecting link to the research work of the researcher with the world of reality. But the gathering the data is meaning less unless the data will be presented and analyzed properly to change if from raw to understandable presentation. The analysis of data consists of organizing tabulating, performing statistical analysis and drawing inferences. Data may be obtained from several source, however, general sources of data may be primary and secondary sources. This chapter deals with the data regarding the dividend policy and practices of sampled commercial banks of Nepal. It is related with the analysis of financial indicators and variables, regression analysis and test of hypothesis. This chapter is based on the

presentation and analysis of the secondary data, which help to conclude and draw some recommendations.

**4.2Analysis of Dividend Payment Practices of the Selected Banks:**

As already mentioned in the first chapter, one of the objectives of the study is to assess the prevailing practices of the company regarding dividend. In this section, an attempt has been make to analyses the financial indicators that one relevant fiercely or in fiercely to the divider payments of the banks. This helps to understand the divider practices of these banks in the absence of complicated information. The analysis includes.

**4.2.1 Analysis of Dividend per Share:**

Dividend per shone indicates the proportion of earning distributed to owner (Share holder) on per share basis. Generally, the higher DPS creates positive attitude among the share holder toward the bank, which accordingly helps to increase the market value of shone. The following table shows all details relating to dividend per share.

**Table No. 4.1**

**Analysis of DPS**

| Bank Year | HBL | BOKL | SCBNL | NABIL |
|---|---|---|---|---|
| 2005/06 | 27.50 | 0 | 100 | 40 |
| 2006/07 | 25 | 10 | 100 | 30 |
| 2007/08 | 0 | 5 | 110 | 50 |
| 2008/09 | 0 | 10 | 110 | 65 |
| 2009/10 | 11.52 | 15 | 110 | 70 |
| Mean | 13.06 | 8 | 106 | 51 |
| S.D | 11.51 | 5.09 | 4.90 | 14.97 |
| C.V | 8.81 | 64 | 4.62 | 29.6 |

*Source: Appendix I.*

In the above table, it is seen that DPS of all banks one in fluctuating trend. HBL has paid highest DPS in year 2005/06; BOKL has paid highest DPS in the year 2009/10. The highest dividend of Rs110 was paid in year 2007/08 to 2008/09 by SCBNL. Where as NABIL has paid the highest DPS in year 2009/10, The mean DPS of HBL, BOKL, SCBNL& NABIL and are Rs.13.6, Rs.8, Rs.106 and Rs.51 respectively. It shows that mean DPS of SCBNL is greater than other commercial Banks.

Thus, the analysis of the DPS trend shows that average dividend per share paid by SCBNL is in first position; NABIL is in second position then after HBL and BOKL. Higher dividend per share creates positive attitude of the sonorities towards the bank, which consequently helps to increase the market value per share. It is the indicator of better performance of the firm. In this regard, SCBNL is better than others.

The CV of 64% indicates that there is high fluctuation in the DPS of BOKL.

We can better present the comparative DPS of the Banks with the help of bar diagram as follow:

**Figure No. 4.1**
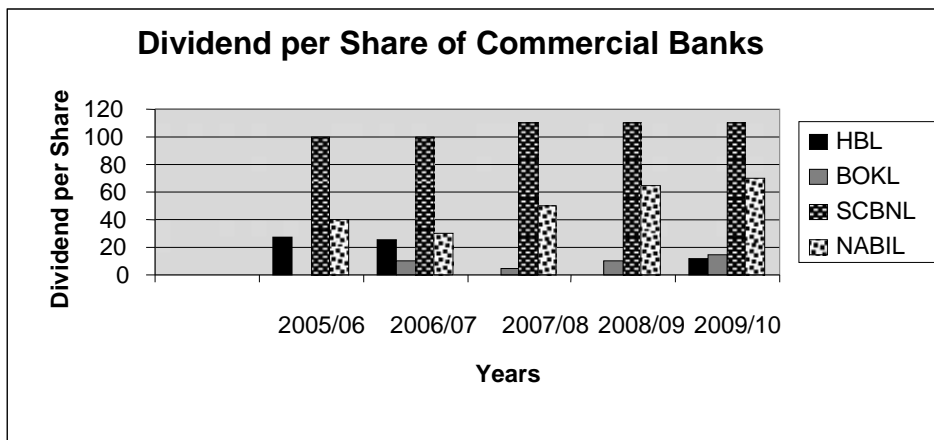
**4.2.2. Analysis Earning Per Share:**

Normally the performance and achievement of business organization are measured in term of its 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 in seen in the stock market. The earning per Share of the bank understudying is tabulated as follows.

**Table No. 4.2**

**Analysis of Earning Per Share**

| Bank<br>Year | HBL | BOKL | SCBNL | NABIL |
|---|---|---|---|---|
| 2005/06 | 93.56 | 27.97 | 126.88 | 82.81 |
| 2006/07 | 60.26 | 2 | 141.13 | 55.25 |
| 2007/08 | 49.45 | 17.72 | 149.30 | 84.66 |
| 2008/09 | 49.05 | 27.50 | 143.55 | 92.61 |
| 2009/10 | 47.91 | 30.10 | 135.18 | 105.49 |
| Mean | 60.05 | 21.06 | 139.21 | 84.16 |
| S.D | 17.34 | 10.44 | 7.65 | 16.52 |
| C.V | 28.88 | 49.57 | 5.50 | 19.63 |

*Source: Annual Reports and Appendix I*

The above table shows the EPS of HBL during the period of study is Rs.60.05. The standard deviation of EPS of HBL is 17.35 where as the coefficient of variation is 28.88. It indicates that there is moderate fluctuation in EPS of that

bank. The bank is able to maintain its average EPS only in the year 2005/06 and 2006/07. The analysis shows that EPS of HBL is in decreasing trend.

During the study period, BOKL has an average EPS of Rs.21.06 with standard deviation of 10.44 BOKL has the lowest average EPS among the sampled banks. Average EPS is maintained the bank in the year 2005/06, 2008/09 and 2009/10. The coefficient of variation of BOKL is 49.57, which indicates that there is highly fluctuated in EPS of that bank.

The average EPS of SCBNL during the study period is Rs.139.21. The standard deviation of EPS is 7.65 where as the coefficient variation is 5.50. It indicates that there is fluctuation in EPS of that bank. The Bank is able to maintain its average EPS during the study periods.

The above table shows that average earning per Share of NABIL is Rs.84.16. The bank has maintained its average EPS during the study period except the year 2006/07. The standard deviation of EPS of NABIL is 16.52 where the coefficient of aviation is 19.63.

Comparing the overall performance of sample banks selected for the study in respect of EPS, SCBNL has the highest EPS among the selected banks and BOKL has the lowest EPS among than. We can better present the comparative EPS of Sample banks with the help of the following bar diagram.

**Figure No. 4.2**

### 4.2.3 Analysis of MPS:
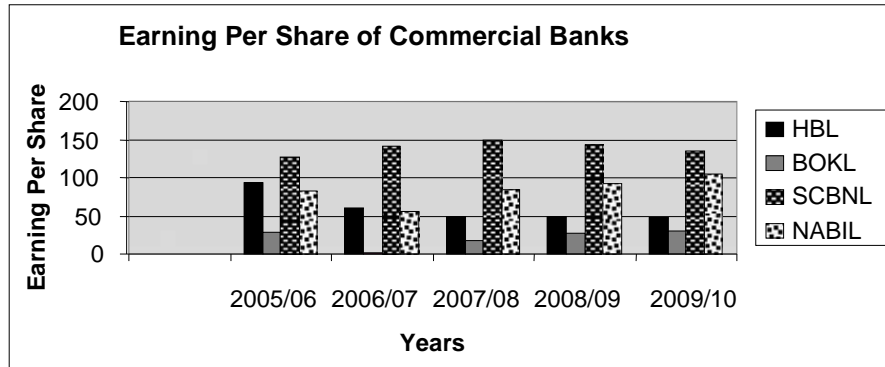


Market price of share is that value of stock, which can be received by firm or equity holders selling it in the capital market. The capital market determiners the value of MPS. In this analysis MPS represent the closing market price of NEPSE index of the sample firms. The following table shows the market price of stock of the sample banks.     **Table No. 4.3**

**Analysis of MPS**

| Bank / Year | HBL | BOKL | SCBNL | NABIL |
|---|---|---|---|---|
| 2005/06 | 1500 | 850 | 2144 | 1500 |
| 2006/07 | 1000 | 254 | 1550 | 735 |
| 2007/08 | 836 | 198 | 1640 | 735 |
| 2008/09 | 840 | 295 | 1745 | 1000 |
| 2009/10 | 925 | 519 | 2345 | 1505 |
| Mean | 1020.20 | 423.20 | 1884.8 | 1095 |
| S.D | 247.42 | 239.63 | 306.76 | 346.51 |
| C.V | 24.25 | 56.62 | 16.28 | 31.64 |

*Source: Annual Reports and Appendix I*

The above mentioned comparative table No. 4.3 Shows that the trend of MPS of different financial institution for 5 years period and its average or mean, standard deviation and coefficient of venation. HBL has an average MPS of Rs.1020.20 and it has maintain this level during the study period. It has a standard deviation of 247.42 and coefficient of variation is 24.25. It indicates there is moderate level of fluctuation on MPS during the study period.

During the study period BOKL has an average MPS of Rs.423.20. In 2006/07, 2007/08 and 2008/09 it has lower MPS than average mean. The standard deviation is 239.63 and coefficient of deviation 56.62 which indicates relatively higher fluctuation on MPS than other sample banks.

The average MPS of SCBNL is Rs1884.80, the highest average MPS among four commercial banks. The bank has maintained its MPS at an average level during the last five year. The standard deviation is 306.76 and coefficient of variation is 16.28 which indicate there is lower fluctuation in MPS.

The average MPS of NABIL is Rs.1095 and it has cannot maintain its MPS at average level in 2006/07 and 2007/08. The standard deviation is 346.51 and coefficient of variation is 31.64 which indicated there is moderate fluctuation on market price of share during the last five years.

Comparing the overall performance of sample banks selected for the study in respect of MPS, SCBNL has the highest average MPS and the lowest coefficient of variation among the sample banks. We can better present he comparative MPS of sample MPS of banks with the help of the following bar diagram.

**Fig: No. 4.3**
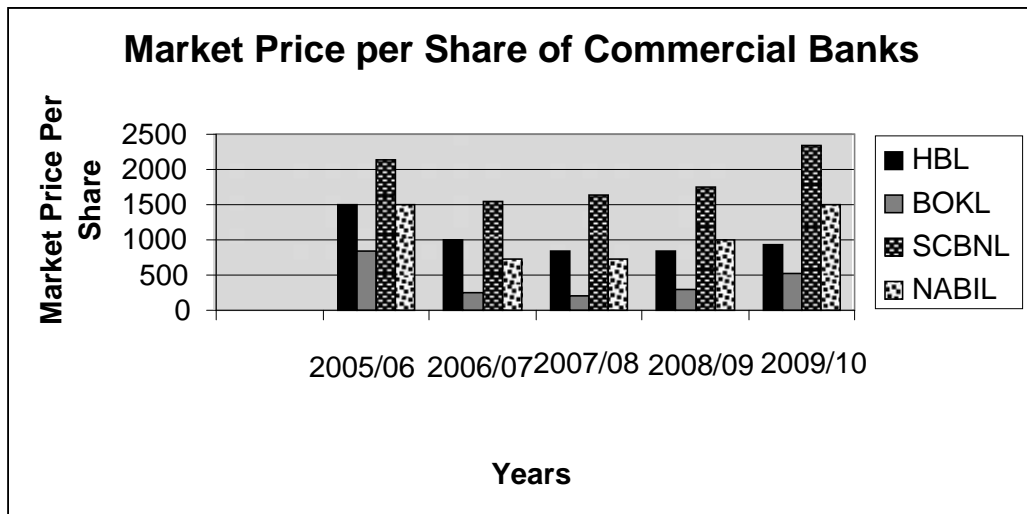


4.2.4 Analysis of Dividend Payout Ratio:

This ratio show the amount of dividend as a parentage of earning available for equity shore. The dividend payout ratio obviously depends on earning, greater the earning more ability of company to pay dividend. The comparison of payout ratio reflects the management attitude towards the treatment of profit in respect to the distribution of dividend and retained earnings. Therefore Comparison between the selected banks has been made under

**Fig: No. 4.4**

**Analysis of Dividend Payout Ratio**

| Bank / Year | HBL | BOKL | SCBNL | NABIL |
|---|---|---|---|---|
| 2005/06 | 29.39 | 0 | 78.81 | 67.49 |
| 2006/07 | 41.39 | 5 | 70.86 | 54.30 |
| 2007/08 | 2.67 | 28.22 | 73.68 | 59.06 |
| 2008/09 | 0 | 36.36 | 76.63 | 70.19 |
| 2009/10 | 24.17 | 49.83 | 73.82 | 66.36 |
| Mean | 19.52 | 23.88 | 74.76 | 63.48 |
| S.D | 15.89 | 18.84 | 2.73 | 5.89 |
| C.V | 81.40 | 79.89 | 3.65 | 9.28 |

*Source: Annual Reports and Appendix I*

From the above table it can see that none of the company has maintaining stable dividend payout ratio. An average DPR of 19.52% is noted during study period for HBL. The standard deviation of DPR is 15.89. The coefficient variation of 81.40% sows a highly fluctuating nature of DPR in HBL, SCBNL has a high.

BOKL has an average DPR of 23.88 % during the study period. It means that BOKL generally pays 23.88% of its total earning as dividend to its. Share holders. The standard deviation of DPR is 18.84 and efficient of variation is 78.89%. It indicates the high fluctuation nature of DPR in BOKL.

SCBNL has an average pay out ratio of 74.76% during the study period. It has maintained the average payout ration during the period. The maximum DPR is

78.81% in 2003/04. The standard deviation of SCBNL is Rs.83 the coefficient variation of 8.63% sows the less furcating nature of DPR in SCBNL.

NABIL has an average pay out ratio of 63.48 percent. The bank has not maintained the average pay out ratio only in the year 2005/06 and 2006/07. The maximum payout ration is 70.19% in 2006/07. The standard deviation of DPR is 5.89 and coefficient of variation in 9.28 % which indicates the less fluctuating nature of DPR in NABIL.

From the above analysis performance in respect of DPR among the sample banks we can better present the comparative DPR of sample banks during the study period with the help of following bar diagram.

**Figure No. 4.4**
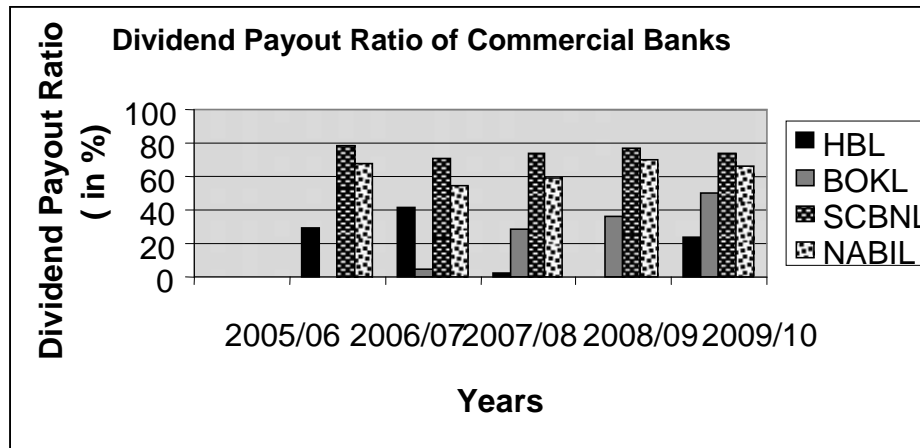
## 4.3 Impact of Dividend on Market Price of Share:

Analysis and interpretation of divided payout practices of the selected companies have been presented in the earlier section. Besides, keeping in the mind the need for more elaborate and extensive analysis effects of dividend on stock price have to be carried out. Therefore this part of study is purely devoted in this regained. Based on these sample saves it is hopes that the studies will adequate light on the impact of dividend on stock price.

## 4.3.1 Analysis of simple Regression and Correlation between Dividend per Share and Market Price Share.

To assess the impact of dividend on market price of share the simple regression and correlation has been analyzed. Here, the regression equation is estimated by assuming DPS as independent variable 'X' and MPS as dependent variable 'Y' the simple regression model is y =a+bx

The result of regression and correlation has been presented in the following

**Table No. 4.5**

**Regression and Correlation Analysis of MPS and DPS**

| BANKS | a | B | $R^2$ | SEE | t | R |
|-------|-----|-----|--------|---------|--------|--------|
| HBL | 795.56 | 17.19 | 0.7098 | 192.34 | 2.30 | 0.8425 |
| BOKL | 587.04 | 20.48 | 0.19 | 278.43 | 0.8387 | 0.435 |
| SCBNL | 1217.00 | 6.30 | 0.01 | 394.025 | 0.1617 | 0.10 |
| NABIL | 603.79 | 9.514 | 0.1627 | 416.98 | 0.7636 | 0.4034 |

*Source: Appendix III*

Here, the simple regression model is.

Y = a+bx

MPS = a+b DPS

By calculation of the available data of the given banks (See appendix II), the regression equation for the sample banks are under.

**For HBL**

Y=a+bx

or Y=795.56 + 17.19 x

or MPS = 795.56 + 17.19 DPS


**For BOKL**

Y=a+bx

or Y= 587.04-20.48x

or MPS = 587.04-20.48 DPS


**For SCBNL**

Y=a+bx

or Y= 1217 + 6.30x

or MPS = 1217 + 6.30 DPS


**For NABIL**

Y= a+ bx

or Y= 603.79 + 9.514 x

Or MPS = 603.79 + 9.514 DPS

From the above table, the regression constant 'a' of HBL is 795.56, which means the dependent variable MPS is fitted 795.56 units above the origin. In simple words, if the value of DPS is zero then the value of MPS will be 795.56. The regression coefficient 'b' of 17.19 indicates that with a unit change in DPS there will be change by 19.17 units in the value of MPS. Here it can be said that DPS plays a vital role in the valuation of the share price. Its $R^2$ is 0.7098 it means 70.98 % of the variation of MPS is explained by the explanatory variable DPS. The other remaining variation is due to other factors. There is positive relationship between the DPS and MPS of this firm. The result is not statistically significant at 5% level of significant because calculated value at 5% level of significant because calculated value of 'f' (2.30) is lower then the tabulated value of 'f' (2.776) at 5% level of significant.

In case of BOKL, the regression constant 'a' is 587.04 which mean that a zero values of DPS the MPS will be 587.04. The regression coefficient 'b' is 20.4. It indicates the negative relation between the two variables. It shows that with a unit charge in DPS there is 20.48 unit charges in MPS but the charge is in opposite direction. That is R2. 1 increase in the value of DPS the MPS will decrees by Rs.20.48 the standard error of estimate of 278.43 indicates that there is 278.43% scatter ness about the regression line of MPS and DPS its coefficient determination is 0.190 which indicates that 19% of variation of MPS is explained by explanatory variable DPS. The remaining variation is due to other factors. The correlation coefficient is 0.4359, which indicates that there is negative relationship between DPS and MPS of this firm. The calculated value of 't' is 0.8337 at 5% level of significant which is less than tabulated value. (2.776), the estimated slope is not statistically significant at 5% level if significant.

The regression constant 'a' of SCBNL is 1217, which means the dependent variable MPS is fitted 1217 unit above the origin. In simple words, if the value of DPS is zero then the value of MPS will be 1217. The regression coefficient 'b' of 6.30, shows the positive relationship between two variables which indicate that unit change in DPS there is 6.30 unit changes in MPS. That is when Rs1.0 increase in the value of DPS the MPS will increase by 6.30. The scatter ness (SEE) is 394.025, thus the regression line is dispersed by 394.025%. It's coefficient of determination is 0.010, which indicates only 1% of the variation of the result is not statistically significant at 5% level of significant because calculated value of 'F' (0.1617) is lower then the tabulated value of 'f' (2.776) at 5% level of significant.

From the above table the relationship between MPS and DPS can be analyzed. The regression constant 'a' incase of NABIL is 603.79 with implies that the line of fit lies 603.79 units above the origin. In other world, with z other world, with zero DPS the market value per share of NABIL would be 603.79. The regression coefficient 'b' is 9.514 which imply that with one unit variation in DPS there will be 9.514 times more then DPS. The standard error of estimate of 416.98 indicates that this is 416.98% scatter ness about the regression line of MPS on DPS. Its coefficient of determination is 0.1627. It indicates that 16.27% of the variation of MPS in explained by the explanatory variable DPS. The correlation coefficient of 0.4034 indicates there in positive relationship between DPS and MPS of this firm.

**4.3.2 Analysis of Simple Regression and Correlation between Dividend Payout Ration and Valuation of Share:**

<div align="center">

**Table No. 4.6**

**Regression result of Market Price per Share on Dividend Payout Ratio**

</div>

| BANKS | A | B | R2 | SEE | Sb | t | R |
|-------|-----|-----|------|-----|-----|-----|-----|
| HBL | 858.18 | 8.3 | 0.2809 | 270.19 | 7.60 | 1.092 | 0.53 |
| BOKL | 518.48 | -3.99 | 0.0961 | 293.74 | 6.97 | 0.5724 | 0.31 |
| SCBNL | -1989.26 | 51.82 | 0.2116 | 352.52 | 57.67 | 0.8986 | 0.46 |
| NABIL | -1493.71 | 40.78 | 0.4761 | 322.63 | 24.52 | 1.6631 | 0.69 |

*Appendix- III*

Regression equation $y = a + bX$

Here, the regression equation is estimated by arriving DPR as independent variable 'x' and MPS as dependent variable 'y' the simple regression model is

$Y = a+bx$

or MPS = a+b (DPR)

By calculation of the available data of the given banks (see appendix III). The regression equation for the sample banks are as under.

**For HBL**

$y = a+bx$

or, $y = 859.18 + 8.30x$

MPS = 858.18 + 8.30 DPR

**For BOKL**

$Y = a+bx$

or, $y = 518.48 -3.99 x$

or, MPS = 518.48 – 3.99 DPR

**For SCBNL**

y = a+bx

or, y = -1989.26 + 51.82 x

MPS = -1989.26 + 51.82 DPR


**For NABIL**

y = a + bx

or y = -1493.71 + 40.78x

or MPS = -1493.71 + 40.78 DPR


The above table shows the value of 'a', 'b' standard error estimate. Coefficient of 'a' is the numerical constant which determines the distance of the fitted line directly above or below the origin. The coefficient of 'b' represents the change in the value of dependent variable MPS for a unit change in the value of independent variable DPR. The standard error of estimate (SEE) to MPS on DPR is a measure of dispersion (Variation) about the regression line of MPS on DPR.


In case of HBL, the regression constant 'a' is 858.18 which mean that zero value DPR the MPS will be 858.18. the regression coefficient 'b' is 8.30 which indicate that with a unit change in DPR there will be change by 8.30 units in the value of MPS have it can be said that DPR play a vital role in the valuation of stocks. Its $R^2$ is 0.2809 which indicates 28.09% of the variation of MPS is explained by the explanatory variables DPR. The remaining variation is due to other factors. The correction coefficient is 0.53 which indicates there is positive relationship between MPS and DPR. Calculated value of 'f' (1.092) at 5% level of

significant is lower then the tabulated value of 't' (2.776), the estimated scope is not statistically significant at 5% level of significant.

In case of BOKL, the refraction constant 'a' is 518.48 which mean that with a value of DPR. The MPS will be 518.48. The coefficient 'b' is -3.99 shows the negative relation between the two variables. It indicates that with a unit change in DRP there is 3.99 units change in MPS but in opposite direction. That is when 1% increase in DRP; the MPS will decrease by Rs3.99. However, the scatter ness (SEE) is 293.74, thus the regression line dispersed by 293.74 percent. The coefficient of determination is 0.0961 it indicates that only 9.61% of the variation of MPS is explained by the explanatory variables DPR. The result is not statistically significant at 5% level of significant because calculated value of 'F' (-0.5724) is lower then the tabulated of 't' (2.776) at 5% level of significant

The regression constant 'a' of SCBNL is -1989.26. Which shows that the average MPS would be -1989.26, if the DPR where zero. The regression coefficient 'b' of 51.82 indicates that with a unit change in DPR will be change by 51.82 units in the value of MPS. Its coefficient of determination is 0.2116, which indicate that 21.16 percent of the variation of MPS in explained by the explanatory variables of DPR the remaining 78.84% variation is due to other factors. The correction coefficient is 0.46 which indicate that there is positive relation between the MPS and DPR of this form. This result is not statistically significant at 5% level of significant because calculate of 'F' (0.8986) is lower than the tabulated value of 'F' (2.776) at 5% of significant.

Here, the regression constant 'a' of NABIL is -1493.71, which the value of coefficient 'b' of 40.78 indicates that with which change in DPR change the value of MPS by Rs.40.78. That is when 1% increase in the DPR; the MPS will increase

by Rs.40.78. However the scatter ness (SEE) is 322.63, thus the regression line is dispersed by 322.63%. The coefficient of determination ($R^2$) is 0.4761; it indicates that 47.61% variation of MPS is explained by the explanatory variable DPR. Calculated value of 't' at 5% level of significance is 1.6631, which is less than tabulated value 92.776), the estimated slope is not statistically significant at 5% level of significance. It explains that there are other variables except than DPR, which could affect the overall MPS of the firm in case of BOKL.

### 4.3.3 Analysis of simple Regression and Correction between EPS and DPS:

Here, the regression equation is estimated by assuming EPS as independent variable 'x' and DPS as dependent variable 'y' the simple regression model is:

Y = a+bx

DPS = a+b (EPS)

For the simplicity of study the regression constant 'a' and regression coefficient 'b' along with coefficient of determination $R^2$ (Calculation shown in appendix IV), standard error of estimate correlation coefficient and 'f' value has been presented in tabular form.

**Table No. 4.7**

**Simple Regression and correlation Analysis between DPS and EPS**

| BANKS | a | B | R2 | SEE | t | R |
|-------|------|---------|---------|------|--------|---------|
| HBL | -17.78 | 0.5136 | 0.5995 | 9.42 | 2.114 | 0.7743 |
| BOKL | 8.28 | -0.0132 | 0.00073 | 6.58 | 0.0468 | -0.0271 |
| SCBNL | 55.88 | 0.36 | 0.3136 | 5.33 | 1.1553 | 0.56 |
| NABIL | -19.63 | 0.8343 | 0.8649 | 7.23 | 4.35 | 0.93 |

*Source: Appendix IV*

86

By calculation of the available data of the given banks (see appendix IV), the regression equation for the sample banks are as under.

**For HBL**

y = a+bx

or, y = -17.78 + 0.5) 36 x

or, DPS = 17.78 + 0.51 36 EPS

**For BOKL**

Y = a + bx

or, y = 8.28 – 0.0132 x

or, DPS = 8.28 – 0.0132 EPS

**For SCBNL**

Y = a+bx

or, Y = 55.88 + 0.36x

or, DPS = 55.88 10.30 EPS

**For NABIL**

Y = a + bx

or, y = 19.63 + 0.8393 x

or, DPS = - 19.63 + 0.8393 EPS

From the above table the relationship between EPS & DPS can be analyzed. In case of HBL, the slope of regression coefficient is 0.5136, which indicates that if

the EPS of HBL is increased by Rs 1 Per Share, its DPS on an average goes up by RS 0.5136 Per Share. The regression constant 'a' is -17.78, which shows that the average DPS would be -17.78 if the EPS were zero. The coefficient of determination 'R$^2$' is 0.5995 which indicates that 59.95% of the variation of DPS is determines by, the explanatory variables EPS and remaining 40.05% variation is due to other factors. Correlation coefficient of HBL between the DPS is 0.7743. There is high degree of positive relationship between the EPS and DPS of HBL. The calculated value of 't' statistics is 2.114 at 5% level of significance, which is less than the tabulated value of 't' (2.776), the estimated slope is not statistically significant at 5% level of significance.

Similarly, in case of BOKL, the slope of regression coefficient is -0.0132, which indicates that if EPS of BOKL is increased by per shone, its DPS on an average goes town by 0.0132 Per Share. The intercept coefficient is 8.28, which shows that the average DPS would be R2 8.28, if the EPS were almost zero. The coefficient of determination R$^2$ is 0.00073, shows that 0.73% of the variation of DPS is determined by the explanatory van able EPS and remaining venation are due to other factors. The correlation coefficient 'r' is -0.0271, indicates there is low degree of negative relationship between the DPS and EPS of BOKL. The calculated value of 't' statistics at 5% level of significance is -0.0468, which is less than the tabulated value of t (i.e.2.776), the estimated slope is not statistically significant at 5% level of significance.

In case of SCBNL, the slope of regression coefficient is 0.36, which indicates that if EPS of SCBNL is increased by R2 1, its DPS on an average goes up by 0.63 per shone. The intercept coefficient is 55.88 which show that the average DPS would be 55.88, if the EPS were zero. The coefficient of determination 'R2'

is 0.3136, indicates that 31.36% of total variation of DPS is determined by the explanatory variable EPS and remaining 68.64% of variation is due to other factors. Correlation coefficient 'r' is variation is due to other factors. Correlation coefficient 'r' is 0.56 which indicates that there is high degree of positive correlation between the DPS and EPS of SCBNL. Calculated value of 't' statistics at 5% level of significance is 1.1553, which is greater less than the tabulated value of 't' (2.776) the estimated slope is not statistically significant at 5% level of significance.

The regression constant 'a' incase of NABIL is -19.63 if the EPS were zero. As the result shown, the slope of coefficient is 0.8393, which indicates that if the WPS of NABIL is increased by Per Shone, its DPS on an average goes up by 0.8393 Per Share. The coefficient of determination $R^2$ is 0.8649 which indicates that 86.49% of the total variation of DPS is determined by the explanatory variable EPS correlation coefficient 'y' is 0.93 which indicates that there is high degree of positive correlation between EPS and DPS Calculated value if 't' at 5% level of significance is 4.35, which is greater than tabulated value (2.776), the estimates slope is statistically significant at 5% level of significance.

## 4.4. Multiple Regression Analysis:

This part of the study is designed to examine the relationship between MPS, DPS and EPS.

## 4.4.1 Regression of MPS on DPS and EPS:

When the multiple regression motel having two independent visible one run the result are obtained as presented in the following table no. 4.8. It presents the unusual linear relationship between MPS, DPS, and EPS. Here multiple regression

equation is estimated by assuming MPS as dependent variable 'X$_2$' and EPS as in dependent variable 'X$_3$' The multiple regression model is,

$X_1 = a_1 + b_1x_2 + b_2x_3$

Or, MPS = $a_1 + b_1$DPS + $b_2$DPs

Where,

a$_1$   = Regression intercept

b$_1$, b$_2$= Regression Coefficient

For simplicity of the study the regression intercept 'a' coefficient b1 coefficient 'b2', along with coefficient of multiple determination 'R2' and f- ratio have been presented in the following tabular form:-

**Table No. 4.8**

**Regression of MPS on DPS and EPS**

| BANKS | $a_1$ | $b_1$ | $b_2$ | $R^2$ | SEE | F |
|--------|--------|--------|--------|--------|--------|--------|
| HBL | 206.34 | 1.77 | 13.17 | 0.9767 | 58.61 | 41.8548 |
| BOKL | 318.04 | -19.79 | 12.51 | 0.3007 | 271.43 | 0.4315 |
| SCBNL | 3419.68 | 46.69 | -46.58 | 0.9427 | 121.33 | 16.4541 |
| NABIL | -736.03 | -35.16 | 43.06 | 0.7445 | 308.97 | 2.9137 |

*Source: Appendix v*

From the above table we can analyze the effect of EPS and DPS on MPS. In case of HBL, the regression coefficient (b$_1$,) for DPS is 1.77 which indicates that one rupee increase in DPS leads to an average of about Rs 1.77 increase in MPS holding the another dependent variable EPS constant. There is positive relationship between MPS and DPS. The regression coefficient (b$_2$) for EPS is 13.17, which indicates that with one rupees increase in EPS leads to an average of an about Rs. 13.17 increase in MPS holding DPS variable as constant there is

positive relationship between MPS and EPS. The value of multiple coefficient of determination ($R^2$) is 0.9767which indicates 97.67% which indicate 97.67% variation in MPS explained by explanatory variables DPS and EPS and rest of the variation is due to the other variables except DPS and EPS which affects the value of MPS. The standard error of estimate is 58.6. This states that the predictions of this motel may vary by Rs. 58.61.

In case of  BOKL the regression coefficient ($b_1$) for DPS is -19.79, which indicate that one rupee increase in DPS leads to an average of about Rs. 19.79 decrease in MPS holding the another variable EPS constant. There is negative relationship between MPS and DPS since DPS cause decrease in EPS. Are regression coefficient ($b_2$) for EPS is 12.51, which indicates that with one rupees increase in EPS leads to an average of about of Rs.12.51 increase in MPS holding DPS variable contest. There is positive relationship between MPS and EPS. The value of coefficient of determination ($R^2$) is 0.3007 which indicate 30.07% variation in MPS is explained by explanatory variables DPS and EPS and rest of the variation (69.93%) is due to the other variables except DPS and EPS which effects the value of MPS, likewise the standard error of estimate is 271.43, which states that the predictions of this motel map vary by 271.43 rupees.

In case of SCBNL, the regression coefficient ($b_1$) for DPS is 46.69 which indicates that one rupee increase in DPS leads to an average of about Rs.46.65 increase in MPS holding the another dependent variable EPS constant. There is positive relationship between MPS and DPS. The regression coefficient ($b_2$) for EPS is -46.58 which indicates that with one rupees increase in EPS leads to an average of about Rs. 46.58 decrease in MPS holding DPS variable as constant. There is negative relationship between MPS and EPS since EPS cause decrease in

MPS. The value of coefficient of determination $R^2$ is 0.9427, which indicates 94.27% variation in MPS is explained by explanatory variables DPS and EPS and rest of the variation is due to the other variables except DPS and EPS which affects the value of MPS.

As the table shown, the regression coefficient ($b_1$,) for DPS of NABIL is -35.16, which indicates that one rupee increase in DPS least to an average to about Rs.35.16 decrease on MPS holding the another variable EPS. The regression coefficient ($b_2$) for EPS is 43.06. This indicates that one rupee increase in EPS leads to an average of about Rs. 43.06 increase in MPS holding the other variables constant. There is positive relationship between EPS and MPS. The value of multiple coefficient of determination ($R^2$) is 0.7445 which indicates 74.45% of variation in MPS is explained by explanatory variables DPS and EPS and rest of the variation is due to the other factors expect EPS and DPS, which affects the value of MPS.

**4.4.2 Regression of MPS on DPS and DPR:**

Now, the researcher is going to assess the impact of DPS and DPR on MPS. For this purpose multiple regression and coefficient of determination has been used. Here, the multiple regression equation is estimated by assuming DPS as in depended variable ($X_2$), DPS as independent variable '$X_3$' and dependent variable MPS '$X_1$'. The multiple regression models is

$x_1 = a_1 + b_1 x_2 + b_2 x_3$

or, MPS $= a_1 + b_1$DPS $+ b_2$DPR

Where,

$a_1$ = Regression intercept

$b_1$, $b_2$= Regression Coefficient

For simplicity of the study the regression intercept 'a$_1$' coefficient 'b$_1$',coefficient 'b$_2$' along with coefficient of multiple determination (R$^2$) and standard error of estimate have been presented on the following tabular from:

**Table No 4.9**

**Regression of MPS on DPS and DPR**

| BANKS | a$_1$ | b$_1$ | b$_2$ | R$^2$ | S.E.E |
|-------|-------|-------|-------|-------|-------|
| HBL | 861.42 | 47.57 | - 23.70 | 82.55 | 0.9479 |
| BOKL | 587.07 | 20.49 | 0.00305 | 340.97 | 0.1899 |
| SCBNL | 2738.62 | 6.97 | 51.97 | 424.27 | 0.2234 |
| NABIL | - 1732.37 | - 4.005 | 47.76 | 388.44 | 0.4957 |

*Source: Appendix VI*

From the above table we can analyze the effect of DPS and DPR on MPS. The regression constant 'a$_1$' is 861.42for HBL. Similarly the regression coefficient (b$_1$,) is for DPS is 47.57 and it indicates that with one rupees increase in DPS leads to an average of about Rs 47.57 increase in MPS holding DPS variable constant. There positive relationship between DPS and MPS. The regression coefficient (b$_2$) for DPR is -23.70 which means with one percentage increase in DPR leads to an average amount of Rs 23.70 decrease in MPS. There is negative relationship between MPS and DPR. Multiple coefficient of determination is 0.9497, shows that 94.79% of variation in MPS is explained by the explanatory variable DPS and DPR and rest of 5.21% variation is due to other variables except DPS and DPR, which affects the MPS. The standard error of estimate is 82.55, states that the predictions of this model may vary bye 82.55 rupees.

In case of BOKL, the regression constant is 587.07. The regression coefficient $(b_1)$ for DPS is -20.49 which indicates that with one rupee increase in DPS leads to an average about of Rs 20.49 decrease in MPS. There is negative relationship between DPS and MPS of BOKL. Similarly next regression coefficient $(b_2)$ for DPR is 0.00305 which indicates that with one percentage change in DPR results Rs. 0.00305 increase in MPS of BOKL. There is positive relationship MPS and DPR holding another variable DPS constant. The coefficient of multiple determinations $(R^2)$ is 0.1899, which shows 18.99% venation in MPS is explained by the explanatory variables DPS and DPR and remaining 81.01% variation is due to other variable except DPS and DPR which affect the MPS. Likewise the standard error of estimate is 340.97, which states that the predictions of this model may vary by Rs 340.97.

The regression constant 'a$_1$' is -2738.62 for SCBNL. The regression coefficient $(b_1)$ for DPS .56.97, which indicates that one rupee increase in DPS leads to an average of about 6.97 rupees increase in MPS if another variables holding constant. There is positive relationship between MPS and DPS of SCBNL. Another regression coefficient $(b_2)$ for DPR is 51.97, it means that with one percent increase in DPR leads to an average of about Rs 51.97 increase in MPS holding DPS variable constant. There is positive relationship between MPS and EPS. The value of multiple coefficient of determination $(R^2)$ is 0.2234 which indicates 22.34% variation in MPS is explained bye the explanatory variables DPS and DPR and remaining 77.66% variation is due to other factors except DPS and DPR, which affect the value of MPS. Likewise the standard error of estimate is 424.27, which state that the predictions of this model may vary bye 424.27 rupees.

As table shown above, the regression coefficient ($b_1$) for DPS of NABIL is -4005, which indicates that one rupee increase in DPS leads to an average of about Rs 4.005 decrease in MPS holding the another the another variable DPR as constant. There negative relationship between MPS and DPS since DPS cause decrease in MPS.The regression coefficient ($b_2$) for DPR is 47.76, which indicates that with one percentage increase in DPR leads to an average of about of Rs 47.76 increase in MPS holding the DPS variable constant. There is positive relationship between the DPR and MPS. The value of coefficient of determination ($R^2$) is 0.4957 which shows 49.57% variation in MPS is explained bye the explanatory variables DPS and DPR and rest of the variation 50.43% is due to the other variables except DPS and DPR which affects the value of MPS. Likewise the standard error of estimate is 388.44, which states that the predictions of this model may very by 388.48 rupees.

## 4.5 Testing of Hypothesis:

This point of study is concerned with the test of the relationship between mentioned factors of HBL, , BOKL SCBNL and NABIL In this test, it has been tried to find whether the independent variables DPS (say $X_2$) and EPS ($X_3$) have statistically significant relationship with dependent variable MPS ($X_1$) or not.

**For HBL**

Null Hypothesis $H_O$: $b_1 = b_2 = 0$, that regression equation of $X_1$ on $X_2$ and $X_3$ is not significant. In other words there is no relationship between dependent $X_1$ and two independent variables $X_2$ and $X_3$.

Alternative Hypothesis $H_1$: $b_1$   $b_2$   0, that regression equation of $X_1$, on $X_2$ and $X_3$ in not significant. In other words there is no relationship between dependent $X_1$, and two independent variables $X_2$ and $X_3$.

Test statistic under Ho,

The test statistic is F=$\frac{MSR}{MSE}$ (Appendix V)

The calculated value of F (2,2) is .41.8548. (Appendix v)

The tabulated value of F at 5% level of significance for two tailed test with degree of freedom (2,2) is F $_{0.05}$(2,2) =19.

Decision: Since the calculated value of F is less than the tabulated value of F, it is not significant Hence Ho is accepted which means there is no linear relationship between MPS and two independent variable EPS and DPS of HBL.

**For BOKL**

Null Hypothesis $H_O$: $b_1$ = $b_2$= 0, that regression equation of $X_1$, on $X_2$ and $X_3$ is not significant. In other words there is no relationship between dependent $X_1$, and two independent variables $X_2$ and $X_3$.

Alternative Hypothesis $H_1$: $b_1$   $b_2$   0, that regression equation of $X_1$, on $X_2$ and $X_3$ in not significant. In other words there is no relationship between dependent $X_1$, and two independent variables $X_2$ and $X_3$.

Test statistic under Ho,

Under Ho, The test statistic is F= $\frac{MSR}{MSE}$ (Appendix V)

Calculated value of 5 F (2, 2) at 5% level of significance in 0.4315.

The tabulated value of f at 5% level of Significance for two tail test with d.f. (2, 2) is 19.

Decision: Since the calculated value of F is less than tabulated value of F, it is not significant. Hence Ho is accepted which means there is no linear relationship between MPS and two independent variable DPS and EPS in BOKL.

**For SCBNL**

Null Hypothesis $H_O$: $b_1 = b_2 = 0$, that regression equation of $X_1$, on $X_2$ and $X_3$ is not significant. In other words there is no relationship between dependent $X_1$, and two independent variables $X_2$ and $X_3$.

Alternative Hypothesis $H_1$: $b_1 \quad b_2 \quad 0$, that regression equation of $X_1$, on $X_2$ and $X_3$ in not significant. In other words there is no relationship between dependent $X_1$, and two independent variables $X_2$ and $X_3$.

Test statistic under Ho,

Under Ho, The test statistic is $F = \dfrac{MSR}{MSE}$ (Appendix V)

The calculated value of F(1,2) is 16.4541.( See Appendix V)

The tabulated value of f at 5% level of significance for two tailed test with degree of freedom (2,2) is $F_{0.05}$ (2,2) =19.

Decision: Since the calculated value of F is less than the tabulated value of F, it is not significant Hence Ho is accepted which means there is no linear relationship between MPS and two independent variable DPS and EPS in SCBNL.

**For NABIL**

Null Hypothesis $H_O$: $b_1 = b_2 = 0$, that regression equation of $X_1$ on $X_2$ and $X_3$ is not significant. In other words there is no relationship between dependent $X_1$ and two independent variables $X_2$ and $X_3$.

Alternative Hypothesis $H_1$: $b_1$ $b_2$ 0, that regression equation of $X_1$ on $X_2$ and $X_3$ in not significant. In other words there is no relationship between dependent $X_1$ and two independent variables $X_2$ and $X_3$.

Test statistic under Ho,

Under Ho, The test statistic is $F = \dfrac{MSR}{MSE}$ (Appendix V)

Here, calculated $F (2,2) = 2.9137$ .The tabulated value of F at 5% level of significant for two tailed test with d.. (2,2) is 19.

Decision: Since the calculated value of F is less than tabulated value of F, it is not significant. Hence $H_o$ is accepted. It means that the regression equation of dependent variable on $X_2$ and $X_3$ is not significant. In other words, there is no linear relationship between x1, x2 and x3 in NABIL.

This part of study is concerned with the test of relationship of DPS, MPS and DPR of sample banks. In this test it has been tried to fine whether the independent variables X2 (DPS) and X3 (DPR) have statistically significant relationship with dependent variable x1 (MPS) or not.

**For HBL:**

Null Hypothesis $H_O$: $b_1 = b_2 = 0$, that regression equation of $X_1$, on $X_2$ and $X_3$ is not significant. In other words there is no relationship between dependent $X_1$, and two independent variables $X_2$ and $X_3$.

Alternative Hypothesis $H_1$: $b_1$   $b_2$   0, that regression equation of $X_1$, on $X_2$ and $X_3$ in not significant. In other words there is no relationship between dependent $X_1$, and two independent variables $X_2$ and $X_3$.

Test statistic under Ho,

The test statistic is F= $\frac{MSR}{MSE}$ (Appendix V)

The calculated value of F (2, 2) statistics is 18.219 (See appendix VI)

The tabulated value of F at 5% level of significance for two tailed test with (2, 2) degree of freedom is $F_{0.05}$ (2, 2) =19.

Decision: Since the calculated value of F is less than the tabulated value of F, it is not significant; hence the null hypothesis is accepted. It means there is no linear relationship of MPS on DPS and DPR in Himalayan Bank Limited.

**For BOKL:**

Null Hypothesis $H_O$: $b_1 = b_2 = 0$, that regression equation of $X_1$, on $X_2$ and $X_3$ is not significant. In other words there is no relationship between dependent $X_1$, and two independent variables $X_2$ and $X_3$.

Alternative Hypothesis $H_1$: $b_1$  $b_2$  0, that regression equation of $X_1$, on $X_2$ and $X_3$ in not significant. In other words there is no relationship between dependent $X_1$, and two independent variables $X_2$ and $X_3$.

Test statistic Under Ho,

The test statistic is $F = \dfrac{MSR}{MSE}$ (Appendix V)

The calculated value of F (2,2) is 0.2345 (see appendix VI)

The tabulated value of F at 5% level of significance for two tailed test with degree of freedom (2,2) is $F_{0.05}(2,2) = 19$

Decision: since the calculated value of F is less than the tabulated value of F , if is not significant, hence the null hypothesis is accepted. If means that the regression equation of dependent variable on two independent variables of BOKL is not significant. In other word, there is no linear relationship between the MPS and two independent varia

**For SCBNL:**

Null Hypothesis $H_O$: $b_1 = b_2 = 0$, that regression equation of $X_1$, on $X_2$ and $X_3$ is not significant. In other words there is no relationship between dependent $X_1$, and two independent variables $X_2$ and $X_3$.

Alternative Hypothesis $H_1$: $b_1$  $b_2$  0, that regression equation of $X_1$, on $X_2$ and $X_3$ in not significant. In other words there is no relationship between dependent $X_1$, and two independent variables $X_2$ and $X_3$.

Test statistic under Ho,

The test statistic is $F = \dfrac{MSR}{MSE}$ (Appendix V)

The calculated value of F (2,2) statistics is 0.2877 (See appendix V1)

The tabulated value of F at 5% level of significance for two tailed test with (2,2) degree of freedom is $F_{0.05}$ (2,2) =19

Decision: Since the calculated value of F is less than the tabulated value of F, it is not significance the null hypothesis is accepted. If means the regression equation of X1 on X2 and X3 of SCBNL is not significant. In other word there is no linear relationship.

**For NABIL**

Null Hypothesis $H_O$: $b_1 = b_2 = 0$, that regression equation of $X_1$, on $X_2$ and $X_3$ is not significant. In other words there is no relationship between dependent $X_1$, and two independent variables $X_2$ and $X_3$.

Alternative Hypothesis $H_1$: $b_1 \quad b_2 \quad 0$, that regression equation of $X_1$, on $X_2$ and $X_3$ in not significant. In other words there is no relationship between dependent $X_1$, and two independent variables $X_2$ and $X_3$.

Test Statistic under Ho,

The test statistic is $F = \dfrac{MSR}{MSE}$ (Appendix V)

The calculated value of F (2,2) statistics is 0.9831 ( see appendix vi )

The tabulated value of F at 5% level of Significance for two tailed test with (2,2) degree of freedom is F 0.05 (2,2)= 19.

Decision: Since the calculated value of F is less than the tabulated value of F. If is not significant hence null hypothesis is accepted. It means that the regression equation of X1 on X2 and X3 of NABIL is not Significant. There is no linear relationship MPs in DPS and DPR of NABIL.

## 4.6 Major finding:

The major finding of this research work one summarized in the following numerical order.

➢ The multiple regression analysis of MPS on DPS and DPR shows that the relationship of MPS with DPS is negative in NABIL and BOKL but positive in SCBNL and HBL. Similarly relationship I of MPS with DPR is positive in all four sample banks except negative in HBL. The HBL has the highest coefficient of determination of 94.79% and BOKL has the lowest $R^2$. Both DPS and DPR affect the value of MPS but DPS has more influence on MPS.

➢ From the hypothesis test, it has been found that the regression equation of dependent variable MPS on two independent variables DPS and EPS , is not significant in all sample banks except is significance in HBL.

➢ From the next hypothesis testing, it has also been found that the regression equation of dependant variable MPS on tow independent variables DPS and DPR in not significant in all sample bank.

➢ The bank of the financial knowledge and the market inefficiency ahs affected the market price of share in all the firms. But it is theoretically argued.

➢ MPS of each sample commercial banks has fluctuating nature has indicated by the standard deviation of respective banks. SCBNL has the lowest coefficient of

variations, indicated that less fluctuation in the market price of share where as BOKL has the highest coefficient of variation and it has the highest fluctuating nature in NPS.

➢ On the basis of average divided payout ratio SCBNL is paying higher percentage of it  earning as divided and its coefficient of variation is only 3.56% HBL has comparatively lower divided payout ratio of 19.52% than other sample banks and also it has the highest degree of coefficient of variation.

➢ The relationship between MPS and DPS of the sample banks shows by the coefficient 'b' which is positive in all sample banks except BOKL which is negative. Correlation coefficient and coefficient determination is highest in HBL. All the calculated value of 't' it lower then the tabulated value at 5% level of significance. BOKL has negative relationship between its DPS and MPS.

➢ The relationship between EPS and DPS of sample banks shows by the coefficient of regression 'b' which positive in all sample banks except in BOKL. NABIL has the highest degree of positive correlation coefficient between its DPS and MPS. It has also the highest coefficient of determination where as BOKL has negative correlation coefficient has lowest level of coefficient of determination. All banks calculated 't' value is less then the tabulated value at 5% level of significance the divided decision is very much influence by the earning position of the company.

➢ Divided of the sample commercial banks in an average shows that there is no regularity and consistency in the divided payment. SCBNL has the highest average DPS among the sample commercial banks. SCBNL has maintained approx table divided per share policy. It has indicated the need of divided policy as well as the need of proper analysis of banks.

➢ Most of the Nepalese firm from the very past have no profit planning and investment strategy, which have imbalanced the whole position of the firms. It means there is not consistency even in the earning.

➢ The MPS is affected by the financial position and the financial indicators and the divided paid by the firms, in this regard the MPS of the sample firm is seemed to be indicated. It denoted Nepalese investors are not treated fairly. The MPS of various companies one still affected by the whims and roamers

The relationship between MPS and DPR of sample banks shows by the regression coefficient 'b' which is positive in NABIL, SCBNL and HBL but negative in BOKL. Its shows negative relationship between MPS and DPR in BOKL. The coefficient of determination and correlation coefficient is highest in NABIL. BOKL has negative correlation coefficient between MPS and DPR.

# CAPTER - V
## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Introduction:

This chapter focuses on summering the study held with the conclusions and some recommendations on the basis of findings. There major aspects of the study are discussed in this chapter. At the beginning summary and conclusions have been drawn up based on findings. It also provides chess of suggestions to the concerned authorities as well as practitioners and academicians. The recommendation presented in the last par of the study.

### 5.2 Summary:

Nepal is an under developed country having low per capita income and commerce is deep rooted in the people and most of them are unaware of modern from of commerce. But after restoration of democracy in 1990 a Universal echo of economic policy .As a result, many more companies are established in different sectors whose contribution in economy has great significance .These commercial banks mainly concentrating their business in foreign trade and in financing agricultural and service sectors.

Dividends one payment 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 reinvested in the firm. Dividend payment to shareholders is taken as best in such condition because shareholders have investment opportunities elsewhere. In the changed context of encouraging secondary maculate, it is time to study influences of other factors on

dividend and implication of dividend on macula price of sheers. This study has tired to cover some such factors. However it is not enough due to some limitation. Among many commercial banks only four commercial banks as selected for this study propose. The main objectives of the study are to find out the practices of dividend policy of simple banks and its effect on stock price. For thus propose different description, financial and statistics analyses have been done using various methodologies.

The theoretical statement of this study is to study the impact of dividend policy on market price of share. Therefore it is conducted that more or less the dividend policy depends on the earning per share of a company, the earning and dividend per share having the positive relation may also impact on the market price of share. This paper attempts to analyze the dividend policy and practices of Nepalese commercial banks. The study is based on secondary date for a period of 2003/04 to 2007/08. To analyze the dividend payment practices of banks different financial ratios have been calculated and interpreted.

In other to assess the impact of dividend on MPS, available information from different sectors were reviewed and analyses simple and multiple regression analysis have been done to make the research more reliable, At last testing of hypothesis has been done from analysis, it is found that banks one paying regular dividend but there is no consistency in dividend distribution. The research shows that none of the banks have well defined and appropriate dividend policy. They do not seem to follow the optimum dividend policy of paying regular dividend as per the shareholders expectations. It might cause uncertainty among shareholders. A change in dividend per share and payout ratio affects the share prices differently in the different banks.

The market price of share is affected by the financial position and dividend paid by the firms. In this regards, the MPS of sample bank is seem to be fluctuated. It denotes Nepalese investors are not treated fairly. The lack of financial knowledge and the market inefficiency has affected the market price of share in alls ample.

Three different simple regression equations are formed to assess the impact of EPS, and DPS on MPS the next multiple regression is of MPS on DPS and DPR both multiple regression equation are set for all sample banks and analyzed later on, f statistic and t statistic have also been tested.

## 5.3 Conclusions:

From the study held by the researcher, it can be concludes that there is no any consistency in the dividend policy of the sample banks. The results of assumption of dividend and some time accept the theoretical assumption of dividend and sometime do not companies used to make dividend decision haphazardly.

There is lack of rules and regulations that bind the 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 two arts dividend. Research has found the majority of the Nepalese firm gives first priority to 'earnings' to get in to decision of dividend ,the next priority goes to the cash availability and third priority is given to 'past dividend. After all concern about maintaining or increasing the stock price 'priority also influences the dividend policy of the firm in Nepal.

Shareholders in Nepal are not conscious. Talking the advantage of unconscious shareholders' the company management does not show the commitment promised in prospect while raising capital. Promoter investors mentioning to pay attractive dividends, when company makes profit however in reality, most of the companies are dividend from their statement as promised in prospectus of the company.

Among sample banks SCBNL is a strong company with the financial market reputation, if the results are compared to other sample banks BOKL, NABIL and HBL the EPS affects DPS but EPS is less concerned with MPS therefore the MPS is more or less dependent with DPS in the efficient capital market.

## 5.4 Recommendations:

The study is concerned with dividend policy and stock price, it may be appropriate to provide a package of suggestion in the light of finding however these recommendations may also some repercussion and there is no doubt of these measures to improve the existing conditions and these recommendations also made for the further applications of dividends policy to have strong MPS in capital market these recommendations are explained below. The suggestion will be certainly proved as a milestone in order to correct the existing situation. The suggestions are as follows.

➢ The DPS analysis shows that there is not any consistency of dividend policy in all the sample banks except SCBNL therefore these firms need to create some how paying reasonable DPS every year, it is because consistency in dividends and higher DPS creates positive attitude of shareholders to want company, which consequently help to increase the market value of share.

➢ The government should encourage for the establishment of organization to promote and to protect activities in favor of investors. There are not any other organizations fully devoted to protect investor interest.

➢ Although the payout ratio of the sample banks is fluting from year to year dear is no rational approach indicating the payout all the firms should analyze the eternal rate of return and the cost of capital in deciding DPR which help to maximize the shareholder wealth.

➢ EPS of all banks are in fluctuating trend therefore the banks should search the fruitful investment opportunities plan for profit maximizing.

➢ Banks should have long term vision regarding earnings and dividend payment that helps to cope with challenging competitive situation of present world various internal and external factors should be consider before talking dividend decision.

➢ There is influence of DPS and EPS to market prize of share which is found by analyzing simple regression there for to improve the MPS Bank are suggested to increase and also other variables such as EPS and DPS which of affect the MPS The psychological value of the shareholders is also valued as the assets of    the firm.

➢ It is necessary to enact legal rules that bind the companies to pay divided. The legal rules for the treatment of dividend is most for the smooth growth of the enterprises as well as growth of national economy for these GON, NEPSE, SEBO/N and other concerns party should work together.

➢ The banks should also consider the liquidity position before making a dividend decision because cash availability plays vital role in the business.

➢ Share holder should be given option to choose between stuck dividend and cash dividend instead of declaring stuck or cash dividend arbitrary for this dividend retardation should be purpose to the annual general meeting of share holder for approval.

➢ Each and every company should provide the information regarding there activities and performance so that investor can analyze the situation and financial position of company and invest there money in the best company.

➢ The banks than financial indicators also should consider those factors there that indirectly affect the dividend decision and market price of share.

➢ All the financial institutions should clearly define the dividend policy.

➢ The right information, activities and policies should be transparent for the share holder.

➢ Formulation of dividend policy is to make clear guidance for how to follow dividend distribution strategy. The policy should determine whether the company is going to adopt stable dividend policy, constant payout ratio or how regular plus extra dividend.

➢ The practices of dividend payment should adopt by the companies. In many cases, a small amount of dividend is paid without considering the risk free rate of return. The financial institution should consider the shareholders expectation as far as possible.

➢ At last, it is recommended to the government to make a proper business environment and maintain political stability because instability has affected the financial indicators of the sample banks. And also the current situation of country has to be solved at pacific settlement

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# Appendix – I

**DPS of the Sample Banks**

| Year | HBL | BOKL | SCBNL | NABIL |
|------|------|------|-------|-------|
| 2005/06 | 27.50 | 0 | 100 | 40 |
| 2006/07 | 25 | 10 | 100 | 30 |
| 2007/08 | 1.32 | 5 | 110 | 50 |
| 2008/09 | 0 | 10 | 110 | 65 |
| 2009/10 | 11.52 | 15 | 110 | 70 |
| Mean | 13.06 | 8 | 106 | 51 |
| S.D. | 11.51 | 5.09 | 4.90 | 14.97 |
| C.V. | 8.81% | 64% | 4.62% | 29% |

*Source: Annual Reports of sample Banks.*

$$\text{Mean } (\overline{X}) = \frac{\sum X}{n}$$

$$\text{C.V.} = \frac{\text{S.D.}}{\overline{X}}$$

$$\text{S.D.} = \sqrt{\frac{\sum X^2}{n} - \left(\frac{\sum X}{n}\right)^2}$$

# Appendix – II

**1) HBL**

**Simple Regression and Correlation Analysis between DPS and MPS**

| Year | X | Y | XY | $X^2$ | $Y^2$ |
|------|------|------|---------|---------|---------|
| 2005/06 | 27.50 | 1500 | 41250 | 756.25 | 2250000 |
| 2006/07 | 25 | 1000 | 25000 | 625 | 1000000 |
| 2007/08 | 1.32 | 836 | 1103.52 | 1.7424 | 698896 |
| 2008/09 | 0 | 840 | 0 | 0 | 705600 |
| 2009/10 | 11.52 | 925 | 10656 | 132.71 | 855625 |

$n = 5$ $\qquad \sum Y = 5101 \qquad \sum X^2 = 1513.96$

$\sum X = 63.34 \qquad \sum XY = 78009.52 \qquad \sum Y^2 = 5510121$

Let,
Value of X represents dividend per share
Value of Y represents market price of share

Mean, $\overline{X} = 13.068, \overline{Y} = 1020.20$

a) Coefficient of Correlation $(r) = \dfrac{n\sum XY - \sum X.\sum Y}{\sqrt{n.\sum X^2 - \left(\sum X\right)^2}\sqrt{n.\sum Y^2 - \left(\sum Y\right)^2}} = 0.8425$

Coefficient of Determination $(r^2) = 0.7098$

Standard Error (S.E.) $= \dfrac{1-r^2}{\sqrt{n}} = 0.1298$

Probable Error (P.E.) $= 0.6745 \times \dfrac{1-r^2}{\sqrt{n}} = 0.0876$

b) Regression Equation of Y on X is
$$Y = a + bX$$
Where,

a= Regression Constant
b= Regression Coefficient (slope of the regression line)

According to the principle of least square method for forecasting the numerical constants a and b are given by,
$$\sum Y = na + b\sum X$$
$$\sum XY = a\sum X + b\sum X^2$$
Solving the above equations we get,
$$b = \dfrac{n\sum XY - \sum X\sum Y}{n\sum X^2 - \left(\sum X\right)^2} = 17.19$$

$a = \overline{Y} - b\overline{X} = 795.56$

Standard Error of Estimate (SEE) $= \sqrt{\dfrac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}} = 192.34$

Standard Error of Regression Coefficient $(S_b) = \dfrac{SEE}{\sqrt{\sum\left(X - \overline{X}\right)^2}} = 7.47$

T-value $(t) = \dfrac{b}{S_b} = 2.30$

**2) BOKL**
**Simple Regression and Correlation Analysis between DPS and MPS**

| Year | X | Y | XY | X² | Y² |
|------|-----|-----|------|-----|--------|
| 2005/06 | 0 | 850 | 0 | 0 | 722500 |
| 2006/07 | 10 | 254 | 2540 | 100 | 64516 |
| 2007/08 | 5 | 198 | 990 | 25 | 39204 |

114

| 2008/09 | 10 | 295 | 2950 | 100 | 87025 |
| 2009/10 | 15 | 519 | 7785 | 225 | 269361 |

$n = 5$ $\qquad \sum Y = 2116$ $\qquad \sum X^2 = 450$

$\sum X = 40$ $\qquad \sum XY = 14265$ $\qquad \sum Y^2 = 1182606$

Let,
Value of X represents dividend per share
Value of Y represents market price of share
Mean, $\overline{X} = 8, \overline{Y} = 423.20$

a) Coefficient of Correlation$(r) = \dfrac{n\sum XY - \sum X.\sum Y}{\sqrt{n.\sum X^2 - \left(\sum X\right)^2}\sqrt{n.\sum Y^2 - \left(\sum Y\right)^2}} = -0.4359$

Coefficient of Determination $(r^2) = 0.190$

Standard Error (S.E.) $= \dfrac{1 - r^2}{\sqrt{n}} = 0.3622$

Probable Error (P.E.) $= 0.6745 \times \dfrac{1 - r^2}{\sqrt{n}} = 0.2443$

b) Regression Equation of Y on X is
$\qquad$ Y = a + bX
$\qquad\qquad$ Where,
$\qquad\qquad\qquad$ a= Regression Constant
$\qquad\qquad\qquad$ b= Regression Coefficient (slope of the regression line)

According to the principle of least square method for forecasting the numerical constants a and b are given by,
$\qquad \sum Y = na + b\sum X$
$\qquad \sum XY = a\sum X + b\sum X^2$
Solving the above equations we get,
$$b = \frac{n\sum XY - \sum X\sum Y}{n\sum X^2 - \left(\sum X\right)^2} = -20.48$$
$a = \overline{Y} - b\overline{X} = 587.04$

Standard Error of Estimate (SEE) $= \sqrt{\dfrac{\sum Y^2 - a\sum Y - b\sum XY}{n - 2}} = 278.43$

Standard Error of Regression Coefficient $(S_b) = \dfrac{SEE}{\sqrt{\sum\left(X - \overline{X}\right)^2}} = 24.42$

T-value $(t) = \dfrac{b}{S_b} = -0.8387$

**3) SCBNL**
### Simple Regression and Correlation Analysis between DPS and MPS

| Year | X | Y | XY | $X^2$ | $Y^2$ |
|------|-----|------|--------|-------|---------|
| 2005/06 | 100 | 2144 | 214400 | 10000 | 4596736 |
| 2006/07 | 100 | 1550 | 155000 | 10000 | 2402500 |
| 2007/08 | 110 | 1640 | 180400 | 12100 | 2689600 |
| 2008/09 | 110 | 1745 | 191950 | 12100 | 3045025 |
| 2009/10 | 110 | 2345 | 257950 | 12100 | 5499025 |

$n = 5$ $\qquad \sum Y = 9424 \qquad \sum X^2 = 56300$

$\sum X = 530 \qquad \sum XY = 999700 \qquad \sum Y^2 = 18232886$

Let,

Value of X represents dividend per share

Value of Y represents market price of share

Mean, $\overline{X} = 106, \overline{Y} = 1884.80$

a) Coefficient of Correlation $(r) = \dfrac{n\sum XY - \sum X.\sum Y}{\sqrt{n.\sum X^2 - \left(\sum X\right)^2}\sqrt{n.\sum Y^2 - \left(\sum Y\right)^2}} = 0.10$

Coefficient of Determination $(r^2) = 0.010$

Standard Error (S.E.) $= \dfrac{1-r^2}{\sqrt{n}} = 0.4427$

Probable Error (P.E.) $= 0.6745 \times \dfrac{1-r^2}{\sqrt{n}} = 0.2986$

b) Regression Equation of Y on X is

$\qquad$ Y = a + bX

$\qquad\qquad$ Where,

$\qquad\qquad\qquad$ a= Regression Constant

$\qquad\qquad\qquad$ b= Regression Coefficient (slope of the regression line)

According to the principle of least square method for forecasting the numerical constants a and b are given by,

$\qquad \sum Y = na + b\sum X$

$\qquad \sum XY = a\sum X + b\sum X^2$

Solving the above equations we get,

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} = 6.30$$

$$a = \overline{Y} - b\overline{X} = 1217$$

$$\text{Standard Error of Estimate (SEE)} = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}} = 394.025$$

$$\text{Standard Error of Regression Coefficient (S}_b) = \frac{\text{SEE}}{\sqrt{\sum\left(X - \overline{X}\right)^2}} = 35.97$$

$$\text{T-value (t)} = \frac{b}{S_b} = 0.1617$$

## 4) NABIL
### Simple Regression and Correlation Analysis between DPS and MPS

| Year | X | Y | XY | $X^2$ | $Y^2$ |
|------|-----|------|--------|-------|---------|
| 2005/06 | 40 | 1500 | 60000 | 1600 | 2250000 |
| 2006/07 | 30 | 735 | 21000 | 900 | 490000 |
| 2007/08 | 50 | 735 | 37000 | 2500 | 547600 |
| 2008/09 | 65 | 1000 | 65000 | 4225 | 1000000 |
| 2009/10 | 70 | 1505 | 105350 | 4900 | 2265025 |

$n = 5$ $\qquad \sum Y = 5445 \qquad \sum X^2 = 14125$

$\sum X = 255 \qquad \sum XY = 288350 \qquad \sum Y^2 = 6552625$

Let,

Value of X represents dividend per share

Value of Y represents market price of share

Mean, $\overline{X} = 51, \overline{Y} = 1089$

$$\text{a) Coefficient of Correlation(r)} = \frac{n\sum XY - \sum X.\sum Y}{\sqrt{n.\sum X^2 - \left(\sum X\right)^2}\sqrt{n.\sum Y^2 - \left(\sum Y\right)^2}} = 0.4034$$

Coefficient of Determination $(r^2) = 0.1627$

$$\text{Standard Error (S.E.)} = \frac{1 - r^2}{\sqrt{n}} = 0.3745$$

$$\text{Probable Error (P.E.)} = 0.6745 \times \frac{1 - r^2}{\sqrt{n}} = 0.2526$$

b) Regression Equation of Y on X is

$\qquad Y = a + bX$

$\qquad\qquad$ Where,

a= Regression Constant
b= Regression Coefficient (slope of the regression line)

According to the principle of least square method for forecasting the numerical constants a and b are given by,

$$\sum Y = na + b\sum X$$

$$\sum XY = a\sum X + b\sum X^2$$

Solving the above equations we get,

$$b = \frac{n\sum XY - \sum X\sum Y}{n\sum X^2 - (\sum X)^2} = 9.514$$

$$a = \overline{Y} - b\overline{X} = 603.79$$

Standard Error of Estimate (SEE) $= \sqrt{\dfrac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}} = 416.98$

Standard Error of Regression Coefficient $(S_b) = \dfrac{SEE}{\sqrt{\sum (X - \overline{X})^2}} = 12.46$

T-value (t) $= \dfrac{b}{S_b} = 0.7636$

# Appendix – III

**1) HBL**

**Simple Regression and Correlation Analysis between DPR and MPS**

| Year | X | Y | XY | $X^2$ | $Y^2$ |
|------|------|------|----------|---------|---------|
| 2005/06 | 29.39 | 1500 | 44085 | 63.77 | 2250000 |
| 2006/07 | 41.39 | 1000 | 41390 | 1713.13 | 1000000 |
| 2007/08 | 2.67 | 836 | 2232.12 | 7.13 | 698896 |
| 2008/09 | 0 | 840 | 0 | 0 | 705600 |
| 2009/10 | 24.17 | 925 | 22357.25 | 584.19 | 855625 |

$n = 5$ $\qquad \sum Y = 5101$ $\qquad \sum X^2 = 3168.22$

$\sum X = 97.62$ $\qquad \sum XY = 110064.37$ $\qquad \sum Y^2 = 5510121$

Let,

Value of X represents dividend payout ratio (%)

Value of Y represents market price of share

Mean, $\overline{X} = 19.52, \overline{Y} = 1020.20$

a) Coefficient of Correlation(r) $= \dfrac{n\sum XY - \sum X.\sum Y}{\sqrt{n.\sum X^2 - (\sum X)^2}\sqrt{n.\sum Y^2 - (\sum Y)^2}} = 0.53$

Coefficient of Determination $(r^2) = 0.2809$

Standard Error (S.E.) $= \dfrac{1-r^2}{\sqrt{n}} = 0.3216$

Probable Error (P.E.) $= 0.6745 \times \dfrac{1-r^2}{\sqrt{n}} = 0.2169$

b) Regression Equation of Y on X is

$\qquad$ Y = a + bX

$\qquad\qquad$ Where,

$\qquad\qquad\qquad$ a= Regression Constant

$\qquad\qquad\qquad$ b= Regression Coefficient (slope of the regression line)

According to the principle of least square method for forecasting the numerical constants a and b are given by,

$$\sum Y = na + b\sum X$$
$$\sum XY = a\sum X + b\sum X^2$$

Solving the above equations we get,

$$b = \dfrac{n\sum XY - \sum X\sum Y}{n\sum X^2 - \left(\sum X\right)^2} = 8.30$$

$a = \overline{Y} - b\overline{X} = 858.18$

Standard Error of Estimate (SEE) $= \sqrt{\dfrac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}} = 270.19$

Standard Error of Regression Coefficient $(S_b) = \dfrac{SEE}{\sqrt{\sum\left(X - \overline{X}\right)^2}} = 7.60$

T-value (t) $= \dfrac{b}{S_b} = 1.092$

## 2) BOKL
### Simple Regression and Correlation Analysis between DPR and MPS

| Year | X | Y | XY | $X^2$ | $Y^2$ |
|------|------|-----|----------|---------|--------|
| 2005/06 | 0 | 850 | 0 | 0 | 720500 |
| 2006/07 | 5 | 254 | 1270 | 25 | 64516 |
| 2007/08 | 28.22 | 198 | 5587.56 | 796.37 | 39204 |
| 2008/09 | 36.36 | 295 | 10726.20 | 1322.05 | 87025 |
| 2009/10 | 49.83 | 519 | 25861.77 | 2483.03 | 269361 |

$n = 5$ $\qquad\qquad \sum Y = 2116 \qquad\qquad \sum X^2 = 4626.45$

$\sum X = 119.41 \qquad\qquad \sum XY = 43445.53 \qquad\qquad \sum Y^2 = 1182606$

Let,

Value of X represents dividend payout ratio (%)
Value of Y represents market price of share

Mean, $\overline{X} = 106, \overline{Y} = 1884.80$

a) Coefficient of Correlation(r) $= \dfrac{n\sum XY - \sum X . \sum Y}{\sqrt{n.\sum X^2 - \left(\sum X\right)^2}\sqrt{n.\sum Y^2 - \left(\sum Y\right)^2}} = -0.31$

Coefficient of Determination ($r^2$) $= 0.0961$

Standard Error (S.E.) $= \dfrac{1-r^2}{\sqrt{n}} = 0.4042$

Probable Error (P.E.) $= 0.6745 \times \dfrac{1-r^2}{\sqrt{n}} = 0.2726$

b) Regression Equation of Y on X is

       $Y = a + bX$

          Where,

               a= Regression Constant

               b= Regression Coefficient (slope of the regression line)

According to the principle of least square method for forecasting the numerical constants a and b are given by,

      $\sum Y = na + b\sum X$

      $\sum XY = a\sum X + b\sum X^2$

Solving the above equations we get,

      $b = \dfrac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} = -3.99$

$a = \overline{Y} - b\overline{X} = 518.48$

Standard Error of Estimate (SEE) $= \sqrt{\dfrac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}} = 293.74$

Standard Error of Regression Coefficient ($S_b$) $= \dfrac{SEE}{\sqrt{\sum \left(X - \overline{X}\right)^2}} = 6.97$

T-value (t) $= \dfrac{b}{S_b} = -0.5724$

3) **SCBNL**

      **Simple Regression and Correlation Analysis between DPR and MPS**

| Year | X | Y | XY | $X^2$ | $Y^2$ |
|------|------|------|-----------|---------|---------|
| 2005/06 | 78.81 | 2144 | 168968.64 | 6211.02 | 4596736 |
| 2006/07 | 70.86 | 1550 | 109833 | 5021.14 | 2402500 |
| 2007/08 | 73.68 | 1640 | 120835.20 | 5428.74 | 2689600 |
| 2008/09 | 76.63 | 1745 | 133719.35 | 5872.16 | 3045025 |
| 2009/10 | 73.82 | 2345 | 173107.90 | 5449.39 | 5499025 |

$n = 5$ $\qquad \sum Y = 9424 \qquad \sum X^2 = 27982.45$

$\sum X = 373.80 \qquad \sum XY = 706464.09 \qquad \sum Y^2 = 18232886$

Let,
Value of X represents dividend payout ratio (%)
Value of Y represents market price of share

Mean, $\overline{X} = 74.76, \overline{Y} = 1884.80$

a) Coefficient of Correlation$(r) = \dfrac{n\sum XY - \sum X.\sum Y}{\sqrt{n.\sum X^2 - \left(\sum X\right)^2}\sqrt{n.\sum Y^2 - \left(\sum Y\right)^2}} = 0.46$

Coefficient of Determination $(r^2) = 0.2116$

Standard Error (S.E.) $= \dfrac{1 - r^2}{\sqrt{n}} = 0.3526$

Probable Error (P.E.) $= 0.6745 \times \dfrac{1 - r^2}{\sqrt{n}} = 0.2378$

b) Regression Equation of Y on X is

$\qquad Y = a + bX$

$\qquad\qquad$ Where,

$\qquad\qquad$ a= Regression Constant

$\qquad\qquad\qquad$ b= Regression Coefficient (slope of the regression line)

According to the principle of least square method for forecasting the numerical constants a and b are given by,

$\qquad \sum Y = na + b\sum X$

$\qquad \sum XY = a\sum X + b\sum X^2$

Solving the above equations we get,

$\qquad\qquad b = \dfrac{n\sum XY - \sum X\sum Y}{n\sum X^2 - \left(\sum X\right)^2} = 51.82$

$a = \overline{Y} - b\overline{X} = -1989.26$

Standard Error of Estimate (SEE) $= \sqrt{\dfrac{\sum Y^2 - a\sum Y - b\sum XY}{n - 2}} = 351.52$

Standard Error of Regression Coefficient $(S_b) = \dfrac{SEE}{\sqrt{\sum(X - \overline{X})^2}} = 57.67$

T-value $(t) = \dfrac{b}{S_b} = 0.8986$

## 4) NABIL

### Simple Regression and Correlation Analysis between DPR and MPS

| Year | X | Y | XY | $X^2$ | $Y^2$ |
|------|------|------|-----------|---------|---------|
| 2005/06 | 67.49 | 1500 | 101235 | 4554.90 | 2250000 |
| 2006/07 | 54.30 | 735 | 39910.50 | 2948.49 | 540225 |
| 2007/08 | 59.06 | 735 | 43409.10 | 3488.08 | 540225 |
| 2008/09 | 70.19 | 1000 | 70190 | 4926.64 | 1000000 |
| 2009/10 | 66.36 | 1505 | 99871.80 | 4403.65 | 2265025 |

$n = 5$ $\qquad \sum Y = 5475 \qquad \sum X^2 = 20321.76$

$\sum X = 317.40 \qquad \sum XY = 354616.40 \qquad \sum Y^2 = 6595475$

Let,

Value of X represents dividend payout ratio (%)

Value of Y represents market price of share

Mean, $\overline{X} = 63.48, \overline{Y} = 1095$

a) Coefficient of Correlation $(r) = \dfrac{n\sum XY - \sum X . \sum Y}{\sqrt{n.\sum X^2 - (\sum X)^2} \sqrt{n.\sum Y^2 - (\sum Y)^2}} = 0.69$

Coefficient of Determination $(r^2) = 0.4761$

Standard Error $(S.E.) = \dfrac{1 - r^2}{\sqrt{n}} = 0.2343$

Probable Error $(P.E.) = 0.6745 \times \dfrac{1 - r^2}{\sqrt{n}} = 0.1580$

b) Regression Equation of Y on X is

$\qquad Y = a + bX$

$\qquad\qquad$ Where,

$\qquad\qquad\qquad$ a= Regression Constant

$\qquad\qquad\qquad$ b= Regression Coefficient (slope of the regression line)

According to the principle of least square method for forecasting the numerical constants a and b are given by,

$\qquad \sum Y = na + b\sum X$

$\qquad \sum XY = a\sum X + b\sum X^2$

Solving the above equations we get,

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} = 40.78$$

$$a = \overline{Y} - b\overline{X} = -1493.71$$

$$\text{Standard Error of Estimate (SEE)} = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}} = 322.63$$

$$\text{Standard Error of Regression Coefficient (S}_b) = \frac{\text{SEE}}{\sqrt{\sum\left(X - \overline{X}\right)^2}} = 24.52$$

$$\text{T-value (t)} = \frac{b}{S_b} = 1.6631$$

# Appendix - IV

**1) HBL**

**Simple Regression and Correlation Analysis between EPS and DPS**

| Year | X | Y | XY | $X^2$ | $Y^2$ |
|------|------|------|--------|---------|--------|
| 2005/06 | 93.56 | 27.50 | 257317 | 8755.34 | 756.25 |
| 2006/07 | 60.26 | 25 | 1506.50 | 3631.27 | 625 |
| 2007/08 | 49.45 | 1.32 | 62.274 | 2445.30 | 1.74 |
| 2008/09 | 49.05 | 0 | 0 | 2405.90 | 0 |
| 2009/10 | 47.91 | 11.52 | 554.80 | 2295.37 | 134.09 |

$n = 5$ $\qquad \sum Y = 65.40 \qquad \sum X^2 = 19533.18$

$\sum X = 300.24 \qquad \sum XY = 4699.75 \qquad \sum Y^2 = 1517.08$

Let,

Value of X represents earning per share

Value of Y represents dividend per share

Mean, $\overline{X} = 60.05, \overline{Y} = 13.06$

a) Coefficient of Correlation(r) $= \dfrac{n\sum XY - \sum X.\sum Y}{\sqrt{n.\sum X^2 - \left(\sum X\right)^2}\sqrt{n.\sum Y^2 - \left(\sum Y\right)^2}} = 0.7743$

Coefficient of Determination $(r^2) = 0.5995$

b) Regression Equation of Y on X is

$\qquad Y = a + bX$

$\qquad\qquad$ Where,

$\qquad\qquad\qquad$ a= Regression Constant

$\qquad\qquad\qquad$ b= Regression Coefficient (slope of the regression line)

According to the principle of least square method for forecasting the numerical constants a and b are given by,

$$\sum Y = na + b\sum X$$
$$\sum XY = a\sum X + b\sum X^2$$

Solving the above equations we get,
$$b = \frac{n\sum XY - \sum X\sum Y}{n\sum X^2 - \left(\sum X\right)^2} = 0.5136$$

$$a = \overline{Y} - b\overline{X} = -17.78$$

Standard Error of Estimate (SEE) $= \sqrt{\dfrac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}} = 9.42$

Standard Error of Regression Coefficient $(S_b) = \dfrac{SEE}{\sqrt{\sum\left(X - \overline{X}\right)^2}} = 0.2429$

T-value (t) $= \dfrac{b}{S_b} = 2.114$

## 2) BOKL
### Simple Regression and Correlation Analysis between EPS and DPS

| Year | X | Y | XY | $X^2$ | $Y^2$ |
|------|------|-----|--------|--------|------|
| 2005/06 | 27.97 | 0 | 0 | 782.32 | 0 |
| 2006/07 | 2 | 10 | 20 | 4 | 100 |
| 2007/08 | 17.72 | 5 | 88.6 | 313.99 | 25 |
| 2008/09 | 27.50 | 10 | 275 | 756.25 | 100 |
| 2009/10 | 30.10 | 15 | 451.50 | 906.01 | 225 |

$n = 5$ $\qquad \sum Y = 40 \qquad \sum X^2 = 2762.57$

$\sum X = 105.29 \qquad \sum XY = 835.10 \qquad \sum Y^2 = 450$

Let,
Value of X represents earning per share
Value of Y represents dividend per share

Mean, $\overline{X} = 21.06, \overline{Y} = 8$

a) Coefficient of Correlation(r) $= \dfrac{n\sum XY - \sum X.\sum Y}{\sqrt{n.\sum X^2 - \left(\sum X\right)^2}\sqrt{n.\sum Y^2 - \left(\sum Y\right)^2}} = -0.0271$

Coefficient of Determination $(r^2) = 0.00073$

b) Regression Equation of Y on X is
$\qquad Y = a + bX$
$\qquad\qquad$ Where,

<div align="center">
a= Regression Constant<br>
b= Regression Coefficient (slope of the regression line)
</div>

According to the principle of least square method for forecasting the numerical constants a and b are given by,

$$\sum Y = na + b\sum X$$
$$\sum XY = a\sum X + b\sum X^2$$

Solving the above equations we get,

$$b = \frac{n\sum XY - \sum X\sum Y}{n\sum X^2 - \left(\sum X\right)^2} = -0.0132$$

$$a = \overline{Y} - b\overline{X} = 8.28$$

$$\text{Standard Error of Estimate (SEE)} = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}} = 6.58$$

$$\text{Standard Error of Regression Coefficient (S}_b) = \frac{SEE}{\sqrt{\sum\left(X - \overline{X}\right)^2}} = 02818$$

$$\text{T-value (t)} = \frac{b}{S_b} = -0.0468$$

## 3) SCBNL
### Simple Regression and Correlation Analysis between EPS and DPS

| Year | X | Y | XY | $X^2$ | $Y^2$ |
|------|------|-----|----------|----------|-------|
| 2005/06 | 126.88 | 100 | 12688 | 16098.53 | 10000 |
| 2006/07 | 141.13 | 100 | 14113 | 19917.68 | 10000 |
| 2007/08 | 149.30 | 110 | 16423 | 22290.49 | 12100 |
| 2008/09 | 143.55 | 110 | 15790.50 | 20606.60 | 12100 |
| 2009/10 | 135.18 | 110 | 14869.80 | 18273.63 | 12100 |

$n = 5$ $\qquad \sum Y = 530 \qquad \sum X^2 = 97186.93$

$\sum X = 696.04 \qquad \sum XY = 73884.30 \qquad \sum Y^2 = 56300$

Let,
Value of X represents earning per share
Value of Y represents dividend per share

Mean, $\overline{X} = 139.21, \overline{Y} = 106$

a) Coefficient of Correlation(r) $= \dfrac{n\sum XY - \sum X.\sum Y}{\sqrt{n.\sum X^2 - \left(\sum X\right)^2}\sqrt{n.\sum Y^2 - \left(\sum Y\right)^2}} = 0.56$

Coefficient of Determination $(r^2) = 0.3136$

b) Regression Equation of Y on X is

$\qquad$ Y = a + bX

$\qquad\qquad$ Where,

$\qquad\qquad\qquad$ a= Regression Constant

$\qquad\qquad\qquad$ b= Regression Coefficient (slope of the regression line)

According to the principle of least square method for forecasting the numerical constants a and b are given by,

$$\sum Y = na + b\sum X$$
$$\sum XY = a\sum X + b\sum X^2$$

Solving the above equations we get,

$$b = \frac{n\sum XY - \sum X\sum Y}{n\sum X^2 - \left(\sum X\right)^2} = 0.36$$

$$a = \overline{Y} - b\overline{X} = 55.88$$

Standard Error of Estimate (SEE) $= \sqrt{\dfrac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}} = 5.33$

Standard Error of Regression Coefficient $(S_b) = \dfrac{SEE}{\sqrt{\sum\left(X - \overline{X}\right)^2}} = 0.3116$

## 4) NABIL
### Simple Regression and Correlation Analysis between EPS and DPS

| Year | X | Y | XY | $X^2$ | $Y^2$ |
|------|------|-----|---------|----------|------|
| 2005/06 | 82.81 | 40 | 3312.40 | 6857.50 | 1600 |
| 2006/07 | 55.25 | 30 | 1657.50 | 3052.56 | 900 |
| 2007/08 | 84.66 | 50 | 4233 | 7167.32 | 2500 |
| 2008/09 | 92.61 | 65 | 6019.65 | 8576.61 | 4225 |
| 2009/10 | 105.49 | 70 | 7684.30 | 11128.15 | 4900 |

n = 5 $\qquad\qquad \sum Y = 255 \qquad\qquad \sum X^2 = 36782.14$

$\sum X = 420.82 \qquad \sum XY = 22606.85 \qquad \sum Y^2 = 14125$

Let,

Value of X represents earning per share

Value of Y represents dividend per share

Mean, $\overline{X} = 84.16, \overline{Y} = 51$

a) Coefficient of Correlation(r) $= \dfrac{n\sum XY - \sum X . \sum Y}{\sqrt{n.\sum X^2 - \left(\sum X\right)^2}\sqrt{n.\sum Y^2 - \left(\sum Y\right)^2}} = 0.93$

Coefficient of Determination $(r^2) = 0.8649$

b) Regression Equation of Y on X is

$$Y = a + bX$$

Where,

a= Regression Constant

b= Regression Coefficient (slope of the regression line)

According to the principle of least square method for forecasting the numerical constants a and b are given by,

$$\sum Y = na + b\sum X$$

$$\sum XY = a\sum X + b\sum X^2$$

Solving the above equations we get,

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} = 0.8393$$

$$a = \overline{Y} - b\overline{X} = -19.63$$

Standard Error of Estimate $(SEE) = \sqrt{\dfrac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}} = 7.23$

Standard Error of Regression Coefficient $(S_b) = \dfrac{SEE}{\sqrt{\sum\left(X - \overline{X}\right)^2}} = 0.1931$

T-value $(t) = \dfrac{b}{S_b} = 4.35$

T-value $(t) = \dfrac{b}{S_b} = 1.1553$

# Appendix – V

**1) HBL**

**Multiple Regression Analysis of MPS on EPS and DPS**

| Year | $X_1$ | $X_2$ | $X_3$ | $X_1^2$ | $X_2^2$ | $X_3^2$ | $X_1X_2$ | $X_1X_3$ | $X_2X_3$ |
|------|-------|-------|-------|---------|---------|---------|----------|----------|----------|
| 2005/06 | 1500 | 27.50 | 93.56 | 2250000 | 756.25 | 8753.47 | 41250 | 140340 | 2572.90 |
| 2006/07 | 1000 | 25 | 60.26 | 1000000 | 625 | 3631.27 | 25000 | 60260 | 1506.50 |
| 2007/08 | 836 | 1.32 | 49.45 | 698896 | 1.7424 | 2445.30 | 1103.52 | 41340.20 | 65.274 |
| 2008/09 | 840 | 0 | 49.05 | 705600 | 0 | 2405.90 | 0 | 41202 | 0 |
| 2009/10 | 925 | 11.52 | 47.91 | 855625 | 132.71 | 2295.37 | 10656 | 44316.75 | 551.92 |

$$\sum X_1 = 5101 \qquad \sum X_1^2 = 5510121 \qquad \sum X_1X_2 = 78009.52$$

$$\sum X_2 = 65.34 \qquad \sum X_2^2 = 1515.70 \qquad \sum X_1X_3 = 327458.95$$

$$\sum X_3 = 300.23 \qquad \sum X_3^2 = 19531.31 \qquad \sum X_2X_3 = 4696.60$$

$$n = 5$$

Let,
Value of $X_1$ represents market price per share (i.e. dependent variable)
Value of $X_2$ represents dividend per share (i.e. independent variable)
Value of $X_3$ represents earning per share (i.e. independent variable)

Mean, $\overline{X}_1 = 1020.20$
The general for the multiple regression equation applicable in the case is,
$$X_1 = a_1 + b_1 X_2 + b_2 X_3$$
Where,

      $a_1$= Regression Constant
      $b_1$ and $b_2$= Coefficient of Regression Equation

Required normal equation to find the value of $a_1$, $b_1$ and $b_2$ can be written as follows,
$$\sum X_1 = n.a_1 + b_1 \sum X_2 + b_2 \sum X_3$$
$$\sum X_1 X_2 = a_1 \sum X_2 + b_1 \sum X_2^2 + b_2 \sum X_2 X_3$$
$$\sum X_1 X_3 = a_1 \sum X_3 + b_1 \sum X_2 X_3 + b_2 \sum X_3^2$$
Substituting the corresponding values in the above equations and by solving them we get,
$$a_1 = 206.34, b_1 = 1.77, b_2 = 13.17$$

Hence the required multiple regression equations is as follows:
$$\hat{X} = 206.34 + 1.77 X_2 + 13.17 X_3$$

Standard Error of Estimate $X_1$ on $X_2$ and $X_3$ is given by,
$$S_{1.23} = \sqrt{\frac{\sum X^2 - a_1 \sum X_1 - b_1 \sum X_1 X_2 - b_2 \sum X_1 X_3}{n - 3}}$$
$$= 58.61$$

**Coefficient of Determination among MPS, DPS and EPS**

| Year | $X_1$ | $X_2$ | $X_3$ | $\left(X_1 - \overline{X}_1\right)^2$ | $\hat{X}$ | $\left(\hat{X} - \overline{X}_1\right)^2$ |
|---|---|---|---|---|---|---|
| 2005/06 | 1500 | 27.50 | 93.56 | 230208.04 | 1487.20 | 218089 |
| 2006/07 | 1000 | 25 | 60.26 | 408.04 | 1044.21 | 576.48 |
| 2007/08 | 836 | 1.32 | 49.45 | 33929.64 | 859.93 | 25686.47 |
| 2008/09 | 840 | 0 | 49.05 | 32472.04 | 852.33 | 28180.34 |
| 2009/10 | 925 | 11.52 | 47.91 | 9063.04 | 857.70 | 26406.25 |

$$\sum \left(X_1 - \overline{X}_1\right)^2 = 306080.80 \quad \sum \left(\hat{X} - \overline{X}_1\right)^2 = 298938.54$$

Total variation = Total sum of squares (SST) = $\sum \left(X_1 - \overline{X}_1\right)^2 = 306080.80$

Explained variation = Regression sum of squares (SSR) = $\sum \left(\hat{X} - \overline{X}_1\right)^2 = 298938.54$
Unexplained variation = SST-SSR = 7142.26

The coefficient of multiple determination is given by,

$$R^2_{1.23} = \frac{\text{Explained variation}}{\text{Total variation}}$$

$$= \frac{298938.54}{306080.80} = 0.9767$$

**Test of Regression Coefficients of Multiple Determination**
**ANOVA Table**

| Source of variation | Sum of squares | Degree of freedom | Mean sum of squares | F-Ratio |
|---|---|---|---|---|
| Explained variation (Regression) | SSR = 298938.54 | k-1 = 3-1 = 2 | MSR = SSR/k-1 =149469.27 | F(k-1,n-k) =MSR/MSE =41.8548 |
| Unexplained variation (Error) | SSE = 7142.26 | n-k = 5-3 =2 | MSE = SEE/n-k =3571.13 | |
| Total | SST = 306080.80 | n-1 = 4 | | |

**2) BOKL**
**Multiple Regression Analysis of MPS on EPS and DPS**

| Year | $X_1$ | $X_2$ | $X_3$ | $X_1^2$ | $X_2^2$ | $X_3^2$ | $X_1X_2$ | $X_1X_3$ | $X_2X_3$ |
|---|---|---|---|---|---|---|---|---|---|
| 2005/06 | 850 | 0 | 27.97 | 722500 | 0 | 782.32 | 0 | 23774.50 | 0 |
| 2006/07 | 254 | 10 | 2 | 64516 | 100 | 4 | 2540 | 508 | 20 |
| 2007/08 | 198 | 5 | 17.72 | 39204 | 25 | 314 | 990 | 3508.56 | 88.60 |
| 2008/09 | 295 | 10 | 27.50 | 87025 | 100 | 756.25 | 2950 | 8112.50 | 275 |
| 2009/10 | 519 | 15 | 30.10 | 269361 | 225 | 906.01 | 7785 | 15621.90 | 451.50 |

$$\sum X_1 = 2116 \qquad \sum X_1^2 = 1182606 \qquad \sum X_1 X_2 = 14265$$

$$\sum X_2 = 40 \qquad \sum X_2^2 = 450 \qquad \sum X_1 X_3 = 51525.46$$

$$\sum X_3 = 105.29 \quad \sum X_3^2 = 2762.58 \quad \sum X_2 X_3 = 835.10$$

n = 5

Let,

Value of $X_1$ represents market price per share (i.e. dependent variable)

Value of $X_2$ represents dividend per share (i.e. independent variable)

Value of $X_3$ represents earning per share (i.e. independent variable)

Mean, $\overline{X}_1 = 423.20$ The general for the multiple regression equation applicable in the case is,

$$X_1 = a_1 + b_1 X_2 + b_2 X_3$$

Where,

$a_1$= Regression Constant

$b_1$ and $b_2$= Coefficient of Regression Equation

Required normal equation to find the value of $a_1$, $b_1$ and $b_2$ can be written as follows,

$$\sum X_1 = n.a_1 + b_1 \sum X_2 + b_2 \sum X_3$$

$$\sum X_1 X_2 = a_1 \sum X_2 + b_1 \sum X_2^2 + b_2 \sum X_2 X_3$$

$$\sum X_1 X_3 = a_1 \sum X_3 + b_1 \sum X_2 X_3 + b_2 \sum X_3^2$$

Substituting the corresponding values in the above equations and by solving them we get,

$$a_1 = 318.04, b_1 = -19.79, b_2 = 12.51$$

Hence the required multiple regression equations is as follows:

$$\hat{X} = 318.04 - 19.79 X_2 + 12.51 X_3$$

Standard Error of Estimate $X_1$ on $X_2$ and $X_3$ is given by,

$$S_{1.23} = \sqrt{\frac{\sum X^2 - a_1 \sum X_1 - b_1 \sum X_1 X_2 - b_2 \sum X_1 X_3}{n-3}}$$
$$= 271.43$$

### Coefficient of Determination among MPS, DPS and EPS

| Year | $X_1$ | $X_2$ | $X_3$ | $(X_1 - \overline{X_1})^2$ | $\hat{X}$ | $(\hat{X} - \overline{X_1})^2$ |
|------|-------|-------|-------|----------------------------|-----------|--------------------------------|
| 2005/06 | 850 | 0 | 27.97 | 182158.24 | 343.06 | 6422.42 |
| 2006/07 | 254 | 10 | 2 | 28628.64 | 145.16 | 77306.24 |
| 2007/08 | 198 | 5 | 17.72 | 50715.04 | 440.77 | 308.70 |
| 2008/09 | 295 | 10 | 27.50 | 16435.24 | 464.16 | 1677.72 |
| 2009/10 | 519 | 15 | 30.10 | 9177.64 | 397.74 | 648.21 |

$$\sum (X_1 - \overline{X_1})^2 = 287114.80 \quad \sum (\hat{X} - \overline{X_1})^2 = 86363.30$$

Total variation = Total sum of squares (SST) = $\sum (X_1 - \overline{X_1})^2 = 287114.80$

Explained variation = Regression sum of squares (SSR) = $\sum (\hat{X} - \overline{X_1})^2 = 86363.30$

Unexplained variation = SST-SSR = 200751.50

The coefficient of multiple determination is given by,

$$R^2{}_{1.23} = \frac{\text{Explained variation}}{\text{Total variation}}$$
$$= \frac{86363.30}{287114.80} = 0.3007$$

### Test of Regression Coefficients of Multiple Determination
### ANOVA Table

| Source of | Sum of squares | Degree of | Mean sum of | F-Ratio |
|-----------|----------------|-----------|-------------|---------|

| variation | | | freedom | squares | |
|---|---|---|---|---|---|

| Year | $X_1$ | $X_2$ | $X_3$ | $X_1^2$ | $X_2^2$ | $X_3^2$ | $X_1X_2$ | $X_1X_3$ | $X_2X_3$ |
|---|---|---|---|---|---|---|---|---|---|
| 2005/06 | 2144 | 100 | 126.88 | 4596736 | 10000 | 16098.53 | 214400 | 272030.72 | 12688 |
| 2006/07 | 1550 | 100 | 141.13 | 2402500 | 10000 | 19917.68 | 155000 | 218751.50 | 14113 |
| 2007/08 | 1640 | 110 | 149.30 | 2689600 | 12100 | 22290.49 | 180400 | 244852 | 16423 |
| 2008/09 | 1745 | 110 | 143.55 | 3045025 | 12100 | 20606.60 | 191950 | 250494.75 | 15790.50 |
| 2009/10 | 2345 | 110 | 135.18 | 5499025 | 12100 | 18273.63 | 257950 | 257950 | 14869.80 |

| | | | | | |
|---|---|---|---|---|---|
| Explained variation (Regression) | SSR = 86363.30 | k-1 = 3-1 = 2 | MSR = SSR/k-1 =43318.15 | F(k-1,n-k) =MSR/MSE =0.4315 |
| Unexplained variation (Error) | SSE = 200751.50 | n-k = 5-3 =2 | MSE = SEE/n-k =100375.75 | |
| Total | SST = 287114.80 | n-1 = 4 | | |

### 3) SCBNL
#### Multiple Regression Analysis of MPS on EPS and DPS

$$\sum X_1 = 9424 \qquad \sum X_1^2 = 18232886 \qquad \sum X_1X_2 = 999700$$

$$\sum X_2 = 530 \qquad \sum X_2^2 = 56300 \qquad \sum X_1X_3 = 130126.07$$

$$\sum X_3 = 696.04 \qquad \sum X_3^2 = 97186.93 \qquad \sum X_2X_3 = 73884.30$$

$$n = 5$$

Let,

Value of $X_1$ represents market price per share (i.e. dependent variable)

Value of $X_2$ represents dividend per share (i.e. independent variable)

Value of $X_3$ represents earning per share (i.e. independent variable)

Mean, $\overline{X}_1 = 1884.80$

The general for the multiple regression equation applicable in the case is,

$$X_1 = a_1 + b_1X_2 + b_2X_3$$

Where,

  $a_1$ = Regression Constant

  $b_1$ and $b_2$ = Coefficient of Regression Equation

Required normal equation to find the value of $a_1$, $b_1$ and $b_2$ can be written as follows,

$$\sum X_1 = n.a_1 + b_1\sum X_2 + b_2\sum X_3$$

$$\sum X_1X_2 = a_1\sum X_2 + b_1\sum X_2^2 + b_2\sum X_2X_3$$

$$\sum X_1X_3 = a_1\sum X_3 + b_1\sum X_2X_3 + b_2\sum X_3^2$$

Substituting the corresponding values in the above equations and by solving them we get,

$a_1 = 3419.68, b_1 = 46.69, b_2 = -46.58$

Hence the required multiple regression equations is as follows:

$\hat{X} = 3419.68 + 46.69X_2 - 46.58X_3$

Standard Error of Estimate $X_1$ on $X_2$ and $X_3$ is given by,

$$S_{1.23} = \sqrt{\frac{\sum X^2 - a_1 \sum X_1 - b_1 \sum X_1 X_2 - b_2 \sum X_1 X_3}{n-3}}$$

$$= 121.33$$

### Coefficient of Determination among MPS, DPS and EPS

| Year | $X_1$ | $X_2$ | $X_3$ | $\left(X_1 - \overline{X_1}\right)^2$ | $\hat{X}$ | $\left(\hat{X} - \overline{X_1}\right)^2$ |
|------|-------|-------|-------|-------|-------|-------|
| 2005/06 | 2144 | 100 | 126.88 | 67184.64 | 2178.61 | 86324.32 |
| 2006/07 | 1550 | 100 | 141.13 | 112091.04 | 1514.84 | 136870.40 |
| 2007/08 | 1640 | 110 | 149.30 | 59927.04 | 1601.19 | 80434.63 |
| 2008/09 | 1745 | 110 | 143.55 | 19544.04 | 1869.02 | 249.00 |
| 2009/10 | 2345 | 110 | 135.18 | 211784.04 | 2258.89 | 139943.33 |

$\sum \left(X_1 - \overline{X_1}\right)^2 = 470530.80$    $\sum \left(\hat{X} - \overline{X_1}\right)^2 = 443572.68$

Total variation = Total sum of squares (SST) = $\sum \left(X_1 - \overline{X_1}\right)^2 = 470530.80$

Explained variation = Regression sum of squares (SSR) = $\sum \left(\hat{X} - \overline{X_1}\right)^2 = 443572.68$

Unexplained variation = SST-SSR = 26958.12

The coefficient of multiple determination is given by,

$$R^2_{1.23} = \frac{\text{Explained variation}}{\text{Total variation}}$$

$$= \frac{443572.68}{470530.80} = 0.9427$$

### Test of Regression Coefficients of Multiple Determination
### ANOVA Table

| Source of variation | Sum of squares | Degree of freedom | Mean sum of squares | F-Ratio |
|------|------|------|------|------|
| | | | | |

| | | | | | | | |
|---|---|---|---|---|---|
| Explained variation (Regression) | SSR = 443572.68 | k-1 = 3-1 = 2 | MSR = SSR/k-1 =221786.34 | F(k-1,n-k) =MSR/MSE =16.4541 |
| Unexplained variation (Error) | SSE = 26958.12 | n-k = 5-3 =2 | MSE = SEE/n-k =13479.06 | |
| Total | SST = 470530.80 | n-1 = 4 | | |

## 4) NABIL

### Multiple Regression Analysis of MPS on EPS and DPS

| Year | $X_1$ | $X_2$ | $X_3$ | $X_1^2$ | $X_2^2$ | $X_3^2$ | $X_1X_2$ | $X_1X_3$ | $X_2X_3$ |
|---|---|---|---|---|---|---|---|---|---|
| 2005/06 | 1500 | 40 | 82.81 | 2250000 | 1600 | 6857.50 | 60000 | 124215 | 3312.40 |
| 2006/07 | 735 | 30 | 55.25 | 540225 | 900 | 3032.56 | 22050 | 40608.75 | 1657.50 |
| 2007/08 | 735 | 50 | 84.66 | 540225 | 2500 | 7167.32 | 36750 | 62225.10 | 4233 |
| 2008/09 | 1000 | 65 | 92.61 | 1000000 | 4225 | 8576.61 | 65000 | 92610 | 6019.65 |
| 2009/10 | 1505 | 70 | 105.49 | 2265025 | 4900 | 11128.14 | 105350 | 158762.45 | 7384.30 |

$$\sum X_1 = 5475 \qquad \sum X_1^2 = 6595475 \qquad \sum X_1X_2 = 289150$$

$$\sum X_2 = 225 \qquad \sum X_2^2 = 14125 \qquad \sum X_1X_3 = 478421.30$$

$$\sum X_3 = 420.82 \qquad \sum X_3^2 = 36762.13 \qquad \sum X_2X_3 = 22606.85$$

$$n = 5$$

Let,

Value of $X_1$ represents market price per share (i.e. dependent variable)

Value of $X_2$ represents dividend per share (i.e. independent variable)

Value of $X_3$ represents earning per share (i.e. independent variable)

Mean, $\overline{X}_1 = 1095, \overline{X}_2 = 51$ and $\overline{X}_3 = 84.16$

The general for the multiple regression equation applicable in the case is,

$$X_1 = a_1 + b_1X_2 + b_2X_3$$

Where,

$a_1$= Regression Constant

$b_1$ and $b_2$= Coefficient of Regression Equation

Required normal equation to find the value of $a_1$, $b_1$ and $b_2$ can be written as follows,

$$\sum X_1 = n.a_1 + b_1\sum X_2 + b_2\sum X_3$$

$$\sum X_1X_2 = a_1\sum X_2 + b_1\sum X_2^2 + b_2\sum X_2X_3$$

$$\sum X_1X_3 = a_1\sum X_3 + b_1\sum X_2X_3 + b_2\sum X_3^2$$

Substituting the corresponding values in the above equations and by solving them we get,

$$a_1 = -736.03, b_1 = -35.16, b_2 = 43.06$$

Hence the required multiple regression equations is as follows:
$$\hat{X} = -736.03 - 35.16X_2 + 43.06X_3$$

Standard Error of Estimate $X_1$ on $X_2$ and $X_3$ is given by,

$$S_{1.23} = \sqrt{\frac{\sum X^2 - a_1\sum X_1 - b_1\sum X_1X_2 - b_2\sum X_1X_3}{n-3}}$$
$$= 308.97$$

### Coefficient of Determination among MPS, DPS and EPS

| Year | $X_1$ | $X_2$ | $X_3$ | $(X_1 - \overline{X_1})^2$ | $\hat{X}$ | $(\hat{X} - \overline{X_1})^2$ |
|------|------|------|-------|------|------|------|
| 2005/06 | 1500 | 40 | 82.81 | 164025 | 1423.36 | 107820.29 |
| 2006/07 | 735 | 30 | 55.25 | 129600 | 588.23 | 256815.83 |
| 2007/08 | 735 | 50 | 84.66 | 129600 | 1151.43 | 3184.34 |
| 2008/09 | 1000 | 65 | 92.61 | 9025 | 966.36 | 16548.25 |
| 2009/10 | 1505 | 70 | 105.49 | 168100 | 1345.17 | 62585.02 |

$$\sum(X_1 - \overline{X_1})^2 = 600350 \qquad \sum(\hat{X} - \overline{X_1})^2 = 446953.73$$

Total variation = Total sum of squares (SST) = $\sum(X_1 - \overline{X_1})^2 = 600350$

Explained variation = Regression sum of squares (SSR) = $\sum(\hat{X} - \overline{X_1})^2 = 446953.73$

Unexplained variation = SST-SSR = 153396.27

The coefficient of multiple determination is given by,

$$R^2_{1.23} = \frac{\text{Explained variation}}{\text{Total variation}}$$
$$= \frac{446953.73}{600350} = 0.7445$$

### Test of Regression Coefficients of Multiple Determination
### ANOVA Table

| Source of variation | Sum of squares | Degree of freedom | Mean sum of squares | F-Ratio |
|------|------|------|------|------|
| Explained variation (Regression) | SSR = 446953.73 | k-1 = 3-1 = 2 | MSR = SSR/k-1 =223476.86 | F(k-1,n-k) |

| Unexplained variation (Error) | SSE = 153396.27 | n-k = 5-3 =2 | MSE = SEE/n-k =76698.13 | =MSR/MSE =2.9137 |
|---|---|---|---|---|
| Total | SST = 600350 | n-1 = 4 | | |

# Appendix – VI

## 1) HBL

### Multiple Regression Analysis of MPS on EPS and DPS

| Year | $X_1$ | $X_2$ | $X_3$ | $X_1^2$ | $X_2^2$ | $X_3^2$ | $X_1X_2$ | $X_1X_3$ | $X_2X_3$ |
|---|---|---|---|---|---|---|---|---|---|
| 2005/06 | 1500 | 27.50 | 93.56 | 2250000 | 756.25 | 8753.47 | 41250 | 140340 | 2572.90 |
| 2006/07 | 1000 | 25 | 60.26 | 1000000 | 625 | 3631.27 | 25000 | 60260 | 1506.50 |
| 2007/08 | 836 | 1.32 | 49.45 | 698896 | 1.7424 | 2445.30 | 1103.52 | 41340.20 | 65.274 |
| 2008/09 | 840 | 0 | 49.05 | 705600 | 0 | 2405.90 | 0 | 41202 | 0 |
| 2009/10 | 925 | 11.52 | 47.91 | 855625 | 132.71 | 2295.37 | 10656 | 44316.75 | 551.92 |

$$\sum X_1 = 5101 \qquad \sum X_1^2 = 5510121 \qquad \sum X_1X_2 = 78009.52$$

$$\sum X_2 = 65.34 \qquad \sum X_2^2 = 1515.70 \qquad \sum X_1X_3 = 327458.95$$

$$\sum X_3 = 300.23 \qquad \sum X_3^2 = 19531.31 \qquad \sum X_2X_3 = 4696.60$$

$$n = 5$$

Let,

    Value of $X_1$ represents market price per share (i.e. dependent variable)
    Value of $X_2$ represents dividend per share (i.e. independent variable)
    Value of $X_3$ represents earning per share (i.e. independent variable)

Mean, $\overline{X}_1 = 1020.20$

The general for the multiple regression equation applicable in the case is,

$$X_1 = a_1 + b_1X_2 + b_2X_3$$

Where,

    $a_1$ = Regression Constant
    $b_1$ and $b_2$ = Coefficient of Regression Equation

Required normal equation to find the value of $a_1$, $b_1$ and $b_2$ can be written as follows,

$$\sum X_1 = n.a_1 + b_1\sum X_2 + b_2\sum X_3$$

$$\sum X_1X_2 = a_1\sum X_2 + b_1\sum X_2^2 + b_2\sum X_2X_3$$

$$\sum X_1X_3 = a_1\sum X_3 + b_1\sum X_2X_3 + b_2\sum X_3^2$$

Substituting the corresponding values in the above equations and by solving them we get,

$$a_1 = 206.34, b_1 = 1.77, b_2 = 13.17$$

Hence the required multiple regression equations is as follows:

$$\hat{X} = 206.34 + 1.77X_2 + 13.17X_3$$

Standard Error of Estimate $X_1$ on $X_2$ and $X_3$ is given by,

$$S_{1.23} = \sqrt{\frac{\sum X^2 - a_1 \sum X_1 - b_1 \sum X_1 X_2 - b_2 \sum X_1 X_3}{n-3}}$$

**Coefficient of Determination among MPS, DPS and EPS**

| Year | $X_1$ | $X_2$ | $X_3$ | $\left(X_1 - \overline{X_1}\right)^2$ | $\hat{X}$ | $\left(\hat{X} - \overline{X_1}\right)^2$ |
|------|-------|-------|-------|------|------|------|
| 2005/06 | 1500 | 27.50 | 93.56 | 230208.04 | 1487.20 | 218089 |
| 2006/07 | 1000 | 25 | 60.26 | 408.04 | 1044.21 | 576.48 |
| 2007/08 | 836 | 1.32 | 49.45 | 33929.64 | 859.93 | 25686.47 |
| 2008/09 | 840 | 0 | 49.05 | 32472.04 | 852.33 | 28180.34 |
| 2009/10 | 925 | 11.52 | 47.91 | 9063.04 | 857.70 | 26406.25 |

$$\sum \left(X_1 - \overline{X_1}\right)^2 = 306080.80 \qquad \sum \left(\hat{X} - \overline{X_1}\right)^2 = 298938.54$$

Total variation = Total sum of squares (SST) = $\sum \left(X_1 - \overline{X_1}\right)^2 = 306080.80$

Explained variation = Regression sum of squares (SSR) = $\sum \left(\hat{X} - \overline{X_1}\right)^2 = 298938.54$

Unexplained variation = SST-SSR = 7142.26

The coefficient of multiple determination is given by,

$$R^2{}_{1.23} = \frac{\text{Explained variation}}{\text{Total variation}}$$
$$= \frac{298938.54}{306080.80} = 0.9767$$

**Test of Regression Coefficients of Multiple Determination**
**ANOVA Table**

| Source of variation | Sum of squares | Degree of freedom | Mean sum of squares | F-Ratio |
|------|------|------|------|------|
| Explained variation (Regression) | SSR = 298938.54 | k-1 = 3-1 = 2 | MSR = SSR/k-1 =149469.27 | F(k-1,n-k) =MSR/MSE =41.8548 |
| Unexplained variation (Error) | SSE = 7142.26 | n-k = 5-3 =2 | MSE = SEE/n-k =3571.13 | |
| Total | SST = 306080.80 | n-1 = 4 | | |

**2) BOKL**
**Multiple Regression Analysis of MPS on DPS and DPR**

| Year | $X_1$ | $X_2$ | $X_3$ | $X_1{}^2$ | $X_2{}^2$ | $X_3{}^2$ | $X_1 X_2$ | $X_1 X_3$ | $X_2 X_3$ |
|------|------|------|------|------|------|------|------|------|------|
| 2005/06 | 850 | 0 | 0 | 722500 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2006/07 | 254 | 10 | 5 | 64516 | 100 | 25 | 2540 | 1270 | 50 |
| 2007/08 | 198 | 5 | 28.22 | 39204 | 25 | 796.37 | 990 | 5587.56 | 141.10 |
| 2008/09 | 295 | 10 | 36.36 | 87025 | 100 | 1322.05 | 2950 | 10726.20 | 363.60 |
| 2009/10 | 519 | 5 | 49.83 | 269361 | 225 | 2483.03 | 7785 | 25861.77 | 747.45 |

$$\sum X_1 = 2116 \qquad \sum X_1^2 = 1182606 \qquad \sum X_1 X_2 = 14265$$

$$\sum X_2 = 40 \qquad \sum X_2^2 = 450 \qquad \sum X_1 X_3 = 43445.53$$

$$\sum X_3 = 119.41 \qquad \sum X_3^2 = 9252.89 \qquad \sum X_2 X_3 = 1302.15$$

$$n = 5$$

Let,

Value of $X_1$ represents market price per share (i.e. dependent variable)
Value of $X_2$ represents dividend per share (i.e. independent variable)
Value of $X_3$ represents dividend payout ratio (i.e. independent variable)

Mean, $\overline{X}_1 = 423.20$

The general for the multiple regression equation applicable in the case is,

$$X_1 = a_1 + b_1 X_2 + b_2 X_3$$

Where,

$a_1$ = Regression Constant
$b_1$ and $b_2$ = Coefficient of Regression Equation

Required normal equation to find the value of $a_1$, $b_1$ and $b_2$ can be written as follows,

$$\sum X_1 = n.a_1 + b_1 \sum X_2 + b_2 \sum X_3$$

$$\sum X_1 X_2 = a_1 \sum X_2 + b_1 \sum X_2^2 + b_2 \sum X_2 X_3$$

$$\sum X_1 X_3 = a_1 \sum X_3 + b_1 \sum X_2 X_3 + b_2 \sum X_3^2$$

Substituting the corresponding values in the above equations and by solving them we get,

$$a_1 = 587.07, b_1 = -20.49, \text{ and } b_2 = 0.00305$$

Hence the required multiple regression equations is as follows:

$$\hat{X} = 587.07 - 20.49 X_2 + 0.00305 X_3$$

Standard Error of Estimate $X_1$ on $X_2$ and $X_3$ is given by,

$$S_{1.23} = \sqrt{\frac{\sum X^2 - a_1 \sum X_1 - b_1 \sum X_1 X_2 - b_2 \sum X_1 X_3}{n - 3}}$$

Coefficient of Determination among MPS, DPS and DPR

| Year | $X_1$ | $X_2$ | $X_3$ | $\left(X_1 - \overline{X}_1\right)^2$ | $\hat{X}$ | $\left(\hat{X} - \overline{X}_1\right)^2$ |
|---|---|---|---|---|---|---|
| 2003/04 | 850 | 0 | 0 | 182158.24 | 587.07 | 26853.37 |
| 2004/05 | 254 | 10 | 5 | 28628.64 | 382.18 | 1682.64 |

| | | | | | | |
|--------|------|-----|-------|----------|--------|----------|
| 2005/06 | 198 | 5 | 28.22 | 50715.04 | 484.70 | 3782.25 |
| 2006/07 | 295 | 10 | 36.36 | 16435.24 | 382.28 | 1674.44 |
| 2007/08 | 519 | 5 | 49.83 | 9177.64 | 279.87 | 20543.48 |

$$\sum \left(X_1 - \overline{X}_1\right)^2 = 287114.80 \quad \sum \left(\hat{X} - \overline{X}_1\right)^2 = 54536.18$$

Total variation = Total sum of squares (SST) = $\sum \left(X_1 - \overline{X}_1\right)^2 = 287114.80$

Explained variation = Regression sum of squares (SSR) = $\sum \left(\hat{X} - \overline{X}_1\right)^2 = 54536.18$

Unexplained variation = SST-SSR = 232578.62

The coefficient of multiple determination is given by,

$$R^2{}_{1.23} = \frac{\text{Explained variation}}{\text{Total variation}}$$
$$= \frac{54536.18}{287114.80} = 0.1899$$

**Test of Regression Coefficients of Multiple Determination**
**ANOVA Table**

| Source of variation | Sum of squares | Degree of freedom | Mean sum of squares | F-Ratio |
|---------------------|----------------|-------------------|---------------------|---------|
| Explained variation (Regression) | SSR = 54536.18 | k-1 = 3-1 = 2 | MSR = SSR/k-1 =27268.09 | F(k-1,n-k) =MSR/MSE =0.2345 |
| Unexplained variation (Error) | SSE = 232578.62 | n-k = 5-3 =2 | MSE = SEE/n-k =116289.31 | |
| Total | SST = 287114.80 | n-1 = 4 | | |

**3) SCBNL**
**Multiple Regression Analysis of MPS on DPS and DPR**

| Year | $X_1$ | $X_2$ | $X_3$ | $X_1{}^2$ | $X_2{}^2$ | $X_3{}^2$ | $X_1X_2$ | $X_1X_3$ | $X_2X_3$ |
|------|-------|-------|-------|-----------|-----------|-----------|----------|----------|----------|
| 2005/06 | 2144 | 100 | 78.81 | 4596736 | 10000 | 6211.02 | 214400 | 168968.64 | 7881 |
| 2006/07 | 1550 | 100 | 70.86 | 2402500 | 10000 | 5021.14 | 1550000 | 109833 | 7086 |
| 2007/08 | 1640 | 110 | 73.68 | 2689600 | 12100 | 5428.74 | 180400 | 120835.20 | 8104.80 |
| 2008/09 | 1745 | 110 | 76.63 | 3045025 | 12100 | 5872.15 | 191950 | 133719.35 | 8429.30 |
| 2009/10 | 2345 | 110 | 73.81 | 5499025 | 12100 | 5447.92 | 257950 | 173084.45 | 8119.10 |

$$\sum X_1 = 9424 \qquad \sum X_1{}^2 = 18232886 \qquad \sum X_1X_2 = 999700$$

$$\sum X_2 = 530 \qquad \sum X_2{}^2 = 56300 \qquad \sum X_1X_3 = 706440.64$$

$$\sum X_3 = 373.79 \qquad \sum X_3{}^2 = 27980.97 \qquad \sum X_2X_3 = 39620.20$$

$$n = 5$$

Let,

Value of $X_1$ represents market price per share (i.e. dependent variable)

Value of $X_2$ represents dividend per share (i.e. independent variable)

Value of $X_3$ represents dividend payout ratio (i.e. independent variable)

Mean, $\overline{X}_1 = 1884.80$
The general for the multiple regression equation applicable in the case is,
$$X_1 = a_1 + b_1 X_2 + b_2 X_3$$
Where,

$a_1$ = Regression Constant
$b_1$ and $b_2$ = Coefficient of Regression Equation

Required normal equation to find the value of $a_1$, $b_1$ and $b_2$ can be written as follows,
$$\sum X_1 = n.a_1 + b_1 \sum X_2 + b_2 \sum X_3$$
$$\sum X_1 X_2 = a_1 \sum X_2 + b_1 \sum X_2^2 + b_2 \sum X_2 X_3$$
$$\sum X_1 X_3 = a_1 \sum X_3 + b_1 \sum X_2 X_3 + b_2 \sum X_3^2$$

Substituting the corresponding values in the above equations and by solving them we get,
$$a_1 = -2738.62, b_1 = 6.97, \text{ and } b_2 = 51.97$$

Hence the required multiple regression equations is as follows:
$$\hat{X} = -2738.62 + 6.97 X_2 + 51.97 X_3$$

Standard Error of Estimate $X_1$ on $X_2$ and $X_3$ is given by,
$$S_{1.23} = \sqrt{\frac{\sum X^2 - a_1 \sum X_1 - b_1 \sum X_1 X_2 - b_2 \sum X_1 X_3}{n-3}}$$

**Coefficient of Determination among MPS, DPS and DPR**

| Year | $X_1$ | $X_2$ | $X_3$ | $\left(X_1 - \overline{X}_1\right)^2$ | $\hat{X}$ | $\left(\hat{X} - \overline{X}_1\right)^2$ |
|------|-------|-------|-------|------|------|------|
| 2005/06 | 2144 | 100 | 78.81 | 67184.64 | 2054.13 | 28672.65 |
| 2006/07 | 1550 | 100 | 70.86 | 112091.04 | 1640.97 | 59453.06 |
| 2007/08 | 1640 | 110 | 73.68 | 59927.04 | 1857.23 | 760.10 |
| 2008/09 | 1745 | 110 | 76.63 | 19544.04 | 2010.54 | 15810.54 |
| 2009/10 | 2345 | 110 | 73.81 | 211784.04 | 1863.98 | 433.47 |

$$\sum\left(X_1 - \overline{X}_1\right)^2 = 470530.80 \quad \sum\left(\hat{X} - \overline{X}_1\right)^2 = 105129.82$$

Total variation = Total sum of squares (SST) = $\sum\left(X_1 - \overline{X}_1\right)^2 = 470530.80$

Explained variation = Regression sum of squares (SSR) = $\sum\left(\hat{X} - \overline{X}_1\right)^2 = 105129.82$
Unexplained variation = SST-SSR = 365400.98

The coefficient of multiple determination is given by,

$$R^2_{1.23} = \frac{\text{Explained variation}}{\text{Total variation}}$$
$$= \frac{105129.82}{470530.80} = 0.2234$$

**Test of Regression Coefficients of Multiple Determination**
**ANOVA Table**

| Source of variation | Sum of squares | Degree of freedom | Mean sum of squares | F-Ratio |
|---|---|---|---|---|
| Explained variation (Regression) | SSR = 105129.82 | k-1 = 3-1 = 2 | MSR = SSR/k-1 =52564.91 | F(k-1,n-k) =MSR/MSE =0.2877 |
| Unexplained variation (Error) | SSE = 365400.98 | n-k = 5-3 =2 | MSE = SEE/n-k =182700.49 | |
| Total | SST = 470530.80 | n-1 = 4 | | |

### 4) NABIL
**Multiple Regression Analysis of MPS on DPS and DPR**

| Year | $X_1$ | $X_2$ | $X_3$ | $X_1^2$ | $X_2^2$ | $X_3^2$ | $X_1X_2$ | $X_1X_3$ | $X_2X_3$ |
|---|---|---|---|---|---|---|---|---|---|
| 2005/06 | 1500 | 40 | 67.49 | 2250000 | 1600 | 4554.90 | 60000 | 101235 | 2699.60 |
| 2006/07 | 735 | 30 | 54.30 | 540225 | 900 | 2948.49 | 22050 | 39910.50 | 1629 |
| 2007/08 | 735 | 50 | 59.06 | 540225 | 2500 | 3488.08 | 36750 | 43409.10 | 2953 |
| 2008/09 | 1000 | 65 | 70.19 | 1000000 | 4225 | 4926.64 | 65000 | 70190 | 4562.35 |
| 2009/10 | 1505 | 70 | 66.36 | 2265025 | 4900 | 4403.65 | 105350 | 99871.80 | 4645.20 |

$$\sum X_1 = 5475 \qquad \sum X_1^2 = 6595475 \qquad \sum X_1X_2 = 289150$$
$$\sum X_2 = 255 \quad \sum X_2^2 = 14125 \qquad \sum X_1X_3 = 354616.40$$
$$\sum X_3 = 317.40 \qquad \sum X_3^2 = 30321.76 \qquad \sum X_2X_3 = 16489.15$$
$$n = 5$$

Let,

Value of $X_1$ represents market price per share (i.e. dependent variable)
Value of $X_2$ represents dividend per share (i.e. independent variable)
Value of $X_3$ represents dividend payout ratio (i.e. independent variable)

Mean, $\overline{X}_1 = 1095$
The general for the multiple regression equation applicable in the case is,

$$X_1 = a_1 + b_1X_2 + b_2X_3$$

Where,

$a_1$= Regression Constant
$b_1$ and $b_2$= Coefficient of Regression Equation

Required normal equation to find the value of $a_1$, $b_1$ and $b_2$ can be written as follows,

$$\sum X_1 = n.a_1 + b_1 \sum X_2 + b_2 \sum X_3$$

$$\sum X_1 X_2 = a_1 \sum X_2 + b_1 \sum X_2{}^2 + b_2 \sum X_2 X_3$$

$$\sum X_1 X_3 = a_1 \sum X_3 + b_1 \sum X_2 X_3 + b_2 \sum X_3{}^2$$

Substituting the corresponding values in the above equations and by solving them we get,

$$a_1 = -1732.37, b_1 = -4.005, \text{ and } b_2 = 47.76$$

Hence the required multiple regression equations is as follows:

$$\hat{X} = -1732.37 - 4.005 X_2 + 47.76 X_3$$

Standard Error of Estimate $X_1$ on $X_2$ and $X_3$ is given by,

$$S_{1.23} = \sqrt{\frac{\sum X^2 - a_1 \sum X_1 - b_1 \sum X_1 X_2 - b_2 \sum X_1 X_3}{n-3}}$$

**Coefficient of Determination among MPS, DPS and DPR**

| Year | $X_1$ | $X_2$ | $X_3$ | $\left(X_1 - \overline{X_1}\right)^2$ | $\hat{X}$ | $\left(\hat{X} - \overline{X_1}\right)^2$ |
|------|------|------|------|------|------|------|
| 2003/04 | 1500 | 40 | 67.49 | 164025 | 1330.75 | 55578.06 |
| 2004/05 | 735 | 30 | 54.30 | 129600 | 740.85 | 125422.22 |
| 2005/06 | 735 | 50 | 59.06 | 129600 | 888.08 | 42815.88 |
| 2006/07 | 1000 | 65 | 70.19 | 9025 | 1359.58 | 70002.50 |
| 2007/08 | 1505 | 70 | 66.36 | 168100 | 1156.63 | 3798.25 |

$$\sum \left(X_1 - \overline{X_1}\right)^2 = 600350 \qquad \sum \left(\hat{X} - \overline{X_1}\right)^2 = 297616.91$$

Total variation = Total sum of squares (SST) = $\sum \left(X_1 - \overline{X_1}\right)^2 = 600350$

Explained variation = Regression sum of squares (SSR) = $\sum \left(\hat{X} - \overline{X_1}\right)^2 = 297616.91$

Unexplained variation = SST-SSR = 302733.09

The coefficient of multiple determination is given by,

$$R^2{}_{1.23} = \frac{\text{Explained variation}}{\text{Total variation}}$$

$$= \frac{297616.91}{600350} = 0.4957$$

**Test of Regression Coefficients of Multiple Determination**
**ANOVA Table**

| Source of variation | Sum of squares | Degree of freedom | Mean sum of squares | F-Ratio |
|------|------|------|------|------|

| | | | | |
|---|---|---|---|---|
| Explained variation (Regression) | SSR = 297616.91 | k-1 = 3-1 = 2 | MSR = SSR/k-1 =148808.45 | F(k-1,n-k) =MSR/MSE =0.9831 |
| Unexplained variation (Error) | SSE = 302733.09 | n-k = 5-3 =2 | MSE = SEE/n-k =151366.54 | |
| Total | SST = 600350 | n-1 = 4 | | |