CHAPTER-I

INTRODUCTION

1.1 Background

Banking sector is the backbone of the economic development of the nation. Bank is the pool house between depositors and investors. Banks and financial institutions have covered large area in current days in Nepal. On the other hand, banks and financial institutions are playing vital role in the economic development of the nation. So, if there are no banking and financial facilities, the growth of economic development become slow. Commercial banks are the main key players of Nepalese financial system. The functions of bank are not only accepting deposit and granting loan but also include wide range of services to the different strata of society to facilitate the growth of trade, commerce, industry and agriculture of the national economy. The main objective of banks (commercial, development and others) is to earn profit by proper utilization of resources in productive sectors after collecting scattered resources. Kent argue that "A bank is an institution whose people operation are concerned with the accumulation of the temporarily idle money of the general public for the purpose of advancing to other for expenditure".

Dividend policy (behavior) involves paying a portion of profit as a divided and rest is reinvested in the firm to strengthen the financial position of the firm which called retained earning. Any change in the behavior (policy) of dividend distribution has both favorable and unfavorable impact on the firm's stock price. So, stock price largely depends on the divided behavior of the firm. Higher dividend payment by the firms means good financial position of the investor and low growth rate of the firm. Higher dividend attracts more investors. Less dividend may be more retained earning in the company or the company has low profit. But it attracts few or no investors, so dividend behavior (policy) should be neither badly affects the position of the institution nor the investor. In a nutshell it should be favor able for both.

Now we can get 31 commercial banks in Nepal which are as follows:

• Nepal Bank Limited	• Machhapuchhre Bank Ltd.
• Rastriya Banijya Bank	• Kumari Bank Ltd.
• NABIL Bank Ltd.	• Laxmi Bank Ltd.
• Nepal Investment Bank Ltd.	• Siddhartha Bank Ltd.
• Standard Chartered Bank Nepal Ltd.	• Mega Bank Ltd.
• Himalayan Bank Ltd.	• Global Bank Ltd.
• Nepal SBI Bank Ltd.	• Citizens Bank International Ltd.
• Nepal Bangladesh Bank Ltd.	• Prime Commercial Bank Ltd.
• Everest Bank Ltd.	• Bank of Asia Nepal Ltd.
• Bank of Kathmandu Ltd.	• Sunrise Bank Ltd.
• Nepal Credit and Commerce Bank Ltd.	• Development Credit Bank Ltd.
• Lumbini Bank Ltd.	• NMB Bank Ltd.
• Nepal Industrial & Commercial Bank Ltd.	• KIST Bank Ltd.
• Agriculture Development Bank Ltd.	• Civil Bank Ltd.
• Janata Bank Ltd.	• Century Bank Limited
• Commerze and Trust Bank Limited	

Although, 31 commercial banks are actively working in the nation. Only, five commercial banks are taken as samples. These five commercial banks had already issued their common stock to public and are actively trading in Nepal Stock Market. The sample banks are as follows:

i) Nabil Bank Ltd (Nepal Arab Bank Ltd)

ii) Himalayan Bank Limited

iii) Bank of Kathmandu Ltd

iv) Kumari Bank Ltd

v) Nepal Industrial and commercial Bank Ltd

1.2. A Brief Introduction of Sample Commercial Banks

a) Nabil Bank Ltd (Nepal Arab Bank Ltd)

Nabil, as a pioneer in introducing many innovative products and marketing concepts in the domestic banking sector, represents a milestone in the banking

history of Nepal as it started an era of modern banking with customer satisfaction measured as a focal objective while doing business. Nepal Arab Bank Ltd (NABIL), is the first joint-venture commercial bank in Nepal which was incorporated in 1984 AD (2042 B. S.). Dubai Bank Ltd was the initial foreign joint venture partner with 50% society investment. The shares owned Dubai Bank Ltd (DBL) were transferred to Emirates Bank International Ltd (EBIL) Dubai by virtue of its annexation with the later. Later on, EBIL, Dubai sold its entire 50% equity to National Bank Ltd, Bangladesh (NBLB). NBLB is managing the bank in accordance with the technical services agreement signed between NBLB and Nabil Bank Ltd on June 1995. The main objectives of this bank are collect deposits, provide loans and to provide modern banking services to the public. Pursuing its objective, Nabil provides a full range of commercial banking services through its 19 points of representation across the kingdom and over 170 reputed correspondent banks across the globe.

Authorized capital, issued capital and paid-up capital of this bank are Rs. 1,600,000,000, Rs. 1,449,124,000 and Rs. 1,449,124,000. Its par value per share is Rs. 100. NABIL Bank was listed in the Nepal Stock Exchange in the year 1986 A.D. (2042 B.S.)

b) Himalayan Bank Limited

Himalayan Bank was established in 1993 in joint venture with Habib Bank Limited of Pakistan. Despite the cut-throat competition in the Nepalese Banking sector, Himalayan Bank has been able to maintain a lead in the primary banking activities- Loans and Deposits. Products such as Premium Savings Account, HBL Proprietary Card and Millionaire Deposit Scheme besides services such as ATMs and Tele-banking were first introduced by HBL. This is the first joint venture bank managed by Nepalese chief executive. The main activities of this bank are to provide modern banking services like tele-banking to the businessmen; industrial and other professional and to provide loans in different sectors.

Authorized capital, issued capital and paid-up capital of this bank are Rs. 3,000,000,000, Rs. 1,600,000,000 and Rs. 1,600,000,000 respectively. Par

value per share is Rs. 100. Himalayan Bank limited was listed in the Nepal Stock Exchange in the year 1993 (2050 B.S.).

c) Bank of Kathmandu Limited

Bank of Kathmandu was incorporated in 1994, under Company Act 1964, in collaboration with SIAM Commercial Bank PCC, Thailand. In the beginning SIAM commercial bank holds 50 % share of this bank, but later on, it handed over its 25 % share to Nepalese citizen in 1998 A. D. BOK started its operation in March 1995 with the objective to stimulate the Nepalese economy and take it to newer heights. BOK also aims to facilitate the nation's economy and to become more competitive globally. To achieve these, BOK has been focusing on its set objectives right from the beginning.

Authorized capital, issued capital and paid-up capital are Rs. 2,000,000,000, Rs. 1,182,157,100 and Rs. 1,182,157,100 respectively. Its par value per share is Rs. 100. The listing date of its stock in Nepal Stock Exchange is Shrawan 2, 2054 B. S. (1998 A.D.).

d) Kumari Bank Ltd.

Kumari Bank Limited, came into existence as the fifteenth commercial bank of Nepal by starting its banking operations from 21st Chaitra, 2057 B.S (3rd April, 2001) with an objective of providing competitive and modern banking services in the Nepalese financial market. The bank has paid up capital of Rs. 1,306,015,920, of which 70% is contributed from promoters and remaining from public. The bank is pioneer in providing some of the latest/lucrative banking services like E-Banking and SMS banking services in Nepal. The bank always focus on building sound technology driven internal system to cater the changing needs of the customers that enhance high comfort and value.

e) Nepal Industrial and Commercial Bank Limited

Nepal Industrial and Commercial Bank Limited (NIC Bank) commenced its operation on 21st July, 1998 from Biratnagar. The Bank was promoted by some of the prominent business houses of the country. The current

shareholding pattern of the Bank Constitutes of promoters holding 65% of the shares while 35% is held by general public.NIC Bank is one 0f the most widely-held Banking companies in Nepal, with over 32,000 shareholders. In early 80's and particularly after the restoration of democracy in 1990, almost all the private sector joint venture bank had established their head office at Kathmandu. They also consigned their activities within the valley. However, rapidly growing Nepalese Economy offers tremendous potential outside the capital as well. In order to provide the necessary impetus to the economic progress of Nepal through banking support of international standards. Nepal industrial and commercial bank limited established its head office at Biratnagar "The Commercial Capital" of Nepal.

Authorized capital of this bank is Rs. 1,600,000,000 and its issued capital and paid up capital are Rs. 1,311,552,000 and Rs. 1,311,552,000 from the very beginning till now. Nepal Industrial and Commercial Bank was listed in Ashadh, 2057 B.S. (2000 B.C.) on Nepal Stock Exchange.

1.3. Statement of the Problem

Dividends are an important factor for the attraction of the investor and identify healthy position of the company. Dividend is the most inspiring factor for the investment on share of the company and similar to commercial banks. But Nepalese commercial banks have not satisfactory result concerning dividend decision. The dividend behavior of commercial bank also affected by government rules and regulations.

This dividend decision however is still a crucial as well as controversial area of managerial finance. There is no, consensus among the financial scholars on this subject matter and its relation with stock price.

Some financial scholars say that stock prices are least influenced by dividend while some other believe that its relevance to the stock prices it quite significant. The idea of relevance is vague, (unclear) as well. It is rather hard to define whether dividend has positive or negative or no impact on commercial banks.

Dividend behavior of the commercial bank is not matching with the earning. On the other hand, there is no proper relationship between dividend and quoted market price of share in the stock exchange.

Commercial banks in Nepal have not adopted consistent behavior (policy) on dividend decision.

- What are the prevailing behaviors of the commercial banks regarding their dividends?
- What is the relationship of dividend with earning per share, stock price, net profit and net worth of different commercial bank?
- Whether dividend decision affects the market price of shares differently in different commercial banks or not?

1.4. Objective of the Study

The study primarily focuses on the dividend behavior adopted by the sample banks with a view to provide workable suggestion which may be helpful to the formulation of optional dividend policy and maximize the stock price and to take some other appropriate dividend strategies. However, the specific objectives can be set as follows:

- To find out whether dividend behavior affect the market price of shares differently in different banks.
- To highlight the dividend behavior of Nepalese commercial banks.
- To analyze the relationship of dividend with earning per share, stock price, net profit and net worth.
- To provide valuable suggestion regarding dividend behavior (policy).

1.5. Importance of the Study

Most of financial theories have been developed on the assumption of dividend behavior. Dividend policy is directly affected by the rules and regulation of the government. Moreover, dividend policy has implicated for the investment strategy that the investors may wish to pursue. Hence, the knowledge of dividend behavior (policy) is must necessary to use theoretical models correctly and to choose the correct investment strategy for the investment decision.

In Nepal, there almost none of the companies (including banks) are adopting fair dividend behavior. So, the study of dividend behavior (policy) is great importance.

Therefore, this study will be helpful to understand the divided payment behavior of commercial banks. It will also be helpful to shareholders, management and policy maker for their knowledge. It will be also helpful to government in making policy, controlling, monitoring and supervising the commercial bank in Nepal.

Finally, it will be also useful literature for the future study about the relating topics.

1.6 Limitation of the Study

Dividend policy play a vital role in management, so financial manager has to take several decisions from financial management area like liquidity management, capital structure management, Investment decision, leverage, dividend policy and other many more. Here, we have only taken dividend policy, which will try to interpret and analyze the dividend behavior of listed Nepalese commercial banks only.

No study can be free from its own limitation. So, the present study has also some limitation. Reliability of statistical tools, lack of research experiences are the major limitation.

a. Only sample commercial banks are taken as the population of study, which are NABIL, HBL, BOK, KBL and NIC banks.
b. Only secondary data will be used. So, the limitations of using secondary data exist.
c. The major sources of data are financial statement of sample commercial bank, which are available in Nepal Stock Exchange.
d. The study covers 5 fiscal years data from FY 2005/2006 to 2009/2010
e. This study covers only cash dividend excludes bonus/stock dividend.

1.7 Organization of the Study

The study has been organized into five chapters, each devoted to some aspects of the comparative study of dividend policies between commercial bank of Nepal. The title of each chapter is as follows:

Chapter- I (Introduction)

Deals with the subject matters of the study consists introduction and background of commercial banks, statement of the problems, objectives of the study, importance of the study and limitation of the study.

Chapter- II (Review of Literature)

Deals with review of literature. It includes a discussion on the conceptual framework on dividend. It also reviews the major studies relating with dividend decision of several authors and from the several books and journals.

Chapter- III (Research Methodology)

Explain the research methodology used to evaluate dividend behavior of commercial bank in Nepal. It consists of introduction, research design, selection of sample, sources of data collection, method of analysis financial tools and statistical tools.

Chapter- IV (Presentation and Analysis of Data)

Chapter four fulfills the objectives of the study by presenting data and analyzing them with the help of various statistical tools followed by methodology.

Chapter- V (Summary, Conclusion and Recommendation)

States summary, conclusion and recommendation of study.

Bibliography and Annexes are also incorporated at the end of the study.

CHAPTER-II

LITERATURE REVIEW

The present research aim to analyze the dividend behavior of commercial banks especially five banks viz. Nabil Bank Limited, Himalayan Bank Limited, Bank of Kathmandu Limited, Kumari Bank Limited and Nepal Industrial and Commercial Bank Limited. For this purpose, it needs to review related literatures, in this concerned area which will help researcher to get a clear idea. The researcher study different magazines, journals and newspaper, book to collect the information about their dividend behaviour. This process of studying different materials, which are concerned with dividend behaviour of the research, is known as review of literature. "Review of literature is useful in research because it provides the insight and general knowledge about the subject matter of research". (P. V. Young)

2.1 Conceptual Framework

Dividend policy determines what portion of earnings will be paid out to stockholders and what will be retained in the business to finance long-term growth. "While dividend policy refers to the guidelines that management uses in establishing portion of earning that is paid to the share holders in the firm of dividend" (Mathur, Ipbal, 1979:297). The policy of a company on the division of its profit is between share holders as dividend and retention for it's the investment is known as dividend policy. There is a inverse relation between retained earning and cash dividend. If a firm kept more retained earning less will be dividend and vice-versa. The firm will used the net profit for paying dividends to the shareholders, if the payment will-lead to maximization of the wealth of the owners, if not, it is better to retain them for investment.

Shareholder expects higher dividend. But corporation wants to re-invest its profit maximizing the overall shareholder's wealth. "Financial management is therefore concerned with the activities of corporation that affect the well-being of shareholders that well-being can be particularly measured by the dividend received, but a more accurate measure is market value of stock". (William II. Dean 1973:1)

There is an ongoing debate about whether a company should pay out its earnings as dividends or retain them for firm growth. There is a further debate about which policy investors prefer. Firms that are view and growing generally pay low or no dividends. Mature firms that are no longer in a growth phase often pay high and increasing dividends.

Generally, dividends are paid in cash, which decrease the cash balance of firm. It affects the investor's attitude, financial structure, corporate liquidity and flow of funds.

2.1.1 Forms of Dividend

We can get many types of dividend in the world. Although most particular forms of dividend is cash dividend, corporations need to follow different types of dividend in view of the objectives and policies which they implement. Some investors are interested in cash dividend and some are interested in stock dividend.

"The types of dividend that corporation follow is partly of a matter of attitude of directors and partly a matter of the various circumstances and financial constraint that bound corporate plan and policies". (Shrestha, M. K. 1980:670)

According to the changing needs of corporation, dividend is being distribute in several forms like cash dividend, stock dividend etc.

I) Cash Dividend

Cash dividend is a cash payment made to the shareholders of a corporation. Cash dividend is the dividend, which is distributed to the shareholders from the accumulated profit of the company. When cash dividend is distributed both total assets and net worth of the company decrease as cash and earnings decrease. Generally, market price of the share drops in most cases by the amount of cash dividend distributed. For distribution cash dividend, firm has maintains adequate balance of cash otherwise company should be made to borrow fund; which is risky or difficult.

II) Stock Dividend

Stock dividend simply is the payment of additional stock to shareholders. Companies, not having good cash position or growing company, generally pay dividend in the form of shares by capitalizing the profits of current year and of past years. Such shares are issued instead of paying dividend in cash and called 'Bonus Shares'. Basically there is no change in the equity of shareholders. Certain guidelines have been used by the company Law in respect of Bonus Shares. Effect of the stock dividend is the same as that of a stock split. A stock dividend occurs when the board of directors authorizes a distribution of common stock to existing shareholders. Stock dividend increases the number of outstanding shares of the Firm's stock. Although stock dividends do not have a real value, firms pay stock dividend as a replacement for a supplement lo cash dividend.

III) Scrip Dividend

Scrip dividends are used when earnings justify a dividend, but the cash position of the company is temporarily weak. By applying this method of dividend, company issue and distributes to shareholders transferable promissory note or share or debenture which may be interest bearing or not. This dividend is justified only when the company has really earned profit and has only to wait for the conversion of others current assets into cash in the course of operation. Such payment of dividend is called Scrip Dividend. Shareholders generally do not like such dividend because the shares or debentures, so paid are worthless. Such dividend was allowed before passing of the Companies (Amendment) Act 1960, but thereafter this unhealthy practice was stopped.

IV) Interim Dividend

Generally dividend is declared at the end of financial year. This is called regular dividend also. Many times director can declare dividend before the end of financial year. It is generally declared and paid when company has earned heavy profits or abnormal profits during the year and directors which to pay the profits to shareholders. Such payment of dividend in between the two Annual General meetings before finalizing the accounts is called Interim Dividend.

V) Bond Dividend

In rare instances, dividends are paid in the form of debentures or bonds or notes, for a long-term period. The effect of such dividend is the same as that of paying dividend in scrip. The shareholders become the secured creditors is the bonds has a lien on assets. Bond dividend by its name is a dividend that is distributed to shareholders in the form of a bond. Those bonds can be long-term or short-term. Bond dividend helps to postpone the payment of cash. In other words, company declares dividends in the form of its own bond with a view to avoid cash outflow is called bond dividend. In this study, the term dividend generally refers to cash dividend. But, bond dividend is not found in practice in Nepal.

VI) Property Dividend

Sometimes, dividend is paid in the form of asset instead of payment of dividend in cash. The distribution of dividend is made whenever the asset is no longer required in the business such as investment or stock of finished goods. But, it is, however, important to note that in India, distribution of dividend is permissible in the form of cash or bonus shares only. Distribution of dividend in any other form is not allowed.

2.2 Stability of Dividend

Stability or regularity of dividend is considered as a desirable policy by the management of company. Most of the stockholders prefer stable dividends because all other things being same, stable dividends have a positive impact on the market price of shares. The term dividend stability refers to consistency or lack of variability in the stream of dividend. In other words, it means that a certain minimum amount of dividend is paid out regularly.

The stability could take three forms:

Keep dividends at a stable rupee amount but allow its payout ratio to fluctuate (constant dividend per share), or Maintain stable payout ratio and let the rupee dividend fluctuate (constant payout ratio), or

Set low regular dividend and then supplement it with year-end "extras" in years when earnings are high. As earnings of the firm increase the customary dividend will not be altered bill a year-end "extras" will he declared. (Low regular dividend extra)

i. Constant Dividend per Share

Constant dividend policy is based on the payment on the fixed rupee dividend in each year. There is no consideration of inflation. Investors who have dividend as the only sources of their income prefer the constant dividend per share. It is easy to follow this policy where earnings are stable. However, if the earning pattern of a company shows wide fluctuations. It is difficult to maintain such a policy. When the company reaches new level of earning and expect to maintain it, the annual dividend per share may also be increased.

ii. Constant Payout Ratio

When fixed percentage of earnings is paid as dividend in every period; the policy is called constant payout ratio. The Ratio of dividend to earning is known as payout ratio. Since, earning fluctuate, following this policy necessarily means that the rupee amount of dividends will fluctuate. This policy is not likely to maximize the value of-firm's stock because it results in unreliable signals to the market about the future prospects of the firm. It ensures that dividends are paid when profit are earned, and avoided when it incurs losses.

iii. Low Regular Dividend plus Extra

The low regular dividend plus extra policy is comprise between the first two. It gives the firm flexibility but it leaves investors somewhat uncertain about what their dividend income will be if a firms earnings are quite volatile however, this policy may be best choice. Under this policy, the small amount of dividend is fixed to reduce the possibility of over missing a dividend payment. By paying extra dividend in the period of good profit an attempt is made to prevent investors from expecting that the dividend represent an increase in the established dividend amount. The policy enables a company to pay constant amount of dividend regularly, without a default and allows a great deal of flexibility, if the firms earning is quite volatile, this policy may be the best policy.

2.3 The Residual Theory of Dividend

"Residual dividend policy is based on the premise that investors refer to have a firm retain and reinvest earnings rather than pay them out in dividends if the rate of return of the firm can earn and reinvested earnings exceeds the rate of return investors can obtain for themselves on other investments of comparable risk. Further, it is loss expensive for the firm to use retained earning than is to issue new common stock." (KiranThapa)

"The residual theory of dividend suggests that dividend paid by a firm should be viewed as a residual amount or left after all acceptable investment opportunity have been undertaken." (Gitman 7th edition)

2.4 Factors Affecting Dividend Policy

The factors affecting dividend decision is one of the main focus of this study. All type of investors want to more dividends. But, Mostly public enterprises are operating at loss in Nepal. Therefore, the question of paying dividend does not arise. But many Nepalese commercial banks, private organization and joint venture company are operating in profit and they are trying to pay more or less dividend to their shareholders. In such commercial bank, dividend policy play main role in financial management decision. Although all of them are not protecting shareholders right, main factors which affecting dividend policy are as follows;

1. Legal Consideration

In deciding on the dividend, the directors far to keep in mind the legality paying dividend to shareholder. Certain legal rectifications are imposed to payment of dividend for protecting the company and investor. In order to protect the interests of creditors an outsider, the companies Act 1956 prescribes certain guidelines in respect of the distribution and payment of dividend. There are specific legal rules which may limit the amount of dividends a firm may pay. These legal constraints fall into two categories, first, statutory restrictions may prevent a company from paying dividends. While specific limitations vary by slate, generally a corporation may not pay a dividend.

i. If the amount of the dividend exceeds the accumulated profits (returned earnings),

ii. If the firm's assets is less than liabilities,

iii. If the dividend is being paid from capital invested in the firm.

The second types of legal restrictions is unique to each firm and results from restrictions in debt and preferred stock contracts, for example, payment of dividend on preference shares in priority over ordinary dividend.

2. Stability of Earnings

A company with stable earning can be pay higher dividend. The nature of business has an important bearing on the dividend policy. Industrial units having, stability of earnings may formulate a more consistent dividend policy than those having an uneven how of incomes because they can predict easily their savings and earnings. Usually, enterprises dealing in necessities suffer less from oscillating earnings than those dealing in luxuries or fancy goods

3. Age of Corporation

Age of the corporation counts much in deciding the dividend policy. A newly established company may require much of its earnings for expansion and plant improvement and may adopt a rigid dividend policy while, on the other hand, an older company can formulate a clear cut and more consistent policy regarding dividend.

4. Liquidity of Funds

Dividend payment affects the liquidity position of the firm. So, dividend should not be paid in way that it leads to liquidity position of the firm. Availability of cash and sound financial position is also an important factor in dividend decisions. A dividend represents a cash outflow, the greater the funds and the liquidity of the firm the better the ability to pay dividend. The liquidity of a firm depends very much on the investment and financial decisions of the firm which in turn determines the rate of expansion and the manner of financing. If cash position is weak, stock dividend will be distributed and if cash position is strong, company can distribute the cash dividend.

5. Extent of share Distribution

Nature of ownership also affects the dividend decisions. A closely held company is likely to get the assent of the shareholders for the suspension of dividend or for following a conservative dividend, policy. On the other hand, a company having a good number of shareholders widely distributed and forming low or medium income group, would face a great difficulty in securing such assent because they will emphasise to distribute higher dividend.

6. Needs for Additional Capital

Generally company needs an additional capital for investment in capitalized assets. Companies retain a part of their profits for strengthening their financial position. The income may be conserved for meeting the increased requirements of working capital or of future expansion. Small companies usually find difficulties in raising finance for their needs of increased working capital for expansion programmes. They having no .other alternative, use their ploughed back profits. Thus, such Companies distribute dividend at low rates and retain a big part of profits.

7. Trade Cycles

Business cycles also influence upon dividend Policy. Dividend policy is adjusted according to the business oscillations. During the boom, prudent management creates food reserves for contingencies which follow the inflationary period. Higher rates of dividend can be used as a tool for marketing the securities in an otherwise depressed market. The financial solvency can be proved and maintained by the companies in dull years if the adequate reserves have been built up.

8. Government Policies

The earnings capacity of the enterprise is widely affected by the change in fiscal, industrial, labour, control and other government policies. Sometimes government restricts the distribution of dividend beyond a certain percentage in a particular industry or in all spheres of business activity as was done in emergency. The dividend policy has to be modified or formulated accordingly in those enterprises.

9. Taxation Policy

The status of the tax of the shareholders also determines the payment of dividend. Investor having, higher income tax bracket prefer lower cash dividend. High taxation reduces the earnings of the companies and consequently the rate of dividend is lowered down. Sometimes government levies dividend-tax of distribution of dividend beyond a certain limit. It also affects the capital formation.

10. Legal Requirements

In deciding on the dividend, the directors take the legal requirements too into consideration. In order to protect the interests of creditors an outsider, the companies Act 1956 prescribes certain guidelines in respect of the distribution and payment of dividend. Moreover, a company is required to provide for depreciation on its fixed and tangible assets before declaring dividend on shares. It proposes that Dividend should not be distributed out of capita, in any case. Likewise, contractual obligation should also he fulfilled, for example, payment of dividend on preference shares in priority over ordinary dividend.

11. Past Dividend Rates

While formulating the Dividend Policy, the directors must keep in mind the dividend paid in past years. The current rate should be around the average past rate. If it has been abnormally increased the shares will be subjected to speculation. In a new concern, the company should consider the dividend policy of the rival organization and the history of the payment of past year's dividend.

12. Ability to Borrow

Well established and large firms have better access to the capital market than the new Companies and may borrow funds from the external sources if there arises any need. Such Companies may have a better dividend payout ratio. Whereas smaller firms have to depend on their internal sources and therefore they will have to built up good reserves by reducing the dividend payout ratio for meeting any obligation requiring heavy funds.

13. Policy of Control

Policy of control is another determining factor is so far as dividends are concerned. If the directors want to have control on company, they would not like to add new shareholders and therefore, declare a dividend at low rate. Because by adding new shareholders they fear dilution of control and diversion of policies and programmes of the existing management. So they prefer to meet the needs through retained earning. If the directors do not bother about the control of affairs they will follow a liberal dividend policy. Thus control is an influencing factor in framing the dividend policy.

14. Repayments of Loan

A company having loan indebtedness are vowed to a high rate of retention earnings, unless one other arrangements are made for the redemption of debt on maturity. It will naturally lower down the rate of dividend. Sometimes, the lenders (mostly institutional lenders) put restrictions on the dividend distribution still such time their loan is outstanding. Formal loan contracts generally provide a certain standard of liquidity and solvency to be maintained. Management is bound to hour such restrictions and to limit the rate of dividend payout.

15. Time for Payment of Dividend

When should the dividend be paid is another consideration. Payment of dividend means outflow of cash. It is, therefore, desirable to distribute dividend at a time when is least needed by the company because there are peak times as well as lean periods of expenditure. Wise management should plan the payment of dividend in such a manner that there is no cash outflow at a time when the undertaking is already in need of urgent finances.

16. Regularity and stability in Dividend Payment

Dividends should be paid regularly because each investor is interested in the regular payment of dividend. The management should, in spite of regular payment of dividend, consider that the rate of dividend should be all the most constant. For this purpose sometimes companies maintain dividend equalization Fund.

2.5. Legal Provision for Dividend Behavior in Nepal

Nepal Company Act 1997 makes some legal provisions for dividend payment in Nepalese firm/organizations. These provisions are as follows;

- Section-2 "(M) states that bonus share means share issued in the forms of additional shares to shareholders by capitalizing the surplus from the profits or the reserve fund of a company. The term also denotes an increase in capitalized surplus or reserve funds." (Endi consultants Ktm p. 43)
- Section 47 has forbid company from purchasing its own share. This section states that no company shall purchases its own shares or supply loan against the security of its own share. 33 (Ibid p 60)
- Section 137, in regarding bonus shares and subsection (1) states that company must inform the office before issuing bonus shares under sub-section. This may be done only by passing special resolution by the general meeting. 14 (Ibid p 94)
- Section 140, is regarding dividend a sub-section of this section are as follows. 15 (Ibid pp 94-95)

Sub-section (1)

Except in the following circumstances, dividends shall be distributed among the shareholder within 45 days from the date of decision to distribute them.

a. Incase any law may forbids the distribution of dividends.
b. Incase the right to dividend is disputed.
c. In case the dividends can't be distributed within the time limit mentioned above owing to circumstance beyond anyone's control and without any fault on the part of company.

Sub-section (2)

In case the dividends are not distributed within the time limit mentioned in subsection (1), this shall be done by adding interest at the prescribed rate.

Sub-section (3)

Only the person whose name stands registered in the register of existing shareholders at the time of declaring the dividend shall be entitled to it. The above mentioned sections and sub-section of Company Act-1997 indicates that the repurchase of own stock is not permitted to Nepalese company. This act is not enough regarding dividend policy.

2.6. Review of Major Studies in the Relevant Field

Here, we are going to review of the major 'Studies concerning dividends, behavior aspect of dividend policy, dividends effect upon value of enterprises and dividend's effect on market price of share.

Walter's Study

James E. Walter study concluded that the choice of dividend policies almost always affects the value of enterprises. (Walter, 1996:29-44)

In this study he suggests that dividend practice of firm affects its stock price. Walter's especially highlight that, there is significant relationship between internal rate of return and cost of capital, which is the main determining factor to retain its earnings or to distribute dividend to shareholder.

His study was based on the following assumptions

- The firm finances all investment projects through retained earning.
- All earning are either distributed as dividend or reinvested internally.
- The firm's internal rate of return (r) and its cost of capital (K) remain constant.
- There is no change in value of earnings per share and dividend per share.
- The firms have perpetual life.

Based on these assumptions, Prof. Walter develops a model to determine the market price per share is as follows:

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

Where,

P = Market price per share

DPS = Dividend per share

EPS = Earnings per share

r = Internal rate of return

K = Cost of Capital

According to this study the given firm may have three probable conditions. There are:

a) Growth First, r>K

If the firm's internal rate of return is more than cost of capital, the relation between dividend and stock price is negative, i.e., more dividend leads to low stock price and vice-versa. This kind of firm is refereed to as growth firm. The zero dividend payout ratios would maximize the market value of stock for growth firm.

b) Normal Firms, r = K

If a firm has r = K, there is no relation between dividend and stock price, i.e. there is no role of dividend payout ratio for determining stock price. In this situation the firm is indifference whether to retain its earnings or to pay dividends, such firms is called normal firm.

c) Declining Firms, r< K

If the firm's internal rate of return is less than the cost of capital, the relation between dividends and stock prices is positive, i.e., increase in payout ratio leads to increase in stock price. This type of firm referred to declining firm. Prof. Walter Argues that 100% dividend payout would optimize the market price of share for such firm.

In this way, Walter's study conclude that dividends are negatively correlated with market value of stock for growth firm, positively correlated for declining

firm and there is no relation between market value and dividend payout ration for normal firm.

Gordon's Study

In 1962, Mayron Gordon developed his theory. In his study he concluded that dividend policy of a firm affects its value. (Gordon, 1996:57)

A firm having greater investment opportunities tends to increase retention ratio by keeping low dividend payout ratio. In his dividend model, he assumes that the in all equity financed and also making the firm to rely on retained earnings without external financing. According to him, market value of the share is equal to present value of an infinite stream of dividend to be received by the share.

Basically his model based on the following assumptions:

a. No external financing is available i.e., only source is retained earning.
b. The firm uses equity capital only.
c. Internal rate of return (r) and cost of capital (K.) of the firm remains constant.
d. The firm has a perpetual life.
e. There are no taxes on corporate income.
f. The growth rate, g = br, is constant forever.
g. Growth rate is always smaller than cost of capital G<K.

From, his above assumption, Gordon develop following formula for finding out the market value per share,

P = Market value per share

E = Earning per share

b = Retention ratio

Ke = Cost of capital or capitalization rate

r = Interest rate of return

br = growth rate

1-b = Dividend payout ratio i.e. percentage of earning distributed as dividend.

According to his study, following facts are revealed.

- In case of growth firm, share price tends to decline in corresponding with increase in payout ratio or decrease in retention ratio i.e. high dividend corresponding to earning leads to decrease in share price. Therefore, dividend and stock price are negatively correlated in growth firm.
- In the normal firm, share price remain constant regardless of change in dividend policies. It means dividend and stock prices are free from each other in normal firm.
- In the case of declining firm, share price tends to rise in correspondence with rise in dividend payout ratio. It means dividend and stock prices are positively correlated with each other in a decline firm.

Linter's Study

During, the period of 1956, Linter an important study of the behavioral aspect of dividend policy in the American context. Form the test of 28 companies in America partial adjustment model was developed by him. From that he concluded that a major portion of the dividend of a firm could be expressed in the following way. (Linter 1956:97-113)

$Div_t^* = P^{EPS}{}_t$.....(i)

$Div_t^* - Div_{t-1} = a + b\ (Div_t^* - Div_{t-1}) + e_t$ .....(ii)

Or Div, $= a + b\ Div_t^* + (1-b)\ Div_{t-1} + e_t$ .....(iii)

Where,

Div_t^* = is firm's desired payment

EPS_t = Earning per share

P = Targeted payout ratio

a = Constant relating to dividend growth

b = Adjusted factors relating to previous period's dividend and new desired level of dividend whose b<l.

The major findings of this study were:

- Firms generally think in terms of proportion of earning to be paid out.
- Investment requirements are not considered for modifying the pattern of dividend behavior.
- Firm generally have target payout ratio in view while determining change in dividend, or dividend rate.

Modigliani and Miller's Study

In 1961 Modigliani and Miller, for the first time in the history of finance argued that the dividend policy doesn't affect the stock price of the firm. They argued that the value of the firm depends upon the firm's earnings which depend on its investment policy. That is why, MM theory; a firm's value is independent of dividend policy. (Modigliani & Miller 1961:411-433)

This study is based on the following assumption:

- The firm operates in perfect capital market.
- These are no taxes.
- The firm has a fixed investment policy, which does not change at all.
- Risk of uncertainty does not exist.

Considering the above critical assumption MM provide the proof in support of their arguments.

$$nP_0 = \left[\frac{\{P_1(n + \Delta n) - I + E\}}{1 + Ke}\right]$$

Where,

nP_0 = Value of firm

P_1 = Market price of the share at the end of year

n = No. of additional share

Δn = No. of new shares at the end of the period

I = Total investment

E = Total Earning of the firm

By taking the above equation, it is formed that there is no role of dividend in estimating the value of firm. So Modigliani & Miller concluded that dividend policy has no effect on the share price or value of the firm.

Hence, MM theory concluded that, it seems that under the conditions of perfect capital market, rational investors, absence of tax discrimination between dividend income and capital appreciation, given the firm's investment policy may have no influence on the market price of the share. (Modigliani & Miller 1966:345)

Van Horn & **Mc - Donald's Study**

Van Horn and Mc Donald conducted a more comprehensive study on dividend policy and new equity financing. The purpose of this study was to investigate the combined effect of dividend policy and new equity financing decision on the market value of the firm's stocks. They explored some basic aspects of conceptual framework, and empirical tests were performed during year-end 1968, for two industries, using a well-known valuation modal. The required data were collected from 86 electric utility firms included on the COMPUSTAT utility data tape and 39 firms in the electrics and component industries as listed on the COMPUSTAT industry data tape. *(Van Home & McDonald 1971:507-519)*

They tested two regression models for the utilities industries.

First model was,

$P_0/E_0 = a_0+a_1 (g) + a_2 (D_0/E_0) + a_3 (Lev) + U$

Where,

Po/E_0 = Closing market price in 1968 dividend by average EPS for 1967 and 1968

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

D_0/E_0 = Dividend payout, measured by cash dividend in 1968 dividend by earnings in 1968.

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

U = Error term

The Second Model was,

$P_0/E_0 = a_0 + a_1(g) + a_2(D_0/E_0) + a_3(Lev) + a_4 (F_a) + a_5(f_b) + a_6(F_c) + a_7(F_d) + U$

Where,

F_0, F_b, F_c and F_d are dummy variables corresponding to new issue ratio (NIR) group A through D.

It is noted that they had grouped the firms in five categories A. B. C. D. and *E* by NIR group is one and the value of remaining dummy variables are zero.

Again, they tested the following regression equation for electronics electronic components industry.

$P_0/E_0 = a_0+a_1 (g) + a_2 (D_0/E_0) + a_3 (Lev) + a_4 (OR) + U$

Where,

Lev = Financial risk, measured by long-term debt plus preferred stock dividend by net worth as of the end of 1968.

OR = Operating risk, measured by the standard error for the regression of operating earning per share on time of I960 through 1968, and rest are as in first model above.

By using these models or methodology, they compared the result obtained for the firms, which both pay dividends and engage in new equity financing with other firms in an industry. They concluded that for electric utility firms in 1968, share value was not adversely affected by new equity financing in the presence of cash dividends, except for those in the highest new issue group and it made new a mostly costly form of financing than the retention of earning. They also indicated that the payment of dividends through excessive equity financing reduces share prices for electronics, electronic components industry, a significant relationship between new equity financing and value was not demonstrated.

Friend and Puckett's Study

Friend and Puckett had conducted a study on the relationship between dividend and stock prices based on 110 firms from five industries. There five industries were chemical, electronic, food, steel and electric utilities. The study prior covered a boom year for the economy when stock price leveled off after rise (1956 A. D.) and a somewhat depressed year for the economy when stock prices, however, rose strongly (i.e. 1958 A. D.). *(Friend and Marshall, 1964:656-682)*

They used dividends, retained earnings and price earning ratios as independent variables in their regression model of price function. They also used dividend (supply)

function on which earnings, last year's dividends and price earnings ratio are independent variables.

Their price function and dividend (supply) function can be presented as follows:

I) Price Function

$$P_t = a + bD_t + cR_1 + d\left(\frac{E}{P}\right)_{t-1}$$

Where,

P_t = Price per share at time t.

D_t = Dividend at time t.

R_t = Retained earning at time t.

$\left(\frac{E}{P}\right)_{t-1}$ = Lagged earnings price ratio.

II) Dividend (Supply) Function

$$D_t = e + fE_t + gD_{t-1} + h\left(\frac{E}{P}\right)_{t-1}$$

Where,

E_t = Earning per share at time t

D_{t-1} + Last year dividend

This study was based on following assumption.

a) Dividends do react to year-to-year fluctuation in earnings.
b) Price doesn't contain speculative components.
c) Earnings function may not sum zero over the sample.

The conclusion of Friend and Puckett's study was, 'it is possible to increase stock price in non growth industry by raising dividend, and in growth industry by greater retentions or low dividend.'

Deepak Chalwala and G. Srinivasan's Study

In India, Chawala and Srinivasan studied the impact of dividend and retention on share price. 18 Chemical and 13 sugar industries were selected for the study. *(Chawala, and Srinivasan, 1987:137-140)*

The objectives of their study were as follows:

- To set a model to explain share price, dividend and retain earnings relationship.
- To test the dividend, retained earnings hypothesis.
- To examine the structural changes in the estimated relations over time.

To explain the price behavior, they, used simultaneous equation model as developed by Friend and Puckett (1964).

Price Function

$$P_t = F\left[\frac{D_1, R_1, \left(\frac{P}{E}\right)^1}{(t-1)}\right]$$

Dividend Supply Function

$$P_t = F\left[\frac{E_1, D_{t-1}, \left(\frac{P}{Es}\right)^1}{(t-1)}\right]$$

Where,

P = Market Price Per Share

D = Dividend per share

R = Retained per share

E = Earning per share

$\left(\frac{P}{Es}\right)$ = Deviation from the sample average of price earning ratio.

T = Subscript for time.

They used two stage least square techniques for estimation and in case of chemical industry they found the estimated coefficient had the correct sign and the coefficient of determination of all the equation were very high. It implies that the stock price and dividend supply variation can he explained by their independent variables. But in case of sugar industry, they found the sign for the retained earnings is negative. Finally, they concluded that dividend hypothesis holds well in chemical industry. Both dividend and retained earnings significantly explain the variation in share price in

chemical industry. They also stressed that the impact of dividend is more pronounced than that of the retained earnings but the market has started shifting towards more weight for retained earnings.

2.7 Review of Research Works in Nepalese Perspective

In this regard, there are very few articles published in Nepal under this subsection, the two major studies are reviewed as follows:

Pradhan's Study ()

It is desirable to put forth here the study of Radhe S. Pradhan. The study "A survey of Dividend Policy and Practices of Nepalese Enterprises" has been conducted based on views of 135 managers on dividend policy of large Nepalese enterprises.

A questionnaire was distributed to the financial executives of 50 large Nepalese enterprises as identified in the publication of securities boards, Nepal and Nepal Stock Exchange Ltd. out of 50 enterprises. They research on 36 finance sector and 14 on non-finance sector.

The main objective of that study is to examine management's view on various aspects of dividend policy and practices in Nepal.

The major finding of the study:

- In their ranks for the importance of major decision of finance, respondents give third priority to dividend decision.
- With respect to major motives for paying cash dividend that it is to convey information to shareholders that the company is doing well and is to draw attention from the investment community.
- Dividend decision is not a residual decision.
- Nepalese shareholders are not really indifferent to whether the company pays or does not dividend.
- The earning announcement by the company would help to increase market price of share.
- In Nepal most of the companies do not want to pay dividend.
- Dividend policy is affected by earning availability stock price.

Shrestha's Study

One article, "Public Enterprises: Have they dividend paying ability" Was published in 1981 by Prof. Dr. Manohar Krishna Shrestha, which gives short glimpse of the dividend performance of some public enterprise of that time in Nepal. *(Shrestha, 1981:23)*

Dr. Shrestha has highlighted following issues in his article.

- HMF expects two things from the public enterprises:
  - i) They should be in a position to pay minimum dividend and
  - ii) The public enterprises should be self-supporting in financial matters in future years to come, but none of these two objectives are achieved by the public enterprises.
- One reason for this inefficiency is caused by excessive governmental interference in day-to-day affairs. On the other hand, high-ranking officials of BIMG appointed on directors of Board do nothing but simply show their bureaucratic personalities. Bureaucracy has been the enemy of efficiency and thus led corporation to face losses. Losing corporations are, therefore, not in position to pay dividend to government.
- Another reason is the lack of self-criticism and self-consciousness. Esman has pointed out that the lack of favorable leaders is one of the biggest constraints to institution building. Moreover, corporate leadership come as managers of corporations have not been able to identify them regarding what they can contribute as managers of corporations. So, HMG must be in a position to develop a financial target in corporate investment by imposing financial obligation on corporation.
- The article point out the irony of government biasness that government has not all owed bands to follow an independent dividend policy and HMG is focused to have pressurized on dividend payment in case of Nepal Bank Ltd. regardless of profit. But, it has left off Rastriya Banijya Bank from dividend obligation is spite of considerable profit.

The improvements suggested by author are:

a) Adopt a criteria-guided policy to drain resources from corporations through the medium of dividend payment.

b) Realization by Managers about the cost of equity and dividend obligation.

In HMG want to tap resources through dividend, the following criteria should be followed.

a) Proper evaluation of public enterprises in term of capability of paying dividend should be made through corporation co-ordination committee.

b) Imposition of fixed rate of dividend by government to all the financially sound public enterprises.

c) Circulating the information to all the public enterprises about the minimum rate of dividend.

d) Specifying performance criteria .such ns profit target in terms of emphasis, priorities, liming arid plans and developing a strategic plan that is not just a statement of corporation aspiration but must be done to covert the aspiration into reality.

e) Identification of corporation objectives in corporation Act, Company Act or special charter so as to clarify the public enterprise managers regarding their financial obligation to pay dividend to HMG.

2.8 Review of Previous Thesis

Prior to this thesis, some student has conducted several thesis works. Out of them, some are supposed to be relevant for this study have been reviewed in this section.

Rishi Raj Gautam (1999)

This study on dividend policy; Comparative study of three joint ventures banks from 1992 through 1997 the main objective of his study are *(Gautam 1999:1-85):*

- To identify the type of dividend Followed b y banks.
- To examine the impact of dividend on stock price.
- To identify the relationship between DPS and other financial indicator.
- To know the uniformity among DPS, EPS and DPR of the sample banks. Following are the finding of his study.
- No clearly defined dividend policy is found followed by the sample banks.

- No significant relationship between DPS and other financial indicators.
- No uniformity in EPS but prominent difference in DPS and DPR.

Secondly, there are many factors, which affect the dividend policy. These are DPS, EPS, DPR, last year dividend paid, liquidity. Net worth but he used only a few financial factors among them, validity of the results not worthwhile.

Bishnu Hari Neupane (2002)

The study on "Dividend Policy of Financial Institutions" conducted by Bishnu Hari Neupane has following objective. *(Neupane, 2002: 6-7)*

- To identify and compare the dividend policies followed by JVBs and finance companies.
- To analyze the relationship dividend with various important variables such as HPS, Net worth and market price per share (MPS).
- To identify The major determinant of dividend policy,

For that purpose, he selected three joint venture banks and three financial institutions based on secondary data of past five year 1996 to 2000.

Analysis of the result of the sample companies helped him to conclude the following points.

- Dividend practices of all sample JVBs and finance companies are not stable.
- Relations between DPS with EPS and NPAT are positive in all these sample financial institutions. Whereas there is mixed result of relationship between DPS with average stock price and net worth is observed.
- DPS affects MPS in different banks differently.

P. L. Rajbhandari (2001)

This study takes into consideration of data of only five year 1994/95 through 1998/99. Six companies are taken as sample. Her main finding arc *(Rhjbhandari: 2001:1-90):*

- Average earning per share seems satisfactory of all sample companies.
- The positive relationship between dividend per share and earning per share.
- The coefficient, of correlation between earning per share and market price to be negative.

- grater than average DPS of BOK. The relationship between market price per share and dividend is positive Dividend payment is not consistency in all six sample companies.

The institutions do not seem to follow the optimal dividend policy of paying regular dividend as per shareholders expectation and interest.

At first, her study is based on secondary data of past live year 1994/1995 to 1998/99. That may not represent the exact practice of dividend policy of joint Venture Banks and Insurance Companies based on secondary data only.

Secondary, she did not explain the existing capital market in Nepal. The dividend is in macro level but if is necessary to do comparative study and analysis of dividend policy in micro level for the assessment of joint ventures banks and insurance companies as well.

They have not calculated the test of hypotheses, especially ANOVA lest therefore, whether the financial .Indicator such as EPS, DPS & DPR results obtained values are significant or not.

Dhungel (2009)

This study conducted a research on "A study on dividend policy of Everest Bank Limited and Bank of Kathmandu Limited." He uses secondary data. His main objective and findings are as follows:

The main objectives of the study were:

- To identify what type of dividend policy is being followed and whether or not the followed policy is appropriate in Bank of Kathmandu and Everest Bank Limited.
- To highlight dividend practices of the Bank of Kathmandu and Everest Bank Limited.
- To analyze the relationship between dividend per share with various important variables such as earning per share, net profit, net worth and stock prices.
- To provide a practical suggestion and possible guidelines to overcome various issues and gapes based on the finding of the analysis.

Some of the major finding of this study is:

- EPS analysis shows that the average EPS of EBL is grater than the average EPS of BOK.
- DPS analysis shows that the average DPS of EBL is
- The DPR ratios shows that BOK provided more than EBL.
- In the analysis of DY the shareholders of BOK enjoyed more dividend percent compare to the shareholders of EBL on the basis of MPS.
- In case of EBL, the correlation of DPS with EPS, MPS and BVPS is negative and result is also insignificant. In the other hand BOK, the correlation of DPS with EPS and MPS is positive and relationship is significant. But the correlation between DPS and MPS is negative and insignificant.
- In summary EBL remained more successful than BOK is satisfying its shareholders through distributing cash and bonus share dividend.

Bhandari (2009)

This study conducted "Dividend Policy Analysis of Commercial Banks of Nepal". She uses primary and secondary data. Statistical as well as financial tools are used and objectives and finding are as follows:

The main objectives the study was:

- To identify what types of dividend policy is being followed and whether or not the followed policy is appropriate.
- The highlight the dividend practices of banks.
- To analyze the relationship between dividend per share with various important variables such as earning per share, net profit, net worth and stock prices.
- To provide a practical suggestion and possible guidelines to overcome various issues and gaps based on the findings of the analysis.

Some main findings are as follows:

- From the primary data, it can be conducted that companies distribute dividend to capture the market.
- The banks should consider mainly the legal consideration while declaring dividend and pay cash dividend to fulfill shareholders expectation.
- The bank should pay dividend only after financing in all investment opportunity.
- The correlation of DPS of NABIL with EPS is positive and significant where as the correlation between of DPS with MPS and BVPS and DPR with MPS is insignificant. This means that DPS increase with the increase in EPS. The correlation of DPS of HBL with EPS, MPS is positive but insignificant. Where as correlation between DPS and BVPS are negative and insignificant. This means that there is no significant relationship of DPS wit EPS, MPS and BVPS of HBL

2.9 Research Gap

The topic of research is Dividend Behavior of Commercial Banks in Nepal. Basically in the previous time the researches had conducted in the similar topic as the dividend practices. They basically focus on the practice of the well established banks. In research have tried to analyze the relation between the well established bank and new Commercial bank which have reached five years at the time of my research. The word, behavior tries to focus the pattern or the way of doing business and the way they have a trend toward the dividend.

CHAPTER-III

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is a process, which solves the problem by using various tools. It describes the method and process of the If study. Research methodology is one of the most, import ant ports of every research. The basic objective of this study is to explain, test and analysis of dividend practice and its impact on market price of stock in Nepalese context. Research methodology describes the methods and process applied in the entire aspect of the study. It refers to the various sequential steps to be adopted by a researcher in studying a problem with certain objects in view. This chapter describes about research design, sample selection and size, data collection procedure, data processing, definition of variables, meaning and definition off statistical tools used.

3.2 Research Design

The research design is the specification of methods and procedure for acquiring the information needed to structure to solve the problems. In another words, it is the conceptual framework within which research is conducted. The analytical as well as descriptive research designs have been included in the present study. For the analytical purpose, the annual reports, financial statements and other relevant material of the companies will be studied.

Karlings argues, "Research Design is the plan, structure and strategy of investigation concerned so as to obtain answers to research question and to control variances".

3.3 Populations and Sample

Now, 31 commercial banks (including government owned, private and joint venture) are operating in Nepal. Due to time and resource factors, it is not possible to study all of them regarding the study topic. Therefore, sampling will be done selecting from population. The population is as follows:

Table 3.1

List of Licensed Commercial Banks

• Nepal Bank Limited	• Machhapuchhre Bank Ltd.
• Rastriya Banijya Bank	• Kumari Bank Ltd.
• NABIL Bank Ltd.	• Laxmi Bank Ltd.
• Nepal Investment Bank Ltd.	• Siddhartha Bank Ltd.
• Standard Chartered Bank Nepal Ltd.	• Mega Bank Ltd.
• Himalayan Bank Ltd.	• Global Bank Ltd.
• Nepal SBI Bank Ltd.	• Citizens Bank International Ltd.
• Nepal Bangladesh Bank Ltd.	• Prime Commercial Bank Ltd.
• Everest Bank Ltd.	• Bank of Asia Nepal Ltd.
• Bank of Kathmandu Ltd.	• Sunrise Bank Ltd.
• Nepal Credit and Commerce Bank Ltd.	• Development Credit Bank Ltd.
• Lumbini Bank Ltd.	• NMB Bank Ltd.
• Nepal Industrial & Commercial Bank Ltd.	• KIST Bank Ltd.
• Agriculture Development Bank Ltd.	• Civil Bank Ltd.
• Janata Bank Ltd.	• Century Bank Limited
• Commerze and Trust Bank Limited	

Source: http://www.nepalstock.com

We have selected only 5 commercials banks for our study out of 31 commercial banks. It is not possible to study all of them regarding the study topic, because all of them these commercial banks share actively traded then others in Nepalese stock Market and due to time and resource factors it is not possible to study all of them that's why these banks are mainly focuses. The samples selected for this study are:

i) Nabil Bank Ltd. (Nepal Arab Bank Ltd.)
ii) Himalayan Bank Limited
iii) Bank of Kathmandu Ltd.
iv) Kumari Bank Ltd.
v) Nepal Industrial and Commercial Bank

Thus, this study covers,
Population Size: 31
Sample Size: 5
In this research study the sample size is 16.13% of the population size.

3.4 Period of Study

The study is based on five years financial data of the banks under study NABIL Bank Ltd., Himalayan Bank Ltd., Bank of Kathmandu Ltd., Kumari Bank Ltd. And Nepal Industrial and Commercial Bank Ltd.

3.5 Source and Technique of Data Collection

The research in mainly based on the secondary data which, may include the Annual Reports of the banks under study, Economic Report Published by Nepal Rastra Bank, the stock price for the whole year listed in the Nepal Stock Exchange (NEPSE, Economic Survey published from HMG Ministry of Finance, Financial Status report published form World Bank, Financial arid other relevant data regarding the dividend policies arid practices of the Banks. Besides this, the data are also collected from various newspapers, magazines and journals published by the concerned agencies as well as website of Nepal Stock Exchange! For the purpose of analysis of data of five years will be taken as sample from 2005 to 2010. These will be analyzed in two ways:

- Using Financial Tools
- Using Statistical Tools

3.6 Data Analysis Tools

The analysis of this study is based on the following tools:

a. Financial tools

b. Statistical tools

a. Financial Tool

Financial Tools are those, which help to study the financial strength and weakness of the sample forms. The financial tools used in this study are presented below:

- **Earning Per Share (EPS)**

  Earning per share refers the rupee amount earned per share of common stock outstanding. It measures the profitableness of the shareholders investment. The earning per share shows the profitability of the banks on a per share basis. The higher earning indicates the better achievements in terms of profitability of the banks by mobilizing their funds and vice-versa. In other words, the earning per share indicates the strength and weakness of the bank.

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

$$\text{EPS} = \frac{\text{Earning Available to Common Stockholders}}{\text{Number of Common Stock Outstanding}}$$

- **Dividend per Share (DPS)**

  Dividend per share indicates the rupee earnings distributed to common stockholders per share held by them. It measures the dividend distribution to each equity shareholders. Dividend per share shows the portion of earning distribution to the shareholders on per share basis. Generally, the higher DPS creates positive altitude of the shareholders toward to bank is common stock, which consequently helps to increase the market value to the share. And it also works as the indictor of better performance of the bank management.

  It is calculated by dividing the total dividend distributed to equity shareholder by the total number of equity shares outstanding. Thus,

$$\text{DPS} = \frac{\text{Total Amount of Dividned Paid to Ordinary Shardholders}}{\text{Number of Ordinary Shareholders Outstanding}}$$

- **Dividend Percent (DP)**

  Dividend percent is the ratio of dividend per share to the paid-up price per ordinary share. It can be calculated as:

$$\text{DP} = \frac{\text{Dividend Per Share}}{\text{Paid up Price Per Share}}$$

- **Dividend Payout Ratio (DPR)**

  It is the proportion of earning paid in the form of dividend. This ratio shows what percentage of profit is distributed as dividend and what percentage is retained as reserve and surplus for the growth of the banks. The dividend payout ratio of a bank depends upon the earnings made by the bank. Higher earning enhances the ability to pay more dividends vice-versa.

There is an inverse relationship between dividends and retained earnings. The higher dividend payout ratio, the lower will be the proportion of retained earning and vice versa. The capacity of internal financing of the firm is checked by the retention ratio.

It is calculated as the percentage of the profit that is distributed as divided. This ratio is calculated by dividing per share by the earning per share. Thus,

$$\text{DPR} = \frac{\text{Dividend Per Share}}{\text{Earning Per Share}}$$

And, Retention Ratio = (1 – Dividend Payout Ratio)

= (1-DPR)

- **Price Earning Ratio (P/E Ratio)**

Price-earning ratio is also called the earnings multiplier. Price-earning ratio is the ratio between market price per share and earning per share. In other words, this represents the amount which investors are willing to pay for each rupee of the firm's earnings.

The P/E ratio measures investor's expectation and market appraisal of the performance of the firm. The higher P/E ratio implies the high market share price of a stock given the earning per share and the greater confidence of investor in the firm's future. This ratio is computed by dividing earning per share to market price. Thus,

$$\text{P/E Ratio} = \frac{\text{Market Price Per Share}}{\text{Earning Per Share}}$$

- **Earning Yield (EY)**

Earning yield is the percentage of earning per share to market price per share in the stock market. In other words, it is a financial ratio relating to earning per share to the market share price at a particular time. It measures the earning in relation to market Value of share. It gives some idea of how much an investor in earning for his money. The share with higher earnings yield is worth buying. It is calculated as:

$$\text{Earning Yield} = \frac{\text{Earning Per Share}}{\text{Market Price Per Share}}$$

- **Dividend Yield (DY)**

  Dividend yield is a percentage of dividends per share on market price per share. It measures the dividend in relation to market value of share. So, dividend yield is the dividend received by the investors as a percentage of market prices per share in the stock market.

  This ratio highly influences the market price per share because a small change in dividend per share can bring effective change in the market value of the share. The share with higher dividend yields is worth buying. Thus the price of higher dividend yield increase sharply in the market. Dividend has important guidance to commit funds for the buying of share in the secondary market. This ratio is calculated by dividing dividend per share by market price of the stock. Thus

  $$\text{DY Ratio} = \frac{\text{Dividend Per Share}}{\text{Market Price Per Share}}$$

- **Market Price per Share (MPPS) to Book Value per Share (BVPS)**

  It gives the indication of how investor regard the company. This ratio measures the market situation per share in the competitive open market with respect to book value per share of commercial banks. This ratio indicates the price the market is paying for the share that is reported from the net worth of the banks.

  This is important to compare the market share prices of different stocks on the banks of the book value per share. It shows market share price of the stock as a percentage of book value per share and the effect of later on the former. The highest rations represent to conclude that the better performance of commercial banks value per share. This ratio can be derived by dividing market price per share by book value per share. Thus

  $$\text{MPS to BVPS Ratio} = \frac{\text{Market Price Per Share}}{\text{Book Value Per Share}}$$

  The higher market to book value ratio indicates that the firm is able to increase the value of the firm in the market.

- **Net Worth Per Share**

  It is a rupee value per share. It is calculated dividing Book Value of Net Worth (or Net Worth) by total numbers of share outstanding. Net worth is also known as capital employed of the firm.

$$\text{Net Worth Per Share} = \frac{\text{Net Worth}}{\text{No. of Shares}}$$

b) Statistical Tools

Besides the financial tools, various statistical tools, various statistical tools have been used to conduct this study. The result of analysis has been properly tabulated, compared, analyzed and interpreted. In this study, the following statistical tools are used to analyze the relationship between dividend and other variables.

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

  An average is the value, which represents a group of values. It depicts the characteristic of the whole group. It is an envoy of the entire mass of homogeneous data. Generally the average value lies somewhere in between the two extremes, i.e. the largest and the smallest items. It is calculated as follows.

$$\text{Arithmetic Mean } (\overline{X}) = \frac{X_1 + X_2 + X_3 + \cdots \ldots \ldots + X_n}{N}$$

$$\text{or}, \overline{X} = \frac{\Sigma X}{N}$$

Where,

ΣX = Sum of the sizes of the items

N = Number of items

- **Standard Deviation (σ)**

  Karl Pearson first introduced the concept of standard deviation m 1983. Standard deviation is the positive square root of the arithmetic average of the squares of all the deviation measured from the arithmetic average of the series. The standard deviation measures the absolute dispersion of a

distribution. The greater the amount of dispersion the greater the standard deviation, i.e. greater will be the magnitude of the deviation of the values from their mean. A small standard deviation means a high degree of uniformity of the observation as well as homogeneity of a series. Standard Deviation is denoted by a Greek letter σ (Sigma) and is calculated as follows.

$$\text{Standard Deviation } (\sigma) = \sqrt{\frac{\Sigma(X - \bar{X})^2}{N}}$$

Where,

N = Number of items in the series

$\bar{X}$ = Menu

X = Variable

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

It is the measurement of the relative dispersion by Karl Person. It is used to compare the variability of two or more series. The series with higher coefficient of variation is said to be more variable, less consistent and less uniform, less stable and less homogenous. On the contrary the series with less coefficient of variation is said to be less variable, more consistent, more uniform, more stable arid more homogenous. It is denoted by C.V. and is obtained by dividing the standard deviation by arithmetic mean. Thus,

$$\text{Coefficient of Variation } (C.V) = \frac{S.D. \times 100}{\text{Mean}} \text{ or, } \frac{\sigma x 100}{\bar{X}}$$

Where,

σ = Standard Deviation

$\bar{X}$ = Mean

- **Coefficient of Correlation (r)**

The correlation analysis is the technique used to measure the closeness of the relationship between the variables. It helps us in determining the degree of relationship between two or more variables. It describes not only the magnitude of correlation but also its direct ion. The coefficient of correlation

in a number, which indicates to what extent two variables are related with each other and to what extent variations in one leads to the variation in the other.

The-value of coefficient of correlation always lies between ±1. A value of –1 indicates a perfect negative relationship between the variables and a value of +1 indicates a perfect positive relationship. A value of zero indicates that there is no relation between the variables. The zero correlation coefficient means the variables are uncorrelated. The closer is +1 or –1, the closer the relationship between the variables and closer r is to zero (0), the less close relationship. The algebraic sign of the correlation coefficient indicates the direction of the relationship between two variables, whether direct or inverse, while the numerical value of the coefficient is concerted with the strength, or closeness of the relationship between low variables.

Thus, in this study, the degree of relationship between market price and other relevant financial indicators such as dividend per share earning per share, dividend payout ratio etc is measured by the correlation coefficient. The correlation coefficient can be calculated as:

$$r = \frac{Cov(XY)}{\sigma_x \sigma_y}$$

$$r = \frac{\Sigma(X - \overline{X})(Y - \overline{Y})}{(N-1)\,\sigma_x \sigma_y}$$

or,

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

Where,

$\sigma_x\sigma_y$, Are the standard deviation of the distributions of X and Y values respectively.

Cov (X, Y) = Covariance of X, Y value

$$= \frac{\Sigma(X - \overline{X})(Y - \overline{Y})}{(N-1)}$$

Under this study, the correlation between the following variables is analyzed:

a) Dividend per Share and Earning Per Share.

b) Dividend per Share and Net profit.

c) Dividend per Share and Market price per share.

d) Dividend per Share arid Net Worth, per share

e) Dividend Payout Ratio and Market Price per Share.

- **Coefficient of Determination (R^2)**

The coefficient of determination is the primary way to measure the extent or strength, of the association that exists between two variables, x and y. It refers to a measure of the total variance in a dependent variable that is explained by its linear relationship to an independent variable. The coefficient of determination is denoted by R^2 and the value lies between zero and infinity. The closer to infinity means greater the explanatory power. A value or one can occur only if the unexplained diagram falls exactly on the regression line. The R^2 is always a positive number. It can't tell whether the relationship between the two variables is positive or negative. The R^2 is defined as the ratio of explained variance to the total variance. Thus,

$$\text{Coefficient of Determination } (R^2) = \frac{\text{Explained Variance}}{\text{Total Variance}}$$

or,

$$R^2 = \frac{1 - \text{Unexplained Variance}}{\text{Total Variance}}$$

- **Regression Analysis**

Francis Galton was the first person to introduce the concept of regression. Regression refers to art analysis, which involves the fitting of an equation to a set of data points, generally by the method of least square. In other words the correlation analysis shows the direction of movement but it doesn't tell the relative movement in .the variable under study. Regression analysis helps to know that relative movement in the variables. Simple regression analysis of following variables are calculated and interpreted in this study.

A. Dividend per Share on Earning Per share

For this following model is used.

$Y = a+bx$

Where,

Y= Dividend per share

a = Regression constant

b = Regression co-efficient

x = Earning per share

This analysis enables to know whether EPS is influencing factor of dividend per share or not,

B. Market Price per Share on Dividend per Share

The Model:

$Y = a + bx$

Where,

Y= Market per share

a = Regression constant

b = Regression co-efficient

x = Dividend per share

This model tests the dependency of MPPS on DPS.

C. Net Worth Per Share on Dividend per Share

The model:

$Y = a+ bx$

Where,

Y= Net worth per share

a = Regression constant

b = Regression co-efficient

x = Dividend per share

These models test the dependency of net worth per share on dividend per share. In correlation and regression analysis following statistics has been calculated and interpreted accordingly.

a. **Multiple R:** It is the correlation co-efficient between observed values and values given by the model. The values close to 1 is preferable, since it indicates that the values are closely related.

b. **R^2:** It is the co-efficient of determination. It measures the linear association between variables. It tells the explained variation due to independent variable. It is square of co-efficient of co-relation.

c. **Standard Error of Estimated (SEE):** It is likely error in predicted values given by the model. Smaller SEE is desirable, since it denotes lower degree of error.

d. **Regression Co-efficient (b):** It describe its changes in independent variable affect the value of dependent variable's estimate.

e. **Regression Constant (a):** The regression constant (a) indicates the average effect on dependent variable, if all the independent variables omitted from the model.

CHAPTER-IV

PRESENTATION AND ANALYSIS OF DATA

This chapter includes three headings, at first analysis of financial indicators and variables are presented. Correlation and regression are the next two sub-headings. Therefore, this chapter is based on the presentation and analysis of the secondary data, which help to conclude and draw some recommendation.

4.1 Analysis of Financial Indicator Variables

Under this heading the financial variables have been presented, analyzed and calculations are done the program SPSS 10.0 for windows.

a. Earning Per Share (EPS)

Normally, the performance and achievement of business organization are measured in term of its capacity of generate earning. The higher earning indicates the higher strength and lower earning indicates the weakness of business organization that helps for its growth, expansion and diversification. The earning power of business organization is measured in terms of earning per share (EPS.)

The following table shows EPS, and its means, standard deviation, co-efficient of variance of different commercial banks.

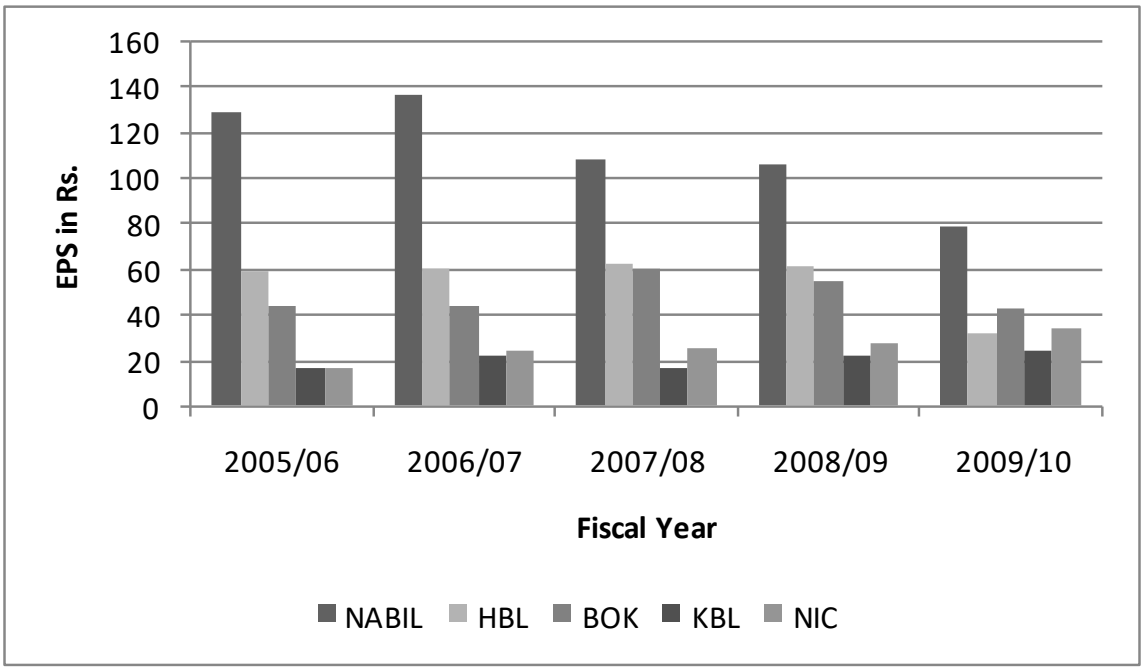
Table No. 4.1
EPS of Commercial Banks (In Rs.)

Banks	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V. (%)
NABIL	129.21	137.08	108.31	106.76	78.61	111.99	20.4	18.22
HBL	59.24	60.66	62.74	61.90	31.8	55.27	11.80	21.35
BOK	43.67	43.5	59.94	54.68	43.08	48.97	7.01	14.31
KBL	16.59	22.07	16.35	22.04	24.24	20.25	3.2	15.80
NIC	16.10	24.01	25.75	27.83	34.30	25.60	5.89	23.01

Source: From Appendix No. 1

EPS of different commercial Banks are also presented in the following figure.

Figure No. 4.1
EPS of Commercial Banks



Source: From Table No. 4.1

The Earning Per Share (EPS) of Nepal Arab Bank Ltd. (NABIL) ranged between Rs. 78.61 to Rs. 137.08 and the average (mean) EPS is Rs. 111.99, the standard deviation (Std. Dev.) of its EPS is Rs. 20.40. The co-efficient of variance (C.V.) of the bank is 18.22 percent of EPS. It indicated that there is 18.22 percent fluctuation in EPs among the given 5 year.

The average income of Himalayan Bank Ltd. (HBL) is Rs. 55.27. The standard deviation and co-efficient of variation of this bank are Rs. 11.8 and 21.35 percent. The co-efficient of variation of this bank shows second highly fluctuation among selected banks on EPS.

The Bank of Kathmandu Limited (BOK) has mean income of Rs. 48.97. The standard deviation and co-efficient of variation of this banks are Rs. 7.01 and 14.31 percent respectively. This bank has higher income in the year 2007/08 and the lower income in the year 2009/10. The co-efficient of variation indicates that there is lower variation in its EPS among selected banks.

The earning per share of Kumari Bank Limited (KBL) ranged between Rs. 16.35 to 24.24. The mean EPS is Rs. 20.25. Its standard deviation and co-efficient of variation are Rs. 3.20 and 15.80 percent respectively. The co-efficient of variance of this bank shows least fluctuation among selected banks in EPS.

The average EPS of Nepal Industrial and Commercial Bank Limited (NIC) is Rs. 25.60. There highest and lowest incomes during the study period are Rs. 34.30 and 16.10 respectively. The standard deviation on EPS of this bank is

5.89 and its fluctuation on EPS is 23.01 percent which is highly fluctuation in its EPS among selected banks.

Finally, EPS of commercial banks in Nepal seems positive. The average EPS of NABIL is the highest and that of Kumari Bank limited is lowest. The EPS range of the banks under study during this period is between Rs. 16.10 to 137.08. Similarly the standard deviation of Nabil is highest and Kumari Bank Limited is lowest. The co-efficient of variation of this banks shows that there is fluctuation in the EPS. If we compared the entire bank, BOK and KBL have the most consistent EPS among all the sample banks.

b) Dividend Per Share (DPS)

Dividend per share indicates the proportion of earning distributed to owner (shareholder) on per share basis. Generally, the higher DPS creates position attitude among the shareholders toward the bank, which accordingly helps to increase the market value of shares.

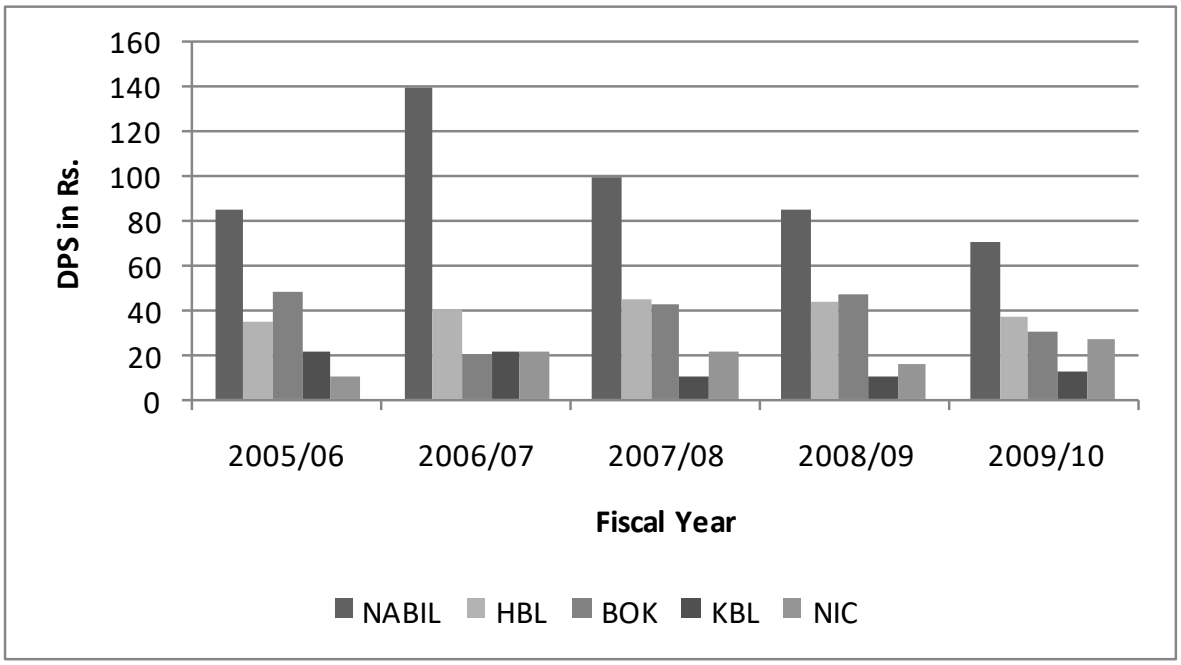
The following table and figure shows the dividend per share of the sample commercial banks, its mean, standard deviation and co-efficient of variance of different listed samples commercial banks in Nepal.

Table No. 4.2
DPS of Commercial Bank (in Rs.)

Banks	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V. (%)
NABIL	85	140	100	85	70	96	23.95	24.95
HBL	35	40	45	43.56	36.84	40.08	3.81	9.51
BOK	48	20	42.11	47.37	30	37.50	10.30	27.49
KBL	21.05	21.05	10.53	10.58	12	15.04	4.93	32.80
NIC	10.53	21.05	21.05	15.79	26.32	18.95	5.37	28.34

Source: From Appendix No. 2

Figure No. 4.2
DPS of Commercial Banks



Source: From Table No. 4.2

Mean dividend per share of Nabil Bank Limited is Rs. 96 with the standard deviation of 23.95. The highest and the lowest dividend per shares are Rs. 140 and Rs. 70 respectively. The co-efficient of variation is 24.95 percent, which indicates that there is 24.95 percent fluctuation in the DPS of Nabil during the period of the study.

Himalayan Bank Limited (HBL) has average dividend per share of Rs. 40.08. It is higher dividend per share is Rs. 45 in year 2007/08 and lower dividend is Rs. 35 in the year 2005/06. The standard deviation and coefficient of variation are Rs. 3.81 and 9.51 percent respectively. The co-efficient of variation shows lowest fluctuation in DPS of this bank among selected banks.

The average DPS of Bank of Kathmandu Limited (BOK) is Rs. 37.50. Its lower and higher dividend per share are Rs. 20 in the year 2006/07 and Rs. 47.37 in the year 2008/09. The standard deviation of this bank is Rs. 10.30. The co-efficient of variation is 27.49 percent which is moderate fluctuated among the selected banks.

Kumari Bank Limited (KBL) paid the higher dividend per share of Rs. 21.05. An average dividend per share of Rs. 12 has been noted during the study period. The standard deviation of the DPS is 4.93. The co-efficient of variation of 32.80 percent indicates that there is highly fluctuation in the DPS in KBL among selected banks.

The average dividend per share of NIC bank over the years is Rs. 18.95. Its standard deviation and C.V. are Rs. 5.37 and 28.34 percent respectively. The co-efficient of variance of this bank indicates that there is greater variability in dividend behavior.

From the above calculation, Nabil has the highest average DPS and KBL has the lowest average DPS. The C.V. indicates that among the banks under study during the period. HBL has the highest consistency in paying dividend where as the DPS of KBL is highly fluctuating.

c) Dividend Payout Ratio (DPR)

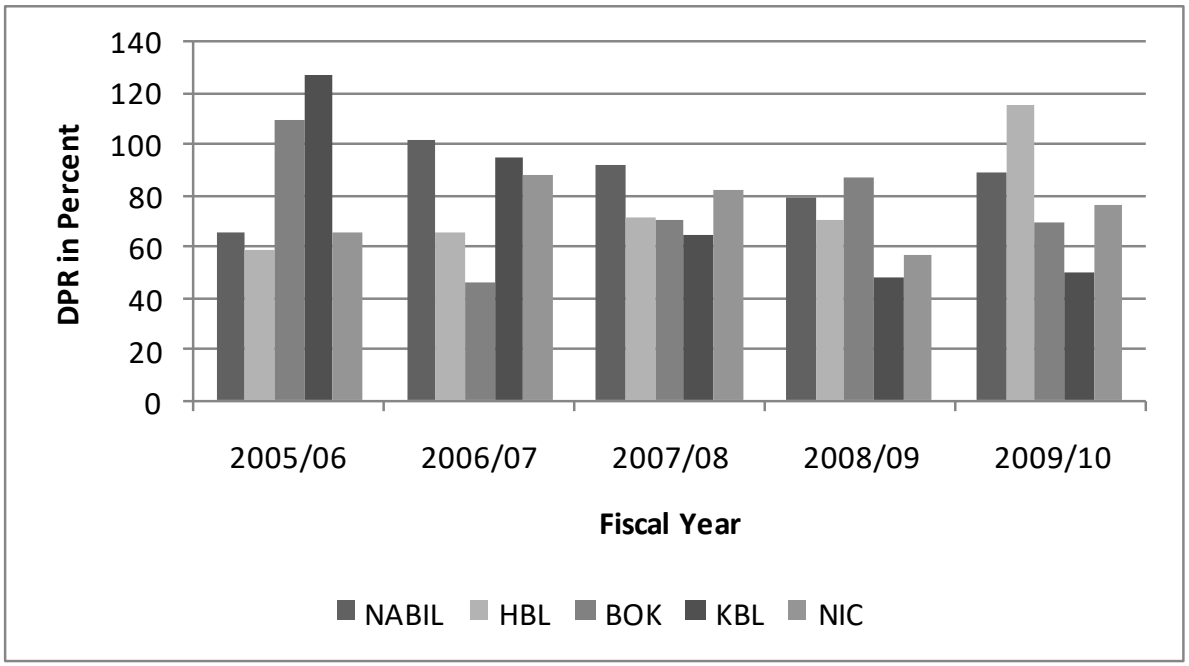
The ratio shows the amount of dividend as a percentage of earning available for equity shares. It depends upon earning of organization. Creator the earnings shows more ability to pay dividend. The dividend payout ratio of the bank's study is stated in the table and figure as follows.

Table No. 4.3
DPR of Commercial Bank (in Percent)

Banks	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V. (%)
NABIL	65.78	102.13	92.33	79.63	89.05	85.78	12.32	14.36
HBL	59.08	65.94	71.72	70.37	115.85	76.6	22.12	26.27
BOK	109.92	45.98	70.25	86.87	69.64	76.53	21.18	27.18
KBL	126.88	95.38	64.40	48	49.50	76.83	30.27	39.39
NIC	65.40	87.67	81.75	56.74	76.73	73.65	11.19	15.19

Source: From Appendix No. 3

Figure No. 4.3
DPR of Commercial Bank



Source: From Table No. 4.3

The average dividend payout ratio (DPR) of Nabil is 85.78 which mean that banks pay 85.78 percent of its earnings as dividend for its investor. The

dividend payout ratio ranged between 65.78 to 102.13 percent. Its standard deviation and co-efficient of variation are 12.32 percent and 14.36 respectively. The value of C.V. points toward consistency in dividend payment behavior.

Himalayan Bank Limited has mean dividend payout ratio of 76.60. It means that HBL is generally paying 76.60 percent. It's earning as dividend to its shareholder. The standard deviation of DPR is 20.12 percent and its fluctuation on DPR is 26.27 percent.

The mean dividend payout ratio of BOK is 76.53 percent. It ranged between 45.98 to 109.92 percent. The average dividend payout ratio shows that the pay 76.53 percent as dividend of its earning on an average. The co-efficient of variation is 27.18 percent. The C.V. on DPR of this bank indicates that there is moderate dividend payment behavior among the selected bank. The standard deviation of BOK is 21.18 percent.

An average dividend ratio of 76.83 noted during the study period for Kumari Bank Limited. The standard deviation of the dividend payout ratio is 30.27 percent. The co-efficient of variation of 39.39 percent shows a worst dividend behavior of dividend payment by KBL i.e. highest variation in DPR.

Nepal Industrial and Commercial Bank Limited have an average dividend payout ratio of 73.65 percent. It means that Nepal Industrial Bank Limited is generally paying 73.65 percent of its earning as dividend to its shareholders. The standard deviation of DPR is 11.19. The C.V. of 15.19 which is moderate consistency in dividend payment behavior among the selected banks.

From above table shows that NABIL has uniform DPR and it also has the lowest C.V. on DPR among all banks under study. It shows that NABIL has the uniform dividend payments among the selected banks.

d. Market Price Per Shares (MPPS)

Market price per share (MPPS) is the value paid to a share of the firm by the investor in the stock market. Thus this price is fixed in the stock market on the basis of demand and supply position for specified share. Higher MPPS is more desirable.

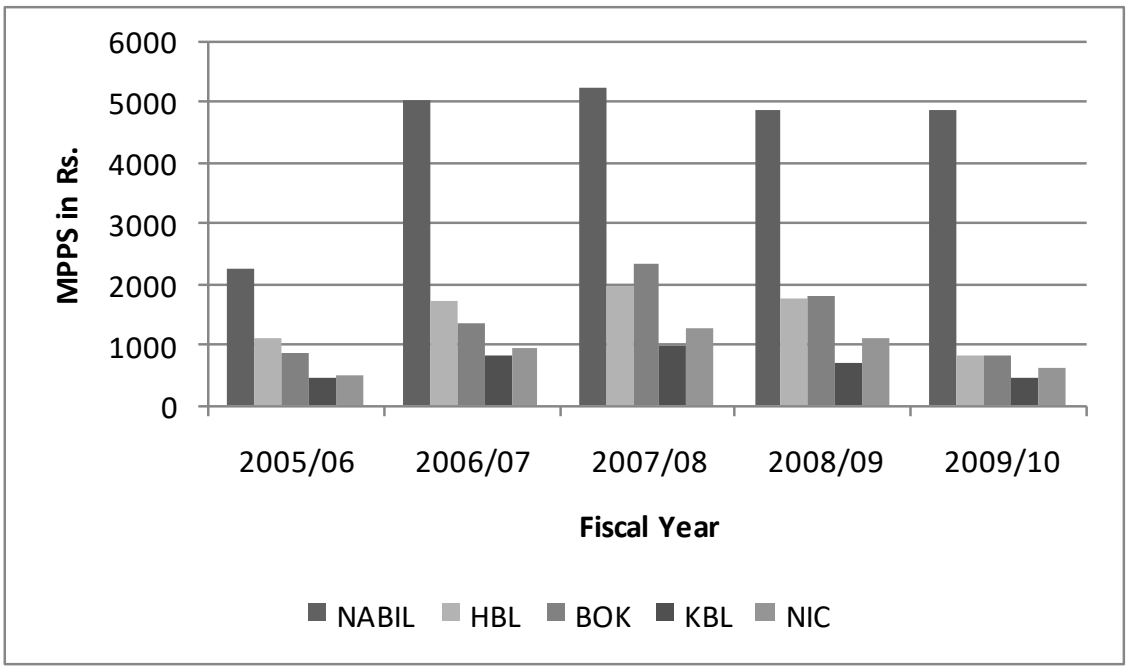
The market price per share of different commercial banks is presented in the following table and figure respectively.

Table No. 4.4
MPPS of Commercial Bank (in Rs.)

Banks	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V. (%)
NABIL	2240	5050	5275	4899	4899	3969.6	1359.46	34.25
HBL	1100	1740	1980	1760	816	1479.2	443.01	29.95
BOK	850	1375	2350	1825	840	1448	581.09	40.13
KBL	443	830	1005	700	468	689.2	214.11	31.06
NIC	496	950	1284	1126	626	896.4	296.41	33.07

Source: From Appendix No. 4

Table No. 4.4
MPPS of Commercial Bank



Source: From Table No. 4.4

The market price per share of NABIL ranged from Rs. 22.40 to Rs. 5275.00. The mean MPPS is Rs. 3969.6. Its standard deviation and co-efficient of variation are Rs. 1359.46 and 34.25 percent respectively.

Similarly HBL has mean MPPS of Rs. 1479.2 which is second higher than other banks average MPPS. Its standard deviation is Rs. 443.01. The co-efficient of variation on MPPS of these banks indicates that there are 29.95 variations in its MPPS which is the lowest among the selected banks.

The average MPPs of Bank of Kathmandu Limited during the period of study is Rs. 1448.00 with a standard deviation of 581.09 and a co-efficient of variation of 40.13 percent, which is highest among the banks under study.
During the period of study, Kumari Bank Limited had an average closing market price per share of Rs. 689.2 with a standard deviation of 214.11. The co-efficient of variation shows that there is a normal fluctuation of 31.06 percent in closing MPPS of KBL.

Nepal Industrial and Commercial Bank Limited have the closing range between Rs. 496 and Rs. 1284 during the period of study. And average closing market price per shares of Rs. 896.4 is noted during this period. The standard deviation of the closing MPPS is 296.40. The co-efficient of variation of 33.07 indicates that there is a general fluctuation of 33.07 in the closing MPPS of NICBL during the period of study.

Finally, the average MPPS and NABIL is higher than other banks. So this is in good position but the average MPPS of all sample commercial banks be

considered to be encouraging. Almost all banks MPPS is in increasing trend for succeeding years. There is less fluctuation is the MPPs of HBL, KBL and NIC, they have lower co-efficient of variation. The MPPS of sample banks has fluctuated in range of 29.95 to 40.13 as indicated by respective C.V. of the different sample banks.

e) Price Earning Ration (P/E Ratio)

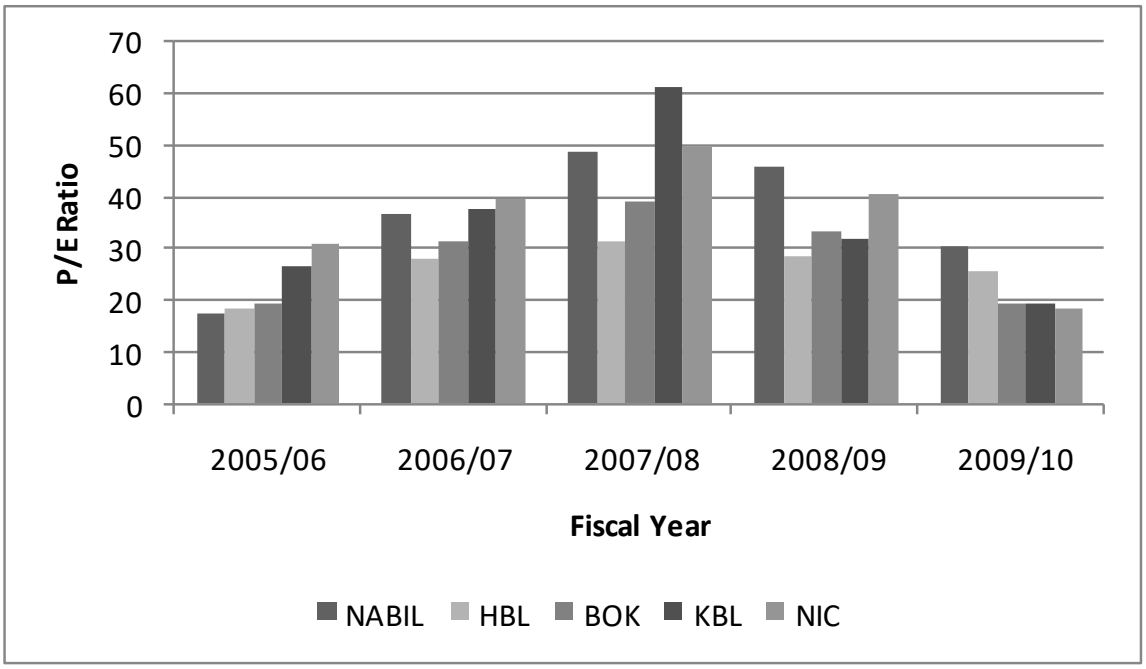
Price earning ratio is the between market price per share and earning per share. It is also called earning multiplier. The price earning ratio of the banks under study is presented in table and figure below.

Table No. 4.5
Price Earning Ratio

Banks	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V. (%)
NABIL	17.34	36.84	48.70	45.89	30.33	35.82	11.31	31.57
HBL	18.57	28.08	31.56	28.41	25.66	26.58	4.41	16.59
BOK	19.46	31.61	39.21	33.37	19.50	28.63	7.89	27.56
KBL	26.71	37.61	61.47	31.76	19.31	35.37	14.37	40.63
NIC	30.81	39.57	49.86	40.46	18.25	35.06	10.85	30.43

Source: From Appendix No. 5

Figure No. 4.5
Price Earning Ratio



Source: From Table No. 4.5

The average P/R ratio NABIL, during this period of study is 35.82. It is within the range of 17.34 and 48.70. The standard deviation of price earning ratio is

11.31 whereas the coefficient of variation of 31.57. Which is quite highly fluctuation nature P/E ratio in NABIL.

Himalayan Bank Limited has an average price earning ratio of 26.58, ranging between 18.57 and 31.56, during the period of study. The standard deviation of 4.41 and the fluctuation of 16.59 in the price earning ratio are seen during the period, which is lowest fluctuation among the selected banks.

The average P/E ratio of Bank of Kathmandu Limited (BOK) is 28.63 with the standard deviation of 7.89. The co-efficient of variation is 27.56 percent, which indicates that it's has general fluctuation in P/E ratio among the sample commercial bank.

Kumari Bank Limited has an average price earning ratio of 35.37. The standard deviation is 14.37 and co-efficient of variation is 40.63 percent. The co-efficient of variance shows that P/E ratio of KBL is highly fluctuation, than other sample commercial bank.

The average price earning ratio of Nepal Industrial and Commercial Bank Ltd. during this period of study is 35.06. The standard deviation is 10.85 and the co-efficient of variation is 30.43 which indicate that it has normal fluctuation in P/E ratio of NIC.

From the above calculation, NABIL has the highest average price earning ratio and HBL has the lowest P/E ratio. The C.V. indicates that among the banks under study during the period. HBL has the highest consistency in P/E ratio whereas the P/E ratio of KBL is highly fluctuating.

f) Dividend Percent (DP)

Dividend percent is the ratio DPS to the paid up price per share. It is measured in percentage. It represents the relationship between cash dividends per share and paid up capital per share.

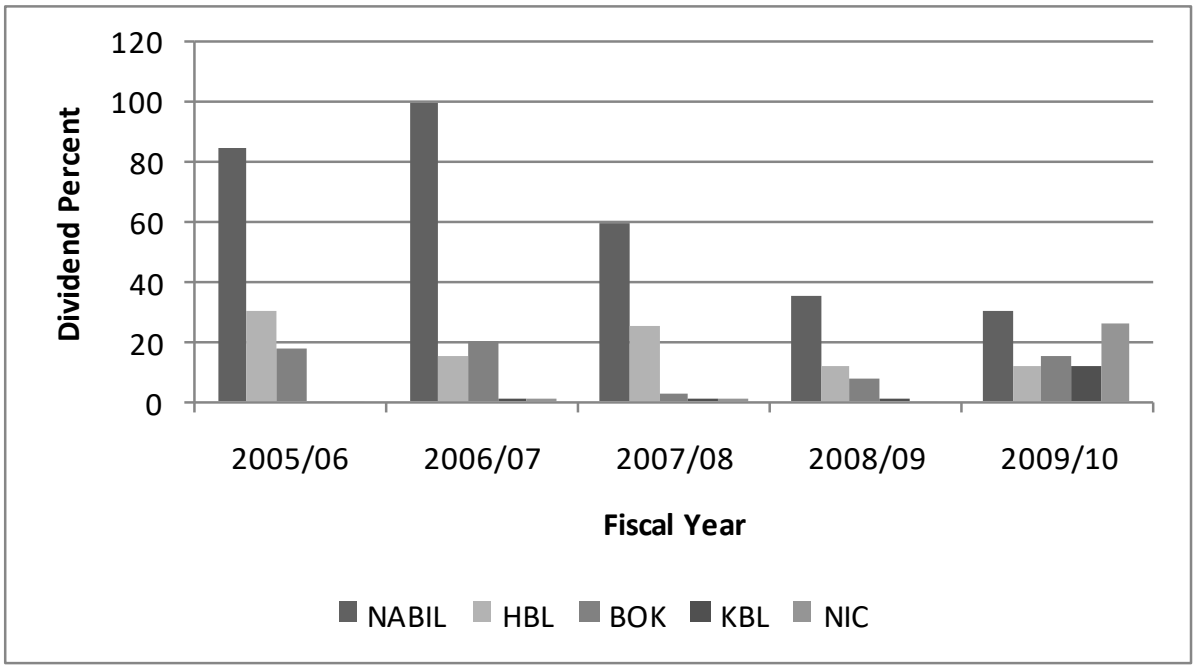
The following table and diagram shows the dividend percent (DP) on Nepalese joint-venture and commercial bank in the year between 2005/06 to 2009/10.

Table No. 4.6
DP of Commercial Bank (In percent)

Banks	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V. (%)
NABIL	85	100	60	35	30	62	27.31	44.05
HBL	30	15	25	12	11.84	18.77	7.39	39.37
BOK	18	20	2.11	7.37	15	12.5	6.71	53.69
KBL	0.05	1.05	0.53	0.55	12	2.84	4.6	161.97
NIC	0.53	1.05	1.05	0.79	26.32	5.95	10.19	171.26

Source: From Appendix No. 6

Figure No. 4.6
DP of Commercial Bank



Source: From Table No. 4.6

NABIL bank limited has an average dividend percent is 62 percent and its standard deviation and C.V. are 37.31 and 4.05 percent respectively. Dividend percent ranged between 30 to 100 percent for NABIL Bank. The C.V. shows there is 44.05 percent variation on its dividend percent which is general fluctuation.

The average dividend percent of HBL is 18.77 percent. It's standard deviation and co-efficient of variation are 7.39 and 39.37 percent respectively. The dividend percent ranged between 11.84 to 30 percent. The C.V. shows that there is normal fluctuation on its dividend percent.

The dividend percent of BOK ranged between 2.11 and 20 percent. During this period the average dividend percent is 12.5 percent. The standard deviation and co-efficient of variation are 6.71 and 53.69 percent respectively. The co-efficient of variation shows that there is average fluctuation in dividend percent.

Kumari Bank Limited (KBL) within the period to study has an average dividend percent of 2.84 percent ranging between 0.05 and 12 percent in year 2005/06 and 2009/20. The standard deviation and co-efficient of aviation are 10.19 and 171.26 percent respectively. The co-efficient of valid on of NIC bank's highest among the selected banks.

The average dividend percent of NIC Bank is 5.95 percent. The dividend percent ranged between 0.53 and 26.32 percent. The standard deviation and co-efficient of variation are 10.19 and 171.26 percent respectively. The co-efficient of variation of NIC Bank is higher among the selected banks.
From the above calculation, NABIL has the highest average dividend percent and KBL has the lowest. The co-efficient of variation indicates that among the banks under study during the period HBL has the highest consistency in its dividend percent whereas NIC has lowest consistency.

g) Dividend Yield (DY)

It is the percentage of dividend per share on market price per share. It shows that how much is the dividend per share on market price per share. It is the dividend received by the investor as a percentage of market prices per share in the stock market. This ratio highly influences the market price per share because a small change in dividend per share can bring effective change in the market value of the share.

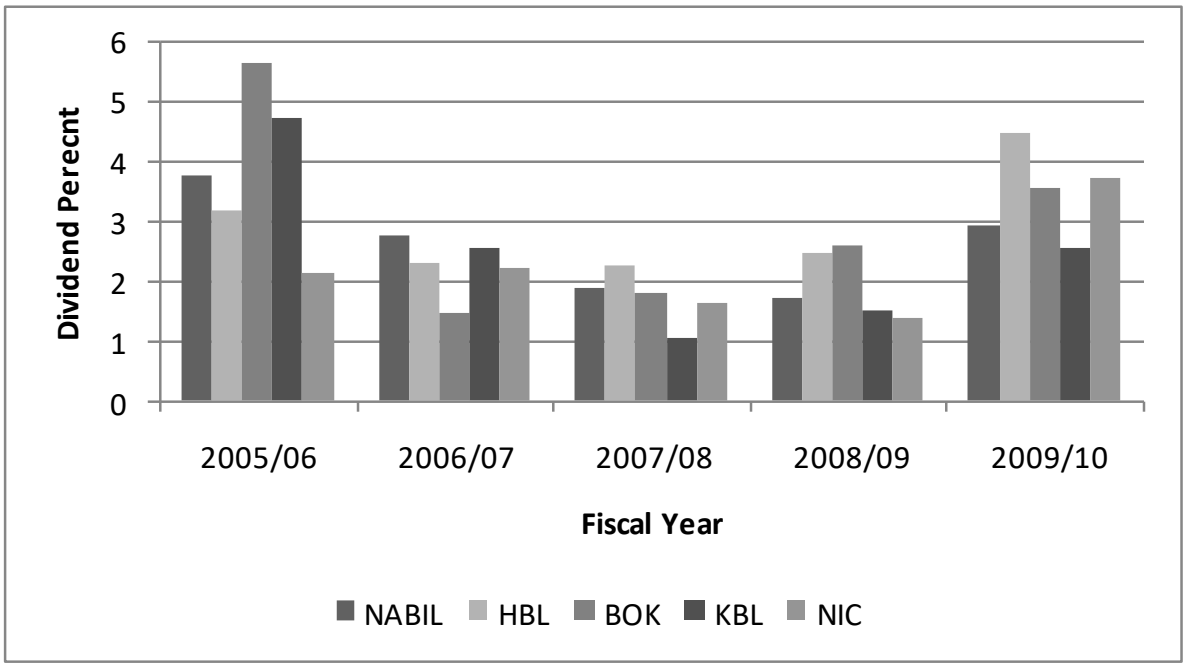
The dividend yield of different joint-venture and commercial bank are presented in the following table and figure.

Table No. 4.7
Dividend Yield (DY)

Banks	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V. (%)
NABIL	3.79	2.77	1.9	1.74	2.94	2.63	0.75	28.52
HBL	3.18	2.3	2.27	2.48	4.51	2.95	0.85	28.81
BOK	5.65	1.45	1.79	2.6	3.57	3.01	1.5	49.83
KBL	4.75	2.54	1.05	1.51	2.56	2.48	1.28	51.61
NIC	2.12	2.22	1.64	1.4	3.73	2.22	0.81	36.49

Source: From Appendix No. 7

Figure No. 4.7
Dividend Yield (DY)



Source: From Table No. 4.7

The average dividend yield of NABIL is 2.63 percent. Its standard deviation and co-efficient of variation are 0.75 and 28.52 respectively. Dividend yield ranged between 1.74 percent to 3.79 for Nabil Bank Limited. The C.V. shows there is 28.52 percent variation on its dividend yield which is normal fluctuation.

Himalayan Bank Limited (HBL) has an average DY of 2.95 percent with standard Deviation 0.85 percent. The dividend yield ranged between 2.27 percent and 4.51 percent. The co-efficient of variance shows that there is fluctuation of 28.81 percent in dividend yield of HBL which is the second lowest fluctuation among the selected banks.

The dividend yield of Bank of Kathmandu Limited ranged between 1.45 percent and 5.65 percent during the period of study. During this period the average dividend yield is 3.01 percent. The standard deviation of the dividend yield under the period of study is 1.5. The co-efficient of variance of 49.83 percent indicates that the fluctuation in the dividend yield of the banks is significantly moderate.

Kumari Bank Limited (KBL) within the period of study had an average dividend yield of 2.48 ranging between 1.05 percent and 4.75 percent (in year 2007/08 and 2005/06). The standard deviation is 1.28 and the fluctuation of 51.51 percent. In the dividend yield, shown by the co-efficient of variation of the bank is highest among the selected banks.

The average dividend yield of Nepal Industrial & Commercial Bank Limited (NIC) is 2.22. The dividend yield ranged between 1.4 and 3.73 percent. The standard deviation and co-efficient of variation of dividend yield of this bank are 0.81 percent and 36.49 percent. The value of co-efficient of variance for this bank indicates that there is average fluctuation in dividend yield.

Since, the higher dividend yield is desirable, the BOK has acceptable average dividend yield (i.e. 3.01) among the sample commercial banks. The NIC has lowest average DY, and KBL has greater fluctuation in its dividend yield. So it is not acceptable for national investor by comparing other banks. The above table and figure also indicate that there is variability in DY among the listed commercial bank in Nepal.

h) Earning Yield of Commercial Banks (In Percent)

Earning Yield (EY) shows the relationship between earning per share (EPS) and market value per share (MPPS). Earning yield is the percentage of earning per share to market price per share in the secondary market. It gives an idea of how much an investor might get for his money. The share with higher earnings yield is worth buying.

The earning on market yield of different commercial banks is presented in the following table of figure.

Table No. 4.8

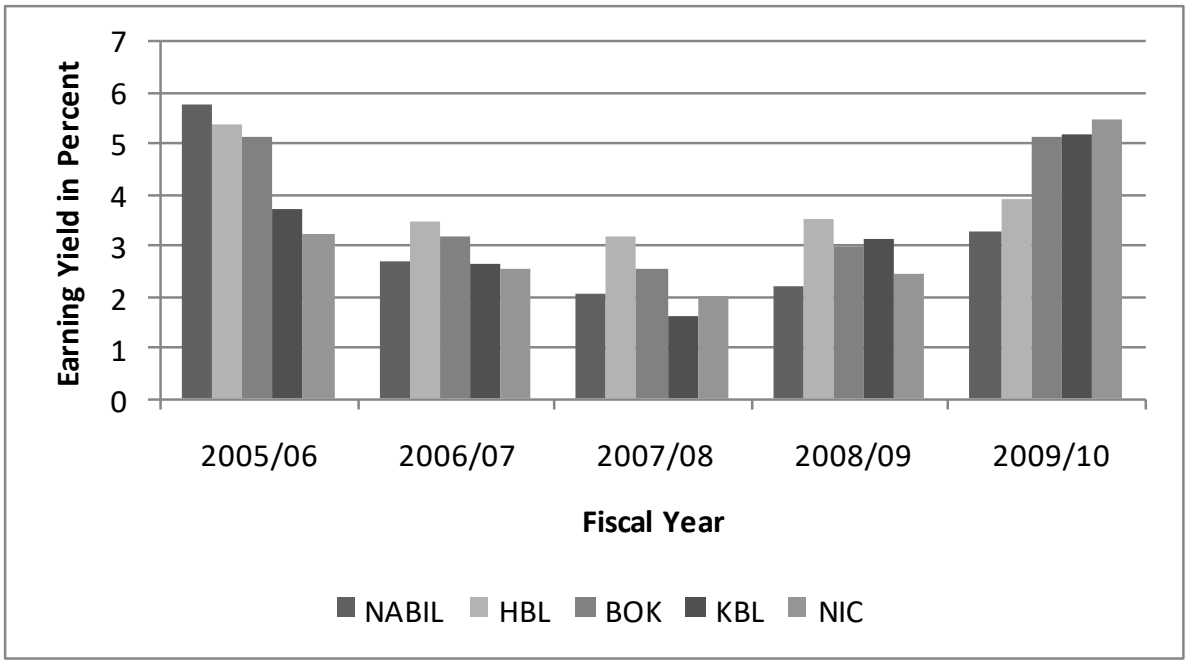
EY of Commercial Bank (In Percent)

Banks	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V. (%)
NABIL	5.77	2.71	2.05	2.18	3.30	3.20	1.36	42.5
HBL	5.39	3.49	3.17	3.52	3.90	3.90	0.78	20
BOK	5.14	3.16	2.55	2.98	5.13	3.79	1.12	29.55
KBL	3.74	2.66	1.63	3.15	5.18	3.27	1.18	36.09
NIC	3.25	2.53	2.01	2.47	5.48	3.15	1.23	39.05

Source: From Appendix No. 8

Figure No. 4.8

EY of Commercial Bank



Source: From Table No. 4.8

The average of earning yield of 3.20 percent with the standard deviation of 1.36 is seen for Nabil Bank Limited (NABIL). The highest and lowest earning yields are 5.77 percent and 2.05 percent respectively. The co-efficient of variation is 42.5 percent during the period of study which shows the highly fluctuation.

Himalayan Bank Limited (HBL) has an average 3.90 percent. The standard deviation is 0.78 percent and co-efficient of variation is 20 percent. The co-efficient of variation is lowest fluctuation seen during this period among the selected banks.

The average EY of Bank of Kathmandu Limited, during this period of study is 3.79 percent. It is within the range of 2.55 percent and 5.14. The standard deviation of earning yield is 1.12 percent whereas the co-efficient of variation of 29.55. The co-efficient of variation is earning yield of BOK indicates it has normal fluctuation.

Kumari Bank Limited (KBL) has an average earning yield of 3.27 percent ranging between 1.63 percent and 5.18 percent, during the period of study. The standard deviation is 1.18 and the fluctuation of 36.09. The co-efficient of variation is earning yield of KBL indicates it has general fluctuation among the banks under study.

Nepal Industrial and Commercial Bank Limited have an average 3.15. The standard deviation is 1.23 percent and coefficient of variation is 39.05 percent. The C.V. indicates that there is moderate fluctuation seen during this period.

From the above calculations HBL has the highest average earning yield and NIC has the lowest. The co-efficient of variation indicates that among the banks under study during the period, HBL has the highest consistency in its earning yield whereas the earning yield of NABIL is highly fluctuation.

4.2 Analysis of Financial Variables of Individual Banks

a) Nepal Arab Bank Limited (NABIL)

Table No. 4.9
Financial Variables of NABIL

Variables	Mean	Max	Min	C.V. %
EPS	111.99	137.08	78.61	18.22
DPS	96	140	70	24.95
DPR	85.78	102.13	65.78	14.36
MPPS	3969.6	5275	2240	34.25
DY	2.63	3.79	1.74	28.52
DP	62	100	30	44.05
EY	3.2	5.77	2.05	42.5
BVPS	384	418	265	16.40
MPPS/BVPS	11.4	15.12	5.89	31.05

Source: From Appendix No. 1, 2, 3, 4, 6, 7, 8, 9 and 10

NABIL has mean EPS of Rs. 111.99, ranged between Rs. 78.61 to 137.08 and its coefficient of variation is 18.22 percent. Bank's average DPS, DY and DPR are Rs. 96, Rs. 2.63 and 85.78 respectively.

Its DPR shows that the bank has distributed 85.78 percent of its profit to the stockholder on an average over the years, and remaining portion of profit is retained in the bank to meet other financing requirement. The average DP (Dividend Percent) of this bank is 62 percent and its C.V. is 44.05 percent. The dividend yield (DY) of this bank indicated that the dividend yield of this bank is normal (i.e. 2.63%) on an average. The average MPPS, EY, BVPS and MPPS/BVPS of the bank are Rs. 3969.6, 3.2, 384 and 11.4 times respectively. Their co-efficient of variation are 34.25, 42.5, 16.40 and 31.05 percent respectively. The overall financial performance of this bank can be taken as satisfactorily for given five years.

b) Himalayan Bank Limited (HBL)

Table No. 4.10
Financial Variables of HBL

Variables	Mean	Max	Min	C.V. %
EPS	55.27	62.74	31.8	21.35
DPS	40.08	45	35	9.51
DPR	76.6	115.85	59.08	36.27
MPPS	1479.2	1980	816	27.75
DY	2.95	4.51	2.27	28.81
DP	18.77	30	11.84	39.37
EY	3.9	5.39	3.17	20
BVPS	277.94	264.74	226.79	6.13
MPPS/BVPS	5.97	7.99	3.6	26.13

Source: From Appendix No. 1, 2, 3, 4, 6, 7, 8, 9 and 10

Dividend per share of HBL is ranged from Rs. 35 to 45 percent that's why its co-efficient of variation is normal (i.e. 9.51) and its average DPS is Rs. 40.08. Its average DPR is 76.6 percent and its co-efficient of variation 26.27 percent which shows that there are 26.27 percent fluctuations in its DPR over the five year period. Dividend percent as a return on paid up capital is seems appropriate since average DP is 18.77 percent its co-efficient of variation is 39.37. Average dividend yield of the bank is 2.95 percent. The EPS of the bank has ranged between Rs. 31.8 to Rs. 62.74 and its average is Rs. 55.27. The average MPPS, BVPS, EY and MPPS/BVPS of the bank are Rs. 1479.2, 244.94, 3.9 and 5.97 times respectively. Bank's earning yield ranged from 3.17 to 5.39. The overall performance of this bank is satisfactory.**Bank of Kathmandu Limited (BOK)**

Table No. 4.11
Financial Variables of BOK

Variables	Mean	Max	Min	C.V. %
EPS	48.97	59.94	43.08	14.31
DPS	37.5	48	20	27.49
DPR	76.53	109.92	45.98	27.18
MPPS	1448	2350	840	40.13
DY	3.01	5.65	1.45	49.83
DP	12.5	20	2.11	53.69
EY	3.79	5.14	2.55	29.55
BVPS	199.90	230.67	164.68	12.93
MPPS/BVPS	7.31	10.56	3.68	35.43

Source: From Appendix No. 1, 2, 3, 4, 6, 7, 8, 9 and 10

DPS of the Bank of Kathmandu has ranged from Rs. 20 to 48 and its average is Rs. 37.5. Its coefficient of variation is 27.49 percent, which is indicates that there is more than 27.49 percent fluctuations from its mean DPS, which show that there is moderate in dividend payment behavior of the bank. Bank's average percent fluctuation in average DPR is 76.53 percent and its co-efficient of variation indicates 27.18 percent fluctuation in average dividend payment ratio. The dividend yield has ranged from 1.45 percent to 5.65 percent and its mean dividend yield is 3.01 percent. Its C.V. indicates that there is 49.83 percent from average dividend yield. The average EPS and its coefficient of variation are Rs. 48.97 and 14.31 percent respectively. Its C.V. indicates that there is normal fluctuation in bank is earnings over the year. The average MPPS of the bank Rs. 1448 and its coefficient of variation is 40.13 percent; which is indicates that there is 40.13 percent fluctuation in its stock market price. Bank's average EY, BVPS and MPPS/BVPS are 3.79, 199.90 and 7.31 times respectively and their C.V is 29.55 percent, 12.93 percent and 35.43 percent respectively. There are great fluctuations in MPPS/BVPS over the period.

d) Kumari Bank Limited (KBL)

Table No. 4.12
Financial Variables of KBL

Variables	Mean	Max	Min	C.V. %
EPS	20.25	24.24	16.35	15.8
DPS	15.04	21.05	10.53	32.80
DPR	76.83	126.88	48	39.39
MPPS	6892	1005	443	90.05
DY	2.48	4.75	1.05	51.61
DP	2.84	12	0.05	161.97
EY	3.27	5.18	1.63	36.09
BVPS	137.55	145	128	4.86
MPPS/BVPS	5.08	7.86	2.97	35.04

Source: From Appendix No. 1, 2, 3, 4, 6, 7, 8, 9 and 10

The mean EPS of Kumari Bank Limited is Rs.20.25. It ranged between Rs.16.35 to Rs.24.24.Its coefficient of variation is 15.80 percent which indicates that there is 15.80 percent fluctuation in it's earning per share. KBL's mean DPS, DY, DPR are Rs. 15.04, 2.48 and 76.83 respectively. The bank's DPR shows that is pays 76.83 of its profit to the stockholder as dividend over the study period, and remaining portion of profit is retained in the bank to meet other financing requirement. DY of this bank is very low and its fluctuation is moderate. Average MPPS, EY, BVPS and MPPS/BVPS of this bank are Rs. 6892, 3.27, 137.55 and 5.08 times respectively and their C.V. is 90.05 percent, 36.09 percent, 4.86 percent and 35.04 percent respectively. The overall financial performance for the given period of this bank cannot be taken as satisfactorily.

e) Nepal Industrial and commercial Bank Limited (NICBL)

Table No. 4.13

Financial Variables of NICBL

Variables	Mean	Max	Min	C.V. %
EPS	25.60	34.30	16.10	23.01
DPS	18.95	26.32	10.53	28.34
DPR	73.65	87.67	56.74	15.19
MPPS	896.4	1284	496	33.67
DY	2.22	3.78	1.4	36.49
DP	5.95	26.32	0.53	171.26
EY	3.15	5.48	2.01	39.05
BVPS	134.71	145.57	116.13	7.48
MPPS/BVPS	6.56	9.30	4.27	28.81

Source: From Appendix No. 1, 2, 3, 4, 6, 7, 8, 9 and 10

The average DPS of Nepal Industrial and Commercial Bank Limited is Rs. 18.95. Its DPS range from Rs. 10.53 to Rs. 26.32 that's why is co-efficient of variance is normal i.e. 28.34 percent fluctuation. Bank's average DPR is Rs. 73.65 and its C.V. is 15.19 which indicate lower degree of fluctuation. Similarly, average DY of the bank has ranged from 3.78 percent to 1.4 percent and its fluctuation is 36.43 percent. The average EPS of the bank is Rs. 25.60 and its C.V. is 23.01 percent. Earning yield of this bank has ranged from 2.01 to Rs. 5.48 and the average is 3.15 percent. Its C.V. indicates 39.05 percent fluctuation. The average MPPS of the bank is Rs. 896.4 and its co-efficient of variation indicates 33.07 percent fluctuation in its stock price in the market. The average BVPS and MPPS/BVPS of the bank are 134.71 and 6.56 times respectively.

4.3 Statistical Tools Analysis

a) Correlation Analysis

Table No. 4.14

Correlation Between Financial Variables

Correlation Co-efficient of NABIL Bank Correlation With				
Variables	**EPS**	**EY**	**DY**	**MPPS**
DPS	0.75	-0.28	-0.18	0.63
DPR	-0.028	0.73	-0.42	0.60
EY	0.28	1	0.93	-0.82
DY	0.26	0.93	1	-0.81
Correlation Co-efficient of HBL Bank Correlation With				
Variables	**EPS**	**EY**	**DY**	**MPPS**
DPS	0.51	-0.84	-0.82	0.89
DPR	-0.95	-0.22	0.80	-1.34
EY	-0.093	1	0.39	-0.66
DY	-0.95	0.39	1	-0.94
Correlation Co-efficient of BOK Bank Correlation With				
Variables	**EPS**	**EY**	**DY**	**MPPS**
DPS	0.50	0.024	0.50	0.24
DPR	0.028	0.46	0.85	-0.25
EY	-0.77	1	0.85	-0.93
DY	-0.46	0.85	1	-0.70
Correlation Co-efficient of KBL Bank Correlation With				
Variables	**EPS**	**EY**	**DY**	**MPPS**
DPS	-0.17	0.044	0.78	-0.27
DPR	-0.54	-0.091	0.83	-0.24
EY	0.58	1	0.49	-0.85
DY	-0.20	0.49	1	-0.75
Correlation Co-efficient of NIC Bank Correlation With				
Variables	**EPS**	**EY**	**DY**	**MPPS**
DPS	0.85	0.60	0.01	0.20
DPR	0.14	0.28	0.32	0.15
EY	0.57	1	1.06	-0.59
DY	0.51	1.06	1	-0.65

Source: From Appendix No. 11, 12, 13, 14 and 15

Correlation co-efficient measures the degree of relationship between two variables. The relationship exists exist either positive or negative. In this study, positive relationship of dividend with related variable is considered favorable.

The correlation between DPS and some variables of NABIL is positively correlated and some are negatively correlated. The correlation between DPR an MPPS of this bank is also positive. The correlations between DPS and EPS and MPS of This bank indicates that when EPS is increased, the DPS, DY and MPPS are also increased.

The correlation between DPS of Himalayan Bank Limited with EPS and MPPS is positive and EY of DY is negative. Such relation clarifies that if DPS increased EPS and MPPs is also increased but EY and DY may decrease. It can be seem that is growing rate of MPS is very high. But the correlation between DPR and MPPs of this bank is negative.

BOK's DPS is positively correlated with EPs and MPPS. The relationship between DPS and EY is also positive. The relationship of DPR with MPPS of this bank indicates that when dividend payout ratio is increased the MPPs also increase and vice-versa. We can say that this is the market effect or effected by expectation of buyer.

The correlation between DPs and Some variables of Kumari Bank Limited is positively correlated and some are negatively correlated. The correlation between all variables and MPPS of this bank are negative.
The correlation between DPS of Nepal Industrial and Commercial Bank Limited with EPS, DY, EY and MPPS are positive, when relation clarities that of DPS increased, EPS, DY and MPPS are also increased. The correlation between DPR and MPPS of the bank is also positive. Finally, the relation of EY, DPS and MPPS shows that its growing rate of MPPS is very high.

At last, the above table shows that the relationship between DPS and EPS for all sample banks is positive. It clarifies that if EPS increased, the DPS may also increase for all sample banks. Similarly, the relationship between DPS and MPPS is positive for all sample Banks except KBL Bank. By this it is clear that if EPS is increase, it may be the cause of increasing in MPPS and DPS.

b) Regression Analysis

Regression Analysis helps us to know the relative movement in the variables. The regression results of dividend per share on earning per share, dividend per share on net profit, net worth on dividend per share and market price per share on dividend per share are presented in the following different tables.

I) Regression Analysis: DPS on EPS

Table No. 4.15
Regression Result of DPS on EPS

Banks	Variables	b.	SEE	T. Value	Sig T	R^2
NABIL	EPS	0.88	20.51	1.638	1.97	0.56
	Constant (a)	-2.55	-	ϑ=5–2=3 α=20%		-
HBL	EPS	0.17	4.24	1.638	1.03	0.26
	Constant (a)	30.68	-	ϑ=5–2=3 α=20%		-
BOK	EPS	0.78	12.13	1.638	0.99	0.25
	Constant (a)	-0.70	-	ϑ=5–2=3 α=20%		-
KBL	EPS	-0.27	6.29	1.638	-0.30	0.0289
	Constant (a)	20.51	-	ϑ=5–2=3 α=20%		-
NIC	EPS	0.77	3.68	1.638	2.77	0.7225
	Constant (a)	-0.76		ϑ=5–2=3 α=20%		-

Source: From Appendix No. 16

Table No. 4.15 shows the linear relationship between dividend per share (DPS) and earning per share (EPS). All sample commercial banks has positive regression co-efficient 'b' indicates that one rupee increase in EPS lead increase in DPS. BOK's regression co-efficient indicates that one rupee increase in EPS leads to average Rs. 0.78 increase in DPS. In case of NABIL, HBL and NIC, if other variable remain constant, regression co-efficient indicates that on rupee increase in EPS lead to average about Rs. 0.88, Rs. 0.17, Rs. 0.77 increase in DPS respectively, In case of KBL, regression of co-efficient 'b' indicates that one rupee increase in EPS leads to average about Rs. 0.27 decrease in DPS.

The standard error of estimate (SEE) of NABIL, HBL, BOK, KBL and NIC are 20.51, 4.24, 12.13, 6.29 and 3.08 respectively which indicates the likely error of predicate value of respective banks.

However, the value of co-efficient of multiple determinations (R^2) of KBL is lowest (0.0289), then other commercial banks. They indicate that only 2.89% in dividend variable is explained by earning variable (i.e. 2.89%) variation in explained in DPS due to change in the value of EPS of this bank. NABIL's R^2 is 0.56, which indicates 56% variation is explained in DPS due to change in value of EPS. Similarly, the value of R^2 is 0.26, 0.25 and 0.7225 for HBL, BOK and NIC respectively, which indicates

that 26%, 25% and 72.25%. Variation is explained in DPS due to change in the EPS of respectively banks.

We can see that, in the above table where degree of freedom is 3 and level of significance is 20%. The calculated value of 't' of NABIL and NIC banks are greater than the tabulated value of t. It shows the results of these banks are significant at 20% level of significance. But HBL, BOK and KBL are not significant because the calculated value of 't' is lower than the tabulated value of 't'. 'T' test result shows that DPS and EPS are correlated.

I) Regression Analysis: NWPS on DPS

Table No. 4.16

Regression Result of NWPS on DPS

NWPS = a + b DPS

Banks	Variables	b.	SEE	T. Value	Sig T	R^2
NABIL	DPS	1.79	37.63	1.638	2.56	0.69
	Constant (a)	176.56		ϑ=5–2=3 α=20%		-
HBL	DPS	2.68	14.18	1.638	1.61	0.46
	Constant (a)	137.53		ϑ=5–2=3 α=20%		-
BOK	DPS	2.18	13.38	1.638	4.08	0.84
	Constant (a)	118.15		ϑ=5–2=3 α=20%		-
KBL	DPS	0.93	6.22	1.638	1.66	0.48
	Constant (a)	123.56		ϑ=5–2=3 α=20%		-
NIC	DPS	0.96	10.95	1.638	1.06	0.27
	Constant (a)	116.52		ϑ=5–2=3 α=20%		-

Source: From Appendix No. 17

From the above regression result of net worth per share on dividend per share, regression co-efficient 'b' is positive of NABIL, HBL, BOK, KBL and NIC

banks. Which indicate that one rupee increase in dividend per share leads to average about Rs. 1.79, Rs. 2.68, Rs. 2.18, Rs. 0.93 and Rs. 0.96 increase in net worth per shareholding other variables constants. The value of multiple determinations (R^2) of NABIL, HBL, BOK, KBL and NIC are 0.69, 0.46, 0.84, 0.48 and 0.27 respectively. This indicates that 69%, 46%, 84%, 48% and 27% of dividend variation can be explained by DPS of the respective banks.

Also standard error of estimate (SEE) of NABIL, HBL, BOK, KBL and NIC are 37.63, 14.18, 13.38, 6.22 and 10.95 respectively. Where KBL SEE is more desirable because it has lower degree of error.

In the above table, the calculated value of 't' of NABIL, BOK and KBL banks are greater than the tabulated value of 't' which means these banks are significant and other banks are not significant because they have lower calculated value of 't' than tabulated value of 't'.

III) Regression Analysis: MPPS on DPS

Table No. 4.17
Regression Result of MPPS on DPS

MPPS = a + b DPS

Banks	Variables	b.	SEE	T. Value	Sig T	R^2
NABIL	DPS	35.81	1361.37	1.638	1.39	0.39
	Constant (a)	531.84		ϑ=5–2=3 α=20%		-
HBL	DPS	103.20	263.19	1.638	3.35	0.79
	Constant (a)	-2657.06		ϑ=5–2=3 α=20%		-
BOK	DPS	12.58	729.18	1.638	0.43	0.0576
	Constant (a)	976.25		ϑ=5–2=3 α=20%		-
KBL	DPS	-11.78	266.09	1.638	-0.49	0.0729
	Constant (a)	866.37		ϑ=5–2=3 α=20%		-
NIC	DPS	10.97	375.07	1.638	0.35	0.04
	Constant (a)	688.52		ϑ=5–2=3 α=20%		-

Source: From Appendix No. 18

With respect to the above regression result of market price per share on dividend per share regression co-efficient 'b' is positive of NABIL, HBL, BOK, and NIC but negative for KBL. In case of NABIL, HBL, BOK and NIC, regression co-efficient 'b' indicates that one rupee increase in dividend per share leads to average about Rs. 35.81, Rs. 103.20, Rs. 12.58 and Rs. 10.97 increase in market price per share holding other variables constant, while in case of KBL, regression co-efficient 'b' indicates the one rupee increase in dividend per share leads to average about Rs. 11.78 decrease in market price per share.

The value of R^2 indicates that three are 39%, 79%, 5.76%, 7.29% and 4% variation in MPPS is explained due to change in DPS for NABIL, HBL, BOK, KBL and NIC respectively.

Also the standard error of estimate (SEE) of NABIL, HBL, BOK, KBL and NIC are 1361.37, 263.19, 729.18, 266.09 and 375.07 respectively. Where, HBL's and KBL's SEE is more desirable because they have lower degree of error.

The calculated value of 't' of HBL is greater than the tabulated value of 't'. It means, HBL bank is significant and NABIL, BOK, KBL and NIC bank are not significant because they have lower calculated value of 't' than tabulated value of 't'.

In aggregate, the regression results of dividend per share on earning per share, net worth on dividend per share and market price per share on dividend behaviour of commercial banks one not uniform. It seems that earning per share and net profit affects the dividend differently in different commercial banks in Nepal. Also, it is memorable that, in the study period, any variable are not constant i.e. no. of share market price, DPS, EPS etc. So, some results of this study are very confused. Such as, my study shows that DPS and Net Worth per Share are not correlated. But, I cannot believe this information.

4.4 Major Findings

The main finding of research work are summarize in numeric order.

i. The average earning per share (EPS) of the banks under study shows a positive result. But the co-efficient variation indicates that there is no consistency of EPS. The C.V. range between 14.31 percent to 23.01%, among the sample banks under study, 111.99 has the highest average EPS with normal fluctuation and 20.25 have the least with degree of fluctuation.

ii. The average dividend per share (DPS) shows that there is no regularity in dividend payment. The NABIL has the highest average DPS. It also fluctuating the co-efficient of variation of DPS range between 9.51% to 32.80%. KBL has the lowest average DPS and also the highest fluctuation

among the sample banks study. Since, the paid up capital per share is Rs. 100, the analysis of dividend percent also same result as that of DPS.

iii. The analysis of DPR also shows that the DPR of the banks are not stable. Among the banks under study NABIL has the highest average DPR lowest fluctuation in the DPR. The result also shows that NIC has the lowest average DPR and moderate fluctuation. The fluctuating range between 14.36% percent to 39.39%. KBL has the moderate average DPR an highest fluctuation in the DPR.

iv. The average market price per share (MPPS) shows that three is quite high level of fluctuation. NABIL has higher average MPPS then other sample banks. So, this bank is in good position but average MPPS of all sample commercial banks be considered to be encouraging. KBL has lowest average MPS and BOK has highest fluctuation and HBL is the most stable MPPS.

v. The average price earning ratio (P/E) of NABIL among the banks under study is the highest and also highly unstable. The ratio of remaining banks satisfactory and quite stable.

vi. The average earning yield of banks under study indicates that HBL is higher than other banks. The mean earning yield of different banks ranged from 3.15 to 3.90. The earning yield of HBL is less fluctuated than other banks. But NABIL has higher fluctuation in its earning as indicated by C.V. of this bank.

vii. The average dividend yield of the banks under study indicates that the dividend yield is quite low ranging between 3.01 to 2.22. Among the banks BOK has the highest dividend yield and NICBL has the lowest. There is high fluctuation in the dividend ranging from 51.61% to 28.52%.

viii. The DPS of NABIL is positively correlated with EPS, MPPS and NWPS. But the correlation between DPR and MPPS of this bank also is positive. The correlation result that when DPR increase the MPPS also is increasing.

ix. The relationship between DPS with EPS and MPPs are positive correlated of HBL.

x. The relationship between DPS of BOK with EPS and MPPS are positive correlated and also NWPS is positive correlated. The correlation between DPR and MPPS of these banks is negative correlated.

xi. In case of KBL, the DPS is negatively correlated with EPS and MPPS. But the correlation between DPS and NWPS of this bank is positive correlated.

xii. The DPS of NICBL has positive correlation with EPS and MPPS. DPR is positive correlated with MPPS of this bank. It means when DPR increase, the MPPS is increased.

xiii. The regression analysis of DPS on EPS shows that regression co-efficient 'b' is positive of NABIL, BOK, HBL and NIC but negative for KBL.

xiv. As far as regression results of NWPS on DPS are concerned, regression co-efficient 'b' is positive in NABIL, BOK, KBL, HBL and NIC.

xv. The regression analysis between MPPS on DPS indicates that the regression co-efficient 'b' is positive for NABIL, HBL, BOK and NICBL and regression co-efficient 'b' is negative for KBL.

CHAPTER-V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter focuses on summarizing the Bt.udy held with the researcher's analysis. Also, this chapter includes conclusions of the study based on major findings. The next attempt in this chapter will be made for the recommendations on the basis of findings arid conclusions. For this whole purpose, the chapter is subdivided into summary, conclusion and recommendation as given here under.

5.1 Summary

Dividend policy decision is one of the most important decisions of financial management. 'The dividend policy decision affects on the operation and prosperity of the organization because it has the power to influence other two decisions of the organization i.e. capital structure decision and investment decision. An investor expects two types of return namely capital gain and. dividend by investing in ordinary shares. So, payment of dividend to shareholders is an effective way to attract new investors and maintain present investors. It is important to have clearly defined and effectively managed dividend behavior so as to fulfill the shareholders expectations and corporate growth.

Paying dividend be taken as an important tool to attract new investors. Besides this dividend paying ability reflects the financial positions of the organization in the market. Due to the division of earnings between dividend payout and retention ratio the market price of the share may also be affected which is also crucial for the organization. So, the funds that couldn't be used due to the lack of investment opportunities would be distributed as dividend. Since shareholders have investment opportunities elsewhere.

Dividend paying banks haves been analyzed to show the implication of dividend behavior they have adopted in their market price per share. Now, in Nepal, those banks have made profit, only these banks paid dividend. Instability of dividend and inconsistent dividend payout ratio is the most applied phenomenon of commercial banks in Nepal. But, only the banks promoted by foreigners are paying dividend more attractively than the bunks promoted by indigenous promoters. However, dividend behavior is taking its path, slowly in Nepalese environment.

In analyzing the problem with the stated objectives in mind, this study has been of more descriptive nature. The study covers five Commercial banks (i.e. NABIL, HBL, BOK, KBL and NIC) and only for the last five fiscal years from 2005/06 to 2009/10. The available secondary data has been analyzed using various financial and statistical tools. So, the reliability of conclusions of this study is determined on the accuracy of secondary data.

The theoretical statement of this study was that dividend decision should depend upon, NW, EPS and MPPS of the sample commercial banks. Among sample banks, dividend payout ratio of NABIL is higher than other. Similarly, according to EPS, among sample Banks 137.08 is more successful than other whereas 16.10 is the lowest. On the basis of P/E ratio, among sample banks NABIL has the higher ratio than other. It means NABIL has the better performance for enhancing the wealth of shareholders rather than other banks on the basis of DPS, NABIL is paying higher value of dividend among sample banks on the basis of NWPS. NABTL has higher NWPS than other moreover, on the basis of market price per share NABIL has higher MPPS than others.

For the purpose of statistical analysis of the entire sample banks. Simple correlation and regression analysis is used to interpret the results. According to regression analysis, of DPS on DPS is concerned, coefficient 'b' is positive NABIL, BOK, HBL and NICBL but negative in KBL which indicates that among others, DPS, increase with increasing EPS except KBL. As for the regression analysis of NWPS on DPS is concerned coefficient 'b' is positive for NABIL, HBL.BOK, KBL and NIC. The positive coefficient 'b' indicates that-dividend per share increase MPPS whereas negative coefficient 'b' indicates that DPS decrease MPPS.

The situation of capital market of Nepal is improving day by day as a result the capital market efficient with compare to previous trend. Though 'weak' efficient market where, share price movement is random this means share price movement does not follow any trends. In such market cash dividend will more effective than other forms dividends like bonus and right. But it is reality that capital market of Nepal is still immature.

5.2. Conclusion

By the analysis of investment activities, is noticed that only few commercial banks have aggressive investment strategy with compare to conservative strategy among most of the commercial banks. In spite of this, there is no doubt that commercial banks are the foundation of a national economical banks are running at profit: and providing dividend to shareholders according to their earning. They also achieved the trust of common people, which is the great success of their performance. But, yet much more to be done than this for the satisfaction of shareholders as well as overall growth of national economy. To make the market efficient; Nepalese company should concentrate on paying cash dividend rather that bonus or right share. This will attract more individual to invest, in capital market as a result capital market will become strong.

From the analyzing of financial, statistical analysis of all sample banks, following conclusion are drawn out:

i) The instability in EPS, MPPS, DPS, DPR, P/.R ratio, E/Y and D/Y is seen and it lack consistency.

ii) The inconsistency in term of dividend behavior is seen and it is neither static nor increasing (growing). Random system of payment of dividend is seen.

iii) The relation between MPPS and NWPS with DPS has produced mixed results.

iv) The market price per share has affected due to change in DPS in different banks in different manner.

5.3 Recommendations

Considering the major findings and conclusion of this study some recommendations are presented. It is hoped that these recommendations will certainly be proved milestone to overcome existing issues in this field.

- There is no clear legal provision concerning dividend payment by commercial banks. So, through appropriate legal provision, the government and Nepal Rastra Bank should compel the profit earning commercial banks to distribute certain portion of their profit; as dividend.
- Commercial bank should have long-term vision regarding earnings and dividend payout ratio, which help to cope with challenging competitive situation of present world. Banks should define their vision clearly considering

their future plans, expansion of business and fill lire economy of country. Considering various internal and external factors, banks should choose whether to adopt stable dividend policy or constant payout ratio or leaving dividend as residual.

- There is inconsistency in dividend payment. The dividend is neither static nor growing. This may relate misconception about the organization regarding its financial position. Due to high degree of risk and uncertainly, the market price per share may lie adversely affected. So the commercial hanks should follow either static or growing dividend payment policy.
- Issue of stock dividend decreases market value per share and earning per share. But issue of cash dividend increases market value per share and earning per share. So due to this reason common share holders should be given a choice whether they preferred stock dividend or cash dividend. Therefore, all the commercial banks are suggested to take care regarding the interest of shareholders.
- All the commercial banks should conduct the seminar or workshop for shareholder experience at least twice in a year. Private consultancy, firms, expert in financial activities arid top executives from all the commercial banks should be the key participation for seminar to identify where the problem lie in their efficient operation. Only then there; will be the; solution of the problems regarding the financial performance of the commercial banks, which is helpful for generating more profit as well as more dividends to their shareholders.
- While; making dividend decision, a minor mistake may lead the bank to serious crisis. Due to this reason it is advised to adopt optimum dividend decision based on the following criteria.
    - Optimum retention for excellent expansion and modernization of bank.
    - Optimum dividend so as to maximize shareholders wealth through increase in market price per share i.e. net present value of shareholders.
    - Stability or consistency in the dividend payout ratio.
- There is no consistency in the dividend payment behavior in many cases; for example small amount of dividend has been paid despite sufficient earnings without, considering risk free rate of return.

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APPENDIXES

Appendix-1

Calculation of EPS of Commercial Bank

NABIL

X (EPS)	$(X-\bar{X})$	$(X-\bar{X})^2$
129.21	17.22	296.53
137.08	25.09	629.51
108.31	-3.68	13.54
106.76	-5.23	27.35
78.61	-33.38	1114.22
559.97		**2081.15**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{559.97}{5} = 111.99$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{2081.15}{5}} = \sqrt{416.23} = 20.40$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{20.40}{111.99} \times 100 = 18.22\%$$

HBL

X	$(X-\bar{X})$	$(X-\bar{X})^2$
59.24	3.94	15.52
60.66	5.39	29.05
62.74	7.47	55.8
61.90	6.63	43.95
31.8	-23.47	550.84
276.34		**695.16**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{276.34}{5} = 55.27$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{695.16}{5}} = \sqrt{139.03} = 11.80$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{11.80}{55.27} \times 100 = 21.35\%$$

BOK

X	$\left(X-\overline{X}\right)$	$\left(X-\overline{X}\right)^2$
43.67	-5.3	28.09
43.50	-5.47	29.92
59.94	10.97	120.34
54.68	5.71	32.60
43.08	-5.89	34.69
244.87		**245.65**

$$\text{Mean}(\overline{X}) = \frac{\sum X}{N} = \frac{244.87}{5} = 48.97$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\overline{X}\right)^2}{N}} = \sqrt{\frac{245.65}{5}} = \sqrt{49.13} = 7.01$$

$$\text{C.V.} = \frac{\sigma}{\overline{X}} \times 100 = \frac{7.01}{48.97} \times 100 = 14.31\%$$

KBL

X	$\left(X-\overline{X}\right)$	$\left(X-\overline{X}\right)^2$
16.59	-3.68	13.54
22.07	1.82	3.31
16.35	-3.9	15.21
22.04	1.79	3.2
24.24	3.99	15.92
101.29		**51.18**

$$\text{Mean}(\overline{X}) = \frac{\sum X}{N} = \frac{101.29}{5} = 20.25$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\overline{X}\right)^2}{N}} = \sqrt{\frac{51.18}{5}} = \sqrt{10.24} = 3.2$$

$$\text{C.V.} = \frac{\sigma}{\overline{X}} \times 100 = \frac{3.2}{20.25} \times 100 = 15.80\%$$

NIC

X	$\left(X-\overline{X}\right)$	$\left(X-\overline{X}\right)^2$
16.10	-9.5	90.25
24.01	-1.59	2.53
25.75	0.15	0.0225
27.83	2.23	4.97
34.30	8.7	75.69
127.99		**173.46**

$$\text{Mean}(\overline{X}) = \frac{\sum X}{N} = \frac{127.99}{5} = 25.60$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\overline{X}\right)^2}{N}} = \sqrt{\frac{173.46}{5}} = \sqrt{34.69} = 5.89$$

$$\text{C.V.} = \frac{\sigma}{\overline{X}} \times 100 = \frac{5.89}{25.6} \times 100 = 23.01\%$$

Appendix-2

Calculation of DPS of Commercial Bank

NABIL

X	$(X-\bar{X})$	$(X-\bar{X})^2$
85	-11	121
140	44	1936
100	4	16
85	-11	121
70	-26	676
480		**2870**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{480}{5} = 96$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{2870}{5}} = \sqrt{574} = 2395$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{23.95}{96} \times 100 = 24.95\%$$

HBL

X	$(X-\bar{X})$	$(X-\bar{X})^2$
35	-5.08	25.81
40	-0.08	0.0064
45	4.92	24.21
43.56	3.48	12.11
36.84	-3.24	10.50
200.4		**72.64**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{200.4}{5} = 40.08$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{72.64}{5}} = \sqrt{14.53} = 3.81$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{3.81}{40.08} \times 100 = 9.51\%$$

BOK

X	$(X-\bar{X})$	$(X-\bar{X})^2$
48	10.5	110.25
20	-17.5	306.25
42.11	4.61	21.25
47.37	9.87	97.42
30	-7.5	56.25
187.42		**531.42**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{187.48}{5} = 37.50$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{531.42}{5}} = \sqrt{106.28} = 10.30$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{10.30}{37.5} \times 100 = 27.49\%$$

KBL

X	$(X-\bar{X})$	$(X-\bar{X})^2$
21.05	6.01	36.12
21.05	6.01	36.12
10.53	-4.51	20.34
10.58	-4.46	19.89
12	3.04	9.24
75.21		**121.71**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{75.21}{5} = 15.04$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{121.71}{5}} = \sqrt{24.34} = 4.93$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{4.93}{15.04} \times 100 = 32.80\%$$

NIC

X	$\left(X-\overline{X}\right)$	$\left(X-\overline{X}\right)^2$
10.53	-8.42	70.90
21.05	2.1	4.41
21.05	2.1	4.41
15.79	-3.16	9.98
26.32	7.37	54.32
94.74		**144.02**

$$\text{Mean}(\overline{X}) = \frac{\sum X}{N} = \frac{94.74}{5} = 18.95$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\overline{X}\right)^2}{N}} = \sqrt{\frac{144.02}{5}} = \sqrt{288} = 5.37$$

$$\text{C.V.} = \frac{\sigma}{\overline{X}} \times 100 = \frac{5.37}{18.95} \times 100 = 28.34\%$$

Appendix-3

Calculation of Dividend Payout Ratio (DPR)

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

NABIL

X	$(X - \bar{X})$	$(X - \bar{X})^2$
65.78	-20	400
102.13	16.35	267.32
92.33	6.55	42.90
79.63	-6.15	37.82
89.05	3.27	10.69
428.92		**758.73**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{428.92}{5} = 85.78$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum (X - \bar{X})^2}{N}} = \sqrt{\frac{758.73}{5}} = \sqrt{151.75} = 12.32$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{12.32}{85.78} \times 100 = 14.36\%$$

HBL

X	$(X - \bar{X})$	$(X - \bar{X})^2$
59.08	-17.52	306.95
65.94	-10.66	113.64
71.72	-4.88	23.81
70.37	-6.23	38.81
115.85	39.25	1540.56
382.96		**2023.77**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{382.96}{5} = 76.60$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum (X - \bar{X})^2}{N}} = \sqrt{\frac{2023.77}{5}} = \sqrt{404.75} = 20.12$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{20.12}{76.6} \times 100 = 26.27\%$$

BOK

X	$\left(X-\bar{X}\right)$	$\left(X-\bar{X}\right)^2$
109.92	33.39	1114.89
45.98	-30.55	933.30
70.25	-6.28	39.44
86.87	10.34	106.92
69.64	-6.89	47.47
382.66		**2242.02**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{382.66}{5} = 76.53$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\bar{X}\right)^2}{N}} = \sqrt{\frac{2242.02}{5}} = \sqrt{448.40} = 21.18$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{21.18}{76.53} \times 100 = 27.68\%$$

KBL

X	$\left(X-\bar{X}\right)$	$\left(X-\bar{X}\right)^2$
126.88	50.05	2505.00
95.38	18.55	344.10
64.40	-12.43	154.50
48	-28.83	831.19
49.50	27.33	746.93
384.16		**4581.70**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{384.16}{5} = 76.83$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\bar{X}\right)^2}{N}} = \sqrt{\frac{4581.70}{5}} = \sqrt{916.34} = 30.27$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{30.27}{76.83} \times 100 = 39.39\%$$

NIC

X	$\left(X-\overline{X}\right)$	$\left(X-\overline{X}\right)^2$
65.40	-8.25	68.06
87.67	14.02	196.56
81.75	8.1	65.61
56.74	-16.91	285.95
76.73	3.08	9.49
368.29		**625.67**

$$\text{Mean}(\overline{X}) = \frac{\sum X}{N} = \frac{368.29}{5} = 73.65$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\overline{X}\right)^2}{N}} = \sqrt{\frac{625.67}{5}} = \sqrt{125.13} = 11.19$$

$$\text{C.V.} = \frac{\sigma}{\overline{X}} \times 100 = \frac{11.19}{73.65} \times 100 = 15.19\%$$

Appendix-4

Calculation of MPPS of Commercial Banks (In Rs.)

NABIL

X	$(X-\bar{X})$	$(X-\bar{X})^2$
2240	-1729.6	2991516.16
5050	1080.4	1167264.16
5275	1305.4	1704069.16
4899	929.4	863784.36
2384	-1585	2514127.36
19848		**9340761.2**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{19848}{5} = 3969.6$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{9240761.2}{5}} = \sqrt{1848152.24} = 1359.46$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{1359.46}{3969.6} \times 100 = 34.25\%$$

HBL

X	$(X-\bar{X})$	$(X-\bar{X})^2$
1100	-379.2	143792.64
1740	260.8	68016.64
1980	500.8	250800.64
1760	280.8	7.8848.64
816	-663.2	439834.24
7396		**981292.8**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{7396}{5} = 1479.28$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{981292.8}{5}} = \sqrt{196258.56} = 443.01$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{443.01}{149.2} \times 100 = 29.95\%$$

BOK

X	$(X-\bar{X})$	$(X-\bar{X})^2$
850	-598	357604
1375	-73	5329
2350	902	813604
1825	377	142129
840	-608	369664
7240		**1688330**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{7240}{5} = 1448$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{1688330}{5}} = \sqrt{337666} = 581.09$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{581.09}{1448} \times 100 = 40.13\%$$

KBL

X	$(X-\bar{X})$	$(X-\bar{X})^2$
443	-246.2	60614.44
830	140.8	19824.64
1005	315.8	99729.64
700	10.8	116.64
468	-221.2	48929.44
3446		**229214.8**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{3446}{5} = 689.2$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{229214.8}{5}} = 214.11$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{214.11}{689.2} \times 100 = 31.06\%$$

NIC

X	$\left(X-\overline{X}\right)$	$\left(X-\overline{X}\right)^2$
496	-400.4	160320.16
950	53.6	2872.96
1284	387.6	150233.76
1126	229.6	52716.16
626	-270.4	73116.16
4482		**439259.2**

$$\text{Mean}(\overline{X}) = \frac{\sum X}{N} = \frac{4482}{5} = 896.4$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\overline{X}\right)^2}{N}} = \sqrt{\frac{439259.2}{5}} = \sqrt{87851.84} = 296.40$$

$$\text{C.V.} = \frac{\text{S.D.}}{\overline{X}} \times 100 = \frac{296.40}{896.4} \times 100 = 33.07\%$$

Appendix-5

Calculation of Price Earning Ration (P/E Ratio) of commercial Bank

NABIL

X	$(X-\bar{X})$	$(X-\bar{X})^2$
17.34	-18.48	341.51
36.84	1.02	1.0404
48.70	12.88	165.89
45.89	10.07	101.40
30.33	-5.49	30.14
179.1		**639.98**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{179.1}{5} = 35.82$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{639.98}{5}} = \sqrt{127.99} = 11.31$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{11.31}{35.82} \times 100 = 31.57\%$$

HBL

X	$(X-\bar{X})$	$(X-\bar{X})^2$
18.57	-8.01	64.16
28.68	2.1	4.41
31.56	4.98	24.80
28.41	1.83	3.35
25.33	-0.92	0.85
132.88		**97.57**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{132.88}{5} = 26.58$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{97.57}{5}} = \sqrt{19.51} = 4.41$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{4.41}{26.58} \times 100 = 16.59\%$$

BOK

X	$(X-\bar{X})$	$(X-\bar{X})^2$
19.49	-9.17	84.09
31.62	2.98	8.88
39.21	10.58	11.94
33.37	4.74	22.47
19.50	-9.13	83.35
143.15		**310.73**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{143.15}{5} = 28.63$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{310.73}{5}} = \sqrt{62.15} = 7.89$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{7.89}{28.63} \times 100 = 27.56\%$$

KBL

X	$(X-\bar{X})$	$(X-\bar{X})^2$
26.70	-8.67	75.17
37.61	2.24	5.0176
61.47	26.1	681.21
31.76	-3.61	13.03
19.31	16.06	257.97
176.85		**1032.35**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{176.85}{5} = 35.37$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{1032.35}{5}} = \sqrt{206.47} = 14.37$$

$$\text{C.V.} = \frac{\text{S.D.}}{\bar{X}} \times 100 = \frac{14.37}{35.37} \times 100 = 40.63\%$$

NIC

X	$\left(X-\overline{X}\right)$	$\left(X-\overline{X}\right)^2$
30.81	-4.85	23.52
39.57	3.91	15.29
49.86	14.2	201.64
40.46	4.8	23.04
18.25	-17.41	303.11
178.32		**566.6**

$$\text{Mean}(\overline{X}) = \frac{\sum X}{N} = \frac{178.32}{5} = 35.66$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\overline{X}\right)^2}{N}} = \sqrt{\frac{566.6}{5}} = \sqrt{113.32} = 10.85$$

$$\text{C.V.} = \frac{\text{S.D.}}{\overline{X}} \times 100 = \frac{10.85}{35.66} \times 100 = 30.43\%$$

Appendix-6

Calculation of Dividend Percent (DP) of Commercial Bank

NABIL

X	$\left(X-\bar{X}\right)$	$\left(X-\bar{X}\right)^2$
85	23	529
100	38	1444
60	-2	4
35	-27	729
30	-32	1024
310		**3730**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{310}{5} = 62$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\bar{X}\right)^2}{N}} = \sqrt{\frac{3730}{5}} = \sqrt{746} = 27.31$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{27.31}{62} \times 100 = 44.05\%$$

HBL

X	$\left(X-\bar{X}\right)$	$\left(X-\bar{X}\right)^2$
30	11.23	126.11
15	-3.77	14.21
25	6.23	38.81
12	-6.77	45.83
11.84	-6.93	48.02
93.84		**272.98**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{93.84}{5} = 18.77$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\bar{X}\right)^2}{N}} = \sqrt{\frac{272.98}{5}} = \sqrt{54.59} = 7.39$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{7.39}{18.77} \times 100 = 39.37\%$$

BOK

X	$(X-\bar{X})$	$(X-\bar{X})^2$
18	5.5	30.25
20	7.5	56.25
2.11	-10.39	107.95
7.37	5.13	26.32
15	2.5	6.25
62.48		**227.02**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{62.48}{5} = 12.50$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{227.02}{5}} = \sqrt{45.40} = 6.71$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{6.71}{12.5} \times 100 = 53.69\%$$

KBL

X	$(X-\bar{X})$	$(X-\bar{X})^2$
0.05	-2.79	7.78
1.05	-1.79	3.20
0.53	-2.31	5.34
0.55	-2.29	5.24
12	9.16	83.91
14.18		**105.47**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{14.18}{5} = 2.84$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{105.47}{5}} = \sqrt{21.09} = 4.60$$

$$\text{C.V.} = \frac{\text{S.D.}}{\bar{X}} \times 100 = \frac{4.60}{2.84} \times 100 = 161.97\%$$

NIC

X	$\left(X-\overline{X}\right)$	$\left(X-\overline{X}\right)^2$
0.53	-5.42	29.38
1.05	-4.9	24.01
1.05	-4.9	24.01
0.79	-5.10	26.63
26.32	20.37	414.94
29.74		**518.97**

$$\text{Mean}(\overline{X}) = \frac{\sum X}{N} = \frac{29.74}{5} = 5.95$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\overline{X}\right)^2}{N}} = \sqrt{\frac{518.97}{5}} = \sqrt{103.79} = 10.19$$

$$\text{C.V.} = \frac{\text{S.D.}}{\overline{X}} \times 100 = \frac{10.19}{5.95} \times 100 = 171.26\%$$

Appendix-7

Calculation of Dividend Yield (DY) of Commercial Bank

$$DY = \frac{DY}{MPS} \times 100$$

NABIL

X	$(X - \bar{X})$	$(X - \bar{X})^2$
3.79	1.16	1.35
2.77	0.14	0.02
1.90	-0.73	0.53
1.74	-0.89	0.79
2.94	0.31	0.09
12.14		**2.78**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{13.14}{5} = 2.63$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum (X - \bar{X})^2}{N}} = \sqrt{\frac{2.78}{5}} = \sqrt{0.556} = 0.75$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{0.75}{2.63} \times 100 = 28.52\%$$

HBL

X	$(X - \bar{X})$	$(X - \bar{X})^2$
3.18	0.23	0.05
2.3	-0.65	0.42
2.27	-0.68	0.46
2.48	-0.47	0.22
4.51	1.56	2.43
14.74		**3.58**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{14.74}{5} = 2.95$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum (X - \bar{X})^2}{N}} = \sqrt{\frac{3.58}{5}} = \sqrt{0.716} = 0.85$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{0.85}{2.95} \times 100 = 28.8\%$$

BOK

X	$\left(X - \bar{X}\right)$	$\left(X - \bar{X}\right)^2$
5.65	2.64	6.97
1.45	-1.56	2.43
1.79	-1.22	1.49
2.6	-0.41	0.17
3.57	0.56	0.31
15.06		**11.19**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{15.06}{5} = 3.01$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X - \bar{X}\right)^2}{N}} = \sqrt{\frac{11.19}{5}} = \sqrt{2.238} = 1.50$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{1.5}{3.01} \times 100 = 49.83\%$$

KBL

X	$\left(X - \bar{X}\right)$	$\left(X - \bar{X}\right)^2$
4.75	2.27	5.1529
2.54	0.06	0.0036
1.05	-1.43	1.0449
1.51	-0.97	0.9409
2.56	0.08	0.0064
12.41		**8.1487**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{12.41}{5} = 2.48$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X - \bar{X}\right)^2}{N}} = \sqrt{\frac{8.1487}{5}} = \sqrt{1.62974} = 1.28$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{1.28}{2.48} \times 100 = 51.61\%$$

NIC

X	$\left(X-\overline{X}\right)$	$\left(X-\overline{X}\right)^2$
2.12	-0.1	0.01
2.22	0	0
1.64	-0.58	0.3364
1.4	-0.82	0.6724
3.73	1.51	2.2801
11.11		**32989**

$$\text{Mean}(\overline{X}) = \frac{\sum X}{N} = \frac{11.11}{5} = 2.22$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\overline{X}\right)^2}{N}} = \sqrt{\frac{3.2989}{5}} = \sqrt{0.65978} = 0.81$$

$$\text{C.V.} = \frac{\sigma}{\overline{X}} \times 100 = \frac{0.81}{2.22} \times 100 = 36.49\%$$

Appendix-8

Calculation of Earning Yield (EY) of Commercial Bank (In %)

$$EY = \frac{EPS}{MPS}$$

NABIL

X	$(X - \bar{X})$	$(X - \bar{X})^2$
5.77	2.57	6.60
2.71	-0.49	0.24
2.05	-1.15	1.32
2.18	-1.02	1.04
3.30	0.1	0.01
16.01		**9.21**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{16.01}{5} = 3.20$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum (X - \bar{X})^2}{N}} = \sqrt{\frac{9.21}{5}} = \sqrt{1.842} = 1.36$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{1.36}{32} \times 100 = 42.5\%$$

HBL

X	$(X - \bar{X})$	$(X - \bar{X})^2$
5.39	1.49	2.22
3.49	-0.41	0.17
3.17	-0.73	0.53
3.52	-0.38	0.14
3.90	0	0
19.47		**3.06**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{19.47}{5} = 3.90$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum (X - \bar{X})^2}{N}} = \sqrt{\frac{3.06}{5}} = \sqrt{0.612} = 0.78$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{0.78}{3.90} \times 100 = 20\%$$

BOK

X	$\left(X-\overline{X}\right)$	$\left(X-\overline{X}\right)^2$
5.14	1.35	1.82
3.16	0.63	0.40
2.55	-1.24	154
2.98	-0.81	0.66
5.13	134	1.80
18.96		**6.22**

$$\text{Mean}(\overline{X}) = \frac{\sum X}{N} = \frac{18.96}{5} = 3.79$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\overline{X}\right)^2}{N}} = \sqrt{\frac{6.22}{5}} = \sqrt{1.244} = 1.12$$

$$\text{C.V.} = \frac{\sigma}{\overline{X}} \times 100 = \frac{1.12}{3.79} \times 100 = 29.55\%$$

KBL

X	$\left(X-\overline{X}\right)$	$\left(X-\overline{X}\right)^2$
3.74	0.47	0.22
2.66	-0.61	0.37
1.63	-1.64	2.69
3.15	-0.12	0.01
5.18	1.91	3.65
16.36		**6.94**

$$\text{Mean}(\overline{X}) = \frac{\sum X}{N} = \frac{16.36}{5} = 3.27$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\overline{X}\right)^2}{N}} = \sqrt{\frac{6.94}{5}} = \sqrt{1.388} = 1.18$$

$$\text{C.V.} = \frac{\sigma}{\overline{X}} \times 100 = \frac{1.18}{3.27} \times 100 = 36.09\%$$

NIC

X	$\left(X-\overline{X}\right)$	$\left(X-\overline{X}\right)^2$
3.25	0.1	0.01
2.53	-0.62	0.38
2.01	-1.14	1.30
2.47	-0.68	0.46
5.48	2.33	5.43
15.74		**7.58**

$$\text{Mean}(\overline{X}) = \frac{\sum X}{N} = \frac{15.74}{5} = 3.15$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\overline{X}\right)^2}{N}} = \sqrt{\frac{7.58}{5}} = \sqrt{1.516} = 1.23$$

$$\text{C.V.} = \frac{\sigma}{\overline{X}} \times 100 = \frac{1.23}{3.15} \times 100 = 39.05\%$$

Appendix-9

Calculation of Book Value per Share of Commercial Bank

NABIL

X	$(X-\bar{X})$	$(X-\bar{X})^2$
381	-3	9
418	34	1156
354	-30	900
324	-60	3600
265	-119	14161
1742		**19826**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{1742}{5} = 384$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{19826}{5}} = \sqrt{3965.2} = 62.97$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{62.97}{384} \times 100 = 16.40\%$$

HBL

X	$(X-\bar{X})$	$(X-\bar{X})^2$
228.72	-16.22	263.09
264.74	19.8	392.04
247.95	3.01	9.06
256.52	11.58	134.09
226.79	-18.15	329.42
1224.72		**1127.7**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{1224.72}{5} = 244.94$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{1127.7}{5}} = \sqrt{225.54} = 15.02$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{150.2}{244.94} \times 100 = 6.13\%$$

BOK

X	$(X-\bar{X})$	$(X-\bar{X})^2$
230.67	30.77	946.79
164.68	-35.22	1240.45
222.51	22.61	511.21
206.25	6.35	40.32
175.40	-24.5	600.25
999.51		**3339.02**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{999.51}{5} = 199.9$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{3339.02}{5}} = \sqrt{667.80} = 25.84$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{25.84}{199.9} \times 100 = 12.93\%$$

KBL

X	$(X-\bar{X})$	$(X-\bar{X})^2$
149	11.45	131.10
137	-0.55	0.30
128	-9.55	91.20
137	-0.55	0.30
136.73	-0.82	0.67
687.73		**223.57**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{687.73}{5} = 137.55$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{223.57}{5}} = \sqrt{44.71} = 6.69$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{6.69}{137.55} \times 100 = 4.86\%$$

NIC

X	$\left(X-\overline{X}\right)$	$\left(X-\overline{X}\right)^2$
116.13	-18.58	345.22
139.17	4.46	19.89
138.09	3.38	11.42
145.57	11.46	131.33
134.57	-0.14	0.02
673.53		**507.88**

$$\text{Mean}(\overline{X}) = \frac{\sum X}{N} = \frac{673.53}{5} = 134.71$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X-\overline{X}\right)^2}{N}} = \sqrt{\frac{507.88}{5}} = \sqrt{101.58} = 10.08$$

$$\text{C.V.} = \frac{\sigma}{\overline{X}} \times 100 = \frac{10.08}{134.71} \times 100 = 7.48\%$$

Appendix-10

$$\frac{\text{MPPS}}{\text{BVPS}}$$

NABIL

$$2005/06 = \frac{2240}{381} = 5.89$$

$$2006/07 = \frac{5050}{418} = 12.08$$

$$2007/08 = \frac{5275}{354} = 14.90$$

$$2008/09 = \frac{4899}{324} = 15.12$$

$$2009/10 = \frac{2384}{265} = 8.99$$

X	$(X - \bar{X})$	$(X - \bar{X})^2$
5.89	-5.51	30.36
12.08	0.68	0.46
14.90	3.5	12.25
15.12	3.72	13.84
8.99	-2.41	5.81
56.98		**62.72**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{56.98}{5} = 11.40$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum (X - \bar{X})^2}{N}} = \sqrt{\frac{62.72}{5}} = \sqrt{12.544} = 3.54$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{3.54}{11.4} \times 100 = 31.05\%$$

HBL

$$2005/06 = \frac{1100}{228.72} = 4.81$$

$$2006/07 = \frac{1740}{264.74} = 6.57$$

$$2007/08 = \frac{1980}{247.95} = 7.99$$

$$2008/09 = \frac{1760}{256.52} = 6.86$$

$$2009/10 = \frac{816}{226.78} = 3.60$$

X	$\left(X - \overline{X}\right)$	$\left(X - \overline{X}\right)^2$
4.81	-1.16	1.35
6.57	0.6	0.36
7.99	2.02	4.08
6.86	0.89	0.79
3.60	2.37	5.62
29.83		**12.2**

$$\text{Mean}(\overline{X}) = \frac{\sum X}{N} = \frac{29.83}{5} = 5.97$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X - \overline{X}\right)^2}{N}} = \sqrt{\frac{12.2}{5}} = \sqrt{2.44} = 1.56$$

$$\text{C.V.} = \frac{\sigma}{\overline{X}} \times 100 = \frac{1.56}{5.97} \times 100 = 26.13\%$$

BOK

$$2005/06 = \frac{850}{230.67} = 3.68$$

$$2006/07 = \frac{1375}{164.68} = 8.35$$

$$2007/08 = \frac{2350}{222.51} = 10.56$$

$$2008/09 = \frac{1825}{206.25} = 8.85$$

$$2009/10 = \frac{840}{175.40} = 4.79$$

X	$(X-\bar{X})$	$(X-\bar{X})^2$
3.68	-3.63	13.18
8.25	1.04	1.08
10.56	3.25	10.56
8.85	1.54	2.37
4.79	-2.52	6.35
36.53		**33.54**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{36.53}{5} = 7.31$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum(X-\bar{X})^2}{N}} = \sqrt{\frac{33.54}{5}} = \sqrt{6.71} = 2.59$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{2.59}{7.31} \times 100 = 35.43\%$$

KBL

$$2005/06 = \frac{443}{149} = 2.97$$

$$2006/07 = \frac{830}{137} = 6.06$$

$$2007/08 = \frac{1005}{128} = 7.86$$

$$2008/09 = \frac{700}{137} = 5.11$$

$$2009/10 = \frac{468}{136.73} = 3.42$$

X	$(X-\bar{X})$	$(X-\bar{X})^2$
2.97	-2.11	4.45
6.06	0.98	0.96
7.86	2.78	7.73
5.11	0.03	0.0009
3.42	-1.66	2.76
25.42		**15.90**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{25.42}{5} = 5.08$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X - \bar{X}\right)^2}{N}} = \sqrt{\frac{15.90}{5}} = \sqrt{44.71} = 1.78$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{1.78}{5.08} \times 100 = 35.04\%$$

NIC

$$2005/06 = \frac{496}{116.13} = 4.27$$

$$2006/07 = \frac{950}{139.17} = 6.06$$

$$2007/08 = \frac{1284}{138.09} = 9.30$$

$$2008/09 = \frac{1126}{145.57} = 7.74$$

$$2009/10 = \frac{626}{134.57} = 4.65$$

X	$\left(X - \bar{X}\right)$	$\left(X - \bar{X}\right)^2$
4.27	-2.29	5.24
6.83	0.27	0.07
9.30	2.74	7.51
7.74	1.18	1.39
4.65	-1.91	3.65
32.79		**17.86**

$$\text{Mean}(\bar{X}) = \frac{\sum X}{N} = \frac{32.79}{5} = 6.56$$

$$\text{S.D.}(\sigma) = \sqrt{\frac{\sum\left(X - \bar{X}\right)^2}{N}} = \sqrt{\frac{17.86}{5}} = \sqrt{3.572} = 1.89$$

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100 = \frac{1.89}{6.56} \times 100 = 28.81\%$$

Appendix-11

Calculation of Correlation Co-efficient of NABIL Bank

Co-efficient with

DPS (X)	EPS (Y)	XY	X^2	Y^2
85	129.21	10982.85	7225	16695.22
140	137.08	19191.2	19600	18790.93
100	108.31	10831	1000	11731.06
85	106.76	9074.6	7225	11397.69
70	78.61	5502.7	4900	6179.53
480	**559.97**	**55582.35**	**48950**	**64794.43**

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

$$= \frac{5 \times 55582.35 - 480 \times 559.97}{\sqrt{5 \times 48950 - (480)^2}\sqrt{5 \times 64794.43 - (559.97)^2}}$$

$$= 0.75$$

DPR (X)	EPS (Y)	XY	X^2	Y^2
65.78	129.21	8499.43	4327.01	16695.22
102.13	139.08	13999.98	10430.54	18790.93
92.33	108.31	10000.26	8524.83	11931.06
79.63	106.76	8501.30	6340.94	11397.70
89.05	78.61	7000.22	7929.90	6179.53
428.92	**559.97**	**48001.19**	**37553.22**	**64794.44**

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

$$= \frac{5 \times 48001.19 - 428.92 \times 559.97}{\sqrt{5 \times 37553.22 - (428.92)^2}\sqrt{5 \times 64794.44 - (559.97)^2}}$$

$$= -0.028$$

EY **(X)**	**EPS (Y)**	**XY**	**X^2**	**Y^2**
5.77	129.21	745.54	33.29	16695.22
2.71	137.08	371.49	7.34	18790.93
2.05	108.31	222.04	4.20	11731.06
2.18	106.76	232.74	4.75	11397.70
3.30	78.61	259.41	10.89	6179.53
16.01	**559.97**	**1831.22**	**60.47**	**64794.44**

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

$$= \frac{5 \times 1831.22 - 16.01 \times 559.97}{\sqrt{5 \times 60.47 - (1601)^2}\sqrt{5 \times 64794.44 - (559.97)^2}}$$

$$= 0.28$$

DY (X)	**EPS (Y)**	**XY**	**X^2**	**Y^2**
3.79	129.21	489.71	14.36	16695.22
2.77	137.08	379.71	7.67	18790.93
1.9	108.31	205.79	3.61	11731.06
1.74	106.76	185.76	3.03	11397.70
2.94	78.61	231.11	8.64	6179.53
13.14	**559.97**	**1492.08**	**37.31**	**64794.44**

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

$$= \frac{5 \times 1152.08 - 13.14 \times 559.97}{\sqrt{5 \times 37.31 - (13.14)^2}\sqrt{5 \times 64794.44 - (559.97)^2}}$$

$$= 0.26$$

DPS (X)	**EY (Y)**	**XY**	**X^2**	**Y^2**
85	5.77	490.45	7225	33.29
140	2.71	379.4	19600	7.24
100	2.05	205	10000	4.2
85	2.18	185.3	7225	4.75
70	3.30	231	4900	1.89
480	**16.01**	**1491.15**	**48950**	**60.47**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 1491.15 - 480 \times 16.01}{\sqrt{5 \times 48950 - (480)^2}\sqrt{5 \times 60.47 - (16.01)^2}}$$
$$= -0.28$$

DPR (X)	**EY (Y)**	**XY**	**X^2**	**Y^2**
65.78	5.77	379.55	4327.01	33.29
102.13	2.71	276.77	10430.54	7.24
92.33	2.05	189.28	8524.83	4.2
79.63	2.18	193.57	6340.14	4.75
89.05	3.30	293.87	7929.90	10.89
428.92	**16.01**	**1313.04**	**37553.22**	**60.47**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 1313.04 - 428.92 \times 16.01}{\sqrt{5 \times 37553.22 - (428.92)^2}\sqrt{5 \times 60.47 - (16.01)^2}}$$
$$= -0.72$$

DY (X)	**EY (Y)**	**XY**	**X^2**	**Y^2**
3.79	5.77	21.87	14.36	33.29
2.77	2.71	7.51	7.67	7.24
1.9	2.05	3.90	3.61	4.2
1.74	2.18	3.79	3.03	4.75
2.94	3.3	9.70	8.64	10.89
13.14	**16.01**	**46.77**	**37.31**	**60.47**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 46.77 - 13.14 \times 16.01}{\sqrt{5 \times 37.31 - (13.14)^2}\sqrt{5 \times 60.47 - (16.01)^2}}$$
$$= 0.93$$

DPS (X)	DY (Y)	XY	X^2	Y^2
85	3.79	322.15	7225	14.36
140	2.77	378.8	19600	7.67
100	1.9	190	1000	3.61
85	1.74	147.9	7225	3.03
70	2.94	205.8	4900	8.64
480	**13.14**	**1244.65**	**48950**	**37.31**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 1244.65 - 480 \times 13.14}{\sqrt{5 \times 48950 - (480)^2}\sqrt{5 \times 37.31 - (13.14)^2}}$$
$$= -0.18$$

DPR (X)	DY (Y)	XY	X^2	Y^2
65.78	3.79	249.31	4327.01	14.36
102.13	2.77	282.90	10430.54	7.67
92.33	1.9	175.43	8524.83	3.61
79.63	1.74	138.56	6340.94	3.03
89.05	2.94	261.81	7929.90	8.64
428.92	**13.14**	**1108.01**	**37553.22**	**37.31**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 1108.01 - 428.92 \times 13.14}{\sqrt{5 \times 37553.22 - (428.92)^2}\sqrt{5 \times 37.31 - (13.14)^2}}$$
$$= -0.42$$

DPS (X)	MPPS (Y)	XY	X^2	Y^2
85	2240	190400	7225	5017600
140	5050	707000	19600	25502500
100	5275	527500	10000	27825625
85	4899	416415	7225	24000201
70	2384	166880	4900	5683456
480	**19848**	**2008195**	**48950**	**88029382**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 2008195 - 480 \times 19849}{\sqrt{5 \times 48950 - (480)^2}\sqrt{5 \times 88029382 - (19848)^2}}$$
$$= 0.63$$

DPR (X)	MPPS (Y)	XY	X^2	Y^2
65.78	2240	147347.2	4327.01	5017600
102.13	5050	515756.5	10430.54	25502500
92.33	5275	487040.75	8524.83	27825625
79.63	4899	390107.37	6340.94	24000201
89.05	2384	212295.2	7929.90	5683456
428.92	**19848**	**1752547.02**	**37553.22**	**88029382**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 1752547.0 - 428.92 \times 19849}{\sqrt{5 \times 37553.22 - (428.92)^2}\sqrt{5 \times 88029382 - (19848)^2}}$$
$$= -0.60$$

EY (X)	MPPS (Y)	XY	X^2	Y^2
5.77	2240	12924.8	33.29	5017600
2.71	5050	13685.5	7.24	25502500
2.05	5275	10813.75	4.2	27825625
2.18	4899	10679.82	4.75	24000201
3.3	2384	7867.2	10.89	5683456
16.01	**19848**	**55971.07**	**60.47**	**88029382**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 55971.07 - 16.01 \times 19849}{\sqrt{5 \times 60.78 - (16.01)^2}\sqrt{5 \times 88029382 - (19848)^2}}$$
$$= -0.82$$

DY (X)	MPPS (Y)	XY	X^2	Y^2
3.79	2240	8489.6	14.36	5017600
2.77	5050	13988.5	7.67	25502500
1.9	5275	10022.5	3.61	27825625
1.74	4899	8524.26	3.03	24000201
2.94	2384	7008.96	8.64	5683456
13.14	**19848**	**48033.82**	**37.31**	**88029382**

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

$$= \frac{5 \times 48033.82 - 13.14 \times 19849}{\sqrt{5 \times 37.31 - (13.14)^2}\sqrt{5 \times 88029382 - (19848)^2}}$$

$$= -0.81$$

Appendix-12

Calculation of Correlation Coefficient of HBL Bank

Correlation with

DPS (X)	EPS (Y)	XY	X^2	Y^2
35	59.24	2073.4	1225	3509.37
40	60.66	2426.4	1600	3679.64
45	62.74	2823.3	2025	3936.31
43.56	61.90	2696.36	1897.47	3831.61
36.84	31.8	1171.51	1357.19	1011.24
200.4	**276.34**	**11190.97**	**8104.66**	**15968.17**

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

$$= \frac{5 \times 11190.97 - 200.4 \times 276.34}{\sqrt{5 \times 8104.66 - (200.4)^2}\sqrt{5 \times 15968.17 - (276.34)^2}}$$

$$= 0.51$$

DPR (X)	EPS (Y)	XY	X^2	Y^2
59.08	59.24	3499.89	3490.45	3509.37
65.94	60.66	3999.92	4348.08	3679.64
71.72	62.74	4499.71	5143.75	3936.31
70.37	61.90	4355.90	4951.94	3831.61
115.85	31.8	3684.03	13421.22	1011.24
382.96	**276.34**	**20039.45**	**31355.44**	**15968.17**

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

$$= \frac{5 \times 11190.97 - 200.4 \times 276.34}{\sqrt{5 \times 8104.66 - (200.4)^2}\sqrt{5 \times 15968.17 - (276.34)^2}}$$

$$= -0.95$$

EY (X)	EPS (Y)	XY	X^2	Y^2
5.39	59.24	319.30	29.05	3509.37
3.49	60.66	211.70	12.18	3679.64
3.17	62.74	198.89	10.05	3936.31
3.52	61.90	217.89	12.39	3831.61
3.90	31.8	124.02	15.12	1011.24
19.47	**276.34**	**1071.8**	**78.88**	**15968.17**

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

$$= \frac{5 \times 1071.8 - 19.47 \times 276.34}{\sqrt{5 \times 78.88 - (19.47)^2}\sqrt{5 \times 15968.17 - (276.34)^2}}$$

$$= -0.093$$

DY (X)	EPS (Y)	XY	X^2	Y^2
3.18	59.24	188.38	10.11	3509.37
2.3	60.66	139.52	5.29	3679.64
2.27	62.74	142.42	5.15	3936.31
2.48	61.90	153.51	6.15	3831.61
4.51	31.8	143.42	20.34	1011.24
14.74	**276.34**	**767.25**	**47.04**	**15968.17**

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

$$= \frac{5 \times 767.25 - 14.74 \times 276.34}{\sqrt{5 \times 47.04 - (14.74)^2}\sqrt{5 \times 15968.17 - (276.34)^2}}$$

$$= -0.95$$

DPS (X)	EY (Y)	XY	X^2	Y^2
35	5.39	188.65	1225	29.05
40	3.49	139.6	1600	12.18
45	3.17	142.65	2025	10.05
43.56	3.52	153.33	1897.47	12.39
36.84	3.90	143.68	1357.19	15.12
200.4	**19.47**	**767.90**	**8104.66**	**78.88**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - \left(\sum X\right)^2}\sqrt{N\sum Y^2 - \left(\sum Y\right)^2}}$$
$$= \frac{5 \times 767.90 - 200.4 \times 19.47}{\sqrt{5 \times 8104.66 - \left(200.4\right)^2}\sqrt{5 \times 78.88 - \left(19.47\right)^2}}$$
$$= -0.84$$

DPR (X)	**EY (Y)**	**XY**	**X^2**	**Y^2**
59.08	5.39	17.14	10.11	29.05
65.94	3.49	8.03	5.29	12.18
71.72	3.17	7.20	5.15	10.05
70.37	3.52	8.73	6.15	12.39
115.85	3.90	17.59	20.34	15.12
382.96	**19.47**	**1473.63**	**31355.44**	**78.88**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - \left(\sum X\right)^2}\sqrt{N\sum Y^2 - \left(\sum Y\right)^2}}$$
$$= \frac{5 \times 1473.63 - 382.96 \times 19.47}{\sqrt{5 \times 31355.44 - \left(382.96\right)^2}\sqrt{5 \times 78.88 - \left(19.47\right)^2}}$$
$$= -0.22$$

DY (X)	**EY (Y)**	**XY**	**X^2**	**Y^2**
3.18	5.39	17.14	10.11	29.05
2.3	3.49	8.03	5.29	12.18
2.27	3.17	7.20	5.15	10.05
2.48	3.52	8.73	6.15	12.39
4.51	3.90	17.56	20.34	15.12
14.74	**19.47**	**58.69**	**47.04**	**78.88**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - \left(\sum X\right)^2}\sqrt{N\sum Y^2 - \left(\sum Y\right)^2}}$$
$$= \frac{5 \times 58.69 - 14.74 \times 19.47}{\sqrt{5 \times 47.04 - \left(14.74\right)^2}\sqrt{5 \times 78.88 - \left(19.47\right)^2}}$$
$$= 0.39$$

DPS (X)	DY (Y)	XY	X^2	Y^2
35	3.18	111.3	1225	10.11
40	2.3	92	1600	5.29
45	2.27	102.15	2025	5.15
43.56	2.48	108.03	1897.47	6.15
36.84	4.51	166.15	1357.19	20.34
200.4	**14.74**	**579.6**	**8104.66**	**47.04**

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

$$= \frac{5 \times 579.6 - 200.4 \times 14.74}{\sqrt{5 \times 8104.66 - (200.4)^2}\sqrt{5 \times 47.04 - (14.74)^2}}$$

$$= -0.82$$

DPR (X)	DY (Y)	XY	X^2	Y^2
59.08	3.18	187.87	3490.45	10.11
65.94	2.3	151.66	4348.08	5.29
71.72	2.27	162.85	5143.75	5.15
70.37	2.48	174.52	4951.94	6.15
115.85	4.51	520.32	13421.22	20.34
382.96	**14.74**	**1197.22**	**31355.44**	**47.04**

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

$$= \frac{5 \times 1197.22 - 382.96 \times 14.74}{\sqrt{5 \times 31355.44 - (382.96)^2}\sqrt{5 \times 47.04 - (14.74)^2}}$$

$$= 0.80$$

DPS (X)	MPPS (Y)	XY	X^2	Y^2
35	1100	38500	1225	121000
40	1740	69600	1600	3027600
45	1980	89100	2025	3920400
43.56	1760	76665.6	1897.47	3097600
36.84	816	30061.44	1357.19	665856
200.4	**7396**	**303927.04**	**8104.66**	**11921456**

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

$$= \frac{5 \times 303927.04 - 200.4 \times 7396}{\sqrt{5 \times 31355.44 - \left(200.4\right)^2}\sqrt{5 \times 11921456 - \left(7396\right)^2}}$$

$$= 0.89$$

DPR (X)	**MPPS (Y)**	**XY**	**X^2**	**Y^2**
59.08	1100	31988	3490.45	121000
65.94	1740	114735.6	4348.08	3027600
71.72	1980	142045.6	5143.75	3920400
70.37	1760	123851.2	4951.94	3097600
115.85	816	94141.92	13421.22	665856
382.96	**7396**	**506761.92**	**31355.44**	**11921456**

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

$$= \frac{5 \times 506761.92 - 382.96 \times 7396}{\sqrt{5 \times 31355.44 - \left(382.96\right)^2}\sqrt{5 \times 11921456 - \left(7396\right)^2}}$$

$$= -1.34$$

EY (X)	**MPPS (Y)**	**XY**	**X^2**	**Y^2**
5.39	1100	5929	29.05	121000
3.49	1740	6072.6	12.18	3027600
3.17	1980	6276.6	10.05	3920400
3.52	1760	6195.2	12.39	3097600
3.90	816	3182.4	15.12	665856
19.47	**7396**	**27655.8**	**78.88**	**11921456**

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

$$= \frac{5 \times 27655.8 - 19.47 \times 7396}{\sqrt{5 \times 78.88 - \left(19.47\right)^2}\sqrt{5 \times 11921456 - \left(7396\right)^2}}$$

$$= -0.66$$

DY (X)	MPPS (Y)	XY	X^2	Y^2
3.18	1100	34798	10.11	121000
2.3	1740	4002	5.29	3027600
2.27	1980	4494.6	5.15	3920400
2.48	1760	4364.8	6.15	3097600
4.51	816	3680.16	20.34	665856
14.74	**7396**	**20039.56**	**47.04**	**11921456**

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

$$= \frac{5 \times 20039.56 - 14.74 \times 7396}{\sqrt{5 \times 47.04 - (14.74)^2}\sqrt{5 \times 11921456 - (7396)^2}}$$

$$= -0.94$$

Appendix-13

Calculation of Correlation Coefficient of BOK Bank

Correlation with

DPS (X)	EPS (Y)	XY	X^2	Y^2
48	43.67	2096.16	2304	1907.07
20	43.50	870	400	1892.25
42.11	59.94	2524.07	1773.25	3592.80
47.37	54.68	2590.19	2243.92	2989.90
30	43.08	1292.4	900	1855.89
187.48	**244.87**	**9372.82**	**7621.17**	**12237.90**

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

$$= \frac{5 \times 9372.82 - 187.48 \times 244.87}{\sqrt{5 \times 7621.17 - (187.48)^2}\sqrt{5 \times 12237.90 - (244.87)^2}}$$

$$= 0.50$$

DPR (X)	EPS (Y)	XY	X^2	Y^2
109.92	43.67	4800.21	12082.41	1907.07
45.98	43.50	2000.13	2114.16	1892.25
70.25	59.94	4210.79	4935.06	3592.80
86.87	54.68	4750.05	7546.40	2989.90
69.64	43.08	3000.9	4849.73	1855.89
382.66	**244.87**	**18761.27**	**31527.75**	**12237.90**

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

$$= \frac{5 \times 18761.27 - 382.66 \times 244.87}{\sqrt{5 \times 31527.75 - (382.66)^2}\sqrt{5 \times 12237.90 - (244.87)^2}}$$

$$= 0.028$$

EY (X)	EPS (Y)	XY	X^2	Y^2
5.14	43.67	224.46	26.42	1907.07
3.16	43.50	137.46	9.98	1892.25
2.55	59.94	152.85	6.50	3592.80
2.98	54.68	162.95	8.88	2989.90
5.13	43.08	221.00	26.32	1855.89
18.96	**244.87**	**898.72**	**78.09**	**12237.90**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - \left(\sum X\right)^2}\sqrt{N\sum Y^2 - \left(\sum Y\right)^2}}$$
$$= \frac{5 \times 898.72 - 18.96 \times 244.87}{\sqrt{5 \times 78.09 - \left(18.96\right)^2}\sqrt{5 \times 12237.90 - \left(244.87\right)^2}}$$
$$= -0.77$$

DY (X)	EPS (Y)	XY	X^2	Y^2
5.65	43.67	246.74	31.92	1907.07
1.45	43.50	63.08	2.10	1892.25
1.79	59.94	107.29	3.20	3592.80
2.6	54.68	142.17	6.76	2989.90
3.57	43.08	153.80	12.74	1855.89
15.06	**244.87**	**713.08**	**56.72**	**12237.90**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - \left(\sum X\right)^2}\sqrt{N\sum Y^2 - \left(\sum Y\right)^2}}$$
$$= \frac{5 \times 713.08 - 15.06 \times 244.87}{\sqrt{5 \times 56.72 - \left(15.06\right)^2}\sqrt{5 \times 12237.90 - \left(244.87\right)^2}}$$
$$= -0.46$$

DPS (X)	EY (Y)	XY	X^2	Y^2
48	5.14	246.72	2304	26.42
20	3.16	63.2	400	9.98
42.11	2.55	107.38	1773.25	6.50
47.37	2.98	142.16	2243.92	8.88
30	5.13	153.9	900	26.32
187.48	**18.96**	**712.36**	**7621.17**	**78.09**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 712.36 - 187.48 \times 18.96}{\sqrt{5 \times 7621.17 - (187.48)^2}\sqrt{5 \times 78.09 - (18.96)^2}}$$
$$= 0.024$$

DPR (X)	**EY (Y)**	**XY**	**X^2**	**Y^2**
109.92	5.14	564.99	12082.41	26.42
45.98	3.16	145.29	2114.16	9.98
70.25	2.55	179.14	4935.06	6.50
86.87	2.98	258.87	7546.40	8.88
69.64	5.13	357.25	4849.73	26.32
382.66	**18.96**	**1505.50**	**31527.25**	**78.09**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 1505.50 - 382.66 \times 18.96}{\sqrt{5 \times 31527.25 - (382.66)^2}\sqrt{5 \times 78.09 - (18.96)^2}}$$
$$= 0.46$$

DY (X)	**EY (Y)**	**XY**	**X^2**	**Y^2**
5.65	5.14	29.04	31.92	26.42
1.45	3.16	4.58	2.10	9.98
1.79	2.55	4.56	3.20	6.50
2.6	2.98	7.75	6.76	8.88
3.57	5.13	18.31	12.74	26.32
15.06	**18.96**	**64.24**	**56.72**	**78.09**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 64.24 - 15.06 \times 18.96}{\sqrt{5 \times 56.72 - (15.06)^2}\sqrt{5 \times 78.09 - (18.96)^2}}$$
$$= 0.85$$

DPS (X)	DY (Y)	XY	X^2	Y^2
48	5.65	271.2	2304	31.92
20	1.45	29	400	2.10
42.11	1.79	75.38	1773.25	3.20
47.37	2.6	123.16	2243.92	6.76
30	3.57	107.1	900	12.74
187.48	**15.06**	**605.84**	**7621.17**	**56.72**

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

$$= \frac{5 \times 605.84 - 187.48 \times 15.06}{\sqrt{5 \times 7621.17 - (187.48)^2}\sqrt{5 \times 56.72 - (15.06)^2}}$$

$$= 0.50$$

DPR (X)	DY (Y)	XY	X^2	Y^2
109.92	5.65	621.05	12082.41	31.92
45.98	1.45	66.67	2114.16	2.10
70.25	1.79	125.75	4935.06	3.20
86.87	2.6	225.86	7546.40	6.76
69.64	3.57	248.61	4849.73	12.74
382.66	**15.06**	**1287.94**	**31527.25**	**56.72**

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

$$= \frac{5 \times 1287.94 - 382.66 \times 15.06}{\sqrt{5 \times 31527.25 - (382.66)^2}\sqrt{5 \times 56.72 - (15.06)^2}}$$

$$= 0.85$$

DPS (X)	MPPS (Y)	XY	X^2	Y^2
48	850	40800	2304	722500
20	1375	27500	400	1890625
42.11	2350	98958.5	1773.25	5522500
47.37	1825	86450.25	2243.92	3330625
30	840	25200	900	705600
187.48	**7240**	**278908.75**	**7621.17**	**12171850**

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

$$= \frac{5 \times 278908.75 - 187.48 \times 7240}{\sqrt{5 \times 7621.17 - (187.48)^2}\sqrt{5 \times 12171850 - (7240)^2}}$$

$$= 0.24$$

DPR (X)	**MPPS (Y)**	**XY**	**X^2**	**Y^2**
109.92	850	93435	12082.41	722500
45.98	1375	6322.5	2114.16	1890625
70.25	2350	165087.5	4935.06	5522500
86.87	1825	158537.75	7546.40	3330625
69.64	840	58497.6	4849.73	705600
382.66	**7240**	**538777.35**	**31527.25**	**12171850**

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

$$= \frac{5 \times 538777.35 - 382.66 \times 7240}{\sqrt{5 \times 31527.25 - (382.66)^2}\sqrt{5 \times 12171850 - (7240)^2}}$$

$$= -0.25$$

EY (X)	**MPPS (Y)**	**XY**	**X^2**	**Y^2**
5.14	850	4369	26.42	722500
3.16	1375	4345	9.98	1890625
2.55	2350	5992.5	6.50	5522500
2.98	1825	5438.5	8.88	3330625
5.13	840	4309.2	26.32	705600
18.96	**7240**	**24454.2**	**78.09**	**12171850**

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

$$= \frac{5 \times 24454.2 - 18.96 \times 7240}{\sqrt{5 \times 78.09 - (18.96)^2}\sqrt{5 \times 12171850 - (7240)^2}}$$

$$= -0.93$$

DY (X)	MPPS (Y)	XY	X^2	Y^2
5.65	850	4802.5	31.92	722500
1.45	1375	199.75	2.10	1890625
1.79	2350	4206.5	3.20	5522500
2.6	1825	4745	6.76	3330625
3.57	840	1998.8	12.74	705600
15.06	**7240**	**18746.55**	**56.72**	**12171850**

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

$$= \frac{5 \times 18746.55 - 15.06 \times 7240}{\sqrt{5 \times 56.72 - (15.06)^2}\sqrt{5 \times 12171850 - (7240)^2}}$$

$$= -0.70$$

Appendix-14

Calculation of Correlation Coefficient of KBL Bank

Correlation with

DPS (X)	EPS (Y)	XY	X^2	Y^2
21.05	16.59	349.22	443.10	275.23
21.05	22.07	464.57	443.10	487.08
10.53	16.35	172.17	110.88	267.32
10.58	22.04	233.18	111.94	485.76
12	24.24	290.88	144	587.58
75.21	**101.29**	**1510.02**	**1253.02**	**2102.96**

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

$$= \frac{5 \times 1510.02 - 75.21 \times 101.29}{\sqrt{5 \times 1253.02 - (187.48)^2}\sqrt{5 \times 2102.96 - (101.29)^2}}$$

$$= -0.17$$

DPR (X)	EPS (Y)	XY	X^2	Y^2
126.88	16.59	2104.94	16098.53	275.23
95.38	22.07	2105.04	9097.39	487.08
64.40	16.35	1052.94	4147.36	267.32
48	22.04	1057.92	2304	485.76
49.50	24.24	1199.88	2450.25	587.58
384.16	**101.29**	**7520.72**	**34097.48**	**2102.96**

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

$$= \frac{5 \times 7520.72 - 384.16 \times 101.29}{\sqrt{5 \times 34097.48 - (384.16)^2}\sqrt{5 \times 2102.96 - (101.29)^2}}$$

$$= -0.54$$

EY (X)	EPS (Y)	XY	X^2	Y^2
3.74	16.59	62.05	13.98	275.23
2.66	22.07	58.71	7.08	487.08
1.63	16.35	26.65	2.66	267.32
3.15	22.04	69.43	9.92	485.76
5.18	24.24	125.56	26.83	587.58
16.36	**101.29**	**342.40**	**60.47**	**2102.96**

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

$$= \frac{5 \times 342.40 - 16.36 \times 101.29}{\sqrt{5 \times 60.47 - (16.36)^2}\sqrt{5 \times 2102.96 - (101.29)^2}}$$

$$= 0.58$$

DY (X)	EPS (Y)	XY	X^2	Y^2
4.75	16.59	78.80	22.56	275.23
2.54	22.07	56.06	6.45	487.08
1.05	16.35	17.17	1.10	267.32
1.51	22.04	33.28	2.28	485.76
2.56	24.24	62.05	6.55	587.58
12.41	**101.29**	**247.36**	**38.94**	**2102.96**

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

$$= \frac{5 \times 247.36 - 12.41 \times 101.29}{\sqrt{5 \times 38.94 - (12.41)^2}\sqrt{5 \times 2102.96 - (101.29)^2}}$$

$$= -0.20$$

DPS (X)	EY (Y)	XY	X^2	Y^2
21.05	3.74	78.80	443.10	33.29
21.05	2.66	56.06	443.10	7.34
10.53	1.63	17.17	110.88	4.20
10.58	3.15	33.28	111.94	4.75
12	5.18	62.05	144	10.89
75.21	**16.36**	**247.36**	**1253.02**	**60.47**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 247.37 - 75.21 \times 16.36}{\sqrt{5 \times 1253.02 - (75.21)^2}\sqrt{5 \times 60.47 - (16.36)^2}}$$
$$= 0.044$$

DPR (X)	**EY (Y)**	**XY**	**X^2**	**Y^2**
126.88	3.74	474.53	16098.53	33.29
95.38	2.66	253.71	9097.39	7.34
64.40	1.63	104.97	4147.36	4.20
48	3.15	151.2	2304	4.75
49.50	5.18	256.41	2450.25	10.89
384.16	**16.36**	**1240.82**	**34097.48**	**60.47**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 1240.82 - 384.16 \times 16.36}{\sqrt{5 \times 34097.48 - (384.16)^2}\sqrt{5 \times 60.47 - (16.36)^2}}$$
$$= -0.091$$

DY (X)	**EY (Y)**	**XY**	**X^2**	**Y^2**
4.75	3.74	17.77	22.56	33.29
2.54	2.66	6.45	6.45	7.34
1.05	1.63	1.71	1.10	4.20
1.51	3.15	4.76	2.28	4.75
2.56	5.18	13.26	6.55	10.89
12.41	**16.36**	**44.26**	**38.94**	**60.47**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 44.26 - 12.41 \times 16.36}{\sqrt{5 \times 38.94 - (12.41)^2}\sqrt{5 \times 60.48 - (16.36)^2}}$$
$$= 0.49$$

DPS (X)	MPPS (Y)	XY	X^2	Y^2
21.05	443	9325.15	443.10	196249
21.05	830	17471.5	443.10	688900
10.53	1005	10582.65	110.88	1010025
10.58	700	7406	111.94	490000
12	468	5616	144	219024
75.21	**3446**	**50401.3**	**1253.02**	**2604198**

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

$$= \frac{5 \times 50401.3 - 75.21 \times 16.36}{\sqrt{5 \times 1253.02 - (75.21)^2}\sqrt{5 \times 2604198 - (3446)^2}}$$

$$= -0.27$$

DPR (X)	MPPS (Y)	XY	X^2	Y^2
126.88	443	56207.84	16098.53	196249
95.38	830	79165.4	9097.39	688900
64.40	1005	64722	4147.36	1010025
48	700	33600	2304	490000
49.50	468	23166	2450.25	219024
384.16	**3446**	**256861.24**	**34097.48**	**2604198**

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

$$= \frac{5 \times 256861.24 - 384.16 \times 16.36}{\sqrt{5 \times 34097.48 - (384.16)^2}\sqrt{5 \times 2604198 - (3446)^2}}$$

$$= -0.24$$

EY (X)	MPPS (Y)	XY	X^2	Y^2
3.74	443	1656.82	13.99	196249
2.66	830	2207.8	7.08	688900
1.63	1005	1638.15	2.66	1010025
3.15	700	2205	9.92	490000
5.18	468	2424.24	26.83	219024
16.36	**3446**	**10132.01**	**60.48**	**2604198**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 10132.01 - 16.36 \times 3446}{\sqrt{5 \times 60.48 - (16.36)^2}\sqrt{5 \times 2604198 - (3446)^2}}$$
$$= -0.84$$

DY (X)	MPPS (Y)	XY	X^2	Y^2
4.75	443	2704.25	22.56	196249
2.54	830	2708.2	6.45	688900
1.05	1005	1055.25	1.10	1010025
1.51	700	1057	2.28	490000
2.56	468	1198.08	6.55	219024
12.41	**3446**	**7522.78**	**38.94**	**2604198**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 7522.78 - 12.41 \times 3446}{\sqrt{5 \times 38.94 - (12.41)^2}\sqrt{5 \times 2604198 - (3446)^2}}$$
$$= -0.75$$

DPS (X)	DY (Y)	XY	X^2	Y^2
21.05	4.75	99.98	443.10	22.56
21.05	2.54	53.47	443.10	6.45
10.53	1.05	11.06	110.88	1.10
10.58	1.51	15.98	111.94	2.28
12	2.56	30.72	144	6.55
75.21	**12.41**	**211.21**	**1253.02**	**38.94**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 211.21 - 75.21 \times 12.41}{\sqrt{5 \times 1253.02 - (75.21)^2}\sqrt{5 \times 38.94 - (12.41)^2}}$$
$$= 0.78$$

DPS (X)	DY (Y)	XY	X^2	Y^2
126.88	4.75	602.68	16098.53	22.56
95.38	2.54	243.54	9097.39	6.45
64.40	1.05	67.62	4147.36	1.10
48	1.51	73.48	2304	2.28
49.50	2.56	126.72	2450.25	6.55
384.16	**12.41**	**1113.04**	**34097.48**	**38.94**

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

$$= \frac{5 \times 1113.04 - 384.16 \times 12.41}{\sqrt{5 \times 34097.48 - (384.16)^2}\sqrt{5 \times 38.94 - (12.41)^2}}$$

$$= 0.83$$

Appendix-15

Calculation of Correlation Coefficient of NIC Bank

Correlation with

DPS (X)	EPS (Y)	XY	X^2	Y^2
10.53	16.10	169.53	110.88	259.21
21.05	24.01	505.41	443.10	576.48
21.05	25.75	542.04	443.10	663.06
15.79	27.83	439.44	249.32	774.51
26.32	34.30	902.78	692.74	1176.49
94.74	**127.99**	**2559.20**	**1939.14**	**3449.75**

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

$$= \frac{5 \times 2559.20 - 94.74 \times 127.99}{\sqrt{5 \times 1939.14 - (94.74)^2}\sqrt{5 \times 3449.75 - (127.99)^2}}$$

$$= 0.85$$

DPR (X)	EPS (Y)	XY	X^2	Y^2
65.40	16.10	1052.94	4277.16	259.21
87.67	24.01	2104.96	7686.03	576.48
81.75	25.75	2105.06	6683.06	663.06
56.74	27.83	1579.07	3219.43	774.51
76.73	34.30	2631.84	5887.49	1176.49
368.29	**127.99**	**9473.87**	**27753.17**	**3449.75**

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

$$= \frac{5 \times 9473.87 - 368.29 \times 127.99}{\sqrt{5 \times 27753.17 - (368.29)^2}\sqrt{5 \times 3449.75 - (127.99)^2}}$$

$$= 0.14$$

EY (X)	EPS (Y)	XY	X^2	Y^2
3.25	16.10	52.33	10.56	259.21
2.53	24.01	60.75	6.40	576.48
2.01	25.75	51.76	4.04	663.06
2.47	27.83	68.74	6.10	774.51
5.48	34.30	187.96	30.03	1176.49
15.74	**127.99**	**421.54**	**57.13**	**3449.75**

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

$$= \frac{5 \times 421.54 - 15.74 \times 127.99}{\sqrt{5 \times 57.13 - (15.74)^2}\sqrt{5 \times 3449.75 - (127.99)^2}}$$

$$= 0.57$$

DY (X)	EPS (Y)	XY	X^2	Y^2
2.12	16.10	34.13	4.49	259.21
2.22	24.01	53.30	4.93	576.48
1.64	25.75	42.23	2.69	663.06
1.4	27.83	38.96	1.96	774.51
3.73	34.30	127.94	13.91	1176.49
11.11	**127.99**	**296.56**	**27.98**	**3449.75**

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

$$= \frac{5 \times 296.56 - 11.11 \times 127.99}{\sqrt{5 \times 27.99 - (11.11)^2}\sqrt{5 \times 3449.75 - (127.99)^2}}$$

$$= 0.51$$

DPS (X)	EY (Y)	XY	X^2	Y^2
10.53	3.25	34.22	110.88	10.56
21.05	2.53	53.26	443.10	6.40
21.05	2.01	42.31	443.10	4.04
15.79	2.47	39.00	249.32	6.10
26.32	5.48	144.23	692.74	30.03
94.74	**15.48**	**313.02**	**1939.14**	**57.13**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 313.02 - 94.74 \times 127.99}{\sqrt{5 \times 1939.14 - (94.74)^2}\sqrt{5 \times 57.13 - (15.48)^2}}$$
$$= 0.60$$

DPR (X)	**EY (Y)**	**XY**	**X^2**	**Y^2**
65.40	3.25	212.55	4277.16	10.56
87.67	2.53	221.81	7686.03	6.40
81.75	2.01	164.32	6683.06	4.04
56.74	2.47	140.15	3219.43	6.10
76.73	5.48	420.48	5887.49	30.03
368.29	**15.48**	**1159.31**	**27753.17**	**57.13**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 1159.31 - 368.29 \times 15.48}{\sqrt{5 \times 27753.17 - (368.29)^2}\sqrt{5 \times 57.13 - (15.48)^2}}$$
$$= 0.28$$

DY (X)	**EY (Y)**	**XY**	**X^2**	**Y^2**
2.12	3.25	6.89	4.49	10.56
2.22	2.53	5.62	4.93	6.40
1.64	2.01	3.30	2.69	4.04
1.4	2.47	3.46	1.93	6.10
3.73	5.48	20.44	13.91	30.03
11.11	**15.48**	**39.71**	**27.98**	**57.13**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 39.71 - 11.11 \times 15.48}{\sqrt{5 \times 27.98 - (11.11)^2}\sqrt{5 \times 57.13 - (15.48)^2}}$$
$$= 1.06$$

DPS (X)	DY (Y)	XY	X^2	Y^2
10.53	2.12	2.32	110.88	4.49
21.05	2.22	46.73	443.10	4.93
21.05	1.64	34.52	443.10	2.69
15.79	1.4	22.11	249.32	1.93
26.32	3.73	98.17	692.74	13.91
94.74	**11.11**	**223.85**	**1939.14**	**27.98**

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

$$= \frac{5 \times 223.85 - 94.74 \times 11.11}{\sqrt{5 \times 1939.14 - (94.74)^2}\sqrt{5 \times 27.98 - (11.11)^2}}$$

$$= 0.61$$

DPR (X)	DY (Y)	XY	X^2	Y^2
65.40	2.12	138.65	4277.16	4.49
87.67	2.22	194.63	7686.03	4.93
81.75	1.64	134.07	6683.06	2.69
56.74	1.4	79.49	3219.43	1.93
76.73	3.73	286.20	5887.49	13.91
368.29	**11.11**	**832.99**	**27753.17**	**27.98**

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

$$= \frac{5 \times 832.99 - 368.29 \times 11.11}{\sqrt{5 \times 27753.17 - (368.29)^2}\sqrt{5 \times 27.98 - (11.11)^2}}$$

$$= 0.32$$

DPS (X)	MPPS (Y)	XY	X^2	Y^2
10.53	496	5222.88	110.88	246016
21.05	950	19997.5	443.10	902500
21.05	1284	270282.2	443.10	1648656
15.79	1126	17779.54	249.32	1267876
26.32	626	16476.32	692.74	391876
94.74	**4482**	**86504.44**	**1939.14**	**4456924**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 86504.44 - 94.74 \times 4482}{\sqrt{5 \times 1939.14 - (94.74)^2}\sqrt{5 \times 4456924 - (4482)^2}}$$
$$= 0.20$$

DPR (X)	MPPS (Y)	XY	X^2	Y^2
65.40	496	32438.4	4277.16	246016
87.67	950	83286.5	7686.03	902500
81.75	1284	104967	6683.06	1648656
56.74	1126	63889.24	3219.43	1267876
76.73	626	48032.98	5887.49	391876
368.29	**4482**	**332614.12**	**27753.17**	**4456924**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 332614.12 - 368.29 \times 4482}{\sqrt{5 \times 27753.17 - (368.29)^2}\sqrt{5 \times 4456924 - (4482)^2}}$$
$$= 0.15$$

DY (X)	MPPS (Y)	XY	X^2	Y^2
2.12	496	1051.52	4.49	246016
2.22	950	2109	4.93	902500
1.64	1284	2105.76	2.69	1648656
1.4	1126	1576.4	1.93	1267876
3.73	626	2334.98	13.91	391876
11.11	**4482**	**9177.66**	**27.98**	**4456924**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 9177.66 - 11.11 \times 4482}{\sqrt{5 \times 27.98 - (11.11)^2}\sqrt{5 \times 4456924 - (4482)^2}}$$
$$= -0.65$$

EY (X)	MPPS (Y)	XY	X^2	Y^2
3.25	496	1612	10.56	246016
2.53	950	2403.5	6.40	902500
2.01	1284	2580.84	4.04	1648656
2.47	1126	2781.22	6.10	1267876
5.48	626	3430.48	30.03	391876
15.48	**4482**	**12808.04**	**57.13**	**4456924**

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

$$= \frac{5 \times 12808.04 - 15.48 \times 4482}{\sqrt{5 \times 57.13 - (15.48)^2}\sqrt{5 \times 4456924 - (4482)^2}}$$

$$= -0.59$$

Appendix-16

Calculation of Regression Analysis: DPS on EPS

NABIL

EPS (X)	DPS (Y)	XY	X^2	Y^2
129.21	85	10982.85	16695.22	7225
137.08	140	19191.2	18790.93	19600
108.31	100	10831	11731.06	1000
106.76	85	9074.6	11397.69	7225
78.61	70	5502.7	6179.53	4900
559.97	**480**	**55582.35**	**64794.43**	**48950**

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - (\sum X)^2}$$
$$= \frac{5 \times 55582.35 - 559.97 \times 480}{5 \times 64794.43 - (559.97)^2}$$
$$= 0.88$$

$$a = \bar{y} - b\bar{x}$$
$$= 96 - 0.88 \times 111.99$$
$$= -2.55$$

$$SEE = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$
$$= \sqrt{\frac{48950 - (-2.55) \times 480 - 0.88 \times 55582.35}{5-2}}$$
$$= 20.51$$

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$
$$= \frac{0.75}{\sqrt{1-0.56}} \times \sqrt{5-2}$$
$$= 1.97$$

HBL

EPS (X)	DPS (Y)	XY	X^2	Y^2
59.24	35	2073.4	3509.37	1225
60.66	40	2426.4	3679.64	1600
62.74	45	2823.3	3936.31	2025
61.90	43.56	2696.36	3831.61	1897.47
31.8	36.84	1171.51	1011.24	1357.19
276.34	**200.4**	**11190.97**	**15968.17**	**8104.66**

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - (\sum X)^2}$$
$$= \frac{5 \times 11190.97 - 276.36 \times 200.4}{5 \times 15968.17 - (276.34)^2}$$
$$= 0.17$$

$$a = \bar{y} - b\bar{x}$$
$$= 40.08 - 0.17 \times 55.27$$
$$= 30.68$$

$$SEE = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$
$$= \sqrt{\frac{8104.66 - 30.68 \times 200.4 - 0.17 \times 11190.97}{5-2}}$$
$$= 4.24$$

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$
$$= \frac{0.51}{\sqrt{1-0.26}} \times \sqrt{5-2}$$
$$= 1.03$$

BOK

EPS (X)	DPS (Y)	XY	X^2	Y^2
43.67	48	2096.16	1907.07	2304
43.50	20	870	1892.25	400
59.94	42.11	2524.07	3592.80	1773.25
54.68	47.37	2590.19	2989.90	2243.92
43.08	30	1292.4	1855.89	900
244.87	**187.48**	**9372.82**	**12237.90**	**7621.17**

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - (\sum X)^2}$$
$$= \frac{5 \times 9372.82 - 244.87 \times 187.48}{5 \times 12237.90 - (244.87)^2}$$
$$= 0.78$$

$$a = \bar{y} - b\bar{x}$$
$$= 37.50 - 0.78 \times 48.97$$
$$= -0.70$$

$$SEE = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$
$$= \sqrt{\frac{7621.17 - 0.701 \times 187.48 - 0.78 \times 9372.82}{5-2}}$$
$$= 12.13$$

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$
$$= \frac{0.50}{\sqrt{1-0.25}} \times \sqrt{5-2}$$
$$= 0.99$$

KBL

EPS (X)	DPS (Y)	XY	X^2	Y^2
16.59	21.05	349.22	275.23	443.10
22.07	21.05	464.57	487.08	443.10
16.35	10.53	172.17	267.32	110.88
22.04	10.58	233.18	485.76	111.94
24.24	12	290.88	587.58	144
101.29	**75.21**	**1510.02**	**2102.96**	**1253.02**

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - (\sum X)^2}$$
$$= \frac{5 \times 1510.02 - 101.29 \times 75.21}{5 \times 2102.96 - (101.29)^2}$$
$$= -2.27$$

$$a = \bar{y} - b\bar{x}$$
$$= 15.04 - (-0.27) \times 20.26$$
$$= 20.51$$

$$SEE = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$
$$= \sqrt{\frac{1253.62 - 20.51 \times 75.21 - (-0.27) \times 1510.02}{5-2}}$$
$$= 6.29$$

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$
$$= \frac{-0.17}{\sqrt{1-0.289}} \times \sqrt{5-2}$$
$$= -0.30$$

NIC

EPS (X)	DPS (Y)	XY	X^2	Y^2
16.10	10.53	169.53	259.21	110.88
24.01	21.05	505.41	576.48	443.10
25.75	21.05	542.04	663.06	443.10
27.83	15.79	439.44	774.51	249.32
34.30	26.32	902.78	1176.49	692.74
127.99	**94.74**	**2559.20**	**3449.75**	**1939.14**

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - (\sum X)^2}$$
$$= \frac{5 \times 2559.20 - 127.99 \times 94.74}{5 \times 3449.75 - (127.99)^2}$$
$$= 0.77$$

$$a = \bar{y} - b\bar{x}$$
$$= 18.95 - 0.77 \times 25.60$$
$$= -0.76$$

$$SEE = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$
$$= \sqrt{\frac{1939.14 - (-0.76) \times 94.74 - 0.77 \times 2559.20}{5-2}}$$
$$= 3.68$$

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$
$$= \frac{0.85}{\sqrt{1-0.7225}} \times \sqrt{5-2}$$
$$= 2.77$$

Appendix-17

Regression Analysis: Networth Per Share (NWPS) on DPS

NABIL

DPS (X)	NWPS (Y)	XY	X^2	Y^2
85	381	32385	7225	145161
140	418	58520	19600	174724
100	354	35400	1000	125316
85	324	27540	7225	104976
70	265	18550	4900	70225
480	**1742**	**172395**	**48950**	**620402**

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

$$= \frac{5 \times 172395 - 480 \times 1742}{\sqrt{5 \times 48950 - (480)^2}\sqrt{5 \times 620402 - (1742)^2}}$$

$$= 0.83$$

$$\therefore r^2 = 0.69$$

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

$$= \frac{5 \times 172395 - 480 \times 1742}{5 \times 48950 - (480)^2}$$

$$= 1.79$$

$$a = \bar{y} - b\bar{x}$$

$$= 348.4 - 1.79 \times 96$$

$$= 176.56$$

$$SEE = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$

$$= \sqrt{\frac{620402 - 176.56 \times 1742 - 1.79 \times 172395}{5-2}}$$

$$= 37.63$$

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$
$$= \frac{0.83}{\sqrt{1-0.69}} \times \sqrt{5-2}$$
$$= 2.56$$

HBL

DPS (X)	NWPS (Y)	XY	X^2	Y^2
35	228.72	8005.2	1225	52312.84
40	264.74	10589.6	1600	70087.27
45	247.95	11157.75	2025	61479.20
43.56	256.52	11174.01	1897.47	65802.51
36.84	226.78	8354.58	1357.19	51429.17
200.4	**1224.71**	**49281.14**	**8104.66**	**301110.98**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 49281.14 - 200.4 \times 1224.71}{\sqrt{5 \times 8104.66 - (200.4)^2}\sqrt{5 \times 301110.98 - (1224.71)^2}}$$
$$= \frac{973.82}{19.06 \times 75.10}$$
$$= 0.68$$
$$\therefore r^2 = 0.46$$

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - (\sum X)^2}$$
$$= \frac{5 \times 49281.14 - 200.4 \times 1224.71}{5 \times 8104.66 - (200.4)^2}$$
$$= \frac{973.82}{363.14}$$
$$= 2.68$$

$$a = \bar{y} - b\bar{x}$$
$$= 244.94 - 2.68 \times 40.08$$
$$= 137.53$$

$$SEE = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$
$$= \sqrt{\frac{30110.98 - 137.53 \times 1224.71 - 2.68 \times 49281.14}{5-2}}$$
$$= 14.18$$

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$
$$= \frac{0.68}{\sqrt{1-0.46}} \times \sqrt{5-2}$$
$$= 1.61$$

BOK

DPS (X)	**NWPS (Y)**	**XY**	**X^2**	**Y^2**
48	230.67	11072.16	2304	53208.65
20	164.68	3293.6	400	27119.50
42.11	222.51	9369.89	1773.25	49510.70
47.37	206.25	9770.06	2243.92	42539.06
30	175.40	5262	900	30765.16
187.48	**999.51**	**138767.71**	**7621.17**	**203143.07**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 38767.71 - 187.48 \times 999.51}{\sqrt{5 \times 7621.17 - (187.48)^2}\sqrt{5 \times 203143.07 - (999.51)^2}}$$
$$= 0.92$$
$$\therefore r^2 = 0.84$$

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - (\sum X)^2}$$
$$= \frac{5 \times 38767.71 - 187.48 \times 999.51}{5 \times 7621.17 - (187.48)^2}$$
$$= 2.18$$

$$a = \bar{y} - b\bar{x}$$
$$= 199.90 - 2.18 \times 37.50$$
$$= 118.15$$

$$SEE = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$
$$= \sqrt{\frac{203143.07 - 118.15 \times 999.51 - 2.18 \times 38767.71}{5-2}}$$
$$= 13.38$$

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$
$$= \frac{0.92}{\sqrt{1-0.85}} \times \sqrt{5-2}$$
$$= 4.08$$

KBL

DPS (X)	**NWPS (Y)**	**XY**	**X^2**	**Y^2**
21.05	149	3136.45	443.10	22201
21.05	137	2883.85	443.10	18769
10.53	128	1347.84	110.88	16384
10.58	137	1449.46	111.94	18769
12	136.73	1640.76	144	18695.09
75.21	**687.73**	**10458.36**	**1253.02**	**94818.09**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 10458.36 - 75.21 \times 687.73}{\sqrt{5 \times 1253.02 - (75.21)^2}\sqrt{5 \times 94818.09 - (687.73)^2}}$$
$$= 0.69$$
$$\therefore r^2 = 0.48$$

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - (\sum X)^2}$$
$$= \frac{5 \times 10458.36 - 75.21 \times 687.73}{5 \times 1253.02 - (75.21)^2}$$
$$= 0.93$$

$$a = \bar{y} - b\bar{x}$$
$$= 137.55 - 0.93 \times 15.04$$
$$= 123.56$$

$$SEE = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$
$$= \sqrt{\frac{94818.09 - 123.56 \times 687.73 - 0.93 \times 1045.36}{5-2}}$$
$$= 6.22$$

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$
$$= \frac{0.69}{\sqrt{1-0.48}} \times \sqrt{5-2}$$
$$= 1.66$$

NIC

DPS (X)	NWPS (Y)	XY	X^2	Y^2
10.53	116.13	1222.85	110.88	13486.18
21.05	139.17	2929.53	443.10	19368.29
21.05	138.09	2906.79	443.10	19068.85
15.79	145.57	2298.55	249.32	21190.62
26.32	134.57	3541.88	692.74	18109.08
94.74	**673.53**	**12899.60**	**1939.14**	**91223.02**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 12899.60 - 94.74 \times 673.53}{\sqrt{5 \times 1939.14 - (94.74)^2}\sqrt{5 \times 91223.02 - (673.53)^2}}$$
$$= 0.52$$
$$\therefore r^2 = 0.27$$

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - (\sum X)^2}$$
$$= \frac{5 \times 12899.60 - 94.74 \times 673.53}{5 \times 1939.14 - (94.74)^2}$$
$$= 0.96$$

$$a = \bar{y} - b\bar{x}$$
$$= 134.71 - 0.96 \times 18.95$$
$$= 116.52$$

$$SEE = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$
$$= \sqrt{\frac{91223.02 - 116.52 \times 673.53 - 0.96 \times 12899.60}{5-2}}$$
$$= 10.95$$

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$
$$= \frac{0.52}{\sqrt{1-0.27}} \times \sqrt{5-2}$$
$$= 1.06$$

Appendix-18

Regression Analysis: MPPS on DPS

NABIL

DPS (X)	MPPS (Y)	XY	X^2	Y^2
85	2240	190400	7225	5017600
140	5050	707000	19600	25502500
100	5275	527500	10000	27825625
85	4899	416415	7225	24000201
70	2384	166880	4900	5683456
480	**19848**	**2008195**	**48950**	**88029382**

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

$$= \frac{5 \times 2008195 - 480 \times 19849}{\sqrt{5 \times 48950 - (480)^2}\sqrt{5 \times 88029382 - (19848)^2}}$$

$$= 0.63$$

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

$$= \frac{5 \times 2008195 - 480 \times 19848}{5 \times 48950 - (480)^2}$$

$$= 35.81$$

$$a = \bar{y} - b\bar{x}$$

$$= 3969.6 - 35.81 \times 96$$

$$= 531.84$$

$$SEE = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$

$$= \sqrt{\frac{88029382 - 531.84 \times 19848 - 35.81 \times 3008195}{5-2}}$$

$$= 1361.37$$

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

$$= \frac{0.63}{\sqrt{1-0.39}} \times \sqrt{5-2}$$

$$= 1.39$$

HBL

DPS (X)	MPPS (Y)	XY	X^2	Y^2
35	1100	38500	1225	121000
40	1740	69600	1600	3027600
45	1980	89100	2025	3920400
43.56	1760	76665.6	1897.47	3097600
36.84	816	30061.44	1357.19	665856
200.4	**7396**	**303927.04**	**8104.66**	**11921456**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 303927.04 - 200.4 \times 7396}{\sqrt{5 \times 31355.44 - (200.4)^2}\sqrt{5 \times 11921456 - (7396)^2}}$$
$$= 0.89$$

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - (\sum X)^2}$$
$$= \frac{5 \times 303927.04 - 200.4 \times 7396}{5 \times 8104.66 - (200.4)^2}$$
$$= 103.20$$

$$a = \bar{y} - b\bar{x}$$
$$= 1479.2 - 103.20 \times 40.08$$
$$= -2657.06$$

$$SEE = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$
$$= \sqrt{\frac{11921456 - (-2657.06) \times 7396 - 103.20 \times 303927.04}{5-2}}$$
$$= 263.19$$

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$
$$= \frac{0.89}{\sqrt{1-0.79}} \times \sqrt{5-2}$$
$$= 3.35$$

BOK

DPS (X)	MPPS (Y)	XY	X^2	Y^2
48	850	40800	2304	722500
20	1375	27500	400	1890625
42.11	2350	98958.5	1773.25	5522500
47.37	1825	86450.25	2243.92	3330625
30	840	25200	900	705600
187.48	**7240**	**278908.75**	**7621.17**	**12171850**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 278908.75 - 187.48 \times 7240}{\sqrt{5 \times 7621.17 - (187.48)^2}\sqrt{5 \times 12171850 - (7240)^2}}$$
$$= 0.24$$

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - (\sum X)^2}$$
$$= \frac{5 \times 278908.75 - 87.48 \times 7240}{5 \times 7621.17 - (187.48)^2}$$
$$= 12.58$$

$$a = \bar{y} - b\bar{x}$$
$$= 1448 - 12.58 \times 37.50$$
$$= 976.25$$

$$SEE = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$
$$= \sqrt{\frac{12171850 - 976.25 \times 7240 - 12.58 \times 27890.75}{5-2}}$$
$$= 729.18$$

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$
$$= \frac{0.24}{\sqrt{1-0.0576}} \times \sqrt{5-2}$$
$$= 0.43$$

KBL

DPS (X)	MPPS (Y)	XY	X^2	Y^2
21.05	443	9325.15	443.10	196249
21.05	830	17471.5	443.10	688900
10.53	1005	10582.65	110.88	1010025
10.58	700	7406	111.94	490000
12	468	5616	144	219024
75.21	**3446**	**50401.3**	**1253.02**	**2604198**

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= \frac{5 \times 50401.3 - 75.21 \times 16.36}{\sqrt{5 \times 1253.02 - (75.21)^2}\sqrt{5 \times 2604198 - (3446)^2}}$$
$$= -0.27$$

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - (\sum X)^2}$$
$$= \frac{5 \times 50401.3 - 75.21 \times 3446}{5 \times 1253.02 - (75.21)^2}$$
$$= -11.78$$

$$a = \bar{y} - b\bar{x}$$
$$= 689.2 - (-11.78) \times 15.04$$
$$= 866.37$$

$$SEE = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$
$$= \sqrt{\frac{2604198 - 8.66.37 \times 3446 - (-11.78) \times 50401.3}{5-2}}$$
$$= 266.09$$

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$
$$= \frac{-0.27}{\sqrt{1-0.0729}} \times \sqrt{5-2}$$
$$= -0.49$$

NIC

DPS (X)	MPPS (Y)	XY	X^2	Y^2
10.53	496	5222.88	110.88	246016
21.05	950	19997.5	443.10	902500
21.05	1284	270282.2	443.10	1648656
15.79	1126	17779.54	249.32	1267876
26.32	626	16476.32	692.74	391876
94.74	**4482**	**86504.44**	**1939.14**	**4456924**

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

$$= \frac{5 \times 86504.44 - 94.74 \times 4482}{\sqrt{5 \times 1939.14 - (94.74)^2}\sqrt{5 \times 4456924 - (4482)^2}}$$

$$= 0.20$$

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

$$= \frac{5 \times 8650.44 - 94.74 \times 4482}{5 \times 1939.14 - (94.74)^2}$$

$$= 10.97$$

$$a = \bar{y} - b\bar{x}$$

$$= 896.4 - 10.97 \times 18.95$$

$$= 688.52$$

$$SEE = \sqrt{\frac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$$

$$= \sqrt{\frac{4456924 - 688.52 \times 4482 - 10.97 \times 86504.44}{5-2}}$$

$$= 375.07$$

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

$$= \frac{0.20}{\sqrt{1-0.04}} \times \sqrt{5-2}$$

$$= 0.35$$