

CHAPTER - ONE

INTRODUCTION

1.1 General Background

Nepal is a landlocked country in South Asia, which is going through economic crisis. So, now-a-days country is trying to develop its economy through global trend of commerce. The poor resource mobilization, lack of entrepreneurship, lack of institutional commitment, erratic government policies, and poor governance are responsible for slow pace of economic development. Also Nepal is facing the problem of new creative, scientific ideas and technology development. It becomes poorer than poorer due to inappropriate, uneducated resource mobilization and day to day increasing corruption and terrorism. The economic condition of Nepal is going very below than other developing countries. Political and economic doors in Nepal remained closed during the age of industrialization, the peak point when the world was moving a step ahead that changed the faces of so many countries. On the other side, it has its own inconveniences created by difficult topographical condition. The inconveniences however are not posing only challenges but also the opportunities side by side. But unfortunately, Nepal failed to move ahead by facing those challenges and making the best utilization of opportunities created by it. (Dongol, 2006)

Reforms introduced in the financial sector of Nepal over the past 10 years including liberalization of interest rates, creation of basic regulatory framework and development of longer term government securities market have led to some significant improvements in the financial sector. Like in other sectors, active participation of private sector in financial sector will play an important role in the economic development of the country. In order to enhance the role of this sector in economic activities, it is essential to flow financial resources easily and in a simple manner which would, in turn, help to achieve desired results from the economic development. Though the present development and

expansion of financial sector are directed towards the same objective, the country has not been able to realize the desired outcome. For this, there might be various responsible causes; one of them is the poor capital market condition. The capital market of Nepal is small and it is at early stage of growth. There is a problem of asymmetric information between management of newly established Nepalese companies and Nepalese investors who have poured their funds therein. The establishment of joint venture banks has brought new hopes for productive mobilization of funds according to their new trends of dividend distribution among foreign joint venture bank; Nepal Arab Bank Ltd has been able to pay a token dividend in the future. But the appreciations in the market value of the share of these Joint venture banks have without any doubt, provided adequate sense of protection to shareholders.

Economic leaders, at present scenario, are the countries which have been successfully collecting the wide spread funds and making investments in good prospects. Efficient flow and generation of funds in the most productive sectors play crucial role in the economic development of the county. In such circumstances, capital market generates and liquidates the securities as per requirement of the corporate groups. (Bhattarai, 2002)

[In context of Nepal it has very short history of security market. It was in 1937 A.D., when the history of security market began with the floatation of shares by the first industrial body of the country, Biratnagar Jute Mill Limited and the first commercial bank of Nepal, Nepal Bank Limited. Than in 1951 A.D., Company Act- 1951 was introduced, followed by the issuance of the government bond in 1964 A.D. for the first time. The securities Exchange Center Ltd was established in 1976 A.D. with an objectives of facilitating and promoting the growth of capital markets. Then, it was the only capital market institution in the country undertaking the job of brokering, underwriting, managing public issues, market making for the government bonds and other financial services (Vaidhya, 1999)

In 1993 A.D., the security Exchange Center was converted into Nepal Stock Exchange (NEPSE) with an objective of providing free marketability and liquidity to the government and corporate securities by facilitating transaction in its own trading floor through the market makers (Bhattarai, 2002)

Nepal Stock Exchange (NEPSE) is a non-profit organization operating under Securities Exchange Act – 1983. NEPSE opened its trading floor on 13th January 1994 A.D. Members of NEPSE are permitted to act as intermediaries in buying and selling of government bonds and listed corporate securities. At present there are 27 members brokers and 2 market makers, who operate on the trading floor as per the securities Exchange Act – 1983, rules and by laws.

Dividends are the share of the profits of a company which is received by the shareholders. However, they do not become the property of the shareholders and shareholders have no right to them until the directors of the company have passed a resolution declaring a dividend.

The study of dividend policy attempts to explain how a firm divides its net earning into retaining earnings and dividend. In general, a firm can choose among different forms of dividend policies based on their earnings and capital investment requirement. The practices of firm on dividend policy vary from firm to firm and industry to industry. As Modigliani and Miller (1961) stated, in the world without taxes, the price of the stock is unaffected by dividend policy because the total yield on stock is simply the sum of dividend yield and capital gain yield. The corporate taxes and individual taxes may be important part of the dividend puzzle (Weston and Copeland, 1992). In the presence of corporate and personal taxes, the rational attempt of the firm is to maximize the value of the firm by balancing risk and return associated which lead to the notion of the optimal dividend policy.

In a capital market, all firms operate in order to generate earnings. Shareholders supply equity capital, hoping to share in these earnings either directly or

indirectly. When a company pays out a portion of its earnings to shareholders in the form of a dividend, the shareholder benefit directly. It is believed by some that in order to maximize wealth under uncertainty, the firm must pay enough dividends to satisfy investors. If instead of paying dividends, the firm retains the funds to exploit other growth opportunities because the distribution of cash dividends causes the reduction in internal funds available to finance profitable investment opportunities consequently, either constrains growth or requires the firm to find out costly sources of financing (Myers, 1984). In this case the shareholder can expect to benefit indirectly through future increase in the price of their stock. Thus shareholder wealth can be increased through future increase in the price of their stock. Thus shareholder wealth can be increased through either dividends or capital gains. Dividend may not increase at the rate profit increases because use the first function dividend is to keep. Firms in the capital markets would not expect to see a very strong correlation between short term profits and dividends (Dewenter and Warther, 1988). As the division of company's profits between dividend and retention is considered as dividend policy, all aspects and questions related to payment of dividend are contained in dividend policy. The long run objectives can be achieved by maintaining adequate funds for investment. Financing growth can be considered as a secondary objective of dividend policy. Therefore, the firm should forecast the future need for funds and determine the amount of retained earnings available after payment of dividends.

Dividend policy of the firm has its effect on both long term financing and wealth of shareholders (Pandey: 1999). Therefore the firm should forecast the future need for funds and should determine the amount of retained earning available after payment of dividend (Adhikari: 1992).Dividend policy affects the financial structure, the flow of funds, corporate liquidity and investor attitude. It is one of the central decision areas related to policies seeking to maximize the value of firm's common stock. Dividend may be in the form of cash, stock or property. In the Nepalese context, many companies pay stock

dividend rather than cash dividend, in which case shareholders receive additional stock. Stock dividend is issued at that time when the company needs funds and retained high percentage of earning. Similarly the dividend policy is less balanced. Theoretical and practical deviation has proved, everything written is not practiced and everything is practice is not of actual theory. Therefore a dividend policy is the practice strategy or decision made by a firm as per their requirement to establish market reputation as well as to meet general expectation of the shareholders. An alternative form of dividend is share repurchase. If a firm has excess cash and insufficient profitable investment opportunity to justify in the use of these funds, it is in the shareholders' interest to distribute the funds. The distribution can be accomplished either by the repurchase of stock or by paying the funds out in increased dividends. But, Nepal Company Act, 2053, section 47 has prohibited company repurchasing its own share. It states that no company shall purchase its own shares and supply loan against the security of its own shares.

Dividend amount is that portion of earning which is paid to the shareholder as a return on investment. The retained earnings provide funds to finance the firm's long term growth. A dividend policy that allows stockholders to get their share of the profits by always paying out a fixed percentage of earnings tends to be preferred over one that regularly pays stable or increasing dividends (Gitman, 1985). Dividend payout of course reduces the total amount of internal financing. The dividend policy means some kind of consistent approach to the distribution versus retention decision, rather than making the decision on the purely ad hoc basis from period to period. Consequently it must be considered in relation to the overall financing decision. Net earnings may not be an appropriate measure of the ability of the firm to pay dividends. So what and how much it is desirable to pay dividends is always a controversial topic because shareholders expect higher dividends but corporations ensure towards setting aside funds for maximizing the shareholder wealth. Hence the Modigliani and Miller (1961) claim that corporate dividend practice was a

more detail in the context of their analysis, the air has been filled with the debate on the importance of dividend.

The concept of the banking and its development has been closely attached with socio-economic development. Banking sector as a monetary agent of economic development plays important role to build up the confidence to businessmen for promoting their businesses and industrialists for encouraging opening new industries. It maintains economic confidence of various segments and extends credit to people.

In Nepal, Banking activities has been since the establishment of Nepal Bank Ltd (NBL) in 1937 A.D. To regulate the banking activities and monetary policy, Nepal Rastra Bank, the central bank has been established. The first commercial bank fully owned by government named 'RastriyaBanijya Bank' was established in 1966. The commercial bank has its own role and contribution in the economic development. It has a source of economic development; it maintains economic confidence of various segments and extends credit to people. In global perspective, Joint Ventures (JVs) are the modes of trading through partnership among nations and also a form of negotiation between various groups of industries and traders to achieve mutual exchange of goods and services for sharing competitive advantages. A joint venture is the joining of forces between two or more enterprises for the purpose of carrying out a specific operation i.e. industries or commercial investment and production or trade.

Financial sector reform introduced in eighties by Nepal Rastra Bank, eased entry restrictions with an amendment to the Commercial Bank Act 1974. As a result, three banks namely Nabil Bank Limited (initially, it was registered as Nepal Arab Bank Ltd.), Nepal Investment Bank Limited (initially, it was registered as Nepal Indo-Suez Bank Limited) and Standard Chartered Bank Ltd (initially, it was registered as Nepal Grindlays Bank Limited) come into operation prior to 1990s. In the same regard, in 1992, Himalayan Bank was

established as a joint venture with Habib Bank Limited of Pakistan. The bank is the first joint venture bank managed by Nepali CEO. However it was only in 1992, after Nepal Rastra Bank adopted a liberal attitude in permitting commercial banks to open, the financial liberalization really took place. Six, new banks, all in joint ventures of foreign banks have come in to operation making the total number of the commercial banks to eleven. In addition, letter of intent has been given to three more commercial banks to operate on regional basis and currently there are 31 commercial banks. (www.stockexchange.com.np)

The main focus of investors however is the dividend, but there are not any consistency and regular practices of dividend announcement in different commercial banks. There are extremely different as per their dividend policy of the commercial banks change the market price of the share. Therefore, it is expected that there is some impact of dividend policy over the market price of the share.

1.2 Statement of the Problem

As a controversial financial puzzle, which is better for the shareholder, or for management, paying earnings out in dividends, for the shareholders to reinvest wherever they choose, or retaining the earnings, to fund the best internal growth projects that management can identify? Miller and Modigliani (1961) posited and proved that dividend policy shouldn't matter in an ideal world, absent tax arbitrage considerations. Why? Because capital is fungible: a company has no reason to care whether it garners capital for projects from bond issuance, from stock issuance or from retained earnings; therefore they should go wherever the risk-adjusted cost of capital is best. Reciprocally, an investor has no reason to care whether an investment pays a dividend, which the investor can reinvest, or whether the company reinvests earnings to fuel earnings growth *equivalent to the foregone dividend yield*. Thus, changes in dividend policy should not affect the value of a firm. Similarly, investment policy and dividend policy should be independent.

Since the work of Lintner (1956), numerous studies have examined the dividend policies of corporations from different perspectives. The effect of dividend policy on a corporation's market value is a subject of long standing controversy (Baker *et al.* 1985). Black (1976) epitomizes the lack of consensus by stating that the harder we look at the dividend picture, the more it seems like a puzzle, with pieces that just don't fit together. Hence, corporate dividend policy is not clearly understood by a large segment of the financial community.

There are many empirical studies on dividends and stock prices in developed capital market, which are Lintner, 1956; Gordon, 1959; Modigliani and Miller, 1961; Friend and Puckett, 1964; Walter, 1966; Van Horne and McDonald, 1971. However, no simple and conclusive relationship exists between the amount paid out in dividend and the market price of share. There is still a considerable controversy concerning the relation between dividends and common stock prices.

The capital market is the part and parcel for corporate development. Though it is in early stage of development, Nepalese investors in recent years have poured funds in newly established companies encouragingly. This trend which is the corner-stone to the development of capital market would continue until investors are by the decisions made by the management of the companies. It is to follow pragmatic approach by the management with regard to providing returns to investors on their investment. Dividend is the most inspiring aspect for the investment on shares of the corporations. In a world in which verbal statements can be ignored or led, dividend action does provide a clear-cut means or 'making a statement' that 'speaks louder than a thousand words' (Soloman, 1963). Solomon (1963) contends that dividends may offer tangible evidence of the firm's ability to generate cash, and as a result, the dividend policy of the firm affects share price. Even if dividends do affect a firm's value, unless management knows exactly how they affect value, there is not much that they can do to increase the shareholders' wealth. The implication of corporate dividend practices thus provides an empirical question for this study.

Since mid 1980s when the HMG/N adopted the economic liberalization policy, many joint venture Commercial banks have been established in Nepal. Many investors are curious to invest in these financial institutions to get dividend and maximize wealth. In Nepalese context Pradhan (1993) in his study states that stocks paying higher dividends have higher liquidity, lower leverage, higher earnings, higher turnover, and higher interest coverage. Similarly, Timilsena (1997) finds the positive relationship between dividend per share and stock price. However, pertinent question arises as to what extent these findings are still relevant in the recent day context, although many changes have taken place. This study tries to study on dividend practices of Nepalese Commercial banks from different perspectives.

Companies/firms can adopt different dividend policies as it is the outcome of the firm's profitability and growth opportunities (investment opportunities). Some firms practice residual policy, some practice fixed dividend policy and even some practice fixed dividend payout policy. There is complete dividend theory which explains this cross-sectional variation. Modigliani and Miller (1961) state that the dividend policy is irrelevant because the dividend payment is simply an act of dividing the shareholder's residual claim into retained earnings and dividend. The total yield on the stock is simply the sum of dividend yield plus capital gain yield. When the firm pays more dividends, the capital gain will be low and vice versa. In real practice, there is direct relationship between dividend and the stock price; however the relationship is not yet clear and controversial issue in finance literature. This study will explore to shed some light on dividend practices of Nepalese financial institutions and impact of dividend on stock prices. Hence, this study is mainly focused on following issues:

1. What is the impact of dividend policy on market price of share?
2. What are the earnings and dividend pattern of the banks? Do they have uniformity in dividend practices?

3. What are the prevailing policy and practices regarding dividend with reference to the sample Firms?
4. Do the banks have similar earnings and dividend pattern? What are the similarities and dissimilarities between the banks?
5. What are the determinants of Dividend per Share and Market Price per Share? How the dividend per share, retained earnings and lagged price-earnings ratio effect on stock price? How the earning per share, lagged dividend and lagged price earnings ratio affect in dividend?

1.3 Objectives of the Study

Of interest in this study is the area of dividend policies and practices which generally compasses issue of how the firm allocate its earning into dividend and retention. The major objective of this study is to assess the corporate dividend practices of banks listed in NEPSE and determinants of dividend policy of financial institutions. The specific objectives are as follows:

- a. To identify, analyze and compare the dividend policies and pattern adopted by the sample firm.
- b. To identify, the major factors affecting dividend policy of the firm.
- c. To compare the earnings and dividend pattern of commercial banks.
- d. To identify the determinants of the price of the stock and dividend per share.
- e. To provide suggestion for improvement.

1.4 Significance of the Study

Dividend policy decision is one of the major decisions of financial management because it affects the financial structure, the flow of funds, corporate liquidity and investors' attitude. The important aspect of dividend policy is to determine the amount of earnings to be distributed to the shareholders and the amount to be retained in the firm. Retained earnings are

the most significant internal sources of financing the growth of the firm. On the other hand, dividends are desirable from shareholders' point of view, as it tends to increase their current wealth. Dividend constitutes the use of the firm's funds. Thus, the two aspects of dividend policy – distribution of dividends and retention of earning for growth, though desirable, are in conflict. A higher dividend rate means less retained earnings, which may consequently result in slower growth and lower market price per share. The financial manager must very carefully decide the allocation of earnings between dividends and retained earnings as this decision affects the value of the firm and as a result the firm's cost of capital. The objectives in choosing a dividend policy should be to maximize the value of the firm to its shareholders.

While investing in shares the investor foregoes opportunity income that he could have earned. The income of capital market is secured from two ways (i) by means of dividend and (ii) by capital gains i.e. appreciation in stock prices. Due to the lack of enough knowledge, people are investing hit-or-miss in shares. It is necessary to clear conceptions about the return that results from investing in securities. In Nepal, as a result, enough study is essential.

Therefore, considering all these facts, the study is undertaken which will help to meet deficiency of the literature relating to dividend decision and factors affecting dividend policy. Lastly, this study will also be useful literature for the further study about the relating topics. Similarly the company may also follow the suggestion of this study to make their policy. Thus the study of dividend policy is significant.

1.5 Limitations of the Study

Notwithstanding the analysis performed and generalization drawn regarding the influence of dividend policy of a company on variation in its market price of shares, there is considerable place for arguing about its accuracy and reliability. There are limitations, which weaken the generalization e.g. inadequate

coverage of industries, time periods taken, reliability of statistical tools used and other variables. This study is simply a partial requirement of MBS program, so this study is limited by following factors.

- This study relies on secondary data collected from Annual Reports of the respective companies available in NEPSE and SEBO database.
- The study period covers only seven years i.e. 2006/7 to 2011/12.
- For the purpose of this study only 5 commercial banks have been considered as sample which may not be able to represent the whole population.
- There are many factors that affect dividend decision and valuation of the firm. However only those factors related with dividend will be considered in this study.
- The related data are considering only cash dividend and exclude the bonus (stock) dividend. MPS of an organization is influenced by several environmental factors but this study excludes all those factors and considers only MPS. Lack of data and time factor have constrained this study from making analysis of all those factors having impact on market price of the stock.

1.6 Organization of the Study

The study has been organized into five chapters, as prescribed by the university, as follows:

Chapter One: It contains the introductory part of the study. This chapter describes the major issues to be investigated along with the objectives and significance of the study.

Chapter Two: It is devoted to theoretical analysis and brief review of related and pertinent literature available. It includes a discussion on the conceptual

framework and review of the major empirical studies.

Chapter Three: It describes the research methodology employed in the study. This chapter deals with the matter and sources of data, population and sample, statistical and financial tools.

Chapter Four: It deals with presentation and analysis of relevant data and information through definite courses of research methodology.

Chapter Five: It states summary, conclusion and recommendation of the study. This chapter states main findings, issues and gaps and suggestive framework of study.

CHAPTER - TWO

REVIEW OF LITERATURE

The purpose of literature review is to find out what research studies have been conducted in one's chosen field of study and what remains to be done, what others have written about the topic, what theories have been advanced, what are the approaches taken by other researchers, what are the areas of agreement and disagreement and whether there are any gaps that could be filled through this research. Dividend policy is of great importance because it affects the financial structure, the flow of funds, corporate liquidity and investor's attitudes. Thus, it is one of the central decision are a seeking to maximize the value of firm's common stock. Due to its rapidly increasing importance and aspects many thoughts and provoking ideas in this area are to be reviewed. This chapter highlights upon the literature that were concerned in this connection. Similarly, what other have said, done or written etc. about the dividend policy are also reviewed which has provide useful input in this study. Therefore in this chapter conceptual framework given by different authors in this area, review from books, thesis, journals, procedure of dividend payment, factors affecting dividend policy and rules regarding dividend policies are presented.

2.1 Conceptual Considerations

2.1.1 Commercial Banks

The commercial banks play a crucial role because they act as a bridge between those who need finance to acquire necessary assets and those who have funds but are unable to make an effective and productive use of it. Beside mobilizing resources commercial banks serve as potent instrument of canalizing funds in conformity with requirement of planned economic development. To credit creation or creation of money is also the important role of bank.

A banker is one who is the ordinary course of his business receive money, which he repays by honoring cheques of persons from whom or on whose

account he receives it. Therefore a commercial bank is a financial institution that accepts the demand and time deposit from the business, institution, and individuals and engages in both business and consumer lending. It uses funds raised from the public deposits providing loans to different sectors with the prime objectives of profit maximization. Moreover, commercial bank provides technical and administrative assistance to industries, trade businesspersons.

The commercial bank gathers the small saving of the people, thus reducing to the lowest limits idle money then combines these small holding in amounts large enough to be profitably employed in those enterprise where they are most called for and most needed. Commercial bank not only generates the small saving from the nook and corner of the country, it in the border sense, help to promote secondary as well as primary security market. Initial public offering (IPO), underwriting and security collateral loans are the examples.

Not only in the highly developed industrial and non- industrial economies of the world where in a way the commercial and industrial activities are paralyzed the absence of banks keeping their doors open, even in the developing countries most economic activities, particularly in the economy's organized sector, are bank based.(Joseph F. sinkey,1988)

The history of commercial banks begins in 1937 with an establishment of Nepal Bank Ltd as a semi government organization in absence of central bank in the country. At that time 51% of the paid up capital of government and 49% by public held equity in general. After then, in 1966, with 100% government ownership, the second commercial banks existence named RastriyaBanijya Bank. Many foreign joint venture banks were introduced after 1980 in Nepal. It could be, only when the government applied the financial liberalization policy. Then in 1990 A.D., with the restoration of democracy, the government adopted liberal and market oriented economic policy followed by dramatically increment of joint venture banks in the country. Due to the economic liberalization policy of the government a good number of commercial banks

are established in the country, some with foreign investments and some with the internal capital. Many of new banks are registered to open even today.

The commercial banking industry has remarkably developed in a short period of time of almost one decade. This development has facilitated a prominent mobilization of the internal resource as well as the external funds of foreign investor's for the economic advancement of the nation.

2.1.2 Dividend

The policy of the company on the division of its earning or net profit between to shareholders as dividend & reinvestment in the firm is known as dividend policy. Dividend in the simple term is the part of earning, which is announced to distribute between the stockholders. In one way it is the cost of sacrificing hard money but as an investment.

Dividend policy of a company is the division of its net earnings between distribution to shareholders as dividend and retention for its investment. Therefore, a firm's dividend policy has the effect of dividing its earnings into two parts retained earnings and dividends. All aspects and questions related to payment of dividend are contained in dividend policy. There is a reciprocal relationship between retained earnings and cash dividends. The increase of one may cause decrease of another. Dividend decision is the major decision of managerial finance. It is important because dividend policy is to determine the amount of earnings to be distributed to shareholders and the amount to be retained in the firm. The decision depends upon the objective of the management for wealth maximization. The firm will use the net profit for paying dividends to the shareholders, if the payment will lead to maximization of wealth of owners. If not, it is better to retain them to finance investment programs. The relationship between dividend and value of the firm should, therefore, be the criterion for decision-making.

In fact, dividend is the portion of the net earnings, which is distributed to the shareholders by a company. After successfully completing the business activities of a company, if the financial statement of its shows the net profit, the Board of Directors decides to declare dividend to stockholders. Therefore, the payment of corporate dividend is at the discretion of the BOD. Most companies pay dividend quarterly.

2.1.2.1 Theories of Dividend Policy

Corporations need to use different forms of dividend in view of the objectives and policies which they implement. The major forms of dividends are cash dividends and stock dividends.

a. Cash Dividends: Cash dividend refers to the portion of earnings paid as cash to the investors in proportion to their shares of Tile Company. Both the total assets and net worth of the company are reduced when the cash dividend is distributed. The market price of the share drops in most cases by the amount of cash dividend distributed. The firm has to maintain adequate balance of cash for the payment of cash dividend otherwise funds to be borrowed for this purpose may be difficult. Cash planning is useful for the company paying stable dividend. Cash Dividend has the direct impact on the shareholders, and the volumes of the cash dividend depend upon earnings of the firm and on the management attitude or policy. Cash dividend has the psychological value for shareholders. Each and every one like or collect their return in cash rather than non-cash means. So cash dividend is not only a way to earnings distribution but also a way of perception on improvement in the capital market. To what extent cash dividend is popular and adopted by companies in Nepal may be an interesting study.

b. Stock Dividends and Stock Splits: Stock dividend is known as bonus share too. A stock dividend is a payment in the form of additional shares of stock instead of cash. A stock split is essentially the same. When a stock splits,

shareholders are given a larger number of shares for the old shares they already own. In either case, each shareholder retains the same percentage of all outstanding stock that he or she had before the stock dividends or split. Thus, for example, a 10 percent stock dividend would, mean that each shareholder was given one share of stock for every ten shares already owned. Under a two-for-one stock split, each shareholder would be given one additional share of stock for every share already owned, thus doubling the number of shares owned by each shareholder.

Stock dividend is simply the means of recapitalizing earnings by making the shareholders feel that they are getting something of value. Under stock dividend each stockholder receives additional shares of the company but the proportionate holdings of each remains the same. This has effect of increasing the number of outstanding shares of the company resulting into the decrease in EPS, which will ultimately enforce reduction in the market price of the shares. Since the shares are distributed proportionately, a shareholder retains his proportionate ownership of the company.

A stock dividend or split does not change the assets of the firm, since nothing is received by the firm for new shares issued. In spite of the fact that stock dividends and splits do not change the underlying assets, liabilities, or equity of the firm, there is some empirical evidence that the total market value of a company's equity increases when the stock dividend or split occurs, roughly a 2 to 6 percent increase (Grinblatt et al., 1984). The declaration of stock dividend will increase the paid up capital and reduce the retained earnings of the company. As a matter of fact, the issue of bonus share simply involves a book keeping transfer from retained earnings to stock accounts. Some of the joint-venture banks of Nepal have followed the practice of paying stock dividend along with cash dividend.

c. Corporate Share Repurchase: Corporate share repurchase is often viewed as an alternative to paying dividends. If a firm has some surplus cash (or it can

borrow), it may choose to buy back some of its own stock. It is instructive to see why share repurchases may be viewed as an alternative to paying dividends. By repurchasing stock, a company is reducing the number of shares outstanding. If the price earning (P/E) ratio does not change after the repurchase, the stock price must rise. If a firm has excess cash and insufficient profitable investment opportunities to justify the use of these funds, it is in the shareholder's interests to distribute the funds. The distribution can be accomplished either by the repurchase of stock or by paying the funds out in increased dividends (Van Horne, 1997). It is thus corporate share repurchase is often viewed as an alternative to paying dividends. A repurchase is a signal that managers, who possess an insider's knowledge of the firm, are convinced that their stock is worth more than its current price (Asquith and Mullins, 1986). In addition, their conviction is strong enough to lead them to pay a premium for the stock despite the risk of dilution if they are wrong. The Company Act, 1997, Section 47 has prohibited company from purchasing its own shares. It states that no company shall purchase its own shares or supply loans against the security of its own shares (HMG/N, 1997).

d. Developing Dividend Policies: The dividend practice should reflect the different factors as well as the firm's present operating and financial position. In this total framework, the firm finds that it has a choice of several dividend policies to follow. These are as follows:

1. **Steady dividends at the Present Level:** Perhaps the most common dividend practice is to declare the same rupee dividend was paid last period. This meets the shareholders' expectations for current income and is not likely to affect market price. This policy may result in shortages of funds during years when earnings have declined. For mature firms with unused borrowing capacity, this is not a serious drawback.
2. **Steady Dividends at a Level Lower than Present Level:** The practice to reduce dividends would be considered if the firm has high-profit

investment opportunities and needs the funds to finance them. This might alienate shareholders seeking current income and affect the market price of the stock. To minimize this impact, the firm might announce that the new level will be maintained in the near future and the board of directors does not anticipate further lowering of dividends. This will reduce some of the uncertainty associated with the reduction of dividends. The firm may also indicate that dividends may be raised if the new investment opportunities are as profitable as expected.

3. **Steady Dividends at a Level Higher than Present Level:** This is a practice to raise the regular dividend declared by the firm. It is warranted when the firm's earnings have risen, when the earnings are stable at the higher level, and when the firm does not need the excess earnings to finance growth. Frequently, the dividend announcement will favorably affect the price of the common stock. In many cases, the higher earnings will already have caused a rise in the stock price, and the dividend declaration will have no effect.

e. The Informational Content of Dividends: It has often been pointed out that a company that raises its dividends often experiences and increases in its stock price and that a company that lowers its dividends has a falling stock price. This causal relationship has been refuted by several researchers on the grounds that dividends per share do not affect stock prices; rather, it is the informational content of dividends that affects stock prices. Since management may have greater insight than the rest of the market as to the level of presents and future earning power, they may use dividend payments as the medium through which their expectations are conveyed (Pettit, 1976). Recent evidence demonstrates that dividend announcements convey information over and above that contained in alternative announcements (Asquith and Mullins, 1986). A number of writers have suggested that a considerable amount of information is conveyed by changes in dividends. In light of this, the management of a firm may use divided payments (or a lack of them) as a method of indicating their

estimates of the firm's earning power and liquidity (Pettit, 1972).

f. The Residual Theory of Dividends: Dividend policy can be viewed as one of a firm's investment decisions. A firm that behaves in this manner is said to believe in the residual theory of dividends. According to this theory, dividend policy is a residual from investment policy. Whether or not a company pays dividends depends on its investment policy. It assumes that the internally generated funds are comparatively cheaper than the funds obtained from external sources. The theory is based on the premise that investors prefer to have the firm retain and reinvest earnings rather than pay them out in dividends if the returns of reinvested earnings exceeds the rate of return the investor could, himself, obtain on other investments of comparable risk. The dividend under a residual dividend policy equals the amount left over from earnings after equity investment. If equity investment equals earnings, no dividends are paid. If equity investment is greater than earnings, then no dividends are paid and new shares are sold to cover any equity investment not covered by earnings. If there is no any investment opportunity, then cent percent earnings are distributed to shareholders. The dividends are therefore merely a residual remaining after all equity investment needs are fulfilled (Schall and Haley, 1991).

Although the residual theory of dividends appears to make further analysis of dividend policy unnecessary, it is indeed not clear that dividends are solely a means of disbursing excess funds. It would therefore be imprudent to conclude that there are no other implications of dividend policy, and so this study shall take a closer look at the relationship between dividends and value.

g. The Wealth maximization theory of dividend: The capital markets are not perfect; therefore, shareholders are not indifferent between dividends and retained earnings. Because of the market imperfections and uncertainty, shareholders give a higher value to the near dividends than the future dividends and capital gains. Thus, the payment of dividends has a strong influence on the

market price of the share. Higher dividends increase the value of shares and low dividends decrease the value. In order to maximize wealth under uncertainty, the firm must declare sufficient dividends to meet the expectation of investors. This theory is generally adopted by the newly established companies to upkeep their image and retain the shareholder's positive attitude towards the company's stock. (Dongol, 2006) The main purpose of the wealth maximization theory of dividend is to make assurance to the stockholders that they are interesting in the firm, which has not better market value.

2.1.2.2 Common factors affecting dividend policy

A number of things come into play while establishing a corporate dividend policy. In what follows, various factors that financial executives in practice should consider when approaching a dividend decision, be taken up.

a. Amount of earnings: The availability of profits to pay dividends is a sine qua non of dividend policy. The whole subject of what constitutes profit is itself the topic of considerable controversy and as such lies outside the scope of this study. Suffice it to say that company law, through the statutes and cases, has imposed constraints and guidelines for the directors' decisions regarding the payment of dividends.

b. Cash flows: When considering the payment of cash dividends the firm's cash flows must be taken into account. There is a liquidity constraint. Even if a dividend is paid by means of 'bonus shares' the impact of such an issue on the personal tax liability of the individual shareholders must be considered. If a shareholder considers that the future stream (of hopefully increased) dividends will not, when discounted, cover the tax that he will have to pay on the scrip dividend he may sell shares to pay for his tax or for consumption or investment and such sales if sufficiently widespread could depress the value of the firm's shares.

c. Incidence of taxation: One aspect of taxation has already been mentioned above but all aspects of taxation, corporate and personal, must be regarded as relevant factors to be taken into account.

d. Financial needs of the firm: Both pragmatists and theorists recognize the importance of retained earnings as a means of financing the investment decisions of the firm. Every dividend payment has associated with it a funds source or financing opportunity undertaken - dividends are a use of funds, and any use of funds must have a source (Solomon, 1963). In other words, the payment of a cash dividend has an opportunity cost in the form of an investment opportunity which may be foregone. When capital rationing exists this is an important factor which must be considered.

e. Contractual and legal constraints: Dividend declaration is not only the concern of shareholders and company, but it is also the issue of the government regulation. Apart from the legal constraints, tax and company laws already mentioned, there may be other legal and contractual constraints. For example the articles of association of a company may impose certain obligations before dividends can be paid. The repayment of a particular class of debentures may be a prerequisite to the payment of any dividends, or specific reserves may have to be created and maintained before dividends can be declared.

f. Effect of dividend policy on liquidity and solvency: During periods of high inflation when the costs of replacing fixed and current assets are increasing it may well be that a firm's previously determined payout ratio cannot be maintained without jeopardizing its liquidity and even its solvency. This problem is of course largely, if not wholly, attributable to the defects of the conventional historical cost accounting model.

g. Risk of take-over bids: If the dividend policy of the firm is perceived by shareholders as unsatisfactory their action of disinvesting in the firm's securities would force the price down. If the aggregate of such price was to fall

below the true asset values of the firm then the firm could become the target for a take-over bid.

Management today, is and must be conscious of maintaining a satisfactory relationship with its workers. If a firm's management decided on a dividend policy which was perceived by a relevant trade union or the workers themselves as being an excessively high payout ratio, especially during inflationary periods when the purchasing power of the workers' earnings is being diminished, a dangerous strain on labor relations within the firm could develop.

2.2 Review of Empirical Works

2.2.1 Review of Major International Studies

This section is devoted to the review of the major studies in general concerning dividends and stock prices, management views on dividend policy, and management views on stock dividends. Always a critical and confused question has arose, whether dividend policy affect the market value of the shares or not. To put light in these matter different studies made by different international scholars and researchers should be overviewed. Therefore some of the main researches are going to be discussed bellow:

Walter Study (Walter, 1966):

Walter studied on dividend and stock price in 1966. According to him, the dividend policy of a firm cannot be looked aside from investment policy. His argument is just the opposite of what Modigliani and Miller said. Walter argued that dividend policy affects the stock prices, i.e., dividend is relevant with stock prices. The relationship between firm's internal rate of return and cost of capital is determining factor to retain profits or distribute dividends. As long as the internal rate is greater than the cost of capital, the stock price will be enhanced by retention and will vary with dividend payout.

His model was based on number of assumptions as given below:

- Retained earnings constitute the exclusive source of financing. The firm does not resort to debt or equity financing.
- The firm's internal rate of return and its cost of capital are constant.
- The firm distributes its entire earnings or retains it for reinvestment immediately.
- There is no change in values of earnings per share and the dividend per share.
- The firm has perpetual life.

Considering the above assumption, Walter's model to determine the market price per share is as follows:

$$\frac{Div}{k} + \frac{r(EP\text{S} - DP\text{S})/K}{K} \text{ or } P = \frac{DP\text{S} + r/k(EP\text{S} - DP\text{S})}{k}$$

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 him the given firm may have three situations. They are:

$$r > k$$

If the firm's internal rate of return exceeds the cost of capital, the relation between dividends and stock prices is negative, i.e. more dividends leads to low stock prices. This kind of firm is referred to as growth firm. Walter argued that zero dividends would maximize the market value of shares for growth firms.

$r = k$ If the firm has $r = k$, there is no role of dividends on stock prices, i.e., dividends are indifferent from stock prices. In other words, dividend payout does not affect the value of share whether the firm retains the profit or distributes dividends, is a matter of indifference. This kind of firm is referred to as normal firm.

$r < k$ If the firm's internal rate of return (r) is less than the cost of capital (k), the relation between dividends and stock prices is positive, i.e. increase in dividend per share yield increase in stock prices. This kind of firm is referred to as declining firm. He argued, cent percent dividend policy would maximize the market price of shares for declining firm.

To conclude, according to Walter, when the firm is in growth stage, then dividends are negatively correlated with stock prices. In the declining firms, dividends are positively correlated with stock prices. In the normal firm, there is no relationship between dividends and stock prices, i.e., dividend are indifferent to variation in market price of shares.

Modigliani and Miller Study (Modigliani and Miller, 1961):

In their 1961 article Modigliani and Miller, for the first time in the history of finance, advocated that dividend policy does not affect the value of the firm, i.e., dividend policy has no effect on the share prices of the firm. They argued that the value of the firm depends on the firm's earnings which depend on its investment policy. Therefore, as per MM theory, a firm's value is independent of dividend policy.

Their study of irrelevance of dividend was based on the following critical assumptions:

- The firm operates in perfect capital market.
- There are no taxes.
- The firm has a fixed investment policy which is not subject to change.
- Risk of uncertainty does not exist.

Modigliani and Miller provided the proof in support of their argument in the following manner:

Step 1: The market price of a share in the beginning of the period is equal to the present value of dividend paid at the end of the period plus the market price of the share at the end of the period.

Symbolically,
$$P_0 = \frac{D_1 + P_1}{1 + K_e}$$
, Where,

P_0 = Market price at the beginning or at the zero period

K_e = Cost of equity capital (assume constant)

D_1 = Dividend per share to be received at the end of the period

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

Step 2: Assuming that the firm does not resort to any external financing the market value of the firm can be computed as follows:

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

where, n = number of equity shares at zero period

Step 3: If the firm's internal sources of financing its investment opportunities fall short of the funds required, and n is the number of new shares issued at the end of year 1 at price P_1 , then

$$np_0 = \frac{nD_1 + p_1(n + \Delta n) - \Delta nP_1}{1 + K_e}$$

Where, n = No. of shares at the beginning

n = No. of equity shares issued at the end of the period

Step 4: If the firm were to finance all investment proposals, the total amount of new shares issued would be given by the following equation.

$$nP_1 = I - (E - nD_1) \text{ or, } nP_1 = I - E + nD_1,$$

Where,

nP_1 = The amount obtained from the sale of new shares to finance capital budget.

I = The total amount requirement of capital budget

E = Earnings of the firm during the period

$E - nD_1$ = Retained Earnings

Step 5: By substituting the value of nP_1 from equation of step 4 to equation of stem 3, the finding is:

$$np_o = \frac{nD_1 + p_1(n + \Delta n) - \Delta n P_1}{1 + K_e} \quad \text{or} \quad np_o = \frac{P_1(n + \Delta n) - I + E}{1 + K_e}$$

Step 6: Conclusion: There is no role of dividend in above equation. So Modigliani and Miller concluded that dividend policy has no effect on the share price.

In this way, according to Modigliani and Miller's study, it seems that under conditions or perfect capital markets, rational investors, absence of tax discrimination between dividend income and capital appreciation, given the firm's investment policy, its dividend policy may have no influence on the market price of the shares. However, the view that dividend is irrelevant is not justified, once the assumption is modified to consider the realities of the world. In practice, every firm follows one kind of dividend policy or another. The selection of a certain dividend policy depends on the age and nature of the firm.

Lintner Study (Lintner, 1956)

Lintner (1956) made an important study focusing on the behavioral aspect of dividend policy in the American context. He investigated a partial adjustment model as he tested the dividend patterns of 28 companies. He concluded that a major portion of the dividend of a firm could be expressed in the following

way:

$$DIV^*t = pEPSt \quad \dots\dots (1)$$

And

$$DIVt - DIVt-1 = a+b(DIV^*t - DIVt-1) + e1 \quad \dots\dots (2)$$

Or,

$$DIVt = a+b DIV^*t +(1-b) DIV^*t-1 +e1 \quad \dots\dots (3)$$

Where,

DIV^*t is firm's desired payment, $EPSt$ is earnings, p is targeted payout ratio, a is constant relating to dividend growth, and b is the adjustment factor relating to the previous period's dividend and new desired level of dividends where $b < 1$.

The major findings of this study were as follows:

- Firms generally think in terms of proportion of earnings to be paid out. Investment requirements are not considered for modifying the pattern of dividend behaviour.
- Firms generally have target payout ratios in view while determining change in dividend per share (or dividend rate).

Gordon Study (Gordon, 1962):

Myron Gordon (1962) in his study concluded that dividend policy of a firm affects its value. In his model, he pleaded that investors are not indifferent between current dividends and retention of earnings. The conclusion of his study is that investors value the present dividend more than future capital gain. His argument insisted that an increase in dividend payout ratio leads to increase in the stock prices for the reason that investors consider the dividend yield ($D1/Po$) is less risky than the expected capital gain.

Hence, investors required rate of return increases as the amount of dividend decreases. This means there exists a positive relationship between the amount of dividend and the stock prices.

His model is based on the following assumptions:

- The firm is an all-equity firm.
- No external financing is available.
- Internal rate of return, r , appropriate discount rate, k_e , are constant.
- The firm and its stream of earnings are perpetual,
- The corporate taxes do not exist.

The retention ratio, b , once decided upon, is constant. Thus the growth rate, $g = br$, is constant forever.

The discount rate is greater than growth rate, $k > br = g$.

Based on the above assumptions, Gordon provided the following formula, which is a simplified version of the original formula (Francis, 1972) to determine the market value of a share.

$$P = \frac{E(1-b)}{K - br}, \text{ where}$$

- P = Price of share
- E = Earnings per share
- B = Retention ratio
- 1-b = Percentage of earnings distributed as dividend
- E (1-b) = Dividend per share
- K = Capitalization rate or cost of capital
- Br = Growth rate in r , i.e. rate of RI of an all equity firm

According to his model, the following facts are revealed.

In the case of growth firm, share price tends to decline in correspondence with

increase in payout ratio or decreases in retention ratio, i.e. high dividend corresponding to earnings leads to decrease in share prices. Therefore, dividends and stock prices are negatively correlated in growth firm. In the case of normal firm, share value remains constant regardless of changes in dividend policies. It means dividend and stock prices are free from each other in normal firm, i.e. r is equals to k firm. In the case of declining firm, share prices tend to rise in correspondence with rise in dividend payout ratio, it means dividends and stock prices are positively correlated with each other in a decline firm.

Van Horne and McDonald Study (Van Horne and McDonald, 1971):

Van Horne and McDonald 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 common 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 model, i.e. a cross-section regression model. The required data were collected from 86 electric utility firms included on the COMPUSTAT utility data tape and 39 firms in the electronics and electronic component industries as listed on the COMPUSTAT industrial data tape.

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,

P_0/E_0 = Closing market price in 1968 divided 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 divided by earnings in 1968.

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

U = Error term

The Second Model was,

$$P_0/E_0 = a_0 + a_1(g) + a_2(D_0/E_0) + a_3(\text{lev}) + a_5(F_b) + a_6(F_c) + a_7(F_d) + u$$

Where,

F_a, F_b, F_c and F_d are dummy variables corresponding to 'new issue ratio" (NIR) groups A through D.

It is noted that they had grouped the firms in five categories A,B,C,D and E by NIR. For each firm the value of dummy variables representing its NIR group is one and the value of remaining dummy variables is zero. Again, they tested the following regression equation for electronics-electronic components industry.

$$P_0/E_0 = a_0 + a_1(g) + a_2(D_0/E_0) + a_3(\text{lev}) + a_4(\text{OR}) + u$$

Where,

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

OR= Operating risk, measured by the standard error for the regression of operating earnings per share for 1960 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 sample. They concluded that the electric utility firms in an industry sample. They concluded that for electric utility firms in 1968, share value was not adversely affected by new equity financing in the presence of cash dividends, except for those in the highest new issue group and it made new equity a more costly form of financing than the retention of earnings. They also indicated that the 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 Study (Friend and Puckett, 1964):

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

They used dividends, retained earnings and price earnings ratio as independent variables in their regression model of price function. They used supply function, i.e. dividend function also. In their dividend functions, earnings, last year's dividends and price-earnings ratio are independent variables. They quoted that the dividend supply function (equation) was developed by adding

to the best type of relationship developed by Lintner.

Symbolically, their price function and dividend supply functions are,

$$\text{Price function: } P_t = a + bD_t + cR_t + d(E/P)_{t-1} ,$$

Where,

- P_t = Per-share price at time t
 D_t = Dividends at time t
 R_t = Retained earnings a time
 $(E/P)_{t-1}$ = Lagged earnings price ratio

$$\text{Dividend supply function: } D_t = e + fE_t + gD_{t-1} + h(E/P)_{t-1}$$

Where,

- E_t = Earnings per share at time t
 D_{t-1} = Last year dividend

Their study was based on the following assumptions:

- Dividends do react to year to year fluctuations in earnings.
- Price doesn't contain speculative components.
- Earnings fluctuations may not sum zero over the sample.

Their regression results based on the equation of $P_t = a + bD_t + cR_t$ showed the customary strong dividend and relatively weak retained earnings effects in three of the five industries, i.e., chemicals, foods and steels. Again they tested other regression equations by adding lagged earnings price ration to the above equation and resulted the following equation: $P_t = a + bD_t + cR_t + d(E/P)_{t-1}$ They found the following results: They found that more than 80% of the variation in stock prices can be explained by three independent variables. Dividends have a predominant influence on stock prices in the same three out of five coefficients are closer to each other for all industries in both years except for steels in 1956,

and correlation are higher, again except industries but they found the differences between the dividends and retained earnings coefficients are not quite so marked as in the first set of regressions. They also found that the dividends and retained earnings for steels.

They also calculated dividend supply equation, i.e., $D_t = e + fE_t + gD_{t-1} + h(E/P)_{t-1}$ and the derived price equation for four industry groups in 1958. In their derived price equation it seems that there was no significant changes from those obtained from the single equation approach as explained above. They argued that the stock prices or more accurately the price earnings ration does not seem to have a significant effect on dividend payout. On the other hand, they noted that the retained earnings effect is increased relatively in three of the four cases tested. Further, they argued that their results suggested price effect on dividend supply are probably not a serious source of bias in the customary derivation of dividend and retained earnings effects on stock prices, though such a bias might be marked if the disturbing effect of short run income movements are sufficiently great.

Further, they used lagged price as a variable instead of lagged earnings price ration and showed that more than 90% of variation in stock prices can be explained by the three independent variables and retained earnings received greater relative weight than dividends in the most of the cases. The only exception was steels and foods in 1958. They considered chemicals, electronics and utilities as growth industries, in these groups; the retained earnings effect was larger than the dividend effect for both years covered. For the other two industries, namely foods and steels, there was no significant systematic difference between the retained earnings and dividend coefficients.

Similarly, they tested the regression equation of $P_t = a + bD_t + cR_t$ by using normalized earnings again. They obtained normalized retained earnings by subtracting dividends from normalized earnings. They added prior year's normalized earnings price variable and they compared the result. Comparing

the result they found that there was significant role of normalized earnings and retained earnings but an effect of normalized price earnings ratio was constant. When they examined the later equation, they found that the difference between dividend and retained earnings coefficients disappeared. Finally, they concluded that management might be able to increase prices somewhat by raising dividends in foods and steels industries.

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

Finally, Friend and Puckett concluded that, it is possible that management might be able, at least in some measure, to increase stock prices in non-growth industries by raising dividends and in growth industries by greater retention, i.e. low dividends.

H.K. Banker and Aaron L. Phillips Study (Banker and Phillips, 1992):

H.K. Baker and Aaron L. Phillips surveyed management views on stock dividend. They addressed two major research questions in this survey. First, why do some managers continue to support stock dividends given the apparently limited benefits of these distributions to shareholders? Second, do management views about the issues and motives for stock dividends differ based on the firm's trading location, the size of the stock dividend, or the frequency of issuing stock dividends? Their sample contained all firms that paid at least one stock dividend. Between 1988 and 1990-100 NYSE/Amex firms and 26 Nasdaq firms. The source of their stock dividend firms was the CRSP Nasdaq and combined NYSE/Amex master files. They chose the 1988-90 period for two reasons. First, they wanted the study period to span several years to avoid any potential bias of using a single year. Second, they wanted a

period long enough to provide a large sample size but short enough to ensure getting someone knowledgeable about the firm's most recent stock dividend to answer the questionnaire.

The questionnaire used by them had two parts. Part I contained 15 closed-end questions on issues drawn from the finance literature about stock dividends. Part II contained seven questions about stock dividend decision and four questions about the respondent's profile.

They sent a survey questionnaire and a cover letter to the highest ranking financial officer of each firm in early November 1991. Non-respondents received a follow-up survey and another cover letter one month later. Of the initial 312 questionnaires mailed, only 299 questionnaires were delivered. Of these 299 questionnaires, 136 firms completed and returned them, giving a response rate of 45.6%.

The findings of their survey were as follows:

- Managers strongly agree that stock dividends have a positive psychological impact on investors receiving them.
- Managers believe that stock dividends enable them to express their confidence in the firm's future prospects, suggesting that stock dividends may have some information content.
- The dominant motive for applying stock dividends is to maintain the firm's historical practice.
- Management views on issues and motives about stock dividends differ little based on the firm's trading location or the size of the stock dividends.

H.K. Baker, G.E. Farrelly, and Richard B. Edelman Study (Baker et al., 1985)

H. Kent Baker, Gail E. Farrelly, and Richard B. Edelman surveyed management view on dividend policy. They asked corporate financial managers what they considered most important in determining their firm's dividend policy. The objectives of their survey were as follows.

- To compare the determinants of dividend policy today with Lintner's behavioral model of corporate dividend policy and to assess management's agreement with Lintner's findings;
- To examine management's perception of signaling and clientele effects; and
- To determine whether managers in different industries share similar views about the determinants of dividend policy.

The firms they surveyed were listed on the New York Stock Exchange (NYSE) and classified four-digit Standard Industrial Classification (SIC) codes. A total of 562 NYSE firms were selected from three industrial groups: utility (150), manufacturing (309), and wholesale/retail (103).

They mailed questionnaire to obtain information about corporate dividend policy. The questionnaire consisted of three parts: (i) 15 closed-end statements about the importance of various factors that each firm used in determining its dividend policy; (ii) 18 closed-end statements about theoretical issues involving corporate dividend policy, and (iii) a respondent's profile including such items as the firm's dividends and earnings per share.

They sent the final survey instrument to the chief financial officers (CFOs) of the 562 firms, followed by a second complete mailing to improve the response rate and reduce potential non-response bias. Their survey yielded 318 usable

responded (a 56.6% response rate), which were divided among the three industry groups as follows: 114 utilities (76%), 147 manufacturing firms (47.6%), and 57 wholesale/retail (5.3%). Based on dividends and earnings per share data provided by the respondents, the 1981 average dividend payout ratio was computed. They found that payout ratio of the responding utilities (70.3%) were considerably higher than for manufacturing (36.6%) and wholesale/retail (36.1%).

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

- The first highly ranked determinant is the anticipated level of a firm's future earnings and the second factor is the pattern of past dividends. They found the high ranking of these two factors is consistent with Lintner's findings.
- A third factor cited as important in determining dividend policy is the availability of cash.
- A fourth determinant is concern about maintaining or increasing stock price. They found this factor is particularly strong among utilities that ranked this factor second in importance.

Similarly, the results of their survey on the aspect of attitudes on theoretical issues were as follows:

- Respondents from all three industry groups agreed relatively strongly that dividend payout affects common stock prices.
- The respondents from all three industry groups agreed, on average, that dividend payouts provide a "Signaling device" of future company prospects and that the market uses dividend announcements as information for assessing security value.
- The respondents also demonstrated a high level of agreement that the

reasons for dividend policy changes should be adequately disclosed to investors.

- Respondents from all three industry groups thought that investors have different perceptions of the relative riskiness of dividends and retained earnings and hence are not indifferent between dividend and capital gain returns.

Chawala and Shrinivasan's Study (Chawala&Shrinivashan, 1987):

D. Chawala and G. Shrinivasan have studied the impact of dividend and retained earnings on the market price of share. They estimated cross sectional relationship of 18 chemical and 13 sugar industries for the year 1963 A.D. to 1973 A.D.

Their Study is directed towards the following objectives:

- To test the hypothesis of dividend and retained earnings.
- To set a model, which explains the relationship between share price, dividend and retained earnings?
- To examine the structural changes in the estimated relations over time.
- Chawala and Shrinivasan conducted their research on the basis of simultaneous equation model developed by Friend and Puckett in 1964 A.D.

Price Function,

$$P_t = F(D_t, R_t, P/E_{t-1})$$

Dividend Supply Function,

$$D_t = F(E_t, D_{t-1}, P/E_{t-1})$$

$$E_t = D_t + R_t$$

Where,

P = Market Price of Stock

D = Dividend Per Share

R = Retained Earnings Per Share

E = Earning Per Share

P/E = Price Earning Ratio

t-1 = Subscript for time

They used two stage least square method for estimation and found that the estimated coefficient had a correct sign and coefficient of determination of all equation were higher in case of chemical industry. This implies that the variation of stock price and dividend paid can be explained by their independent variables. But in case of sugar industry, the sign for retained earnings was negative. They conclude that both dividend and retained earnings significantly explain the variation in share price of the industry.

2.2.2 Review of Major National Studies

There are few studies made in context of Nepal with regards to dividend and stock prices, because of information lack and lack of experts, the studies is limited in this regards. Even though, some studies are made which are going to be reviewed here.

Shrestha Study (Shrestha, 1985):

The study on Dividend policy in selected public limited companies is based on the data collected for altogether 18 public limited companies of the year 1982/83. The study is devoted to streamline dividend policy under three fold aspects that cover (a) Firstly to provide conceptual glimpse of dividend and dividend models (b) secondly to analyze and interpret the dividend payment implications in selected public limited companies through the use of dividend models in accordance.

With the available data that are manageable and (c) lastly, to provide suggestions that help guide in the determination and appropriate adoption of a suitable dividend policy in the proposed public limited companies.

After analyzing the data using different models, it is concluded that, it can be said that dividend policy constitutes one of the most critical it is concluded that, it can be said that dividend policy constitutes one of the most critical issues of the public limited companies. In empirical terms, many of the public limited companies are found to pay negligible dividend to the shareholders in which HMG provide to be a potential investor. Dividend implies paying left-over earnings and theories of dividend policy do differ since some prefer residual theory that conveys passive residual available for payment and the controversial M.M. hypothesis insists on dividend irrelevance in the sense that dividend policy does not matter. There are others who argue that dividend policy does affect value due to the factors of uncertainty. Many factors affect the payment depending upon investors' needs and preferences on one hand and the financing needs of the public limited companies to top potential investment opportunities on the other hand. Dividend policy cash or stock or split and other forms as well as determining stable, fluctuating and extra dividend payment. The dividend models have their own assumptions in the determination of value in terms of dividend per share, earnings per share, retained earnings per share and also comparing these variables through the mathematical relationships with actual and normal capitalization rate. The application of Walter's and Gordon's dividend models in calculating the stock value of selected public limited companies reveals both acceptable and fantastic results. And the need for public limited companies to resort to the formulation of an appropriate dividend policy in terms of developing target dividend payout ratio cannot be ignored.

The interest rate on various time deposits to be attractive compared to commercial banks. They have also provided various alternatives to depositors in enabling them to deposit according to their needs and preference. But,

Finance companies are allowed to charge higher interest rate on loans. However interest rate disparity between deposits and loans are not allowed to fluctuate more than 6 percent at present at present under guidelines of Nepal Rastra Bank. The need to strong them the institutionalization of finance companies is important to have meaningful relationship between finance companies and national development through shift of credit to the productive industrial sectors. At the same time, the series of reforms such as consolidation of finance companies, maintaining relationship between finance companies and commercial banks, directing attention to venture capital financing, appropriate risk return trade off by linking credit to timely repayment schedules, deposit insurance scheme, achieving expectation impacts of depositors and clients, avoiding imperfections, allowing flexibility in lending, one widow service from NRB, diversify scope of activities to fee based services, allow funds transfer, refinancing facilities for finance companies, professional culture within finance companies etc. All these are necessary to ensure better future performance of finance companies that have already been established and growing in Nepal.

Pradhan Study (Pradhan, 1993):

This study on stock market behavior in a small capital market: A case of Nepal was based on the data collected for 17 enterprises from 1986 through 1990. The objectives of his study were as follows, to assess the stock market behavior in Nepal; to examine the relationship of market equity, market value to book value, price-earnings, and dividends with liquidity, profitability, leverage, assets turnover, and interest coverage. The empirical model he used was as follows:

$$V = b_0 + b_1LIQ + b_2LEV + b_3EARN + b_4TURN + b_5COV + U_1$$

Where,

V chosen for the study were market equity (ME), market value of equity to its

book value (MV/BV), price-earnings ratio (PE), dividend per share to market price per share (DPS/MPS), and dividend per share to earnings per share (DPS/EPs).

- LIQ= Current ratio (CR) or Quick ratio (QR)
- LEV= Long term debt to total assets (LTD/TA) or long-term debt to total capitalization (LTD/TC)
- EARN= Return on assets, that is, earnings before tax to total assets (EBT/TA) or earnings before tax to net worth (EBT/NW)
- TURN= Fixed assets turnover, that is, sales to average fixed assets (S/FA), or total assets turnover, that is, sales to average total assets (S/TA)
- COV= Interest coverage ratio, that is earnings before tax to interest
- U = Error term

Some findings of his study, among others, were as follows:

- Higher the earnings on stocks, larger the ratio of dividends per share to market price per share.
- Dividend per share and market per share are positively correlated.
- Positive relationship between the ratio of dividend per share to market price per share and interest coverage.
- Positive relationship between dividend payout and liquidity.
- Negative relationship between dividend payout and leverage ratio.
- Positive relationship between dividend payout and profitability.
- Positive relationship between dividend payout and turnover ratios.
- Positive relationship between dividend payout and interest coverage.
- Liquidity and leverage ratios are more variable for the stock paying lower dividends.
- Earnings, assets turnover, and interest coverage are more variable for the stock paying higher dividends.

Timilsena Study (Timilsena, 1997):

This study on dividends and stock prices was carried out by using the data of 16 enterprises from 1990 through 1994.

The objectives of this study were to test the relationship between dividends per share and stock prices; to determine the impact of dividend policy on stock prices; to determine the impact of dividend policy on stock prices; to identify whether it is possible to increase the market value of the stock changing dividend policy or payout ratio; and to explain the price behavior, the study used simultaneous equation model as developed by Fried and Puckett (1964).

The findings of his study were the relationship between dividend per share and stock prices is positive variedly in different sectors; changing the dividend policy or dividend per share might help to increase the market price of shares; and the relationship between stock prices and retained earnings per share is not prominent - the relationship between stock prices and retained earnings price ratio is negative.

Bhattarai Study (Bhattarai, 1990):

The Thesis paper “Share market in Nepal” of Mr. Anjani Raj Bhattarai had covered some light on dividend performance of the companies. He concluded some findings related to his study. This thesis indicates the following findings:

- Relationship between earnings, dividend, growth and expansion program of the firm do not exist. So the retention policies do not match with the actual financing need of the companies has been realized.
- Majority of the companies are declaring dividend less than risk free rate or return and market risk premium.
- Adopting haphazard dividend policy rather than due regard is not paid on sound dividend policy.

- Most of the companies are under rating the expectation of investors and there by resulting the low market ability of shares on trading floor of stock exchange.
- Joint venture Banks of Nepal are almost in a good position regarding their performance and be a growth firm. Their market value per shares is traded on high price. The dividend per share of these banks is correlated with their earning per share. Earnings per share of these banks is raised at the satisfactory level of the company. Retained earnings trios of these banks are fluctuation is smaller proportion. Earning yield ratios and price earnings ratios are inconsistent. Regarding the dividend payment these banks are declaring higher dividend payment these banks are declaring higher dividend return than other most of the companies.

M. Bhattarai's Study (Bhattarai, 2002):

ManojBhattarai has done thesis on the topic “Dividend Policy and Its impact on Market Price of stock” in 2002 A.D. He has done analysis of five years data (1995 A.D. to 2000 A.D.) taken from two commercial banks two insurance companies. In this analysis, simple and multiple regression equation are used.

The objectives of the study are as under:

- To study the prevailing practices and efforts made in dividend policy by the Nepalese firms with the help of sample firms.
- To find out the impact of dividend policy on the market price of stock.
- To analyze if there is any uniformity among DPS, EPS, MPS, and DPR in the sample firms.
- To provide suggestions on the basis of findings.

Findings of the study are summarized as under:

- There is no any consistency in dividend policy of the sample firms. It has indicated the need of dividend strategy as well as the need of proper analysis of respective sectors of the firms.
- Most of the Nepalese firms, from the very past, did not have profit planning and investment strategy which has imbalanced the whole position of the firms. It mean there is no consistency even in the earnings of the firms.
- Besides, the DP ratio of all the ample firms in many years is found more than the popular practice i.e. 40%
- The MPS is affected by the financial position and dividend paid by the firms. In this regards, the MPS of the sample firms is seen to be fluctuating. It denotes that Nepalese investors are not treated fairly.
- The lack of financial knowledge and market price of the shares in all the firms.

Ghimire's study (Ghimire, 2002):

Prabin Kumar Ghimire carried out a research work entitled “Dividend Policy of Listed Companies” in 2002 A.D. In his research work, Mr. Ghimire has used five years data of six sample companies consisting three commercial banks, two finance companies and one insurance company. The effect of independent variable on dependent variable has been analyzed through the use of simple regression model.

The main objectives of the study are as follows:

- To identify the dividend policies of different sample companies.
- To identify the regularity of dividend distribution of different listed companies.
- To identify the relationship between dividend policy and other financial indicators.
- To find out whether dividend policy affects the value of the firm or

not.

- To analyze the relationship between DPS and MPS.

The following are the major findings of this study:

- The average earnings per share and dividend per share of banks are satisfactory but in case of finance and insurance companies it is quite low.
- It is found that DPS of finance and insurance companies are more fluctuating in comparison to that of banks.
- The higher dividend payout ratio of banks points out that banks following aggressive dividend policy, whereas the finance and insurance companies have implemented moderate dividend policy.
- Comparisons of two sectors shows that banking sectors has higher P/E ratio than the finance insurance companies are more consistent than that of the banks.
- The correlation of EPS with DPS and MPS is positive for all the sample firms.

Though there were above mentioned studies in the context of Nepal, it has now become necessary to find out whether their findings are still valid. Pradhan's study was based on 55 observations only covering the financial data up to 1990. Many changes have taken place in and outside Nepal after 1990. Like other countries, Nepal has also followed a policy of economic liberalization, privatization and globalization. Many changes have taken place in and outside Nepal after 1990. Considering all these facts, it is necessary to carry out a fresh study in Nepal. This study tries to analyze the dividend practices of commercial (joint venture) banks with help of sample of 5 companies by employing more strong analytical tools. This study also tries to compare the pattern of earning and dividend of banks. The findings of this study will provide some meaningful insights to the investors to make their investment decisions.

C. Research Gap

After reviewing the literature, researcher is highly encouraged to conduct a study on Impact of Dividend policy on Market price of Shares. This research as is done in the same topic by some other researcher and by using similar research tools, intend either to strengthen the findings identified by those researchers or kept its own findings against those previous findings with its own logic. Side by side it also expects some new findings during the course of research.

The research work done cannot be posted as the unique one and said that this type of work is done first time in the field. However, utmost effort has been put upon to save it from allegation of being copy of previous research works conducted in the same topic.

Most of the previous researches in the topic have been carried out with five year data. Similarly, the number of sample firms taken in account by the previous researchers is five. Here in this research 6 years data has been taken into account. This research has been conducted with references to the 6 sample firms.

Among the previous research works done in this topic, the samples were either mixture of banks and insurance companies or that of finance companies and manufacturing units. Here, the research work has been done with special reference to the 5 commercial banks of Nepal.

Descriptive analysis has incorporated trend analysis with picture demonstrations that the previous researchers have not done.

CHAPTER - THREE

RESEARCH METHODOLOGY

Research can be defined as an organized, systematic, data-based, critical, scientific inquiry or investigation into a specific problem, undertaken with the objectives of finding answer or solutions to it. It is the systematic and objective analysis and recording of controlled observations that may lead to the developments of generalization principles or theories, resulting in prediction and possibility of ultimate control of events.

Research has two important aspects. First, it is sufficiently broad to include all types of investigations requiring solution to a problem. Second, it explicitly recognizes the systematic nature of the research process in which data are gathered, recorded, analyzed, and interpreted in an orderly manner.

Research methodology refers to the various sequential steps to be adopted by a researcher in studying a problem with certain object(s) in view. It describes the methods processes applied in an entire aspect of the study. In fact, research methodology is a systematic way of solving the research problems. Therefore, this chapter focuses on research design, nature and sources of data, data population and samples, method of analysis and the methodological limitations of this study and described in consecutive sections.

3.1 Research Design

The research design is concentrated on the study of variables, their changes of rates, directions, sequence and other inter-related factors over a period of time. And casual-comparative research will also be applied at the research duration under which investigator takes one or more dependent variables and examines the data by going back through time, seeking out cause, relationship and their meaning.

This study attempts to analyze the dividend patterns and earning pattern of Nepalese banks. It tries to compare the dividend practices of banks. It further tries to study the relationship between EPS and DPS; and DPS and MPS. Hence, this empirical study has followed both analytical and descriptive research design.

3.2 Nature and Sources of Data

This study is based on accounting data of firms listed in Nepal Stock Exchange Limited (NEPSE) for the period of 2006-2011. The required data have been extracted from annual reports and financial statements of the firms available in Securities Board (SEBO) database, NEPSE database and the head offices of the respective banks.. Besides, the other required data are collected from various sources like the websites, newspapers, magazines, and journals, published and unpublished reports as well. Hence, this study mainly relies on secondary data. However some data have also been collected from primary sources. The primary data are collected through conversation method. Verbal conversation have been conducted with the executive and other officer level staffs of various banks in order to seek their view regarding dividend practices of their banks, consistency in DPS, EPS, MPS & D/P ratio the impact of dividend decision on market price of stock.

3.3 Population and Sample

This study has been totally confined to the institution listed in the Nepal stock exchange. These listed organization according to their nature of business and categorized into six groups also called sectors. These sectors are:

1. Banking.
2. Finance.
3. Insurance.
4. Hotel and services.
5. Manufacturing
6. Trading

This study has been limited to the banking sectors. Banking sectors has a large impact on the total performance of the stock exchange. The shares of listed commercial banks are traded actively in the share market. Since the study basically deals with the dividend policy and its impact on market price of stock, the banks declaring dividend are considered and others are set aside. The following are the 5 sample commercial banks selected from among the population:

- ⇒ NABIL Bank Limited (NABIL)
- ⇒ Standard Chartered Bank Limited (SCB)

- ⇒ Nepal Investment Bank Limited (NIB)
- ⇒ Everest Bank Limited (HBL)
- ⇒ Bank of Kathmandu Limited (BOK)

These are the leading commercial banks of Nepal, which are actively declaring dividend in most of the fiscal years. The trends and practices of dividend declaration of these banks can represent the overall trend of dividend declaration by the commercial banks in Nepal.

3.4 Data Collection Techniques

Here almost data are taken through Secondary sources. Data collection from Secondary sources is proximate to the reality and authoritative too. The basic technique, which was used, was observation method, for the study to be authoritative data are enclosed in annex section.

3.5 Data Analysis Tools

The Term analysis refers to the computation of certain measures, along with searching for pattern of relationship that exist among data group. Thus in the process of analysis relationship of difference supporting or conflicting with original or new hypothesis and should be subjected to statistical test of significance to determine with what validity data of can be said to indicator any conclusion (Kothari, 2000, p.151)

The first step conducted was the processing of data in which editing, coding, classification and tabulation of collected data was carried out. That has prepared the data for further analysis. By analysis we mean the computation of certain indices or measure along with searching for patterns of relationship that exist among data group. Analysis may therefore be categorized as descriptive analysis and inferential analysis.

Descriptive analysis may be in respect to one, two or three variable. Inferential analysis is often known as statistical analysis.

To achieve the predetermined objective of the research certain tools are used. The tools used are categorized as:

- Financial Tools
- Statistical Tools

(A) Financial Tools

Financial Tools are normally used to calculate the financial data of the listed company. Its calculation is conducted on EPS, DPS, DPR, P/E ratio etc. Without financial tools it is quite difficult to calculate all these above variables and without these variables it is not possible to interpret data under the statistical tools. So, how financial tools are used in calculating financial data and information are stated like below:

(i) Earning Per Share (EPS):-

EPS is calculated by dividing earning available to the common shareholders by the number of common stocks outstanding. EPS depicts the earning capacity of the firms. Here, in this study, comparison of EPS of various firms has been done. In equation,

$$\begin{aligned} \text{EPS} &= \frac{\text{Earning Available the common Stockholders}}{\text{No. of common stocks outstanding}} \\ &= \frac{\text{Net profit after tax}}{\text{No. of common stocks outstanding}} \end{aligned}$$

(ii) Dividend Per Share (DPS):-

Dividend per share indicates that the part of net profit after interest and preference dividend paid to ordinary shareholders per share basis. Dividend per share is calculated by dividing the total dividend to equity share holders by the total number of share.

$$\text{DPS} = \frac{\text{Total Dividend Paid}}{\text{No. of Equity Shares Outstanding}}$$

(iii) Dividend Payout Ratio (D/P Ratio):-

This ratio reflects the percentage of the profit is distributed as dividend and the percentage is retained as reserve and surplus for the growth of the banks and finance companies. It is calculated by dividing DPS by EPS.

$$\text{DPR} = \frac{\text{Dividend Per Shares (DPS)}}{\text{Earning Per Shares (EPS)}}$$

(iv) Market Price Per Share (MPS)

MPS is the rupee value of one stock indicated in the NEPSE index. It is determined by the capital market movements. MPS is one of the variables that is affected by DPS of the firm. If the EPS and DPS of the company are high, MPS will also be high and vice versa. Under help of MPS investors can take decision to invest or stay in the company. So, MPS is calculated to confirm the company's situation in this way:

$$\text{MPS} = \left(\frac{P}{E} \text{ Ratio} \times \text{EPS}\right)$$

Or,

$$\text{MPS} = \frac{\text{DPS}}{\text{Dividend yield on the equity share}} \times 100$$

(B) Statistical Tools

Various types of statistical tools are used in this study to estimate the relationship between two or more than variable which are as follows:

(i) Arithmetic Mean:

The Sum of all the observations divided by number of observation is called arithmetic mean or simple average. In equation:

$$X = \frac{\sum x}{n}$$

Where, $X = X_1 + X_2 + X \dots \dots \dots X_n =$ given set of observations
 $n =$ number of items observed.

(ii) Standard Deviation:

Standard deviation was first suggested by Karl Pearson in 1883 A.D. as a measure of dispersion. The measurement of the scatter ness of the mass of figures in a series about an average is known as dispersion. Standard deviation means the absolute dispersion. Greater the amount of dispersion greater will be the standard deviation and vice versa. A small standard deviation means high degree of uniformity of the observation as well as homogeneity of a series. A large standard deviation refers low uniformity and homogeneity of the series .It is an improvement over mean deviation.

It can be defined as the square root of arithmetic mean.

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

Where, \bar{X} = Mean Average

n = no. of items observed

(iii) The coefficient of Variation (CV)

The coefficient of variation is the relative measure of dispersion, comparable across, which is defined as the ratios of the standard deviation to the expressed in percent.

$$\text{CV} = \frac{\text{S.D.}}{\bar{X}} \times 100$$

Where, S.D. = Standard Deviation

\bar{X} = Mean Average

The higher CV denotes to the higher variability of variable and vice versa.

(iv) Coefficient of Correlation (r):

The coefficient of correlation refers to the relationship of two or more variables. It is the statistical analysis which measures and analyses the degree of extent to which two variables fluctuate with reference to each other. The coefficient of correlation expresses the relationship or interdependence of two sets of variables upon each in such a way that the changes in the magnitude of another variable. It is the numerical measurement showing the intensity of relationship between two variables. One variable may be called independent and other dependent variable. Dependent variable is measures in terms of the independent variables.

It is the square root of the coefficient of determination. Correlation can either be negative or positive. If both variables are changing in the same direction, then correlation is said to be positive, but when the variation in the two variables in opposite direction, the correlation would be negative. In this study, coefficient of correlation is calculated between stock prices and dividends, stock prices and retained earnings, stock prices and lagged earning.

The degree of association between the two variables, say X and Y, and is defined by correlation coefficient (r)

$$r = \frac{\Sigma xy}{\sqrt{\Sigma x^2} \sqrt{\Sigma y^2}}$$

Its Value lies between -1 to +1 and

If $r=1$, there is a perfect positive relationship.

If $r= -1$, there is perfect negative relationship.

If $r=0$, there is no correlation at all.

(v) Coefficient of (multiple) Determination (R^2)

The coefficient of determination is the measure of the degree (extent or strength) of linear association or correlation between two variables, one of which happens to be independent and the other dependent variable. In other words R^2 measure the percentage of total variation in dependent variable explained by independent variables. The coefficient of determination can have a value ranging from 0 to 1. The $R^2 = 0.65$, it indicates that the independent variables used in the regression model explained 65 percent of the total variation in the dependent variable. A value of 1 can occur only if the unexplained variation is zero which simply means that all the data points in the scattered diagram fall exactly on the regression line.

Coefficient of determination is defined by

$$R^2 = \frac{\text{Explained Variation}}{\text{Total Variation}}$$

(vi) Regression Equation:

Regression lines are expressed algebraically by the equation of straight line called regression equation. The regression equation of Y on X is used to describe the changes in Y- values for a given change in X- value.

The regression equation of Y and X is expressed

$$Y = A + BX + u$$

Where, Y = Dependent variable

X = Independent Variable
A = Intercept,
B = Slope of the regression
u = Residual value

The regression analysis submits the following two concepts:

(a) Regression Equation:

The value of the constant, which is the intercept of the model, indicates the average level of dependent variable when the independent variables are zero. In other words, it is better to understand that “a” (constant) indicate the mean or average effect on the dependent variables are omitted from the model. Using least square method the constant intercept can be determined.

(b) Regression Coefficient:

The Regression coefficient of dependent variable indicates the marginal relationship between the variable and the value of dependent variable, holding constant the effect of all other independent variables in the regression model. In other words, the coefficient describes how change in independent variable affects the value of dependent variable’s estimate. Referring it to the regression equation it is the slope of the regression line.

(vii) Standard Error of Estimate (SEE):

With the help of regression equation, perfect prediction is practically impossible. Standard error of estimate is a measure of reliability of the estimating equation indicating the variability of the observed points around the regression line, that is, the extent to which observed values differ their predicted values on the regression line. The smaller the value of SEE, the close will be the dots of regression line. If SEE is zero, then there is no variation about the line and the correlation will be perfect. Thus with the help of SEE, it is possible for us to ascertain how well and representative the regression line is as a description of the average relationship between two series

(viii) t- Statistics:

To test the validity of our estimation, if sample size is less than 30,t-test is used (C. R.

Kothari, 1994,143). For applying test in contest of small samples, the “t” value calculated first and then compared with the table value of “t” at a certain level of significance for given degree of freedom (in this study the “t” value are computed with the help of computer). If the calculated value of “t” exceeds the table value (say $t=0.05$), we infer that the difference is significant at 5% level but if “t” value is less than the concerning table value of the “t” the difference is not treated as significant.

(ix) F- Statistics:

To test the validity of the estimation, F- test is also used. The difference between two-sample mean can be studied through t- test whereas to examine the significance of the difference between more than two samples means at one at the same time, F- test is used. F- test i.e. the technique of analyzing variance enables to test the significance of difference between more than two sample means. Using this technique, one will be able to make inferences about whether his/her regression equation provides statistically significant result or not.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

Dividend payment of the firm is the function of the earning (profitability) of the firm, corporate and personal taxes and the capital investment requirement of the firm including other behavior issues, particularly, the agency problem. The general perception is that the growing firms require more funds to invest, hence pays less dividend and retain more and vice versa. If the personal tax on shareholder's earning is higher the cash dividend will be lesser. As managers prefer internal financing for their capital requirement (Myers, 1984, p.), firm having more capital investment requirement pays fewer dividends. Beside these, company may adopt various dividend policies under the given context. This chapter contains the analysis and interpretation of the available and relevant data of five commercial banks selected as the sample banks. Six year's data period covering from the 2006/7 A.D. to 2011/12 A.D. have been analyzed and interpreted as per the research methodology defined in chapter three. This chapter has been divided into four sub- headings, at first analysis of financial indicators are presented. The simple and multiple regression analysis are the next two sub headings. The relationship between dividend policy and value of the firm is demonstrated by forming two models of multiple regressions. Lastly the test of hypothesis and major findings are presented. The conclusion and recommendation chapter is based upon the findings of this chapter.

4.1. Analysis of Financial Indicators

4.1.1 Analysis of EPS

Earning per share (EPS) is one of the most important financial indicators, which measure the earning capacity of a firm. It measures the profit available to the ordinary shareholder on a per share basis. It is the outcome of net income available to the shareholders divided by total number of common stocks outstanding.

Table No 1
Analysis of EPS

(In Rs.)

Year	SCB	NABIL	NIB	EBL	BOK
2006/7	126.88	59.26	33.17	31.56	27.97
2007/8	141.13	55.25	33.59	32.91	2.00
2008/9	149.30	84.66	39.56	25.90	17.72
2009/10	143.55	92.73	51.70	45.58	27.50
2010/11	143.14	105.79	39.50	32.47	30.10
2011/12	175.85	129.21	59.35	45.81	43.67
Total	879.85	526.90	256.87	214.23	148.96
Mean	146.64	87.82	42.81	35.71	24.83
SD	14.74	25.64	9.59	7.39	12.72
C.V.	0.10	0.29	0.22	0.21	0.51

The above is the comparative table that shows the earning per share of the 5 leading commercial banks selected as the sample for the period covering from the fiscal year 2005/2006 A.D. to 2011/12 A.D. SCB has highest EPS, Rs. 175.85 in the year 2011/12 A.D and lowest EPS, RS.126.88 in the year 2006/7 A.D. Similarly NABIL bank has highest EPS, Rs. 129.21 in the year 2011/12 A.D. and lowest EPS, Rs. 55.25 in the year 2007/8 A.D. The EPS of NIB fluctuates from lowest Rs. 33.17 in the year 2006/7 A.D. to highest Rs. 59.35 in the year 2011/12 A.D. EBL has highest EPS of RS. 45.81 in the year 2011/12 and lowest EPS of RS. 25.90 in the year 2008/9. The EPS of BOK fluctuates from highest Rs. 43.67 in the year 2011/12 A.D. to the lowest Rs. 2 in the year 2007/8 A.D. SCB has three digits EPS that is highest of all other banks throughout the study period i.e.Rs.126.88, Rs.141.13, Rs.149.30, Rs.143.55, Rs.143.14, Rs.175.85 in the fiscal year 2006/7A.D, 2007/8A.D., 2008/9 A.D., 2009/10, 2010/11 A.D., A.D., 2011/12 respectively.

SCB has the highest EPS mean of Rs.146.64, NABIL, NIB, EBL and BOK has mean EPS of RS.87.82, Rs. 42.81, Rs. 35.71, Rs. 24.83 respectively. Among the sample banks the earning position of SCB is strong.

NABIL has the highest standard deviation of 25.64% in comparison to that of the

other sample banks. Similarly SCB, NIB, EBL and BOK have standard deviation of 14.74%, 9.59%, 7.39%, 12.72% respectively.

The analysis of CV indicates SCB has the lowest CV of 10% which indicates that SCB has lowest fluctuation in its EPS in comparison to that all other sample banks. NABIL, NIB, EBL, BOK have CV of 29%, 22%, 21% and 51% respectively.

The trend of EPS indicates no consistency throughout the study period. The EPS of SCB has increasing trend for the first three years of the study period and it seems slightly decrease in the 4th and 5th year and again highly increasing in sixth year. Similarly, the trend of EPS of NABIL, NIB, EBL, BOK also has fluctuating trends.

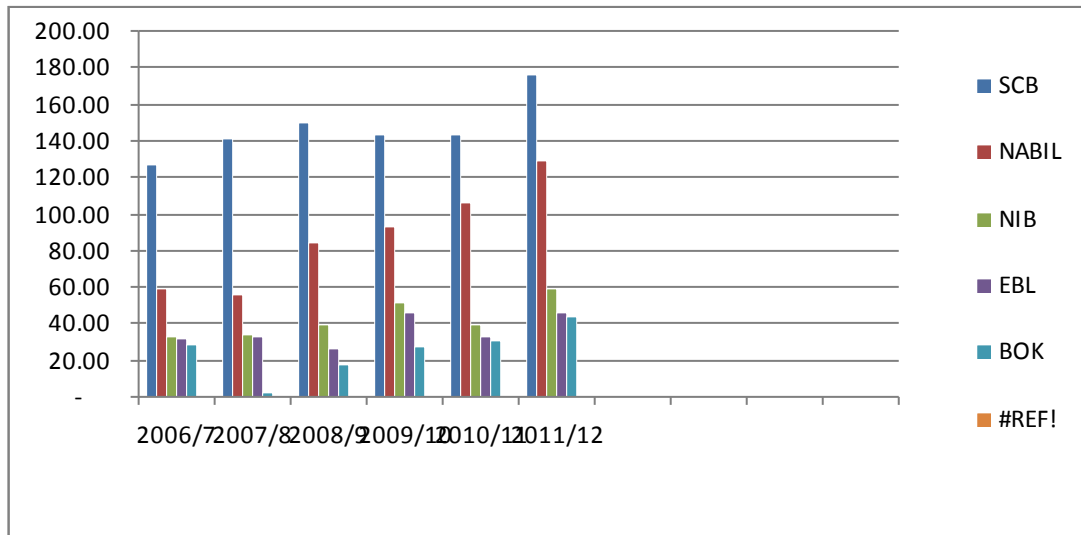


Figure No: Analysis of EPS

4.1.2 Dividend Per Share (DPS)

Table No. 2.
Analysis of DPS

(In Rs.)

Year	SCB	NABIL	NIB	EBL	BOK
2006/7	100.00	40.00	-	-	-
2007/8	100.00	30.00	-	-	10.00
2008/9	110.00	50.00	20.00	20.00	5.00
2009/10	157.91	60.27	7.75	9.11	2.75
2010/11	120.00	-	12.50	-	15.00
2011/12	120.00	5.00	20.00	25.00	18.00
Total	707.91	185.27	60.25	54.11	50.75
Mean	117.99	30.88	10.04	9.02	8.46
S.D.	19.63	22.12	8.28	10.17	6.48
C.V.	0.17	0.72	0.82	1.13	0.77

The above is the comparative table that shows the dividend per share of the six commercial banks selected as the samples for the period covering from fiscal year 2006/7 A.D. to 2011/12 A.D. SCB has highest DPS, Rs. 157.91 in the year 2009/10 A.D. and lowest DPS, Rs. 100 in the year 2011/12 A.D. and 2011/12 A.D. Similarly. NABIL has highest DPS, Rs. 60.27 in the year 2009/10 A.D. and lowest DPS, Re. 0.00 in the year 2009/09 A.D. The DPS of NIB seem to be fluctuating from lowest Re.0.00 in the year 2011/12 A.D. and 2011/12 A.D. to highest Rs.20 in the year 2007/8 A.D. and 2011/12 A.D. EBL has earned lowest DPS of Re. 0.00 in the year 2011/12 A.D., 2011/12 A.D. and 2004/2005 A.D. and highest DPS of Rs.25 in the year 2011/12 A.D. The DPS of BOK fluctuates from highest Rs.18 in the year 2011/12 A.D. and lowest Re. 0.00 in the year 2011/12 A.D.

SCB has three digits DPS throughout the study period. It has highest DPS of all other banks throughout the study period. On the other hand BOK have lower DPS in comparison to the other banks. BOK has not distributed any dividend in the year 2006/7 A.D. Similarly EBL has not distributed any dividend in the year 2006/7 A.D., 2007/8 A.D. and 2011/12 A.D. Also NIB has not distributed any dividend in the year

2006/7 A.D., 2007/8 A.D. NABIL also has not distributed any dividend to its shareholders in the year 2011/12 A.D.

SCB has highest mean DPS of Rs.117.99 NABIL, NIB, EBL and BOK have mean DPS of Rs.30.88, Rs. 10.04, Rs. 9.02, and Rs. 8.46 respectively. This indicates that SCB has been able to satisfy its customer by paying good dividends. From the viewpoint of mean DPS, NABIL, NIB, EBL, BOK stand far behind SCB. It is observed from this comparative analysis that the average DPS paid by SCB is highest among the sample banks taken for analysis. NABIL, NIB, EBL, BOK is encouraging to pay enough dividend but is not very satisfactory.

NABIL has highest standard deviation, i.e., 22.12 % in comparison to that of the other sample banks whereas SCB, NIB, EBL and BOK have standard deviation of 19.63%, 8.28%, 10.17% and 6.48% respectively.

The analysis of CV indicates SCB has the lower CV of 17%. This indicates that NABIL, NIB, EBL and BOK have C.V. of 72%, 82%, 113%, and 77% respectively. The C.V of SCB is lower than the other banks which represent low volatility of DPS.

The trend of DPS indicates no consistency throughout the study period. The DPS of SCB has increasing trend throughout the study period. Similarly the trend of NABIL, NIB, EBL, and BOK has fluctuating trends.

An EBL bank seems to focus on the strategy of retaining all the earning for the reinvestment in internal financing opportunities. The dividend policy of NABIL, NIB, and BOK seem to be quite similar to the strategy adopted by EBL as they have paid no dividend in some years and very low dividends in the rest of the period.

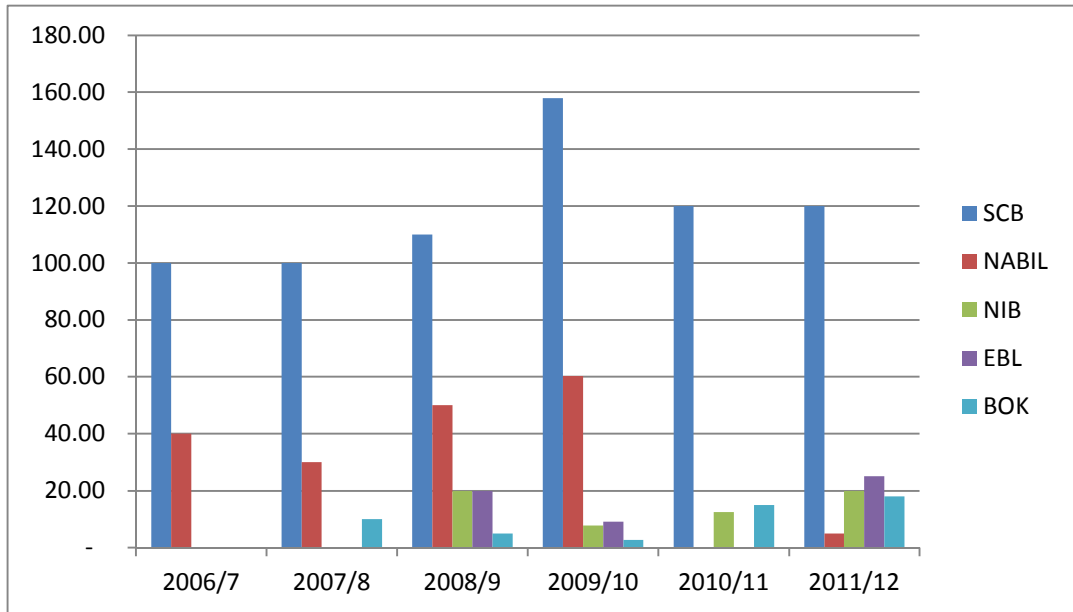


Figure No: 2 Analysis of DPS

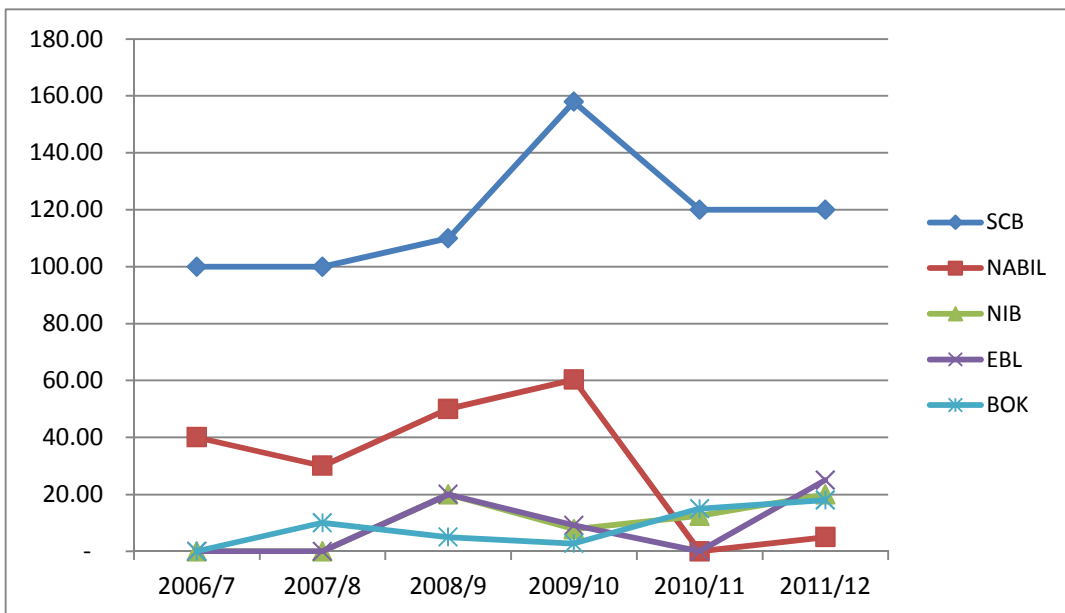


Diagram No: 2. Analysis of DPS

4.1.3 Market Price Per Share (MPS)

Table No: 3
Analysis of MPS

(In Rs.)

Year	SCB	NABIL	NIB	EBL	BOK
2006/7	2,144.00	1,500.00	1,150.00	750.00	850.00
2007/8	1,550.00	735.00	760.00	430.00	254.00
2008/9	1,640.00	735.00	795.00	445.00	198.00
2009/10	1,745.00	1,000.00	940.00	680.00	295.00
2010/11	2,345.00	1,505.00	800.00	870.00	430.00
2011/12	3,775.00	2,240.00	1,260.00	1,379.00	850.00
Mean	2,199.83	1285.83	950.83	759	479.5
S.D.	758.06	531.17	190.97	318.82	271.15
C.V.	0.34	0.41	0.20	0.42	0.57

The above is the comparative table that shows the Market Price Per share of the 5 commercial banks selected as the samples for the period covering from fiscal year 2006/7 A.D. to 2011/12 A.D. SCB has highest MPS, Rs. 3775 in the year 2011/12 A.D. and lowest MPS, Rs. 1550 in the year 2007/8 A.D. Similarly NABIL has highest MPS, Rs. 2240 in the year 2011/12 A.D. and lowest DPS, Rs. 735 in the year 2007/8 A.D. and 2008/9 A.D. The MPS of NIB seem to be fluctuating from lowest Re.760 in the year 2007/8 A.D. to highest Rs.1260 in the year 2011/12 A.D. EBL has lowest MPS of Rs 430 in the year 2007/8 A.D. and highest MPS of Rs.1379 in the year 2011/12 A.D. The MPS of BOK fluctuates from highest Rs.850 in the year 2011/12 A.D. and 2006/7 A.D. and lowest Rs.198 in the year 2008/9 A.D.

SCB has Four digits MPS throughout the study period. It has highest MPS of all other banks throughout the study period. On the other hand BOK has lower MPS in comparison to the other banks. MPS of BOK is lowest of all the sample banks in the year 2008/9 A.D. from among the 5 commercial sample banks; SCB has the highest mean MPS of RS 2199.83. NABIL, NIB, EBL and BOK have mean MPS of Rs.

1285.83, Rs.950.83, Rs.759, and Rs.479.5 respectively. This indicates the good reputation of SCB in the market.

SCB has highest standard deviation of 758.06% in comparison to that of the other sample banks. Similarly NABIL, NIB, EBL and BOK have standard deviation of 531.17%, 190.97%, 318.82% and 271.15% respectively.

For all the sample firms MPS is fluctuating from year to year. The analysis of CV indicates BOK has the highest CV of 57% and SCB, NABIL, EBL and NIC have CV of 34%, 41%, 42%, 32% respectively. Coefficient of variation of MPS of NIB, i.e., 20% is more consistent in comparison to that of other sample banks. Similarly CV of MPS of SCB 34% can also be considered as satisfactory ones. BOK has the highest CV (57%), which shows highest fluctuation in MPS between Rs. 198 in 2008/9 A.D. and Rs. 850 in 2006/7 A.D. and 2011/12 A.D.

The trend of MPS indicates no consistency throughout the study period. The trend of MPS of all the sample banks has fluctuating trend. The above table shows that the trends of MPS of all sample banks are high in the first period and decrease the second year and thereafter increasing the rest of the year. SCB and NABIL have highest MPS in the year 2006/7 A.D., in the year 2007/8 MPS is decreased and increasing the rest of the year. Similarly EBL, BOK has quite similar trend of MPS i.e., highest in the first year 2006/7 A.D. and decreasing in the mid- year and finally increasing in the later period. NIB has also highest MPS in the first year 2000/2001 A.D. and decreased in the second year 2007/8 and increasing in the year 2008/9 A.D. and 2010/11 A.D. and decreased in the year 2011/12 A.D. and again increased in the year 2011/12 A.D.

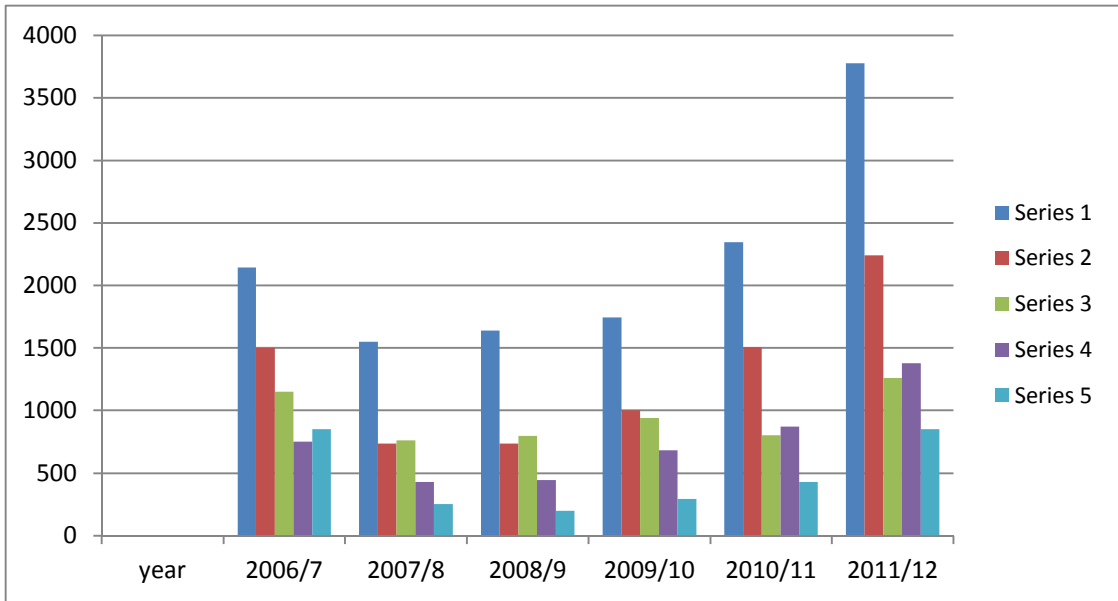


Figure No: 3. Analysis of MPS

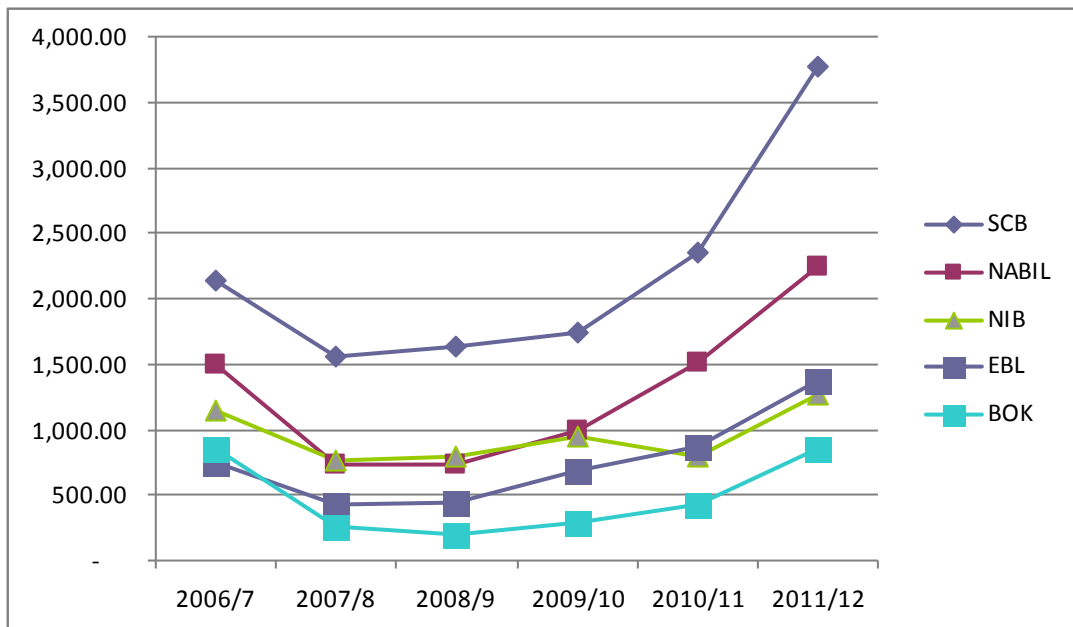


Diagram No: 3. Analysis of MPS

4.1.4 Dividend Payout Ratio (D/P Ratio)

Table No: 4
Analysis of D/P Ratio

Year	SCB	NABIL	NIB	EBL	BOK
2006/7	78.81	67.50	-	-	-
2007/8	70.86	54.30	-	-	500.00
2008/9	73.68	59.06	50.56	77.22	28.22
2009/10	110.00	65.00	14.99	19.99	10.00
2010/11	83.83	-	31.65	-	49.83
2011/12	68.24	3.87	33.70	54.57	41.22
Total	485.42	249.73	130.90	151.78	629.27
Mean	80.90	41.62	21.82	25.30	104.88
S.D.	14.84	8.23	18.54	30.28	177.52
C.V	0.18	0.20	0.85	1.20	1.69

D/P ratio is the percentage of earning that is distributed to the common stockholders in the form of dividend. The above table shows the comparative DPR of 5 sample banks for the period of six years. As recorded in the table, DPR of all the sample banks are fluctuating from year to year.

SCB has highest D/P ratio, 110% in the year 2010/11 A.D. and lowest D/P ratio, 68.24% in the year 2011/12 A.D. Similarly NABIL has highest D/P ratio of 67.50% in the year 2006/7 A.D. and lowest D/P ratio of 0% in the year 2011/12 A.D. The D/P ratio of NIB seems to be fluctuating from lowest 0% in the year 2006/7 A.D. and 2007/8 A.D. to highest 50.56% in the year 2008/9 A.D. EBL has highest D/P ratio of 77.22% in the year 2008/9 A.D. and lowest D/P ratio of 0% in the year 2006/7 A.D., 2007/8 A.D. and 2011/12 A.D. BOK has lowest D/P ratio of 0% in the year 2006/7 A.D. and highest D/P ratio of 500% in the year 2007/8 year. The D/P ratio of NIC is fluctuating from highest 103.52% in the year 2006/7 A.D. to the lowest 0% in the year 2007/8 A.D., 2008/9 A.D. and 2010/11 A.D.

SCB has distributed more than 65% of its earning to its shareholders throughout the study period. In comparison to the other sample banks, SCB has maintained highest payout ratio for all the sample periods except in 2006/7 A.D., 2007/8 A.D. and 2008/9

A.D. on the other hand, NABIL, NIB, EBL, BOK and NIC have not distributed any of their earnings to their shareholders in some years.

BOK has the highest mean D/P Ratio of 104.88% and NIB has the lowest mean D/P Ratio of 21.82%. SCB, NABIL, EBL and NIC have mean D/P Ratio of 80.90%, 41.62%, 25.30% and 25.13% respectively.

BOK has highest standard deviation of 177.52% and NABIL has lowest standard deviation of 8.23% in comparison to that of the other sample banks. Similarly SCB, NIB, EBL have standard deviation of 14.84%, 18.54%, 30.28% and 38.45% respectively.

The analysis of CV indicates BOK has the highest CV of 169% and SCB has the lowest CV of 18%. It indicates that BOK has highest fluctuation in its D/P Ratio, i.e. 0% in the F/Y 2006/7 A.D. and 500% in the F/Y 2007/8 A.D. in comparison to that of other sample banks. However, SCB has lowest fluctuation in its D/P Ratio i.e. 78.81% in the F/Y 2006/7 A.D. and 70.86% in the F/Y 2007/8 A.D. NABIL, NIB, EBL have C.V. of 20%, 85%, 120% respectively. The trend of D/P Ratio of all sample banks has fluctuation trend.

In general we can divide payout ratio into three categories i.e. conservative (0 to 20%), moderate (21 to 50%), and aggressive (51 to 100%). The analysis of above data under the preview of this criterion shows that SCB has adopted aggressive dividend policy throughout the study period. NABIL has adopted aggressive dividend policy in the year 2006/7 A.D., 2007/8 A.D., 2008/9 A.D. and 2010/11 A.D., conservative in 2011/12 A.D. and 2011/12 A.D. Similarly NIB has adopted conservative dividend policy in the year 2006/7 A.D., 2007/8 A.D. and 2010/11 A.D., moderate in 2011/12 A.D. and 2011/12 A.D., Aggressive in 2008/9 A.D. EBL has adopted conservative dividend policy in the year 2006/7 A.D., 2007/8 A.D., 2010/11 A.D. and 2011/12 A.D., Aggressive in 2008/9 A.D. and 2011/12 A.D. BOK seems to be conservative in terms of DPR in the year 2006/7 A.D. and 2010/11 A.D., moderate in 2008/9 A.D., 2011/12 A.D., 2011/12 A.D. and aggressive in 2007/8 A.D.

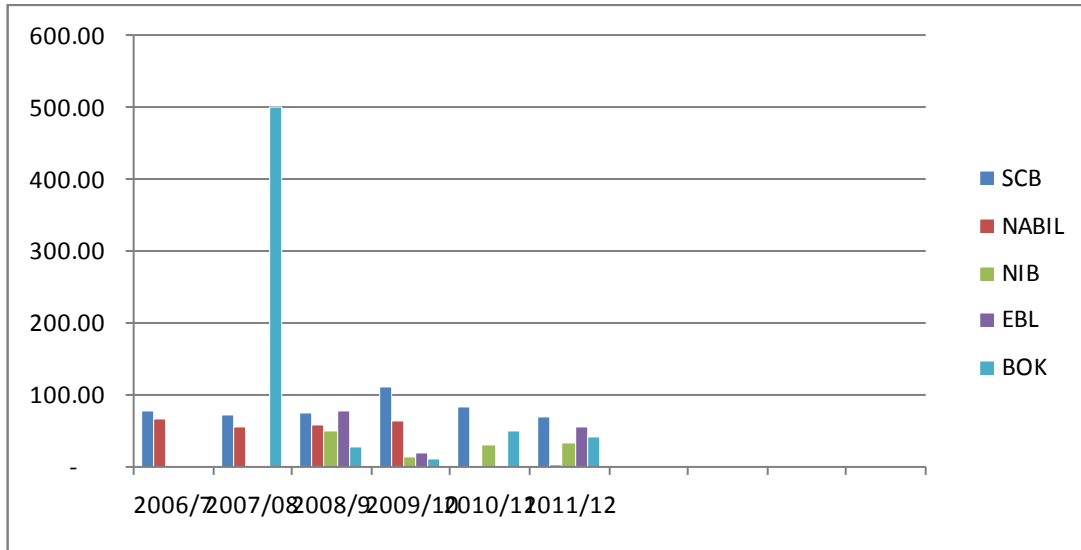


Figure No: 4. Analysis of D/P Ratio

4.2 Simple Regression Analysis

Relationship between Market Price of Share (MPS) and Dividend Per Share (DPS), Market Price of Share (MPS) and Earning Per Share (EPS), and Dividend Per Share (DPS) and Earning Per Share (EPS) of the sample banks are analyzed in this part of the study. The simple regression results between MPS, DPS and MPS of 5 sample banks, computed in Appendix C, are presented and analyzed as follows.

4.2.1. Regression Results between MPS and DPS.

Table No: 5. Regression Results between MPS and DPS

Bank	Model	A	b	SE _b	t	R ²	r
SCB	$Y_1=a+bx_1$	2073.884	1.068	19.298	0.55	0.001	0.028
NABIL	$Y_2=a+bx_2$	2065.474	-22.224	11.809	-1.882	0.541	0.736
NIB	$Y_3=a+bx_3$	779.456	11.239	24.346	0.462	0.096	0.31
EBL	$Y_4=a+bx_4$	232.754	33.372	49.616	0.673	0.311	0.558
BOK	$Y_5=a+bx_5$	420.61	6.962	20.615	0.338	0.028	0.167

(Source: See Appendix C)

In the above table the independent variable Y_1 of the equation represents the MPS of SCB. The equation shows the relationship between MPS and DPS of SCB. As the result shows, the slope of coefficient (b) is 1.068 which indicates that rupee 1 increase

in DPS results to an average increase of Rs. 1.068 in the MPS of SCB. The coefficient of determination (R^2) is 0.001, which indicates that only 0.10% of the variation of MPS is determined by the explanatory variable DPS.

Tabulated value ($t_{0.05}$) of degree of freedom 3 is 3.182. Since the calculated t value is 0.55, which is less than the tabulated value, the estimated slope of coefficient is not statistically significant at 5% level of significance. The simple correlation coefficient (r) between MPS and DPS of SCB is 0.028, which indicates that the relationship between MPS and DPS is positively correlated (*See Appendix C*).

Similarly, the independent variable Y_2 of the equation represents the MPS of NABIL. The equation shows the relationship between MPS and DPS of NABIL. As the result shows, the slope of coefficient is -22.224, which indicates if DPS of NABIL is increased by Re. 1 per share, its MPS, in an average, will decrease by Rs.22.224. The intercept coefficient is 2065.474, which shows that the average MPS would be Rs. 2065.474 per share if the DPS is zero. The coefficient of determination (R^2) is 0.541, which indicates that only 54.10% of the variation of MPS is determined by the explanatory variable DPS.

Tabulated value ($t_{0.05}$) of d.f. is 3 is 3.182. Since the calculated t value is -1.882, which less than the tabulated value of t, the estimated slope of coefficient is not statistically significant at 5% level of significance. The simple correlation coefficient (r) between MPS and DPS of NABIL is 0.736, which indicates that the relationship between MPS and DPS is positively correlated (*See Appendix C*).

In the above table the independent variable Y_3 of the equation represents the MPS of NIB. The equation shows the relationship between MPS and DPS of NIB. As the result shows the slope of coefficient (b) is 11.239, which indicates that if DPS of NIB is increased by Re. 1 per share, its MPS on an average will increase by Rs.11.239 per share. The intercept coefficient is 779.456, which shows that the average MPS would be Rs.779.456 per share if the DPS is zero. The coefficient of determination (R^2) is 0.096, which indicates that only 9.6% of the variation of MPS is determined by the explanatory variable DPS.

Although, the simple correlation coefficient (r) between MPS and DPS of NIB is 0.310, the estimated slope of coefficient is not statistically significant at 5% level of significance as tabulated value of ($t_{0.05}$) for d.f. 3 of two- tailed test (3.182) is greater than the calculated t value (0.462). It explains that there is/ are other variable(s) apart from DPS which could affect the overall MPS of the bank (*See Appendix C*)

In the above table, the independent variable Y_4 of the equation represents the MPS of EBL. The equation shows the relationship between MPS and DPS of EBL. As the results shows, the slope of coefficient (b) is 33.372, which indicates that if DPS of EBL is increased by Re. 1 per share, its MPS in an average would increase by Rs.33.372 per share. The intercept coefficient is 232.754, which shows that the average MPS would be Rs. 232.754 per share if the DPS is zero. The coefficient of determination (R^2) is 0.311, which indicates that only 31.10% of the variation of MPS is determined by the explanatory variable DPS.

Although, the simple correlation coefficient r between MPS and DPS of EBL is 0.558, the estimated slope of coefficient is not statistically significant at 5% level of significance as tabulated value ($t_{0.05}$) for 3 d.f of two-tailed test (3.182) is more than the calculated t value (0.673). It explains that there is / are other variable(s) other than DPS which could affect the overall MPS of the firm (*See Appendix C*)

Similarly, the independent variable Y_5 of equation in the above table represents the MPS of BOK. The equation shows the relationship between MPS and DPS of BOK. The equation shows the relationship between MPS and DPS of BOK. As the result shows, the slope of coefficient (b) is 6.962, which indicates that if DPS of BOK is increased Re. 1 per share, its MPS, in an average, would go up by Rs.6.962 .The intercept coefficient is 420.610 per share, which shows that the average MPS would be Rs. 420.610 per share if DPS is zero. The coefficient of determination (R^2) is 0.028, which indicates that only 2.8%of the variation in MPS is determined by the explanatory variable DPS.

Tabulated value ($t_{0.05}$) of d.f. 3 is 3.182. Since the calculated t value is 0.338, which is less than the tabulated value of t, the estimated slope of coefficient is not statistically significant at 5% level of significance. The simple correlation coefficient (r) between

MPS and DPS of BOK is 0.167, which indicates that the relationship between MPS and DPS of BOK is positively correlated (*See Appendix C*).

4.2.2 Regression Results between MPS and EPS.

Table No: 6
Regression Results between MPS and EPS

Bank	Model	A	b	SE _b	t	R ²	r
SCB	$Y_1=a+bx_1$	-3439.165	38.454	17.085	2.251	0.559	0.748
NABIL	$Y_2=a+bx_2$	48.838	14.086	7.591	1.856	0.463	0.68
NIB	$Y_3=a+bx_3$	496.2	10.619	8.42	1.261	0.285	0.533
EBL	$Y_4=a+bx_4$	-228.589	27.66	16.403	1.686	0.415	0.645
BOK	$Y_5=a+bx_5$	107.925	14.967	7.584	1.973	0.493	0.702

(Source: *See Appendix C*)

In the above table, independent variable Y_1 of the equation represents the MPS of SCB. The equation shows the relationship between MPS and EPS of SCB. As the result shows, the slope of coefficient is 38.454, which indicates that rupee 1 increase in EPS results into an average of about Rs. 38.454 increase in MPS of SCB. The coefficient of determination (R^2) is 0.559, which indicates that only 5.59% of the variation of MPS is determined by the explanatory variable EPS.

Tabulated value ($t_{0.05}$) of d.f. 3 is 3.182. Since the calculated value of t is 2.251, which is less than the tabulated value, the estimated slope of coefficient is not statistically significant at 5 % level of significance. The simple correlation coefficient (r) between MPS and EPS of SCB is 0.748, which indicates that the relationship between MPS and EPS is positively correlated (*See Appendix C*).

Similarly in the above table the independent variable Y_2 of the equation represents the MPS of NABIL. The equation shows the relationship between MPS and EPS of NABIL. As the result shows, the slope of coefficient is 14.086, which indicates that rupee 1 increase in EPS results into an average of about Rs. 14.086 increase in MPS of NABIL. The Coefficient of determination (R^2) is 0.463, which indicates that only 46.3% of the variation of MPS is determined by the explanatory variable EPS.

Tabulated value ($t_{0.05}$) of d.f. 3 is 3.182. Since the calculated value of t is 1.856, which is less than the tabulated value, the estimated slope of coefficient is not statistically significant at 5% level of significance. The simple correlation coefficient (r) between MPS and EPS of NABIL is 0.680, which indicates that the relationship between MPS and EPS is positively correlated (*See Appendix C*).

In the above table the independent variable Y_3 of the equation represents the MPS of NIB. The equation shows the relationship between MPS and EPS of NIB. As the result shows, the slope of coefficient is 10.619, which indicates that rupee 1 increase in EPS results into an average increase of Rs. 10.619 in MPS of NIB. The coefficient of determination (R^2) is 0.285, which indicates that only 28.50% of the variation of MPS is determined by the explanatory variable EPS.

Tabulated value ($t_{0.05}$) of d.f. 3 is 3.182. Since the calculated t value is 1.261, which is less than the tabulated value, the estimated slope of coefficient is not statistically significant at 5 % level of significance. The simple correlation coefficient (r) between MPS and EPS of NIB is 0.533 which indicates that the relationship between MPS and EPS of NIB is positively correlated (*See Appendix C*).

In the above table, the independent variable Y_4 of the equation represents the MPS of EBL. The equation shows the relationship between MPS and EPS of EBL. As the result shows, the slope of coefficient is 27.660, which indicates that rupee 1 increase in EPS results to an average of about Rs. 27.660 increase in MPS of EBL. The coefficient of determination (R^2) is 0.415. Which indicates that only 41.5% of the variation of MPS is determined by the explanatory variable EPS.

Tabulated value ($t_{0.05}$) of d.f. 3 is 3.182. Since the calculated t value is 1.686, which is less than the tabulated t value, the estimated slope of coefficient is not statistically significant at 5% level of significance. The simple correlation coefficient (r) between MPS and EPS of EBL is 0.645, which indicates that the relationship between MPS and EPS of EBL is positively correlated (*See Appendix C*).

In the above table, the independent variables Y_5 of the equation represent the MPS of BOK. The equation shows the relationship between MPS and EPS of BOK. As the result shows, the slope of coefficient (b) is 14.967, which indicates that if EPS of

BOK is increased by Re. 1 per share, its DPS, in an average, would go up by Rs.14.967 per share. The coefficient of determination (R^2) is 0.493, which indicates that 49.30% of the variation in MPS is determined by the explanatory variable EPS.

Tabulated value ($t_{0.05}$) of d.f.3 is 3.182. Since the calculated t value is 1.973, which is less than the tabulated value of t, the estimated slope of coefficient is not statistically significant at 5 % level of significance. The simple correlation coefficient (r) between MPS and EPS of BOK is 0.702, which indicates that the relationship between MPS and EPS of BOK is positively correlated (*See Appendix C*).

4.2.3. Regression Results between DPS and EPS.

Table No: 7
Regression results between DPS and EPS.

Bank	Model	A	b	SE _b	t	R ²	r
SCB	$Y_1=a+bx_1$	77.279	0.278	0.652	0.426	0.043	0.208
NABIL	$Y_2=a+bx_2$	63.275	-0.311	0.368	-0.846	0.192	0.439
NIB	$Y_3=a+bx_3$	13.547	0.032	0.436	0.073	0.003	0.052
EBL	$Y_4=a+bx_4$	23.579	-0.142	0.697	-0.204	0.04	0.199
BOK	$Y_5=a+bx_5$	4.323	0.167	0.241	0.692	0.107	0.327

In the above table the independent variable Y_1 of the equation represents the DPS of SCB. The equation shows the relationship between DPS and EPS of SCB. As the result shows, the slope of coefficient is 0.278, which indicates that Re. 1 increase in EPS results to an average of about Re 0.278 increases in DPS of SCB. The intercept coefficient is 77.279, which shows that the average DPS would be Rs.77.279 if the EPS is zero. The coefficient of determination (R^2) is 0.043, which indicates that only 4.30% of the variation of DPS is determined by the explanatory variable EPS.

Tabulated value ($t_{0.05}$) of d.f 3 is 3.182. Since the calculated t value is 0.426, which is less than tabulated value, the estimated slope of coefficient is not statistically significant as 5% level of significance. The simple correlation coefficient (r) between DPS and EPS of SCB is 0.208, which indicates that the relationship between DPS and EPS is positive correlated (*See Appendix C*).

In the above table the independent variable Y_2 of the equation represents the DPS of

NABIL. The equation shows the relationship between DPS and EPS of NABIL. As the result shows, the slope of coefficient

(-0.311), which indicates that if the EPS of NABIL is increased by Re. 1 per share, its DPS, in an average, would go down by Re. 0.311. The intercept coefficient is 63.275, which shows that the average DPS would be Rs. 63.275, if EPS is zero. The coefficient of determination (R^2) is 0.192, which indicates 19.20% of the variation of DPS is determined by the explanatory variable EPS.

Tabulated value ($t_{0.05}$) of d.f. 3 is 3.182 since the calculated t value is -0.846, which is greater than the tabulated t value, the estimated slope of coefficient is statistically significant at 5% level of significance. The simple correlation coefficient (r) between DPS and EPS of NABIL is 0.439 which indicates that the relationship between DPS and EPS is positively correlated (*See Appendix C*).

In the above table the independent variable Y_3 of the equation represents the DPS of NIB. The equation shows the relationship between DPS and EPS of NIB. As the result shows, the slope of coefficient (b) is 0.032, which indicates that rupee 1 increase in EPS results into an average of about Re. 0.032 increase in DPS of NIB. The intercept coefficient is 13.547, which shows that the average DPS would be Rs 13.547, if the EPS is zero. The coefficient of determination (R^2) is 0.003, which indicates that 0.3% of the variation of DPS is determined by the explanatory variable EPS.

Tabulated value ($t_{0.05}$) of d.f. 3 is 3.182. Since the calculated t value is 0.073, which is less than the tabulated t value, the estimated slope of coefficient is statistically significant at 5% level of significance. The simple correlation coefficient (r) between DPS and EPS of NIB is 0.052, which indicates that the relationship between DPS and EPS of NIB is positively correlated (*See Appendix C*).

In the above table the independent variable Y_4 of the equation represents the DPS of EBL. The equation shows the relationship between DPS and EPS of EBL. As the result shows, the slope of coefficient (b) is -0.142, which indicates that rupee 1 increase in EPS results into an average decrease of Re. 0.142 in DPS of EBL. The intercept coefficient is 23.579, which shows that the average DPS would be Rs 23.579, if the EPS is Zero. The coefficient of determination (R^2) is 0.040, which

indicates that only 4% of the variation of DPS is determined by the explanatory variable EPS.

Tabulated value ($t_{0.05}$) of d.f. 3 is 3.182 since the calculated t value is -0.204, which is less than the tabulated t value, the estimated slope of coefficient is not statistically significant at 5% level of significance. The simple correlation coefficient (r) between DPS and EPS of EBL is 0.1999, which indicates that the relationship between DPS and EPS of EBL is positively correlated (*See Appendix C*).

In the above table the independent variable Y_5 of the equation represents the DPS of BOK. The equation shows the relationship between DPS and EPS of BOK. As the result shows, the slope of coefficient (b) is -0.142, which indicates that if EPS of BOK is increased by Re.1 per share, its DPS, in an average, would go down by Re. 0.142 Per share. The intercept coefficient is 4.323, which shows that the average DPS would be Rs 4.323, if the EPS is zero. The coefficient of determination (R^2) is 0.107, which indicates that only 10.70% of the variation of DPS is determined by the explanatory variable EPS.

Tabulated value ($t_{0.05}$) of d.f. 3 is 3.182. Since the calculated t value is 0.692, which is less than the tabulated t value, the estimated slope of coefficient is not statistically significant at 5% level of significance. The simple correlation coefficient (r) between DPS and EPS of BOK is 0.327, which indicates that the relationship between DPS and EPS of BOK is positively correlated (*See Appendix C*).

4.3 Multiple Regression Analysis

Multiple regression analysis is a logical extension of the simple linear regression analysis. Two or more independent variables are used to estimate the unknown values of a dependent variable. In this part of the study, the multiple regression analysis is carried out to examine the relationship between Market Price Per Share (MPS), Dividend Per Share (DPS), Earning Per Share (EPS) and Lagged Dividend per Share (LDPS). Two models have been formulated for this purpose.

4.3.1. DPS_t on EPS_t and DPS_{t-1}

The following results have been obtained from the multiple regression model having

two independent variables.

EPS (EPS_t) and LDPS (DPS_{t-1}) are independent variables whereas DPS (DPS_t) is dependent variable in this analysis.

Regression Equation: $D_t = a + b_1E_t + b_2D_{t-1}$

Table No: 8. Regression of Average DPS on EPS and DPS_{t-1}

Banks	a	b₁	b₂	R²	SEE	F	Sig. F
SCB	121.098	-0.078	0.104	0.016	30.778	0.016	0.984
	(0.682)	(-0.073)	(0.162)				
	[0.566]	[0.948]	[0.886]				
NABIL	77.754	-0.506	-0.037	0.255	32.518	0.341	0.745
	(0.973)	(-0.763)	(-0.048)				
	[0.433]	[0.525]	[0.966]				
NIB	-23.420	0.946	-0.853	0.528	8.281	1.117	0.472
	(-0.971)	(1.490)	(-1.093)				
	[0.434]	[0.275]	[0.388]				
EBL	-9.224	0.665	-0.729	0.315	13.380	0.459	0.685
	(-0.308)	(0.777)	(-0.856)				
	[0.787]	[0.518]	[0.482]				
BOK	5.264	0.239	-0.137	0.243	7.94	0.321	0.757
	(0.737)	(0.664)	(-0.147)				
	[0.538]	[0.575]	[0.897]				

(Source: See Appendix D)

Note: D_t , E_t and D_{t-1} represents DPS, EPS and LDPS respectively. Similarly, R^2 represents coefficient of multiple determination. Value in () and in [] represents “t” value and significance respectively.

Table no. 8 shows that one rupee increase in EPS of SCB leads to an average of about Re 0.078 decreases in DPS, holding the LDPS variable constant. In the same way 1 rupee increase in EPS leads to an average of about rupee 0.506 decrease in DPS of NABIL and increase in DPS of NIB, EBL, BOK by Re. 0.946, 0.665, 0.239 respectively.

The t value of coefficient of EPS is not statistically significant in all the sample banks .So the regression equation could not provide statistically significant explanation of variation in the DPS of all the sample banks.

On the other hand, one rupee increase in LDPS would result into Re 0.037, 0.853, 0.729, 0.137, 0.126 decreases in DPS, keeping EPS variable as constant in NABIL, NIB, EBL, BOK. The same is noticed to be rupee 0.104 increase in DPS, keeping EPS variable as constant in SCB. The t value of LDPS is statistically significant at 5 % level of significance in all the sample banks because their tabulated t values are smaller than the tabulated t value.

The value of multiple coefficient of determination (R^2) is 0.016 in SCB while it goes up to 0.243, 0.255, 0.315, 0.528 and 0.564 in BOK, NABIL, EBL, and NIB respectively.

As regards to the regression model $D_t = a + b_1 E_t + b_2 D_{t-1}$ and the above explanation, the inferences drawn are that the coefficient of EPS is higher as compared to the coefficient of LDPS in NIB, EBL, BOK . This indicated that there is positive relationship between EPS and DPS. Hence EPS has a predominant influence on DPS in these banks. But on the other hand, the coefficient of EPS is lower as compared to the coefficient of LDPS in SCB and NABIL. This indicates that the previous dividend payout posses greater influence on DPS in these banks.

(See Appendix C)

4.3.2 MPS_t on DPS_t and EPS_t

The next model of this study is formed to find out the relationship between MPS, DPS and EPS. Taking MPS as dependent and EPS and DPS as independent variables, the following results are obtained.

$$\text{Regression Equation: } P_t = a + b_1 D_t + b_2 E_t$$

Table No: 9. Regression of average MPS on DPS and EPS.

Banks	a	b₁	b₂	R²	SEE	F	Sig. F
SCB	-3039.60	-5.170	39.890	0.576	698.118	2.037	0.276
	(-0.989)	(-0.348)	(2.017)				
	[0.395]	[0.751]	[0.137]				
NABIL	1087.357	-16.580	9.13	0.688	505.148	2.204	0.312
	(0.967)	(-1.249)	(-0.969)				
	[0.436]	[0.338]	[0.435]				
NIB	-190.383	9.488	20.961	0.973	63.594	17.145	0.168
	(-0.953)	(1.554)	(5.558)				
	[0.515]	[0.364]	[0.113]				
EBL	-174.326	8.012	24.116	0.474	327.023	1.351	0.382
	(-0.263)	(0.577)	-1.27				
	[0.809]	[0.604]	[0.294]				
BOK	120.690	-2.953	15.459	0.498	271.751	1.487	0.356
	(0.472)	(-0.163)	(1.676)				
	[0.669]	[0.881]	[0.192]				

(See Appendix C)

Note: MPS, DPS and EPS are represented by P_t , D_t and E_t respectively. Similarly, R^2 represents coefficient of multiple determination. Value in () and [] represent t value and significance respectively.

The above table shows that there is lower influence of DPS as compared to EPS on MPS of all sample banks. In NIB, EBL, 1 rupee increase in DPS leads to an average of about Rs. 9.488, Rs. 8.012 increase in MPS respectively keeping the dependent variable constant. However, decrease of Rs. 5.170, Rs. 16.580 in MPS of SCB, NABIL and BOK respectively is observed. The value of multiple coefficient of determination (R^2) is very high i.e. 0.972 in NIB while it goes down to 0.688, 0.576, 0.498, 0.474 and 0.323 in NABIL, SCB, BOK, EBL. The t value of coefficient of DPS and EPS is not statistically significant in all the sample banks at 5% level of significance because their calculated t values are smaller than the tabulated t value. Due to this regression equation could not provide statistically significant explanation

of variation in MPS of all the sample banks.

The “f” statistics for regression are 2.037, 2.204, 17.145, 1.351, 1.487 for SCB, NABIL, NIB, EBL, BOK respectively. The table no. 9 also shows the relationship of EPS to MPS. According to the regression results, Re. 1 increase in EPS of SCB leads to an average of about Rs. 39.890 increase in MPS keeping independent variable DPS constant. The same is noticed to be increased by Rs. 9.130, Rs. 20.961, Rs. 24.116, Rs. 15.459 in NABIL, NIB, EBL, BOK respectively. (See Appendix D)

The regression model $P_t = a + b_1 D_t + b_2 E_t$ indicates that the coefficient of DPS is lower as compared to the coefficient of EPS in SCB, NABIL, NIB, EBL, BOK. This indicates that the MPS of these banks are more influenced by EPS as compared to the DPS. (See Appendix D)

4.4 Major Findings

4.4.1. Findings of Financial Indicators Analysis

1. EPS of all the sample banks are fluctuating from year to year. SCB has the highest mean EPS. The analysis shows that earnings on shareholders' investment of BOK are quite lower in comparison to that of other sample banks. But the profitability of SCB and NABIL is better. Similarly the same of EBL can be quoted as moderate. The EPS of BOK shows highest fluctuation being Rs. 27.97 in 2006/7 A.D. to Rs. 2.00 in 2007/8 A.D. whereas EBL have relatively low fluctuation in their EPS.
2. DPS of SCB is in increasing trend and is highest through out of the study period in comparison to the other sample banks. DPS in case of other sample banks has fluctuating trend. SCB has highest mean DPS in comparison to that of other sample banks. NABIL has not paid any dividend in the year 2011/12 A.D. Similarly, NIB also has not paid any dividend in the year 2006/7 A.D. and 2007/8 A.D. EBL has retained 100% of its income in 3 years out of study period and BOK has not paid any dividend to its shareholders' in the year 2006/7 A.D.
3. None of the sample banks has exactly increasing or decreasing trend of MPS throughout the study period. The trend of MPS for the entire sample banks is fluctuating. SCB has the highest mean MPS (Rs. 2199.83) whereas BOK has

lower mean MPS being Rs.479.50 and Rs. 324 respectively. SCB has the highest fluctuation in MPS being Rs. 1550 in 2007/8 A.D. and Rs.3775 in 2011/12 A.D.

4. SCB has paid more than 70% of its EPS to the shareholders throughout the study period. NABIL, NIB, EBL, BOK are the sample banks that have 0% dividend payout in some years. In the year 2007/8 A.D., BOK has paid extreme 500% of its earnings to the shareholders, which is highest among the sample banks for the whole study period. A part from the study years in which these banks have paid zero dividends there is fluctuating trend of D/P ratio in the other study period.

4.4.2 Findings of Coefficient of Correlation and Coefficient of Multiple Determination Analysis.

1. The coefficient of determination (R^2) between MPS and DPS of SCB is 0.001, which indicates that only 0.1% of the variation of MPS is determined by the explanatory variable DPS. The simple correlation coefficient (r) between MPS and DPS of SCB is 0.028. The coefficient of determination (R^2) between MPS and EPS of SCB is 0.559. The simple correlation coefficient (r) between MPS and EPS of SCB is 0.748. The coefficient of determination (R^2) between DPS and EPS of SCB is 0.043. The simple correlation coefficient (r) between DPS and EPS of SCB is 0.208.
2. The slope of coefficient between MPS and DPS of NABIL is -22.224. The coefficient of determination (R^2) between MPS and DPS of NABIL is 0.541, which indicates that only 54.10% of the variation of MPS is determined by the explanatory variable DPS. The simple correlation coefficient (r) between MPS and DPS of NABIL is 0.736. The slope of coefficient between MPS and EPS of NABIL is 14.086. The coefficient of determination (R^2) between MPS and EPS of NABIL is 0.463. The simple correlation coefficient (r) between MPS and EPS of NABIL is 0.680. The slope of coefficient between DPS and EPS of NABIL is -0.311. The coefficient of determination (R^2) between DPS and EPS of NABIL is 0.192. The simple correlation coefficient (r) between DPS and EPS of NABIL is 0.439.
3. The slope of coefficient between MPS and DPS of NIB is 11.239. The coefficient of determination (R^2) between MPS and DPS of NIB is 0.096,

which indicates that only 9.60% of the variation of MPS is determined by the explanatory variable DPS. The simple correlation coefficient (r) between MPS and DPS of NABIL is 0.310. The slope of coefficient between MPS and EPS of NABIL is 10.619. The coefficient of determination (R^2) between MPS and EPS of NABIL is 0.285. The simple correlation coefficient (r) between MPS and EPS of NABIL is 0.533. The slope of coefficient between DPS and EPS of NABIL is 0.032. The coefficient of determination (R^2) between DPS and EPS of NABIL is 0.003. The simple correlation coefficient (r) between DPS and EPS of NABIL is 0.052.

4. The slope of coefficient between MPS and DPS of EBL is 33.372. The coefficient of determination (R^2) between MPS and DPS of EBL is 0.311, which indicates that only 31.10% of the variation of MPS is determined by the explanatory variable DPS. The simple correlation coefficient (r) between MPS and DPS of EBL is 0.558. The slope of coefficient between MPS and EPS of EBL is 27.660. The coefficient of determination (R^2) between MPS and EPS of EBL is 0.415. The simple correlation coefficient (r) between MPS and EPS of EBL is 0.645. The slope of coefficient between DPS and EPS of EBL is 23.579. The coefficient of determination (R^2) between DPS and EPS of EBL is 0.040. The simple correlation coefficient (r) between DPS and EPS of EBL is 0.199.
5. The coefficient of determination (R^2) between MPS and DPS of BOK is 0.028, which indicates that only 2.80% of the variation of MPS is determined by the explanatory variable DPS. The simple correlation coefficient (r) between MPS and DPS of BOK is 0.167. The coefficient of determination (R^2) between MPS and EPS of BOK is 0.493. The simple correlation coefficient (r) between MPS and EPS of BOK is 0.702. The coefficient of determination (R^2) between DPS and EPS of BOK is 0.107, which indicates that 10.70% of the variation of DPS is determined by the explanatory variable EPS. The simple correlation coefficient (r) between DPS and EPS of BOK is 0.327.

4.4.3 Findings of Multiple Regression Analysis

- a) The regression model $D_t = a + b_1 E_t + b_2 D_{t-1}$ indicates that the coefficient of EPS is higher in comparison to the coefficient of LDPS in NIB, EBL, BOK. Hence EPS has a predominant influence on DPS in these banks. But on the other hand, the coefficient of EPS is lower in comparison to the coefficient of LDPS in SCB and NABIL. This indicates that the previous year's dividend payout possesses greater influence over DPS in these banks. F statistics of regression for SCB, NABIL, NIB, EBL, BOK are 0.016, 0.341, 1.117, 0.459, 0.321, respectively, which indicates that the regression equation does not provide statistically significant explanation of variation in dividend per share of the mentioned banks.
- b) The regression model $P_t = a + b_1 D_t + b_2 E_t$ indicates that the coefficient of DPS is lower in comparison to that of EPS in all the sample banks. Hence EPS has predominant influence on MPS in these all sample banks. F statistic of regression for SCB, NABIL, EBL, BOK are 2.037, 2.204, 1.351, 1.487, respectively, which indicates that the regression equation does not provide statistically significant explanation of variation in the share price of these banks. But on the other hand, regression equation of NIB provides statistically explanation of variation in the share price.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECCOMENDATION

This chapter focuses on summarizing the study held with the researcher's conclusion. The next attempt in this chapter will be made for the recommendation on the basis of findings. For this whole purpose the chapter is subdivided into summary, conclusion and recommendation as following.

5.1 Summary and Conclusion

This study mainly aims at examining the dividend practices of listed commercial banks .Its specific objectives of this study was to find out the impact of dividend policy on market price of share. Descriptive, financial and statistical analyses have been done for the study purpose by using various methodologies. This study used ratio analysis to accomplish most of the objectives. More specifically, it has employed figure to highlight the dividend practices. For the purpose of comparative study between banks, t-test and F- test has been used.

This study covers the sample of 5 commercial banks listed in NEPSE for the period 2006-2011. For the purpose of the study, the necessary data were collected from NEPSE database and SEBO database.

The primary objective of investors for investing in stock is to earn dividend. However, the earning of shareholders may be divided into dividend gain and capital gain. High dividend payout satisfies the dividend need whereas an increase in market price of stock results into an increase in capital gain. Therefore, there should be a proper decision that balances the size of dividend distribution and the size of retention of EPS. From the study, it is found that none of the sample banks have adopted consistent dividend policy. It is also concluded that dividend policy depends upon earnings, and EPS and DPS having positive correlation may impact upon market price of stock.

The first model of multiple regressions denoted by $D_t = a + b_1 E_t + b_2 D_{t-1}$ has been formed to see the relationship of lagged dividend per share and earning per share. Similarly the second model $P_t = a + b_1 D_t + b_2 E_t$ was formed to see the effect of earning

per share and dividend per share on market price of share. The first model shows that there is positive impact of LDPS and EPS on DPS in some cases whereas in some cases there is negative impact too. The second model concluded that there is positive relationship between DPS and EPS most of the time so mostly impact upon MPS and sometimes just reverse it does not make any impact upon MPS at all.

5.2 Recommendation

However, which dividend policy the company would follow is the function of its earning capacity, investment opportunities, shareholders' interest and other contextual variables, it is very difficult to suggest or follow particular dividend policy. Also, in absence of particular standard, it is not only difficult to make comparison but also lead to the inconsistency. As the capital structure theories and empirical studies suggest that managers prefer internal financing first followed by debt financing and lastly, external new equity (Myers, 1984; Myers and Majluf, 1984; Pradhan and Ang, 1994; Gajurel, 2005), company pays less or few amount as dividend if it has capital requirement and pays more if the investment opportunities are less. Invest in the securities of banks; there is no significant difference in the earning pattern of the stock of both types of entities. Since the dividend policy directly effects on the price of the stock, value of the firm and capital structure decision of the firm, firm should adopt such policy which optimizes the value of the firm, the ultimate objective of the firm!

For further research avenue, following recommendations are outlined:

- From the analysis, it is found that there is no consistency in dividend policy followed by the sample banks. Dividend policy adopted by a single bank also seems to be varying from year to year. This has resulted into high degree of fluctuation in DPS, EPS and MPS of all the sample banks.

SCB is found to be in better position in terms of all the financial indicators used whereas BOK is found to be in weak position in comparison to the other sample banks in all aspects. NABIL and NIB have better position in terms EPS and MPS, however it is not in a good position in terms of dividend distribution throughout the study period. EBL has moderate positioning in terms of EPS and MPS. The other banks except SCB have dividend policy

that is not good enough to satisfy the minimum expectation of the shareholders. So, all the banks should have well defined dividend policy, which will help to satisfy the investors and to create better position of the banks in the capital market.

- Fluctuation in EPS and Dividend Payout shows that there is lack of proper investment strategy and profit planning among the sample banks. So the banks should have proper investment strategy and profit planning and should move ahead as per that strategy and planning without hesitation.
- BOK has highest CV in MPS that indicates greater variability of its MPS. Thus BOK should try to balance between dividend policy and MPS.
- Although the payout ratios of sample banks are fluctuating from year to year, there is no rational approach in deciding the payout. Analysis of the cost of capital and internal rate of return is not practiced while making dividend decision. High payout is made despite higher internal rate of return so as to upkeep the image of the firm in the capital markets. But there are some cases in which lower dividends are paid despite of return on retained earnings being quite lower than the cost of capital. This shows that shareholders are not always treated fairly. Thus it is recommended that all the banks should make extensive analysis of internal rate of return and cost of capital in deciding DPR that helps to maximize the shareholder's wealth.
- The correlation between MPS and DPS of SCB, NABIL, NIB, EBL, BOK, observed from simple regression are 2.80%, 73.60%, 31.10%, 55.80%, 16.70% positive, therefore these banks should try to increase DPS to better uplift the MPS in future.
- The multiple regressions of DPS result shows the fact that there is customary strong EPS and relatively weak lagged DPS effect on DPS decision. Therefore the banks are suggested to distribute as their income, not as their past trend of dividend distribution in NIB, EBL, and BOK. SCB and NABIL should concentrate not only in EPS but also to the LDPS. IT means at least

dividend should be paid in the increasing trend.

- EPS seem to have predominant influence upon MPS in comparison to DPS in all the sample banks was found by second multiple regressions analysis. So, to improve the market value of firm, firms are suggested to give stress upon EPS and when there is higher EPS there should be higher DPS consequently. This will ultimately result into the growth in market value of share.
- BOK has highest CV in MPS that indicates greater variability of its MPS. Thus BOK should try to balance between dividend policy and MPS.
- A well defined dividend strategy consistent with the objectives of the firms is still a need in Nepalese corporate firms.
- There is big possibility of investors to be misguided through fake information. Thus the rules and regulation should be in favors of the investors to exercise the dividend practice and to protect the shareholders' right.
- There is considerable growth in Nepalese investors who are actively participating in the capital market. However majority of them lacks financial knowledge and skills to analyze the performance and future prospects of the firms. So investors should make proper analysis of financials, past track records of the banks or any other financial institutions before running behind them. Furthermore, there should be a separate and independent information body that would provide fair information to the investors regarding financial performance of the firms. This would stop haphazard fluctuation in MPS of the firms.
- There is a trend of paying very low dividends in Nepal. Firms hesitate to go for dividends distribution. Every year firms are found to be showing this and that reasons for the curtailment of dividend payment to their shareholders. This shows that shareholders are suffering from institutional exploitation and there is no proper response from the side of intellectuals of the country. Therefore, it is recommended that the intellectual bodies of the country and the government should put upon a kind of lobbying to the firms to make fair

dividend decision that would benefit the shareholders.

- Banks should follow a clear policy for the issue of bonus share. At the same time, they need to clarify the changes in EPS, DPS and MPS due to the issue of bonus shares to their existing and potential shareholders.
- Commercial banks should cross the boundaries of particular economically to attract the majority ordinary small lower level investors too.
- Before making dividend decision, firms should also make consideration of their liquidity position because dividend distribution directly hits upon the cash position of the bank. Insufficient liquidity would require the bank to go for external financing that may be opposed by the existing shareholders due to the fear that they may have to lose their control over the company and will have to share the profits of the bank with the new shareholders. So it may ultimately lead the bank to the huge controversy, which would put it in a very difficult situation.

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Websites:

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Appendix-A

Nabil Bank Limited

1. Simple correlation & regression analysis of MPS & EPS

Year	MPS (X)	EPS (Y)	X ²	Y ²	XY
2007/8	1505	105.49	2265025.00	11128.14	158762.45
2008/09	2240	129.21	5017600.00	16695.22	289430.40
2009/10	5050	137.08	25502500.00	18790.93	692254.00
2010/11	5275	108.31	27825625.00	11731.06	571335.25
2011/12	4899	106.76	24000201.00	11397.70	523017.24
Total	ΣX = 18969	ΣY = 586.85	ΣX ² = 84610951	ΣY ² = 69743.04	ΣXY = 2234799.34

$$(a) \text{ Mean } (\bar{X}) = \frac{18969}{5} = 3793.8 \quad \text{Mean } (\bar{Y}) = \frac{\Sigma Y}{N} = \frac{586.85}{5} = 117.37$$

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

$$= \frac{5 \times 2234799 - 18969 \times 586.85}{\sqrt{5 \times 84610951 - (18969)^2} \sqrt{5 \times 69743.04 - (586.85)^2}}$$

$$= \frac{42039.05}{7951.84 \times 65.74} = 0.0804$$

$$(c) \text{ Coefficient of determination } (r^2) = 0.006464$$

$$\begin{aligned}
 \text{(d) Regression coefficient (b)} &= \frac{\Sigma XY - n\bar{X}\bar{Y}}{\Sigma Y^2 - n\bar{Y}^2} \\
 &= \frac{2234800 - 5 \times 3793.8 \times 117.37}{69743.04 - 5 \times (117.37)^2} \\
 &= \frac{8408.47}{864.455} = 9.72 \\
 \text{(a)} &= \bar{X} - b\bar{Y} = 3793 - 9.72 \times 117.37 \\
 &= 2652.15
 \end{aligned}$$

(e) Regression equation $MPS = 2652.15 + 9.72EPS$

$$\begin{aligned}
 \text{(f) Standard error of estimate (Se)} &= \sqrt{\frac{\Sigma X^2 - a\Sigma X - b\Sigma XY}{n-2}} \\
 &= \sqrt{\frac{84610951 - 2652.15 \times 18969 - 9.72 \times 223480}{5-2}} = 2047.76
 \end{aligned}$$

$$\begin{aligned}
 \text{(g) Standard error of regression coeff. (Sb)} &= \frac{Se}{\sqrt{\Sigma Y^2 - n\bar{Y}^2}} \\
 &= \frac{2047.76}{\sqrt{69743.04 - 5(117.37)^2}} = \frac{2047.76}{29.40} = 69.64
 \end{aligned}$$

$$\text{(h) Standardized value of b (t-value)} = \frac{b}{S_b} = \frac{9.72}{69.64} = 0.139$$

2. Simple correlation & regression analysis of MPS & EPS

Year	MPS (X)	EPS (Y)	X ²	Y ²	XY
2007/8	1505	70	2265025.00	4900.00	105350.00

2008/09	2240	85	5017600.00	7225.00	190400.00
2009/10	5050	140	25502500.00	19600.00	707000.00
2010/11	5275	100	27825625.00	10000.00	527500.00
2011/12	4899	85	24000201.00	7225.00	416415.00
Total	$\Sigma X =$ 18969	$\Sigma Y =$ 480	$\Sigma X^2 =$ 84610951	$\Sigma Y^2 =$ 48950	$\Sigma XY =$ 1946665

$$(a) \text{ Mean } (\bar{X}) = \frac{\Sigma X}{N} = \frac{18969}{5} = 3793.8 \qquad \text{Mean } (\bar{Y}) = \frac{\Sigma Y}{N} = \frac{480}{5} = 96$$

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

$$= \frac{5 \times 1946665 - 18969 \times 480}{\sqrt{5 \times 84610951 - (18969)^2} \sqrt{5 \times 48950 - (480)^2}}$$

$$= \frac{628205}{7951.84 \times 119.79} = 0.66$$

$$(c) \text{ Coefficient of determination } (r^2) = (0.66)^2 = 0.4356$$

$$(d) \text{ Regression coefficient } (b) = \frac{\Sigma XY - n\bar{X}\bar{Y}}{\Sigma Y^2 - n\bar{Y}^2}$$

$$= \frac{1946665 - 5 \times 3793.8 \times 96}{48950 - 5 \times (96)^2}$$

$$= \frac{125641}{28070} = 43.77$$

$$(a) = \bar{X} - b\bar{Y} = 3793.8 - 43.77 \times 96$$

$$= -408.12$$

(e) Regression equation $\boxed{\text{MPS} = -408.12 + 43.77 \text{ DPS}}$

(f) Standard error of estimate (Se) $= \sqrt{\frac{\Sigma X^2 - a\Sigma X - b\Sigma XY}{n-2}}$

$$= \sqrt{\frac{84610951 - (-408.12) \times 18969 - 43.77 \times 1946665}{5-2}} = 1543.48$$

(g) Standard error of regression coef. (Sb) $= \frac{\text{Se}}{\sqrt{\Sigma y^2 - n\bar{Y}^2}}$

$$= \frac{1543.48}{\sqrt{48950 - 5(96)^2}} = \frac{1543.48}{53.57} = 28.81$$

(h) Standardized value of b (t-value) $= \frac{b}{S_b} = \frac{43.77}{28.81} = 1.519$

3. Simple correlation & regression analysis of MPS & DPR

Year	MPS (X)	DPR (Y)	X ²	Y ²	XY
2007/8	1505	66.35	2265025.00	4402.32	99856.75
2008/09	2240	65.78	5017600.00	4327.01	147347.20
2009/10	5050	102	25502500.00	10404.00	515100.00
2010/11	5275	92.32	27825625.00	8522.98	486988.00
2011/12	4899	79.61	24000201.00	6337.75	390009.39

Total	$\Sigma X =$ 18969	$\Sigma Y =$ 406.06	$\Sigma X^2 =$ 84610951	$\Sigma Y^2 =$ 33994.06	$\Sigma XY =$ 1639301.34
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(a) Mean (\bar{X}) = $\frac{\Sigma X}{N} = \frac{18969}{5} = 3793.8$ Mean (\bar{Y}) = $\frac{\Sigma Y}{N} = \frac{406.06}{5} = 81.212$

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

$$= \frac{5 \times 1639301.34 - 18969 \times 406.06}{\sqrt{5 \times 84610951 - (18969)^2} \sqrt{5 \times 33994.06 - (406.06)^2}}$$

$$= \frac{493954.36}{7951.84 \times 71.31} = 0.871$$

(c) Coefficient of determination (r^2) = $(0.871)^2 = 0.7586$

(d) Regression coefficient (b) = $\frac{\Sigma XY - n\bar{X}\bar{Y}}{\Sigma Y^2 - n\bar{Y}^2}$

$$= \frac{1639301.34 - 5 \times 3793.8 \times 81.212}{33994.06 - 5 \times (81.212)^2}$$

$$= \frac{98790.912}{1017.11} = 97.128$$

(a) = $\bar{X} - b\bar{Y} = 3793.8 - 97.128 \times 81.212$

$$= -4094.20$$

(e) Regression equation $\boxed{\text{MPS} = -4094.2 + 97.128 \text{ DPR}}$

(f) Standard error of estimate (Se) = $\sqrt{\frac{\Sigma X^2 - a\Sigma X - b\Sigma XY}{n-2}}$

$$= \sqrt{\frac{84610951 - (-4094.20) \times 18969 - 97.128 \times 1639301.34}{5-2}} = 1008.59$$

$$(g) \text{ Standard error of regression coeff. } (S_b) = \frac{Se}{\sqrt{\Sigma Y^2 - n \bar{Y}^2}}$$

$$= \frac{1008.59}{\sqrt{33994.06 - 5(81.212)^2}} = \frac{1008.59}{31.89} = 31.62$$

$$(g) \text{ Standardized value of b (t-value)} = \frac{b}{S_b} = \frac{97.128}{31.62} = 3.07$$

4. Simple correlation & regression analysis of MPS & P/E

Year	MPS (X)	P/E (Y)	X ²	Y ²	XY
2007/8	1505	14.27	2265025.00	203.63	21476.35
2008/09	2240	17.34	5017600.00	300.68	38841.60
2009/10	5050	36.84	25502500.00	1357.19	186042.00
2010/11	5275	48.70	27825625.00	2371.69	256892.50
2011/12	4899	45.89	24000201.00	2105.89	224815.11
Total	$\Sigma X =$ 18969	$\Sigma Y =$ 163.04	$\Sigma X^2 =$ 84610951	$\Sigma Y^2 =$ 6339.07	$\Sigma XY =$ 728067.56

$$(a) \text{ Mean } (\bar{X}) = \frac{\Sigma X}{N} = \frac{18969}{5} = 3793.8 \quad \text{Mean } (\bar{Y}) = \frac{\Sigma Y}{N} = \frac{163.04}{5} = 32.60$$

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

$$= \frac{5 \times 728067.56 - 18969 \times 163.04}{\sqrt{5 \times 84610951 - (18969)^2} \sqrt{5 \times 6339.07 - (163.04)^2}}$$

$$= \frac{547632.04}{7951.84 \times 71.50} = 0.963$$

(c) Coefficient of determination (r^2) = $(0.963)^2 = 0.9273$

(d) Regression coefficient (b) = $\frac{\Sigma XY - n \bar{X} \bar{Y}}{\Sigma Y^2 - n \bar{Y}^2}$

$$= \frac{728067.56 - 5 \times 3793.8 \times 32.6}{6339.07 - 5 \times (32.6)^2}$$

$$= \frac{109678.16}{1022.27} = 107.28$$

(a) = $\bar{X} - b \bar{Y} = 3793 - 107.28 \times 32.6 = 295.67$

(e) Regression equation $\boxed{\text{MPS} = 295.674 + 107.28 \text{ P/E}}$

(f) Standard error of estimate (Se) = $\sqrt{\frac{\Sigma X^2 - a \Sigma X - b \Sigma XY}{n-2}}$

$$= \sqrt{\frac{84610951 - 295.67 \times 18969 - 107.28 \times 728067.56}{5-2}} = 546.29$$

(g) Standard error of regression coeff. (S_b) = $\frac{\text{Se}}{\sqrt{\Sigma Y^2 - n \bar{Y}^2}}$

$$= \frac{546.29}{\sqrt{6339.07 - 5 (32.6)^2}} = \frac{546.29}{31.97} = 17.08$$

(h) Standardized value of b (t-value) = $\frac{b}{S_b} = \frac{107.28}{17.08} = 6.278$

5.Simple Correlation and regression analysis of MPS & DY

Year	MPS (X)	DY (Y)	X ²	Y ²	XY
2007/8	1505	9.3	2265025.00	86.49	13996.50
2008/09	2240	7.59	5017600.00	57.61	17001.60
2009/10	5050	4.75	25502500.00	22.56	23987.50
2010/11	5275	3.03	27825625.00	9.18	15983.25
2011/12	4899	2.45	24000201.00	6.00	12002.55
Total	ΣX = 18969	ΣY = 27.12	ΣX ² = 84610951	ΣY ² = 181.844	ΣXY = 82971.4

$$(a) \text{ Mean } (\bar{X}) = \frac{\Sigma X}{N} = \frac{18969}{5} = 3793.8 \quad \text{Mean } (\bar{Y}) = \frac{\Sigma Y}{N} = \frac{27.12}{5} = 5.424$$

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

$$= \frac{5 \times 82971.4 - 18969 \times 27.12}{\sqrt{5 \times 84610951 - (18969)^2} \sqrt{5 \times 181.844 - (27.12)^2}}$$

$$= \frac{-99582.28}{7951.8 \times 13.18} = -0.95$$

$$(c) \text{ Coefficient of determination } (r^2) = (-0.95)^2 = 0.9025$$

$$(d) \text{ Regression coefficient (b)} = \frac{\Sigma XY - n\bar{X}\bar{Y}}{\Sigma Y^2 - n\bar{Y}^2}$$

$$= \frac{82971.4 - 5 \times 3793.8 \times 5.424}{181.844 - 5 \times (5.424)^2}$$

$$= \frac{-19916.456}{34.745} = -573.21$$

(a) $= \bar{X} - b \bar{Y}$

$$= 3793.8 - (-573.21) \times 5.424 = 684.67$$

(e) Regression equation $\boxed{\text{MPS} = 684.67 - 573.21 \text{ DY}}$

(f) Standard error of estimate (Se) $= \sqrt{\frac{\sum X^2 - a \sum X - b \sum XY}{n-2}}$

$$= \sqrt{\frac{84610951 - 684.67 \times 18969 - (-573.21) \times 82971.4}{5-2}} = 6303$$

(g) Standard error of regression coef. (S_b) $= \frac{\text{Se}}{\sqrt{\sum Y^2 - n \bar{Y}^2}}$

$$= \frac{6303}{\sqrt{181.844 - 5 (5.424)^2}} = \frac{6303}{5.89} = 1069.30$$

(h) Standardized value of b (t-value) $= \frac{b}{S_b} = \frac{-573.21}{1069.30} = -0.536$

6. Simple correlation & regression analysis of MPS & RR

Year	MPS (X)	RR (Y)	X ²	Y ²	XY
2007/8	1505	33.65	2265025.00	1132.32	50643.25
2008/09	2240	34.22	5017600.00	1171.00	76652.8
2009/10	5050	-2	25502500.00	4	-10100

2010/11	5275	7.68	27825625.00	58.98	40512
2011/12	4899	20.39	24000201.00	415.75	99890.61
Total	$\Sigma X =$ 18969	$\Sigma Y =$ 93.94	$\Sigma X^2 =$ 84610951	$\Sigma Y^2 =$ 2782.06	$\Sigma XY =$ 257598.66

$$(a) \text{ Mean } (\bar{X}) = \frac{\Sigma X}{N} = \frac{18969}{5} = 3793.8 \quad \text{Mean } (\bar{Y}) = \frac{\Sigma Y}{N} = \frac{93.94}{5} = 18.788$$

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

$$= \frac{5 \times 257598.66 - 18969 \times 93.94}{\sqrt{5 \times 84610951 - (18969)^2} \cdot \sqrt{5 \times 2782.06 - (93.94)^2}}$$

$$= \frac{-493954.56}{7951.84 \times 71.31} = -0.871$$

$$(c) \text{ Coefficient of determination } (r^2) = (-0.871)^2 = 0.7586$$

$$(d) \text{ Regression coefficient } (b) = \frac{\Sigma XY - n\bar{X}\bar{Y}}{\Sigma Y^2 - n\bar{Y}^2}$$

$$= \frac{257598.66 - 5 \times 3793.8 \times 18.788}{2782.06 - 5 \times (18.788)^2}$$

$$= \frac{-98790.912}{1017.11} = -97$$

$$(a) = \bar{X} - b\bar{Y} = 3793.8 - (-97.12) \times 18.788$$

$$= 5618.49$$

$$(e) \text{ Regression equation } \boxed{\text{MPS} = 5618.49 - 97.12 \text{ DY}}$$

$$(f) \text{ Standard error of estimate } (Se) = \sqrt{\frac{\Sigma X^2 - a\Sigma X - b\Sigma XY}{n-2}}$$

$$= \sqrt{\frac{84610951 - 5618.49 \times 18969 - (-97.12) \times 257598.66}{5-2}} = 1008.59$$

(g) Standard error of regression coef. (S_b) = $\frac{Se}{\sqrt{\sum Y^2 - n \bar{Y}^2}}$

$$= \frac{1008.59}{\sqrt{2782.06 - (18.788)^2}} = 31.625$$

(h) Standardized value of b (t-value) = $\frac{b}{S_b} = \frac{-97.12}{31.625} = -3.07$

7. Correlation between MPS & DPS

Year	EPS (X)	DPS (Y)	X ²	Y ²	XY
2007/8	105.49	70	11128.14	4900	7384.3
2008/09	129.21	85	16695.22	7225	10982.85
2009/10	137.08	140	18790.92	19600	19191.2
2010/11	108.31	100	11731.05	10000	10831
2011/12	106.76	85	11397.69	7225	9074.6
Total	$\sum X =$ 586.85	$\sum Y =$ 480	$\sum X^2 =$ 69743.04	$\sum Y^2$ =48950	$\sum XY =$ 57463.95

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

$$= \frac{5 \times 57463.95 - 586.85 \times 480}{\sqrt{5 \times 69743.04 - (586.85)^2} \sqrt{5 \times 48950 - (480)^2}} = \frac{5631.75}{65.74 \times 119.79} = 0.715$$

8. Correlation between EPS & DPR

Year	EPS (X)	DPR (Y)	X ²	Y ²	XY
2007/8	105.49	66.35	11128.14	4402.32	6999.26
2008/09	129.21	65.78	16695.22	4327	8499.43
2009/10	137.08	102	18790.92	10404	13982.16
2010/11	108.31	92.32	11731.05	8522.98	9999.18
2011/12	106.76	79.61	11397.69	6337.75	8499.16
Total	ΣX = 586.85	ΣY = 406.06	ΣX ² = 69743.04	ΣY ² = 33994.06	ΣXY = 47980

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

$$= \frac{5 \times 47980 - 586.85 \times 406.06}{\sqrt{5 \times 69743.04 - (586.85)^2} \sqrt{5 \times 33994.06 - (406.06)^2}} = \frac{1603.689}{65.74 \times 71.31} = 0.342$$

9. Correlation between EPS & P/E Ratio

Year	EPS (X)	P/E (Y)	X ²	Y ²	XY
2007/8	105.49	14.27	11128.14	203.63	1505
2008/09	129.21	17.31	16695.22	300.67	2240

2009/10	137.08	36.84	18790.92	1357.18	5050
2010/11	108.31	48.70	11731.05	2371.69	5275
2011/12	106.76	45.89	11397.69	2105.89	4899
Total	$\Sigma X =$ 586.85	$\Sigma Y =$ 163.04	$\Sigma X^2 =$ 69743.04	$\Sigma Y^2 =$ 6339.07	$\Sigma XY =$ 18969

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

$$= \frac{5 \times 18969 - 586.85 \times 163.04}{\sqrt{5 \times 69743.04 - (586.85)^2} \sqrt{5 \times 6339.07 - (163.04)^2}} = \frac{-835.024}{65.74 \times 71.5} = -0.177$$

10. Correlation between EPS & DY

Year	EPS (X)	DY (Y)	X ²	Y ²	XY
2007/8	105.49	9.3	11128.14	86.49	981.057
2008/09	129.21	7.59	16695.22	57.60	980.70
2009/10	137.08	4.75	18790.92	22.56	651.13
2010/11	108.31	3.03	11731.05	9.18	328.18
2011/12	106.76	2.45	11397.69	6.00	261.56
Total	ΣX = 586.85	ΣY = 27.12	ΣX ² = 69743.04	ΣY ² = 181.844	ΣXY = 3202.6322

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

$$= \frac{5 \times 3202.6322 - 586.85 \times 27.12}{\sqrt{5 \times 69743.04 - (586.85)^2} \sqrt{5 \times 181.844 - (27.12)^2}} = \frac{97.789}{65.74 \times 13.18} = 0.1128$$

11. Correlation between EPS & RR

Year	EPS (X)	RR (Y)	X ²	Y ²	XY
2007/8	105.49	33.65	11128.14	1132.32	3549.73
2008/09	129.21	34.22	16695.22	1171	4421.56

2009/10	137.08	-2	18790.92	4	-274.16
2010/11	108.31	7.682	11731.05	58.98	831.82
2011/12	106.76	20.39	11397.69	415.75	2176.83
Total	$\Sigma X =$ 586.85	$\Sigma Y =$ 93.94	$\Sigma X^2 =$ 69743.04	$\Sigma Y^2 =$ 2782.06	$\Sigma XY =$ 10705.80

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

$$= \frac{5 \times 10705.80 - 586.85 \times 93.94}{\sqrt{5 \times 69743.04 - (586.85)^2} \sqrt{5 \times 2782.06 - (93.94)^2}} = \frac{-1599.689}{65.74 \times 71.31} = -0.341$$

12. Correlation between DPS & DPR

Year	DPS (X)	DPR (Y)	X ²	Y ²	XY
2007/8	70	66.35	4900	4402.32	4644.5
2008/09	85	65.78	7225	4327	5591.3
2009/10	140	102	19600	10404	14280.0
2010/11	100	92.32	10000	8522.98	9232.0
2011/12	85	79.61	7225	6337.75	6766.85
Total	ΣX = 480	ΣY = 406.06	ΣX ² = 48950	ΣY ² = 33994.06	ΣXY = 40514.65

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

$$= \frac{5 \times 40514.65 - 48950 \times 406.06}{\sqrt{5 \times 4890 - (480)^2} \sqrt{5 \times 33994 - (406.06)^2}} = \frac{7664.45}{119.79 \times 71.31} = 0.897$$

13. Correlation between DPS & P/E Ratio

Year	DPS (X)	P/E (Y)	X ²	Y ²	XY
2007/8	70	14.27	4900	203.63	998.9
2008/09	85	17.34	7225	300.67	1473.9

2009/10	140	36.84	19600	1357.18	5157.6
2010/11	100	48.70	10000	2371.69	4870
2011/12	85	45.89	7225	2105.89	3900.65
Total	$\Sigma X = 480$	$\Sigma Y = 163.04$	$\Sigma X^2 = 48950$	$\Sigma Y^2 = 6339.07$	$\Sigma XY = 16401.05$

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

$$= \frac{5 \times 16401.05 - 480 \times 163.04}{\sqrt{5 \times 48950 - (480)^2} \sqrt{5 \times 6339.07 - (163.04)^2}} = \frac{3746.05}{119.79 \times 71.5} = 0.437$$

14. Correlation between DPS & DY

Year	DPS (X)	DY (Y)	X ²	Y ²	XY
2007/8	70	9.3	4900	86.49	651
2008/09	85	7.59	7225	57.60	645.15
2009/10	140	4.75	19600	22.56	665
2010/11	100	3.03	10000	9.18	303
2011/12	85	2.45	7225	6.00	208.25
Total	ΣX = 480	ΣY = 27.12	ΣX ² = 48950	ΣY ² = 181.844	ΣXY =2472.4

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

$$= \frac{5 \times 2472.4 - 480 \times 27.12}{\sqrt{5 \times 48950 - (480)^2} \sqrt{5 \times 181.844 - (27.12)^2}} = \frac{-655.6}{119.79 \times 13.18} = -0.41$$

15. Correlation between DPS & RR

Year	DPS (X)	RR (Y)	X ²	Y ²	XY
2007/8	70	33.65	4900	1132.32	2355.5
2008/09	85	34.22	7225	1171	2908.7

2009/10	140	-2	19600	4	-280
2010/11	100	7.68	10000	58.98	768
2011/12	85	20.39	7225	415.75	1733.15
Total	$\Sigma X = 480$	$\Sigma Y = 93.94$	$\Sigma X^2 = 48950$	$\Sigma Y^2 = 2782.06$	$\Sigma XY = 7485.35$

$$\begin{aligned} \text{Coefficient of Correlation (r)} &= \frac{n\Sigma XY - \Sigma X \cdot \Sigma Y}{\sqrt{\Sigma X^2 - (\Sigma X)^2} \sqrt{n\Sigma Y^2 - (\Sigma Y)^2}} \\ &= \frac{5 \times 7485.35 - 480 \times 93.94}{\sqrt{5 \times 48950 - (480)^2} \sqrt{5 \times 2782.06 - (93.94)^2}} = \frac{-7664.45}{119.79 \times 71.31} = -0.897 \end{aligned}$$

16. Correlation between DPR & P/E

Year	DPS (X)	P/E (Y)	X ²	Y ²	XY
2007/8	66.35	14.27	4402.32	203.63	946.81
2008/09	65.78	17.34	4327	300.67	1140.62
2009/10	102	36.84	10404	1357.18	3757.68
2010/11	92.32	48.70	8522.98	2371.69	4495.68
2011/12	79.61	45.89	6337.75	2105.89	3653.30
Total	ΣX = 406.06	ΣY = 163.04	ΣX ² = 33994.06	ΣY ² = 6339.07	ΣXY = 13994.40

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

$$= \frac{5 \times 13994.40 - 406.06 \times 163.04}{\sqrt{5 \times 33994.06 - (406.06)^2} \sqrt{5 \times 6339.07 - (163.04)^2}} = \frac{3767.9776}{71.31 \times 71.5} = 0.739$$

17. Correlation between DPR & DY

Year	DPS (X)	DY (Y)	X ²	Y ²	XY
2007/8	66.35	9.3	4402.32	86.49	617.055
2008/09	65.78	7.59	4327	57.60	499.27

2009/10	102	4.75	10404	22.56	484.5
2010/11	92.32	3.03	8522.98	9.18	-279.73
2011/12	79.61	2.45	6337.75	6.00	195.04
Total	$\Sigma X =$ 406.06	$\Sigma Y =$ 27.12	$\Sigma X^2 =$ 33994.06	$\Sigma Y^2 =$ 181.844	$\Sigma XY =$ 2075.6

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

$$= \frac{5 \times 2075.6 - 406.06 \times 27.12}{\sqrt{5 \times 33994.06 - (406.06)^2} \sqrt{5 \times 181.844 - (27.12)^2}} = \frac{-634.3472}{71.31 \times 13.18} = -0.674$$

18. Correlation between DPR & RR

Year	DPS (X)	RR (Y)	X ²	Y ²	XY
2007/8	66.35	33.65	4402.32	1132.32	2232.67
2008/09	65.78	34.22	4327	1171	2250.99
2009/10	102	-2	10404	4	-204
2010/11	92.32	7.68	8522.98	58.98	709.01
2011/12	79.61	20.39	6337.75	415.75	1623.24
Total	ΣX = 406.06	ΣY = 93.94	ΣX ² = 33994.06	ΣY ² = 2782.06	ΣXY = 6611.93

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

$$= \frac{5 \times 6611.93 - 406.06 \times 93.94}{\sqrt{5 \times 33994.06 - (406.06)^2} \sqrt{5 \times 2782.06 - (93.94)^2}} = \frac{-5085.60}{71.31 \times 71.31} = -1$$

19. Correlation between P/E & DY

Year	P/E (X)	DY (Y)	X ²	Y ²	XY
2007/8	14.27	9.3	203.63	86.49	132.711
2008/09	17.34	7.59	300.67	57.6	131.81

2009/10	36.84	4.75	1357.18	22.56	175
2010/11	48.10	3.03	2371.69	9.18	147.56
2011/12	45.89	2.45	2105.89	6.00	112.43
Total	$\Sigma X =$ 163.04	$\Sigma Y =$ 27.12	$\Sigma X^2 = 6339.07$	$\Sigma Y^2 =$ 181.844	$\Sigma XY = 700$

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

$$= \frac{5 \times 700 - 163.04 \times 27.12}{\sqrt{5 \times 6339.07 - (163.04)^2} \sqrt{5 \times 181.844 - (27.12)^2}} = \frac{-921.64}{71.5 \times 13.18} = -0.978$$

20. Correlation between P/E & RR

Year	P/E (X)	DY (Y)	X ²	Y ²	XY
2007/8	14.27	33.65	203.63	1132.32	480.18
2008/09	17.34	34.22	300.67	1171	593.37
2009/10	36.84	34.22	1357.18	4	-73.68
2010/11	48.10	-2	2371.69	58.08	374.016
2011/12	45.89	7.68	2105.89	415.75	935.6971
Total	ΣX = 163.04	ΣY = 93.94	ΣX ² = 6339.07	ΣY ² = 2782.06	ΣXY = 2309.59

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

$$= \frac{5 \times 2309.59 - 163.04 \times 93.94}{\sqrt{5 \times 6339.07 - (163.04)^2} \sqrt{5 \times 2782.06 - (93.94)^2}} = \frac{-3768.01}{71.5 \times 71.31} = -0.739$$

21. Correlation between DY & RR

Year	P/E (X)	DY (Y)	X ²	Y ²	XY
2007/8	9.3	33.65	86.49	1132.22	312.945
2008/09	7.59	34.22	57.6	1171	259.72

2009/10	4.15	-2	22.56	4	-9.5
2010/11	3.03	7.68	9.18	58.98	23.27
2011/12	2.45	20.39	6	415.75	49.95
Total	$\Sigma X =$ 27.12	$\Sigma Y =$ 93.94	$\Sigma X^2 = 181.844$	$\Sigma Y^2 =$ 2782.06	$\Sigma XY =$ 636.40

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

$$= \frac{5 \times 636.4 - 27.12 \times 93.94}{\sqrt{5 \times 181.844 - (27.12)^2} \sqrt{5 \times 2782.06 - (93.94)^2}} = \frac{634.35}{13.18 \times 71.31} = 0.675$$

Appendix-B

SCB

1. Simple correlation and regression between MPS & EPS

Year	MPS (X)	EPS (Y)	X ²	Y ²	XY
2007/8	-	-	-	-	-
2008/09	360	13.05	129600	170.3025	4698
2009/10	778	15.88	605284	252.1744	12354.64
2010/11	1090	17.29	1188100	298.9441	18846.1
2011/12	1000	22.89	1000000	523.9521	22890
Total	ΣX = 3228	ΣY = 69.11	ΣX ² = 2922984	ΣY ² = 1245.37	ΣXY = 58788.74

$$(a) \text{ Mean } (\bar{X}) = \frac{\Sigma X}{N} = \frac{3228}{4} = 807 \quad \text{Mean } (\bar{Y}) = \frac{\Sigma Y}{N} = \frac{69.11}{4} = 17.27$$

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

$$= \frac{5 \times 58788.74 - 3228 \times 69.11}{\sqrt{5 \times 2922984 - (3228)^2} \sqrt{4 \times 1245.37 - (69.11)^2}} = \frac{12067.88}{1127.8 \times 14.32} = 0.747$$

$$(c) \text{ Coefficient of determination } (r^2) = (0.747)^2 = 0.864$$

$$(d) \text{ Regression coefficient } (b) = \frac{\Sigma XY - n\bar{X}\bar{Y}}{\Sigma Y^2 - n\bar{Y}^2}$$

$$= \frac{58788.74 - 4 \times 807 \times 17.27}{1245.37 - 4 \times (17.27)^2} = 58.08$$

$$(a) \quad = \bar{X} - b \bar{Y} = 807 - 58.08 \times 17.27 \\ = -196.04$$

(e) Regression equation $\boxed{\text{MPS} = -196.04 + 58.08\text{EPS}}$

(f) Standard error of estimate (Se) $= \sqrt{\frac{\sum X^2 - a \sum X - b \sum XY}{n-2}}$

$$= \sqrt{\frac{2922984 - (-196.04) \times 3228 - 58.08 \times 58788.74}{4-2}} = 265.84$$

(g) Standard error of regression coef. (S_b) $= \frac{\text{Se}}{\sqrt{\sum Y^2 - n \bar{Y}^2}}$

$$= \frac{265.84}{\sqrt{1245.37 - 4(17.27)^2}} = \frac{265.84}{7.23} = 36.73$$

(h) Standardized value of b (t-value) $= \frac{b}{S_b} = \frac{58.08}{36.73} = 1.58$

2. Simple correlation & regression analysis of MPS & DPS

Year	MPS (X)	DPS (Y)	X ²	Y ²	XY
2007/8	-	-	-	-	-
2008/09	360	0	129600	0	0
2009/10	778	15.79	605284	249.32	12284.62
2010/11	1090	15.79	1188100	249.32	17211.1

2011/12	1000	10.53	1000000	110.88	10530
Total	$\Sigma X = 3228$	$\Sigma Y = 42.11$	$\Sigma X^2 =$ 2922984	$\Sigma Y^2 =$ 609.53	$\Sigma XY =$ 40025.72

(a) Mean (\bar{X}) = $\frac{\Sigma X}{N} = \frac{3228}{4} = 807$ Mean (\bar{Y}) = $\frac{\Sigma Y}{N} = \frac{42.11}{4} = 10.52$

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

$$= \frac{5 \times 40025.72 - 3228 \times 42.11}{\sqrt{5 \times 2922984 - (3228)^2} \sqrt{4 \times 609.53 - (42.11)^2}} = \frac{24171.8}{1127.8 \times 25.78} = 0.831$$

(c) Coefficient of determination (r^2) = $(0.831)^2 = 0.6905$

(d) Regression coefficient (b) = $\frac{\Sigma XY - n\bar{X}\bar{Y}}{\Sigma Y^2 - n\bar{Y}^2}$

$$= \frac{40025.72 - 4 \times 807 \times 10.52}{609.53 - 4 \times (10.52)^2} = 6067.16 / 166.84 = 36.36$$

(a) = $\bar{X} - b\bar{Y} = 807 - 36.36 \times 10.52 = 424.49$

(e) Regression equation $\boxed{MPS = 424.49 - 36.36DPS}$

(f) Standard error of estimate (Se) = $\sqrt{\frac{\Sigma X^2 - a\Sigma X - b\Sigma XY}{n-2}}$

$$= \sqrt{\frac{2922984 - 424.49 \times 3228 - 36.36 \times 40025.72}{4-2}} = 220.67$$

(g) Standard error of regression coef. (S_b) = $\frac{Se}{\sqrt{\Sigma Y^2 - n\bar{Y}^2}}$

$$= \frac{220.67}{\sqrt{609.53 - 4(10.52)^2}} = 17.08$$

$$(h) \text{ Standardized value of } b \text{ (t-value)} = \frac{b}{S_b} = \frac{36.36}{17.08} = 2.128$$

3. Simple correlation & regression analysis of MPS & DPR

Year	MPS (X)	DPR (Y)	X ²	Y ²	XY
2007/8	-	-	-	-	-
2008/09	360	0	129600	0	0
2009/10	778	99.43	605284	9886.325	77356.54
2010/11	1090	91.32	1188100	8339.342	99538.8
2011/12	1000	46.00	1000000	2116	46000
Total	ΣX = 3228	ΣY = 236.75	ΣX ² = 2922984	ΣY ² = 20341.66	ΣXY = 22895.34

$$(a) \text{ Mean } (\bar{X}) = \frac{\Sigma X}{N} = \frac{3228}{4} = 807 \quad \text{Mean } (\bar{Y}) = \frac{\Sigma Y}{N} = \frac{236.75}{4} = 59.18$$

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

$$= \frac{4 \times 22895.34 - 3228 \times 236.75}{\sqrt{4 \times 2922984 - (3228)^2} \sqrt{4 \times 20341.66 - (236.75)^2}} = \frac{127352.36}{1127.8 \times 159.11} = 0.709$$

$$(c) \text{ Coefficient of determination } (r^2) = (0.709)^2 = 0.5026$$

$$(d) \text{ Regression coefficient } (b) = \frac{\Sigma XY - n\bar{X}\bar{Y}}{\Sigma Y^2 - n\bar{Y}^2}$$

$$= \frac{222895.34 - 4 \times 807 \times 59.18}{20341.66 - 4 (59.18)^2} = 5.03$$

$$(a) = \bar{X} - b \bar{Y} = 807 - 5.03 \times 59.18 = 509.32$$

(e) Regression equation $\boxed{\text{MPS} = 509.32 + 5.03 \text{ DPR}}$

(f) Standard error of estimate (Se) $= \sqrt{\frac{\sum X^2 - a \sum X - b \sum XY}{n-2}}$

$$= \sqrt{\frac{2922984 - 509.32 \times 3228 - 5.03 \times 222895.34}{4-2}} = 280.834$$

(g) Standard error of regression coef. (S_b) $= \frac{\text{Se}}{\sqrt{\sum Y^2 - n \bar{Y}^2}}$

$$= \frac{280.834}{\sqrt{20341.66 - 4 (59.18)^2}} = 3.529$$

(h) Standardized value of b (t-value) $= \frac{b}{S_b} = \frac{5.03}{3.529} = 1.425$

4. Simple correlation & regression analysis of MPS & P/E Ratio

Year	MPS (X)	P/E (Y)	X ²	Y ²	XY
2007/8	-	-	-	-	-
2008/09	360	27.59	129600	761.2081	9932.4
2009/10	778	48.98	605284	2399.04	38106.44
2010/11	1090	63.04	1188100	3974.042	68713.6
2011/12	1000	43.70	1000000	1909.69	43700

Total	$\Sigma X = 3228$	$\Sigma Y = 183.31$	$\Sigma X^2 = 2922984$	$\Sigma Y^2 = 9043.98$	$\Sigma XY = 160452.44$
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(a) Mean (\bar{X}) = $\frac{\Sigma X}{N} = \frac{3228}{4} = 807$ Mean (\bar{Y}) = $\frac{\Sigma Y}{N} = \frac{183.31}{4} = 45.82$

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

$$= \frac{4 \times 160452.44 - 3228 \times 183.31}{\sqrt{4 \times 2922984 - (3228)^2} \sqrt{4 \times 9043.98 - (183.31)^2}} = \frac{50085.08}{1127.8 \times 50.72} = 0.875$$

(c) Coefficient of determination (r^2) = $(0.875)^2 = 0.7656$

(d) Regression coefficient (b) = $\frac{\Sigma XY - n\bar{X}\bar{Y}}{\Sigma Y^2 - n\bar{Y}^2}$

$$= \frac{160452.44 - 4 \times 807 \times 45.82}{9043.98 - 4(45.82)^2} = 19.41$$

(a) = $\bar{X} - b\bar{Y} = 807 - 19.41 \times 45.82 = -82.36$

(e) Regression equation $MPS = -82.36 - 19.41 \text{ P/E ratio}$

(f) Standard error of estimate (Se) = $\sqrt{\frac{\Sigma X^2 - a\Sigma X - b\Sigma XY}{n-2}}$

$$= \sqrt{\frac{2922984 - (-82.36) \times 3228 - 19.41 \times 160452.44}{4-2}} = 192.95$$

(g) Standard error of regression coef. (S_b) = $\frac{Se}{\sqrt{\Sigma Y^2 - n\bar{Y}^2}}$

$$= \frac{192.95}{\sqrt{2043.98 - 4(45.82)^2}} = \frac{192.95}{25.418} = 7.59$$

(h) Standardized value of b (t-value) = $\frac{b}{S_b} = \frac{19.41}{7.59} = 2.556$

5. Simple correlation & regression analysis of MPS & DY

Year	MPS (X)	DY(Y)	X ²	Y ²	XY
2007/8	-	-	-	-	-
2008/09	360	0	129600	0	0
2009/10	778	2.03	605284	4.1209	1579.34
2010/11	1090	1.44	1188100	2.0736	1569.6
2011/12	1000	1.05	1000000	1.1025	1050
Total	ΣX = 3228	ΣY = 4.52	ΣX ² = 2922984	ΣY ² = 7.297	ΣXY = 4198.94

$$(a) \text{ Mean } (\bar{X}) = \frac{\Sigma X}{N} = \frac{3228}{4} = 807 \quad \text{Mean } (\bar{Y}) = \frac{\Sigma Y}{N} = \frac{4.52}{4} = 1.13$$

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

$$= \frac{4 \times 4198.94 - 3228 \times 4.52}{\sqrt{4 \times 2922984 - (3228)^2} \sqrt{4 \times 7.297 - (4.52)^2}} = \frac{2205.2}{1127.8 \times 2.96} = 0.660$$

$$(c) \text{ Coefficient of determination } (r^2) = (0.66)^2 = 0.4356$$

$$(d) \text{ Regression coefficient } (b) = \frac{\Sigma XY - n\bar{X}\bar{Y}}{\Sigma Y^2 - n\bar{Y}^2}$$

$$= \frac{4198.94 - 4 \times 807 \times 1.13}{7.297 - 4 \times (1.3)^2} = \frac{551.3}{2.1894} = 251.80$$

$$(a) = \bar{X} - b \bar{Y} = 807 - 251.8 \times 1.13 = 522.466$$

$$(e) \text{ Regression equation } \boxed{\text{MPS} = 522.466 + 251.8DY}$$

$$(f) \text{ Standard error of estimate (Se)} = \sqrt{\frac{\sum X^2 - a \sum X - b \sum XY}{n-2}}$$

$$= \sqrt{\frac{2922984 - 522.466 \times 3228 - 251.8 \times 4198.94}{4-2}} = 299.3$$

$$(g) \text{ Standard error of regression coef. (S}_b) = \frac{\text{Se}}{\sqrt{\sum y^2 - n \bar{Y}^2}}$$

$$= \frac{299.3}{\sqrt{7.297 - 4(1.13)^2}} = \frac{299.3}{1.479} = 202.27$$

$$(h) \text{ Standardized value of b (t-value)} = \frac{b}{S_b} = \frac{251.80}{202.27} = 1.244$$

6. Simple correlation & regression analysis of MPS & RR

Year	MPS (X)	RR (Y)	X ²	Y ²	XY
2007/8	-	-	-	-	-
2008/09	360	100	129600	10000	36000
2009/10	778	0.57	605284	0.3249	443.46
2010/11	1090	8.57	1188100	73.4449	9341.3
2011/12	1000	54	1000000	2916	54000

Total	$\Sigma X = 3228$	$\Sigma Y = 163.14$	$\Sigma X^2 = 2922984$	$\Sigma Y^2 = 12989.77$	$\Sigma XY = 99784.76$
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(a) Mean (\bar{X}) = $\frac{\Sigma X}{N} = \frac{3228}{4} = 807$ Mean (\bar{Y}) = $\frac{\Sigma Y}{N} = \frac{163.14}{4} = 40.785$

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

$$= \frac{4 \times 99784.76 - 3228 \times 163.14}{\sqrt{4 \times 2922984 - (3228)^2} \sqrt{4 \times 12989.77 - (163.14)^2}} = \frac{-127476.88}{1127.8 \times 159.20} = -0.709$$

(c) Coefficient of determination (r^2) = $(0.709)^2 = 0.502$

(d) Regression coefficient (b) = $\frac{\Sigma XY - n\bar{X}\bar{Y}}{\Sigma Y^2 - n\bar{Y}^2}$

$$= \frac{99784 - 4 \times 807 \times 40.785}{12989.77 - 4 \times (40.785)^2} = \frac{-31869.98}{6336.1051} = -5.029$$

(a) = $\bar{X} - b\bar{Y} = 807 - (-5.029) \times 40.785 = 1012.10$

(e) Regression equation $\boxed{\text{MPS} = 1012.10 - 5.029 \text{ RR}}$

(f) Standard error of estimate (Se) = $\sqrt{\frac{\Sigma X^2 - a\Sigma X - b\Sigma XY}{n-2}}$

$$= \sqrt{\frac{2922984 - 1012.10 \times 3228 - (-5.029) \times 99784.76}{4-2}} = 280.84$$

(g) Standard error of regression coef. (S_b) = $\frac{\text{Se}}{\sqrt{\Sigma Y^2 - n\bar{Y}^2}}$

$$= \frac{280.84}{\sqrt{12989.77 - 4(40.78)^2}} = \frac{280.84}{79.599} = 3.52$$

(h) Standardized value of b (t-value) = $\frac{b}{S_b} = \frac{-5.029}{3.52} = -1.42$

7. Correlation between EPS & DPS

Year	EPS (X)	DPS (Y)	X ²	Y ²	XY
2007/8	20.08	0	403.2064	0.00	0.00
2008/09	13.05	0	170.30	0.00	0.00
2009/10	15.88	15.79	252.17	249.32	250.75
2010/11	17.29	15.79	298.94	249.32	273.01
2011/12	22.89	10.53	523.95	110.88	241.03
Total	ΣX = 89.19	ΣY = 42.11	ΣX ² = 1648.57	ΣY ² = 609.53	ΣXY = 764.18

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

$$= \frac{5 \times 764.78 - 89.19 \times 42.11}{\sqrt{5 \times 1648.57 - (89.19)^2} \sqrt{5 \times 609.53 - (42.11)^2}} = \frac{68.1391}{16.97 \times 35.69} = 0.112$$

8. Correlation between EPS & DPR

Year	EPS (X)	DPR (Y)	X ²	Y ²	XY
2007/8	20.08	0	403.2064	0.00	0.00
2008/09	13.05	0	170.30	0.00	0.00

2009/10	15.88	99.43	252.17	9886.32	1578.95
2010/11	17.29	91.32	298.94	8339.34	1578.92
2011/12	22.89	46	523.95	2116.00	1052.94
Total	$\Sigma X = 89.19$	$\Sigma Y = 236.75$	$\Sigma X^2 = 1648.57$	$\Sigma Y^2 = 20341.66$	$\Sigma XY = 4210.81$

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

$$= \frac{5 \times 4210.81 - 89.19 \times 236.75}{\sqrt{5 \times 1648.57 - (89.19)^2} \sqrt{5 \times 20341.66 - (236.75)^2}} = \frac{-61.6825}{16.97 \times 159.11} = -0.0228$$

9. Correlation between EPS & P/E Ratio

Year	EPS (X)	P/E (Y)	X ²	Y ²	XY
2007/8	-	-	-	-	-
2008/09	13.05	27.59	170.30	761.21	360.05
2009/10	15.88	48.98	252.17	2399.04	777.80
2010/11	17.29	63.04	298.94	3974.04	1089.96
2011/12	22.89	43.70	523.95	1909.69	1000.29

Total	$\Sigma X = 69.11$	$\Sigma Y = 183.31$	$\Sigma X^2 = 1245.37$	$\Sigma Y^2 = 9043.98$	$\Sigma XY = 3228$
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$$\text{Coefficient of Correlation (r)} = \frac{n\Sigma XY - \Sigma X \cdot \Sigma Y}{\sqrt{\Sigma X^2 - (\Sigma X)^2} \sqrt{n\Sigma Y^2 - (\Sigma Y)^2}}$$

$$= \frac{4 \times 3228 - 69.11 \times 183.31}{\sqrt{4 \times 1245.37 - (69.11)^2} \sqrt{4 \times 9043.98 - (183.31)^2}} = \frac{243.44}{14.32 \times 50.72} = 0.335$$

10. Correlation between EPS & DY

Year	EPS (X)	DY (Y)	X ²	Y ²	XY
2007/8	20.08	0	403.2064	0.00	0.00
2008/09	13.05	0	170.30	0.00	0.00
2009/10	15.88	2.03	252.17	4.12	32.24
2010/11	17.29	1.44	298.94	2.07	24.90
2011/12	22.89	1.05	523.95	1.10	24.03
Total	$\Sigma X = 89.19$	$\Sigma Y = 4.52$	$\Sigma X^2 = 1648.57$	$\Sigma Y^2 = 7.297$	$\Sigma XY = 81.168$

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

$$= \frac{5 \times 81.168 - 89.19 \times 4.52}{\sqrt{5 \times 1648.57 - (89.19)^2} \sqrt{5 \times 7.297 - (4.52)^2}} = \frac{2.7037}{16.97 \times 4} = 0.039$$

11. Correlation between EPS & RR

Year	EPS (X)	RR (Y)	X ²	Y ²	XY
2007/8	20.08	100	403.2064	10000.00	2008.00
2008/09	13.05	100	170.30	10000.00	1305.00
2009/10	15.88	0.57	252.17	0.32	9.05
2010/11	17.29	8.57	298.94	73.44	148.18
2011/12	22.89	54	523.95	2916.00	1236.06
Total	ΣX = 89.19	ΣY = 263.14	ΣX ² = 1648.57	ΣY ² = 22989.77	ΣXY = 4706.28

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

$$= \frac{5 \times 4706.28 - 89.19 \times 263.14}{\sqrt{5 \times 1648.57 - (89.19)^2} \sqrt{5 \times 22989.77 - (263.14)^2}} = \frac{61.978}{16.97 \times 213.79} = 0.017$$

12. Correlation between DPS & DPR

Year	DPS (X)	DPR (Y)	X ²	Y ²	XY
2007/8	-	-	-	-	-
2008/09	-	-	-	-	-
2009/10	15.79	99.43	249.32	9886.32	1570
2010/11	15.79	91.32	249.32	8339.34	1442
2011/12	10.53	46.00	110.88	2116.00	484.38
Total	ΣX = 42.11	ΣY = 236.75	ΣX ² = 609.53	ΣY ² = 20341.66	ΣXY = 3496.38

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

$$= \frac{3 \times 3496.38 - 42.11 \times 236.75}{\sqrt{3 \times 609.53 - (42.11)^2} \sqrt{3 \times 20341.66 - (236.75)^2}} = \frac{519.425}{7.43 \times 70.52} = 0.991$$

13. Correlation between DPS & P/E Ratio

Year	DPS (X)	P/E Ratio (Y)	X ²	Y ²	XY
2007/8	-	-	-	-	-
2008/09	0	27.59	0	761.21	0.00

2009/10	15.79	48.98	249.32	2399.04	773.39
2010/11	15.79	63.04	249.32	3974.04	995.40
2011/12	10.53	43.70	110.88	1909.69	460.16
Total	$\Sigma X = 42.11$	$\Sigma Y = 183.31$	$\Sigma X^2 = 609.53$	$\Sigma Y^2 = 9043.98$	$\Sigma XY = 2228.95$

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

$$= \frac{4 \times 2228.95 - 42.11 \times 183.31}{\sqrt{4 \times 609.53 - (42.11)^2} \sqrt{4 \times 9043.98 - (183.31)^2}} = \frac{1196.61}{25.78 \times 50.72} = 0.915$$

14. Correlation between DPS & DY

Year	DPS (X)	DY (Y)	X ²	Y ²	XY
2007/8	-	-	-	-	-
2008/09	-	-	-	-	-
2009/10	15.79	2.03	249.32	4.12	32.05
2010/11	15.79	1.44	249.32	2.07	22.74
2011/12	10.53	1.05	110.88	1.10	11.06
Total	ΣX = 42.11	ΣY = 4.52	ΣX ² = 609.53	ΣY ² = 7.297	ΣXY = 65.8478

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

$$= \frac{3 \times 65.8478 - 42.11 \times 4.52}{\sqrt{3 \times 609.53 - (42.11)^2} \sqrt{3 \times 7.297 - (4.52)^2}} = \frac{7.2062}{7.43 \times 4} = 0.242$$

15. Correlation between DPS & RR

Year	DPS (X)	RR (Y)	X ²	Y ²	XY
2007/8	-	100	-	-	-
2008/09	-	100	-	-	-

2009/10	15.79	0.57	249.32	0.32	9.00
2010/11	15.79	8.57	249.32	73.44	135.32
2011/12	10.53	54	110.88	2916.00	568.62
Total	$\Sigma X = 42.11$	$\Sigma Y = 263.14$	$\Sigma X^2 = 609.53$	$\Sigma Y^2 = 22989.77$	$\Sigma XY = 712.94$

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

$$\frac{5 \times 712.94 - 42.11 \times 263.14}{\sqrt{5 \times 609.53 - (42.11)^2} \sqrt{5 \times 22989.77 - (263.14)^2}} = \frac{-7516.12}{35.69 \times 213.79} = -0.985$$

16. Correlation between DPR & P/E Ratio

Year	DPR (X)	P/E (Y)	X ²	Y ²	XY
2007/8	-	-	-	-	-
2008/09	0	27.59	-	761.2081	0
2009/10	99.43	48.98	9886.32	2399.04	4870.08
2010/11	91.32	63.04	8339.34	3974.04	5756.81
2011/12	46.00	43.70	2116.00	1909.69	2010.20
Total	ΣX = 236.75	ΣY = 183.31	ΣX ² = 20341.66	ΣY ² = 9043.98	ΣXY = 12637.09

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

$$= \frac{5 \times 12637.09 - 236.75 \times 183.31}{\sqrt{4 \times 20341.66 - (236.75)^2} \sqrt{4 \times 9043.98 - (183.31)^2}} = \frac{7149.73}{159.11 \times 50.72} = 0.885$$

17. Correlation between DPR & DY

Year	DPR (X)	DY (Y)	X ²	Y ²	XY
2007/8	-	-	-	-	-
2008/09	-	-	-	-	-

2009/10	99.43	2.03	9886.32	4.12	201.84
2010/11	91.32	1.44	8339.34	2.07	131.50
2011/12	46.00	1.05	2116.00	1.10	48.30
Total	$\Sigma X =$ 236.75	$\Sigma Y = 4.52$	$\Sigma X^2 =$ 20341.66	$\Sigma Y^2 = 7.29$	$\Sigma XY =$ 381.64

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

$$= \frac{5 \times 381.64 - 236.75 \times 4.52}{\sqrt{3 \times 20341.66 - (236.75)^2} \sqrt{3 \times 7.297 \times (4.52)^2}} = \frac{74.8124}{70.52 \times 1.20} = 0.877$$

18. Correlation between DPR & RR Ratio

Year	DPR (X)	RR (Y)	X ²	Y ²	XY
2007/8	0	100	-	10000.00	0.00
2008/09	0	100	-	10000.00	0.00
2009/10	99.43	0.57	9886.32	0.32	56.68
2010/11	91.32	8.68	8339.34	75.34	792.66
2011/12	46.00	54	2116.00	2916.00	2484.00
Total	ΣX = 236.75	ΣY = 263.25	ΣX ² = 20341.66	ΣY ² = 22989.77	ΣXY = 3333.33

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

$$= \frac{5 \times 3333.33 - 236.75 \times 263.25}{\sqrt{5 \times 20341.66 - (236.75)^2} \sqrt{4 \times 22989.77 - (263.25)^2}} = \frac{-45657.774}{213.67 \times 213.66} = -1$$

19. Correlation between P/E & DY

Year	P/E (X)	DY (Y)	X ²	Y ²	XY
2007/8	-	-	-	-	-
2008/09	-	-	-	-	-

2009/10	48.98	2.03	2399.04	4.12	99.43
2010/11	63.04	1.44	3974.04	2.07	90.78
2011/12	43.70	1.05	1909.69	1.10	45.89
Total	$\Sigma X =$ 155.72	$\Sigma Y = 4.52$	$\Sigma X^2 =$ 8282.77	$\Sigma Y^2 =$ 7.297	$\Sigma XY =$ 236.092

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

$$= \frac{3 \times 236.092 - 155.72 \times 4.52}{\sqrt{3 \times 8282.77 - (155.72)^2} \sqrt{3 \times 7.297 - (4.52)^2}} = \frac{4.4216}{24.48 \times 1.20} = 0.149$$

20. Correlation between P/E & RR

Year	P/E (X)	RR (Y)	X ²	Y ²	XY
2007/8	-	-	-	-	-
2008/09	27.59	100	761.2081	10000.00	2759.00
2009/10	48.98	0.57	2399.04	0.32	27.92
2010/11	63.04	8.68	3974.04	75.34	547.19
2011/12	43.70	54	1909.69	2916.00	2359.80
Total	ΣX = 183.31	ΣY = 163.25	ΣX ² = 9043.98	ΣY ² = 12989.77	ΣXY = 5693.90

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

$$= \frac{4 \times 5693.90 - 183.31 \times 163.25}{\sqrt{4 \times 9043.98 - (183.31)^2} \sqrt{3 \times 12989.77 - (163.25)^2}} = \frac{-7149.73}{50.72 \times 159.08} = -0.886$$

21. Correlation between DY & RR

Year	DY (X)	RR (Y)	X ²	Y ²	XY
2007/8	-	-	-	-	-
2008/09	0	100	0	10000.00	0.00

2009/10	2.03	0.57	4.1209	0.32	1.16
2010/11	1.44	8.68	2.0736	75.34	12.50
2011/12	1.05	54	1.1025	2916.00	56.70
Total	$\Sigma X = 4.52$	$\Sigma Y = 163.25$	$\Sigma X^2 = 7.297$	$\Sigma Y^2 = 12989.77$	$\Sigma XY = 70.356$

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

$$= \frac{4 \times 70.356 - 4.52 \times 163.25}{\sqrt{4 \times 7.297 - (4.52)^2} \sqrt{4 \times 12989.77 - (163.25)^2}} = \frac{-456.46}{2.959 \times 159.08} = -0.969$$

Appendix-C

NIBL

1. Simple correlation & regression analysis of MPS & EPS

Year	MPS (X)	EPS (Y)	X ²	Y ²	XY
2007/8	120	-0.74	14400	0.5476	-88.8
2008/09	94	-84.77	8836	7185.95	-7968.38
2009/10	316	-16.56	99856	274.23	-5232.96
2010/11	457	35.63	208849	1269.49	16282.91
2011/12	335	29.35	112225	861.4225	9832.25
Total	ΣX = 1322	ΣY = -37.09	ΣX ² = 444166	ΣY ² = 9591.65	ΣXY = 12825.02

$$(a) \text{ Mean } (\bar{X}) = \frac{\Sigma X}{N} = \frac{1322}{5} = 264.4 \quad \text{Mean } (\bar{Y}) = \frac{\Sigma Y}{N} = \frac{-37.09}{5} = -7.418$$

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

$$= \frac{5 \times 12825.02 - 1322 \times (-37.09)}{\sqrt{5 \times 444166 - (1322)^2} \sqrt{5 \times 9591.65 - (-37.09)^2}} = \frac{113158.08}{687.85 \times 215.83} = 0.762$$

$$(c) \text{ Coefficient of determination } (r^2) = (0.762)^2 = 0.58$$

$$(d) \text{ Regression coefficient } (b) = \frac{\Sigma XY - n\bar{X}\bar{Y}}{\Sigma Y^2 - n\bar{Y}^2}$$

$$= \frac{12825.02 - 5 \times 264.4 \times (-7.418)}{9591.65 - 5 \times (-7.418)^2} = 2.429$$

$$(a) = \bar{X} - b \bar{Y} = 264.4 - 2.429 \times (-7.418) = 282.418$$

(e) Regression equation $\boxed{\text{MPS} = 282.418 + 2.429\text{EPS}}$

$$(f) \text{ Standard error of estimate (Se)} = \sqrt{\frac{\sum X^2 - a \sum X - b \sum XY}{n-2}}$$

$$= \sqrt{\frac{444166 - 282.418 \times 1322 - 2.429 \times 12825.02}{5-2}} = 114.97$$

$$(g) \text{ Standard error of regression coef. (S}_b\text{)} = \frac{\text{Se}}{\sqrt{\sum Y^2 - n \bar{Y}^2}}$$

$$= \frac{114.97}{\sqrt{9591.65 - 5(-7.418)^2}} = 1.19$$

$$(h) \text{ Standardized value of b (t-value)} = \frac{b}{S_b} = \frac{2.429}{1.19} = 2.041$$

2. Simple correlation & regression analysis of MPS & P/E Ratio

Year	MPS (X)	P/E Ratio (Y)	X ²	Y ²	XY
2007/8	120	-162.16	14400	26244	-19459.2
2008/09	94	-1.11	8836	1.2321	-104.34
2009/10	316	-19.08	99856	364.04	-6026.28
2010/11	457	12.83	208849	164.60	5863.31

2011/12	335	11.41	112225	130.18	3822.35
Total	$\Sigma X = 1322$	$\Sigma Y =$ -158.11	$\Sigma X^2 =$ 444166	$\Sigma Y^2 =$ 26904.07	$\Sigma XY =$ -15907.16

(a) Mean (\bar{X}) = $\frac{\Sigma X}{N} = \frac{1322}{5} = 264.4$ Mean (\bar{Y}) = $\frac{\Sigma Y}{N} = \frac{-158.11}{5} = -31.622$

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

$$= \frac{5 \times (-15907.16) - 1322 \times (-158.11)}{\sqrt{5 \times 444166 - (1322)^2} \sqrt{5 \times 26904.07 - (-158.11)^2}} = \frac{129485.62}{687.85 \times 330.94} = 0.568$$

(c) Coefficient of determination (r^2) = $(0.568)^2 = 0.322$

(d) Regression coefficient (b) = $\frac{\Sigma XY - n\bar{X}\bar{Y}}{\Sigma Y^2 - n\bar{Y}^2}$

$$= \frac{-15907.16 - 5 \times 264.4 \times (-31.622)}{26904.07 - 5 \times (-31.622)^2} = 0.81$$

(a) = $\bar{X} - b\bar{Y} = 264.4 - 0.81(-31.622) = 290$

(e) Regression equation $\boxed{MPS = 290 + 0.81P/E \text{ Ratio}}$

(f) Standard error of estimate (Se) = $\sqrt{\frac{\Sigma X^2 - a\Sigma X - b\Sigma XY}{n-2}}$

$$= \sqrt{\frac{444166 - 290 \times 1322 - 0.81 \times (-15907.16)}{5-2}} = 156.70$$

(g) Standard error of regression coef. (S_b) = $\frac{Se}{\sqrt{\Sigma Y^2 - n\bar{Y}^2}}$

$$= \frac{156.7}{\sqrt{26904.07 - 5(-31.622)^2}} = 0.87$$

$$(h) \text{ Standardized value of } b \text{ (t-value)} = \frac{b}{S_b} = \frac{0.81}{0.87} = 0.93$$

3. Correlation between EPS & P/E

Year	EPS (X)	P/E (Y)	X ²	Y ²	XY
2007/8	-0.74	-162.16	0.5476	26295.87	119.9984
2008/09	-84.77	-1.11	7185.953	1.2321	94.0947
2009/10	-16.56	-19.08	274.2336	364.0464	315.9648
2010/11	35.63	12.83	1269.497	164.6089	457.1329
2011/12	29.35	11.41	861.4225	130.1881	334.8835
Total	ΣX = -37.09	ΣY = - 158.11	ΣX ² = 9591.65	ΣY ² = 26904.07	ΣXY = 1322

$$\begin{aligned} \text{Coefficient of Correlation (r)} &= \frac{n\Sigma XY - \Sigma X \cdot \Sigma Y}{\sqrt{\Sigma X^2 - (\Sigma X)^2} \sqrt{n\Sigma Y^2 - (\Sigma Y)^2}} \\ &= \frac{5 \times 1322 - (-37.09) \times (-158.11)}{\sqrt{5 \times 9591.65 - (-37.09)^2} \sqrt{5 \times 26904.07 - (-158.11)^2}} \\ &= \frac{745.7}{215.829 \times 330.94} \\ &= 0.010 \end{aligned}$$

APPENDIX-D

MULTIPLE REGRESSION ANALYSIS OFMPS on DPR & RR

Nabil Bank

Year	MPS (X ₁)	DDR (X ₂)	RR (X ₃)	X ₁ ²	X ₂ ²	X ₃ ²	X ₁ X ₂	X ₂ X ₃	X ₁ X ₃
2007/8	1505	66.35	33.65	2265025	4402.323	1132.323	99856.75	2232.678	50643.25
2008/09	2240	65.78	34.22	5017600	4327.008	1171.008	147347.2	2250.992	76652.8
2009/10	5050	102	-2	25502500	10404	4	515100	-204	-10100
2010/11	5275	92.32	7.68	27825625	8522.982	58.9824	486988	709.0176	40512
2011/12	4899	79.61	20.39	24000201	6337.752	415.7521	390009.4	1623.248	99890.61
Total	$\Sigma X_1 =$ 18969	$\Sigma X_2 =$ 406.06	$\Sigma X_3 =$ = 93.94	$\Sigma X_1^2 =$ 84610951	$\Sigma X_2^2 =$ 33994.06	$\Sigma X_3^2 =$ =2782.06	$\Sigma X_1X_2 =$ 1639301.34	$\Sigma X_2X_3 =$ 6611.93	$\Sigma X_1X_3 =$ 257598.66

The following equation gives the value of a₁, b₁ & b₂.

$$\Sigma X_1 = na_1 + b_1\Sigma X_2 + b_2\Sigma X_3$$

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

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

Substituting the values from above table

$$18969 = 5a_1 + 406.06b_1 + 9394b_2 \dots \dots \dots (i)$$

$$1639301.34 = 406.06a_1 + 33994.06b_1 + 611.93b_2 \dots \dots \dots (ii)$$

$$257598.66 = 93.94a_1 + 6611.93b_1 + 2782.06b_2 \dots \dots \dots (iii)$$

$$a_1 = 1904.56$$

$$b_1 = 37.1413$$

$$b_2 = -59.9863$$

(a) Regression equation = $\boxed{\text{MPS} = 1904.56 + 37.1413\text{DPR} - 59.9683\text{RR}}$

(b) Coefficient of multiple determination $R^2_{1.23}$

$$= \frac{a_1 \sum X_1 + b_1 \sum X_1 X_2 + b_2 \sum X_1 X_3 - n (\bar{X}_1)^2}{\sum X_1^2 - n \bar{X}_1^2}$$

$$= \frac{1904.56 \times 18969 + 37.1413 \times 1639301.34 + (-59.98) \times 257598.66 - 5 (3793.8)^2}{84610951 - 5 (3793.8)^2}$$

$$= 958021.673 / 12646358.8 = 0.789$$

(c) Standard error of estimate ($\sigma_{1.23}$) = $\frac{\sum X_1^2 + a_1 \sum X_1 - b_1 \sum X_1 X_2 - b_2 \sum X_1 X_3}{n-3}$

$$= \frac{84610951 + 1904.56 \times 18969 - 37.14 \times 1639301.34 - 59.98 \times 257598.68}{5-3} = 1235$$

SCB

Year	MPS (X ₁)	DPR (X ₂)	RR (X ₃)	X ₁ ²	X ₂ ²	X ₃ ²	X ₁ X ₂	X ₂ X ₃	X ₁ X ₃
2007/8	-	-	-	129600	0	10000	0	0	36000
2008/09	360	0	100	605284	9886.325	0.3249	77356.54	56.6751	443.46

2009/10	778	99.43	0.57	1188100	8339.342	75.3424	99538.8	792.6576	9461.2
2010/11	1090	91.32	8.68	1000000	2116	2916	46000	2484	54000
2011/12	1000	46.00	54.00	129600	0	10000	0	0	36000
Total	ΣX_1 = 3228	$\Sigma X_2 =$ 236.75	$\Sigma X_3 =$ 163.25	$\Sigma X_1^2 =$ 2922984	$\Sigma X_2^2 =$ 20341.66	$\Sigma X_3^2 =$ 12900	$\Sigma X_1X_2 =$ 222895.34	$\Sigma X_2X_3 =$ 3333.33	$\Sigma X_1X_3 =$ 99784.76

The following equation gives the value of a_1 , b_1 & b_2 .

$$\Sigma X_1 = na_1 + b_1\Sigma X_2 + b_2\Sigma X_3$$

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

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

Substituting the values from above table

$$3228 = 4a_1 + 236.75b_1 + 163.25b_2 \dots \dots \dots (i)$$

$$222895.34 = 236.75a_1 + 20341.66 b_1 + 3333.33b_2 \dots \dots \dots (ii)$$

$$99784.76 = 163.25a_1 + 3333.33b_1 + 12990 b_2 \dots \dots \dots (iii)$$

$$a_1 = -6384.34$$

$$b_1 = 73.9668$$

$$b_2 = 68.9355$$

(a) Regression equation = $\boxed{\text{MPS} = -6384.34 + 73.9668\text{DPR} + 68.9355 \text{RR}}$

(b) Coefficient of multiple determination $R^2_{1,23}$

$$= \frac{a_1 \Sigma X_1 + b_1 \Sigma X_1 X_2 + b_2 \Sigma X_1 X_3 - n (\bar{X}_1)^2}{\Sigma X_1^2 - n \bar{X}_1^2}$$

$$= \frac{-6384.34 \times 3228 + 73.96 \times 222895.34 + 68.93 \times 99784.76 - 5 (807)^2}{2922984 - 4 (807)^2}$$

$$= 149857.33 / 317988 = 0.4712$$

(c) Standard error of estimate ($\sigma_{1.23}$) = $\frac{\Sigma X_1^2 + a_1 \Sigma X_1 - b_1 \Sigma X_1 X_2 - b_2 \Sigma X_1 X_3}{n-3}$

$$= \frac{2922984 + 6384.34 \times 3228 - 73.96 \times 222895.34 - 68.93 \times 99784.76}{4-3} = 410$$