

CHAPTER-I

INTRODUCTION

1.1 Background of the Study

Nepal is a least developed country resulting lower per-capita income. However in recent days many reforms have been made in the financial sector of Nepal like liberalization of interest rates, creation of a basic regulatory framework and development of longer term government securities market. Participation of private sector in financial sector will play an important role in the economic development of the country.

In a capital market, all firms operate in order to generate earnings. Shareholders supply equity capital, expecting 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 shareholders benefit directly. If instead of paying dividends, the firm retains the funds to exploit other growth opportunities, the shareholders can expect to benefit indirectly through future increase in the price of their stock. Thus, shareholder wealth can be increased through either dividends or capital gains. The policy of a company on the division of its profits between dividend and retention is known as dividend policy. All aspects and questions related to payment of dividend are contained in a dividend policy. The wealth maximization objective in the long run can be achieved only 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.

Despite the fact that only few companies are paying dividend, there is also growing practice of paying stock dividend among some Nepalese companies. The reason to stock dividend distributions may lie in their perceived substitution for relatively low cash dividends. It is said that when the firms need to retain a high percentage of earnings, they issue stock dividends so that the shareholders of the firms are content. Managers strongly agree that stock dividends have

a positive psychological impact on investors receiving them. Stock split is another aspect of dividend policy. Practitioners have long contended that the purpose of stock split is to move a firm's share price into an "Optimal trading range." Specifically, investors of small means are presumably penalized by high stock prices that deny them the economies of buying stock in round lots. Thus, stock split is the popular practice of developed capital market. An alternative form of dividend is share repurchase. If a firm has some surplus cash (or if it can borrow), it may choose to buy back some of its own share. In the developed capital market, corporations are allowed to buy back share and better utilize unused cash. However, Nepalese 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.

The issue of how much a company should pay its shareholders as dividends is one that has concerned managers for a long time. It has often been pointed out that a company that raises its dividends often experiences an increase in its stock price and that a company that lowers its dividends has a falling stock price. This seems to suggest that dividends do matter, in that they affect stock price. But this causal relationship has been refuted by several researchers on the grounds that dividends per share do not affect stock prices. Thus there should be no direct link between dividends and stock prices. Ross (1977) and Bhattacharya (1979) have argued that dividend policy could be viewed as a signaling mechanism whereby firms with profitable projects are able and willing to pay higher dividends in order to segregate themselves from firms with less profitable projects. They provide a rationale for value maximizing firms paying positive dividends when a risk premium per unit of dividend yield is positive in equilibrium. Ross (1977) proved that an increase in dividends paid out can represent an inimitable and unambiguous signal to the market place that a firm's prospects have improved. If this is an accurate picture of the way in which firms operate, then it follows those changes in dividend payments supply the market with information regarding management's assessment of the level of the firm's long run cash flows.

Higher dividends can directly benefit shareholders because they reduce the free resources which managers can use sub-optimally. Some economists believe that management decides to pay dividends in order to reduce agency costs. By issuing dividends management is forced to go to

the capital markets for additional financing. Each time it attempts to raise fresh capital, its operations are intensely scrutinized by investment bankers, accountants and other market professionals. Because these parties have a comparative advantages over the bondholders in monitoring the firm's activities, dividend payments accompanied by subsequent new financing may lower monitoring costs and thereby increase firm value.

There are reasons for the efficacy of dividends as signals. Dividend announcements are backed by hard, cold cash. The firm must generate this cash internally or convince the capital markets to supply it. Alternative communications may lack the credibility that comes from "saying it with cash". Investors may feel that financial statements have been skillfully massaged by the financial staff. In addition, dividend decisions tend to be future oriented as opposed to accounting statements which document past performance. Besides credibility, dividends also have the advantages of simplicity and visibility. Many other announcements are, at the same time, complex and detailed in focus. They require time and expertise to decipher. As simple numerical signal, dividends facilitate comparative analyses unlike statement by management which may be difficult to calibrate. Simplicity is especially advantageous for investors holding many firms' shares to achieve the benefits of diversification. Further, dividend signals convey information without releasing sensitive details that may be useful to competitors.

Dividend policy is defined as the policy of allocating the earning between the dividend and retention. In practical dividend is payable whenever the board of directors declares to pay whether it might be monthly, semi annually or annually. Banks have today, gained vital trust of the public. Banking industry offers a wide range of services encompassing the needs of public in different walks of life. At present a large number of banks are operating in Nepal.

1.2 Origin of Bank in Nepal

Nepalese history of banking sector is rather more slow evolution. Even now, the banking system is still in the evolution phase. So far as banking is concerned with debt, we may go back in the Nepalese history, where a merchant namely "Shankhdhar" is recorded. He was the person who alone paid all debts of the people exiting in the country at that time. Since then he introduced a new era called "Nepal Sambat". This record proves the existence of money lending function at

that time. During the course of development of borrowing, we further come across the term “Tanka Dhari” at the end of the 14th century meaning moneylenders. They are one of the 64 castes classified on the basis of occupation.

Establishment of Tejarath Adda by the government in 1877 A.D., was the first step towards development of banking in Nepal. Tejarath Adda did not collect deposits from the people but provide credit facility and gave loans to the employees and general public at minimum interest rate of 5% against the bullion.

The banking history of Nepal is not more than even decade. Nepal Bank Ltd. is the first bank of Nepal set up on 30th Kartik 1994 B.S. Till the establishment of Nepal Rastra Bank, Nepal Bank Ltd. was also discharging the function of Central Bank. As a result, Nepal Rastra Bank was established in 2014 BS. The objective of the bank was to promote, develop and facilitate banking sectors. Because of rapid growth of industrial and scientific activities a single commercial bank was not sufficient to meet national demand of banking services realizing the need of services another commercial bank. So Nepal Rastriya Banijaya Bank was also established on 2012 BS as fully government under taking.

After declaring free economy and privatization and government encouraged the foreign bank for Joint venture in Nepal. Then foreign investor was also attracted. As a result, Nepal Arab Bank was established in 2041 BS. This is the first joint venture’s bank of Nepal. Then after so many joint ventures banks were established in Nepal like Nepal Standard Chartered Bank, Nepal Grindlays Bank, Nepal Bangladesh Bank, Himalayan Bank etc bank is business organization that receives and hold deposits and funds from others makes loans and extends credits and transfers funds by written. Having observed the success of NABIL based on marketing concept and also because of liberal economic policy adopted by the successive governments following commercial banks come into existence.

Table No.1

S.N.	Names	Operation Date (A.D.)	Head Office	Paid up Capital (Fig. in Lakh)
1.	Nepal Bank Ltd.	1937/11/15	Kathmandu	3804
2.	Rastriya Banijya Bank Ltd.	1966/01/23	Kathmandu	3853
3.	Agriculture Development Bank Ltd.	1968/01/02	Kathmandu	94375
4.	Nabil Bank Ltd.	1984/07/16	Kathmandu	20298
5.	Nepal Investment Bank Ltd.	1986/02/27	Kathmandu	24091
6.	Standard Chartered Bank Nepal Ltd.	1987/01/30	Kathmandu	16102
7.	Himalayan Bank Ltd.	1993/01/18	Kathmandu	20000
8.	Nepal SBI Bank Ltd.	1993/07/07	Kathmandu	18693
9.	Nepal Bangladesh Bank Ltd.	1994/06/05	Kathmandu	20103
10.	Everest Bank Ltd.	1994/10/18	Kathmandu	11196
11.	Bank of Kathmandu Ltd.	1995/03/12	Kathmandu	13595
12.	Nepal Credit and Commerce Bank Ltd.	1996/10/14	Siddharthanagar, Rupendehi	13997
13.	Lumbini Bank Ltd.	1998/07/17	Narayangadh, Chitwan	13000
14.	Nepal Industrial & Commercial Bank Ltd.	1998/07/21	Biratnagar, Morang	13116
15.	Machhapuchchhre Bank Ltd.	2000/10/03	Pokhara, Kaski	16275
16.	Kumari Bank Ltd.	2001/04/03	Kathmandu	14850
17.	Laxmi Bank Ltd.	2002/04/03	Birgunj, Parsa	16140
18.	Siddhartha Bank Ltd.	2002/12/24	Kathmandu	15610
19.	Global IME Bank Ltd.	2007/01/02	Birgunj, Parsa	19223
20.	Citizens Bank International Ltd.	2007/06/21	Kathmandu	19223
21.	Prime Commercial Bank Ltd.	2007/09/24	Kathmandu	22457
22.	Sunrise Bank Ltd.	2007/10/12	Kathmandu	18554
23.	Bank of Asia Nepal Ltd.	2007/10/12	Kathmandu	15175
24.	DCBL Bank Ltd.	2008/05/25	Kathmandu	19209
25.	NMB Bank Ltd.	2008/06/05	Kathmandu	16517
26.	Kist Bank Ltd.	2009/05/07	Kathmandu	20000
27.	Janata Bank Nepal Ltd.	2010/04/05	Kathmandu	14000
28.	Mega Bank Nepal Ltd.	2010/07/23	Kathmandu	16310
29.	Commerz & Trust Bank Nepal Ltd.	2010/09/20	Kathmandu	14000

30.	Civil Bank Ltd.	2010/11/26	Kathmandu	12000
31.	Century Commercial Bank Ltd.	2011/03/10	Kathmandu	10800
32.	Sanima Bank Ltd.	2012/02/15	Kathmandu	20160

SOURCE: Nepal Rastra Bank

The above description presents the historical emergence of banks in Nepal. There are 32 commercial banks in Nepal which play an important role as follows.

- a. Managing cash properly
- b. Help in business expansion
- c. Encouraging for the right type of industries
- d. Promoting trade and industry
- e. Transferring of surplus funds to needy regions
- f. Planning financing and investing

1.3 Focus of the Study

Joint venture is simply known as a project where two or more than two stocks or capital are together for specific purposes. It is also called joint stock and joint investment. Joint venture banks are established by joining different force and ability to achieve a common goal with each of the partners.

“A joint venture is the joining of forces between two or more enterprises for the purpose of carrying out a specific operation (industrial or commercial investment, production or trade)”¹

In 1980, the government introduced “Financial sector of reforms.” Nepal allowed the entry of the foreign banks as the joint venture with up to a maximum of 50% equity participation. At present so many joint venture banks are operating in Nepal.

Some Major Features of Joint Ventures Banks:

1. Joint venture is limited to a single business adventures.
2. The work may be carried out by one or all participants.
3. It is confined to a single deal.
4. Capital contributed jointly and profits/losses are shared proportion to their investment.

Joint venture are the modes of credit through partnership among and also form negotiations between various groups of industries and traders to achieve mutual exchange of goods and services for sharing comparative advantage. Joint venture banks are playing vital role in the economic development of the country by collecting deposits from different sources under different accounts to create capital and mobilize the resources in productive area. Joint venture banks have following notable important in Nepal.

A) Modern managerial and banking technique

Joint venture banks are opened and operated with very advanced and modern equipments, computerized working systems, credit cards; master cards have been introduced in the banks. These modern equipments have simplified the working style in the banks for the customers. Customers and service oriented environment and managerial decision making techniques are the prime merits of these banks.

B) Contribution in National Economy

Modern banking system is supporting market oriented liberalization economic policy in the country. Joint venture banks have played a significant role for economic growth as well as in the poverty reduction under the rules and regulations and guidance of Nepal Rastra Bank. Joint venture banks are expected to be medium of economic and social development by mobilizing the passive funds towards trade, commerce and industries.

C) Large Foreign Investors

Before establishment of joint venture banks in Nepal, very few projects are established but after joints venture banks came in Nepal, some foreign mega projects are established here. Highlighting performance of the existing joint venture banks and existing rule regarding banks system in Nepal, other foreign investors who are searching for investment in any sector may invite in Nepal.

D) Creation of Competitive Environment

After arrival of joint venture banks very high competitions are increased which have enforced and compelled to old commercial banks to adopt systematic working environment. Customers

are benefited either high interest on deposit or low interest on loan or credit. Customers are also attracted by fast services, good behaviors and response of staff towards them. New and typical scheme are being introduced which brings the potential customer towards the joint venture bank rather than going to other commercial banks.

In this way the joint venture banks are efficient and effective financial institutions in modern banking field than other old types of banks in Nepalese context.

Dividend decision is one of the major financial decisions. To adopt the appropriate dividend policy is the important work of management of the company. The important aspect of dividend policy is to determine the appropriate allocation of profit between dividend distribution and retained earnings as reserve. Dividend policy solves the problem that how much of the profit should be distributed in terms of dividend and how much should be retained in the firm. It also determines the forms of dividend. All aspects and questions regarding payment of dividend and retention of profit are contained in the policy. Dividend policy explains and determines that what percentage of the earning is retained in the firm. It is mainly taking into consideration that what percentage of the firms earning to be retained is desirous for the growth of the firm.

Thus, among the several commercial banks operating in Nepal, this study aims to focus on dividend policy and practices of Nabil Bank Ltd., Himalayan Bank Ltd., Nepal SBI Bank Ltd. and Nepal Investment Bank Ltd. regarding payment of dividend.

1.4 Statement of the Problem

Numerous studies have examined the dividend policies of corporations. However, dividend decision is still a crucial as well as controversial area of managerial finance. The effect of dividend policy on a corporation's market value is a subject of long controversy. Black epitomizes the lack of consensus by stating "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. For example, few of them are: Lintner (1956), Modigliani and Miller (1961), Gordon (1962), Friend and Puckett (1964), Walter (1966), Van Horne and Mc Donald (1971), Chawala and Srinivasan (1987). 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 satisfied by the decisions made by the management of the companies. It is time to follow pragmatic approach by the management with regard to providing returns to investors on their investment on shares of the corporations. “ In an uncertain world in which verbal statements can be ignored or misinterpreted, dividend action does provide a clear-cut means or ‘making a statement’ that ‘speaks louder than a thousand words’. 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 the 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 shareholder’s wealth. The implication of corporate dividend practices thus provides an empirical question for this study.

Among the various empirical contradictions to the Asset Pricing Model of Sharpe (1964), Lintner (1965) and Black (1972), the most prominent is the size effect of Banz (1981). He finds that average returns on large stocks are lower while average returns on small stocks are higher. The positive relation between leverage and average returns on US stocks and firm’s book value of common equity to its market value is documented by Stattman (1980) and Rosenberg, Reid, and Lanstein (1985). Similarly, Chan, Hamao, and Lakonishok (1999) find the strong role of book-to-market equity in explaining the cross-section of average returns on Japanese stocks. Basu (1983) also finds earning-price ratio in explaining cross-section of average returns on US stocks. Again, Ball (1978) finds that earnings-price relation is likely to be higher for stocks with higher risks and expected returns. Though there are these findings in the context of developed

and big capital markets, their applicability is yet to be seen in the context of smaller and underdeveloped capital markets.

A study on stock market behavior in Nepal attempted to verify the above mentioned results. It mainly indicated that stocks paying higher dividends have higher liquidity, lower leverage, higher earnings, higher turnover, and higher interest coverage (S. Pradhan, 1993). Another such attempt was by the study on dividends and stock prices which revealed that the relationship between dividend per share and stock price is positive and dividend per share affects the share prices variedly in different sectors (Timilsina, 1997). However, pertinent question arises as to what extent these findings are still relevant in the present day context. Many changes have taken place after the completion of these studies. In order to verify these results, this study analyses the properties of portfolios formed on dividends and examines the dividend policy and distributions practices applied by the banks in the country. For this sample will be taken from the various commercial banks operating in the country.

Thus, this study deals with the following issues:

- What kind of dividend policy the selected joint venture banks have followed?
- Is there any variation in the performances, profitability, income, investment and fund etc.?
- Whether changing dividend policy and payout ratio increase the value of stock price or not?
- What is the existing policy and practices of Nepalese joint ventures bank regarding their dividend distribution?
- What is the relationship between the dividends with major variables like EPS, DPS, MPS, BVPS and Net Worth of the Bank?
- Does the dividend decision fo joint venture banks affect the market price of share differently?
- Is there any difference in between dividend policy followed by the selected joint venture commercial banks?

1.5 Objectives of the Study

The main objective of the study is to find out the appropriate dividend policy, distribution, practices followed by the selected joint venture commercial banks of Nepal. Specifically, following objectives can be taken into consideration.

- To analyze and identify the dividend policy distribution and practices followed by the selected banks.
- To study and analyze the relationship of dividend with various financial variables like Earning per share, Net worth, Net earnings and Book value of stock and Market value of stock.
- To study and analyze the dividend practices in sample joint venture banks.
- To recommend possible future guide line and to suggest to policy makers, Educative shareholders and potential investors to overcome various issues and gaps based on the dividend practices.
- To examine the uniformity in DPS, EPS, DPR, MPS and P/E ratio between sampled joint venture banks.

1.6 Importance of the Study

Dividend is the income of shareholders so, people wants to purchase share to get dividend. When any new company or bank issues shares in capital market, people applies to purchase with the expectation of higher return on investment of share. So, the objective behind investment in stock is to get greater dividend. Dividend policy is an effective way to attract new investors to keep present investors happy and to maintain goodwill of the institution. Dividend policy and practices are the controversial topic of financial management. It may affect the value of the firm. Moreover, the most common objective of the firm is to maximize the share holder wealth. So, management may adopt the appropriate decision.

Having lack of adequate knowledge, people are haphazardly investing in share. It shows that there is extreme necessity to establish clear conception about the return that yields from investing securities. Due to excess liquidity and lack of investment opportunities in the capital market, nowadays people are very much interested and attracted to invest in share for getting higher returns. When any new company issues share through capital markets, very big congregation

gathers to apply for owner's certificates. It reveals that people have expectation on higher for investing in share. Therefore, the dividend decision is one of the most important decisions of financial management. It is an effective tool to attract new investors and controlling position of the firm.

In the Nepalese prospective, we find that their existence almost none of the companies adopting consistent dividend policies. There may be many reasons behind it but there is not sufficient study conducted in this regard. So I will try to contribute to these aspects. Therefore, considering all these facts, the study will be undertaken which will help to meet deficiency of the literature relating to dividend decision and factor affecting the dividend policy. So, the study of dividend policies and practices are of considerable importance. I believe that so many persons and parties such as shareholders, management of bank, financial institution, public etc. and other policy making bodies which are concerned with banking will be benefited from this study.

Shareholders are more concerned with the amount of the dividend paid by business organization therefore they may have curiosity of dividend pattern adopted by this concerned banks. They make comparison to other in terms of dividend pattern and value of the firm.

Most of the investors tend to invest in profitable firm, expecting high dividend of highly valued firm. Therefore from this study, they may be advantageous by making a judicious investment decision.

1.7 Limitations of the Study

Every works have its own restrictions and limitations due to the lack of time, resources and knowledge. Likewise this study is also not free from certain limitations. Since the study is the partial fulfillment of the requirement of master in business studies, it has some limitations which are as follows:

- This study is based on secondary data.
- This study used only five years data of each banks for the purpose of analysis and interpretation which may not be sufficient for the conclusion.
- Only four joint venture banks taken as sample for study.

- Only cash dividend has been analyzed.
- The sample taken for the study may not represent the whole population.
- Only selected financial indicators and statistical tools are used to analyze the data.
- This study is only for suggestion not for direction.

1.8 Organization of the Study

The study has been organized into five chapters:

Chapter I: Introduction

This contains the introduction which includes background of the study, origin of bank in Nepal, focus of the study, statement of the problem, importance of the study, limitation of the study and organization of the study.

Chapter II: Review of Literature

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 major studies.

Chapter III: Research Methodology

It describes the research methodology employed in the study. This chapter deals with the nature and sources of data, list of the selected companies, the model of analysis, meaning and definition of statistical tools.

Chapter IV: Data Presentation and Analysis

It deals with the presentation and analysis of secondary data to indicate quantitative facts on corporate dividend practices..

Chapter V: Summary, Conclusions and Recommendations

It includes summary, conclusion and recommendation of the study. This chapter presents the major findings and compares them with theory and other empirical evidence to the extent possible.

CHAPTER-II

LITERATURE REVIEW

2.1 Introduction

An argument in dividend decision is the major concern to the different companies. Specifically, the factors affecting dividend decision is a major argument among the companies. In an attempt to answer this argument, academics and practitioners developed a number of theories, which have been subjected to empirical test. The academic literature has been very helpful to provide clear guidance on practical issues and for the purpose literature review section is being carried out, which consist of valid and authentic books & journals concerning past studies on dividend policy.

2.2 Conceptual Framework

The policy of a company on the division of its profits between distribution to shareholders as dividend and retention for its investment is known as dividend policy. All aspects and questions related to payment of dividend are contained in a dividend policy. There is a reciprocal relationship between retained changes and cash dividends. If retained earnings is kept more by the company less will be dividend and vice versa. Dividend decision is one of three major decisions of managerial finance. It is in the sense that the firm has to choose between distributing profits to shareholders and plugging them back into the business. The decision depends upon the objective of the management for wealth maximization. The firm will use the net profit for paying dividends to the shareholders, if the payment will lead to maximization of the wealth of the owners. If not, it is better to retain them to finance investment programs. The relationship between dividend and value of the firm should therefore, be criterion for decision making.

Most shareholders expect two forms of return from the purchase of common stock. These are capital gains and dividends. Capital gain may be defined as the profit resulting from the sale of common stock. The shareholders expect, at same point, a distribution of the firm's earnings in the form of a dividend. From mature and stable corporations, most investors expect regular dividends to be declared and paid on the common stock. This expectation takes priority over the desire to retain earnings to finance expansion and growth. Thus, shareholders expectation can be

fulfilled through either capital gains or dividends. Since dividends would be more attractive to stockholder, one might think that there would be tendency for corporations to increase distribution of dividends. But one might equally pressure that gross dividends would be reduced somewhat, with an increase in net after tax dividends still available to stockholders, and increase in retained earnings for the corporation (Throp, 1997) It is therefore, a wise policy to maintain a balance between shareholders' interest with that of corporate growth from internally generated funds. The funds that could not be used due to lack of investment opportunities should be better paid as dividends, since shareholders have investment opportunities to employ elsewhere. Financial management is therefore concerned with the activities of corporation that affect the well-being of stockholders. That well-being can be partially measured by the dividend received, but a more accurate measure is the market value of stock (Dean, 1973) Shareholders usually think that the dividend yield is less risky than capital gain.

Dividends refer to that portion of a firm's net earnings which are paid out to the shareholders (Khan and Jain, 1992). Dividends are generally paid in cash. Therefore it reduces the cash balances of the company. Dividend policy affects the financial structure, the flow of funds, corporate liquidity, and investors' attitudes. Thus, it is one of the central decision area related to policies seeking to maximize the value of firm's common stock.

2.3 Theories Regarding Dividend

A. Residual Theory

Residual theory is that, in which the first priority is given to the profitable investment opportunities. If there are profitable opportunities, the firm invest is those and residual income (if any) is distribute to shareholders. Residual theory of dividends means, 'A theory that suggests that the dividend paid by the firm should be the amounts left over after all acceptable investment opportunities have been undertaken.' Using this approach the Firm would treat the dividend decision in three steps as follows:

Step 1 Determine the optimum level of capital expenditure which would be the level generated by the point of intersection of the investment opportunities schedule (IOS) and weight managerial cost of capital (WMCC) function.

Step 2 Using the optimal capital structure proportion, it would estimate the total amount of equity financing needed to support the expenditure generated in step 1.

Step 3 Because of the cost of retained earnings is less than the cost of new common stocks; retained earnings would be used to meet the equity requirement determined in step 2. If retained earnings are inadequate to meet this need, new common stock would be sold. If the available retained earnings are in excess to this needs, the surplus amount would be distributed as dividends. (Gitmen,2001,p.544)

B. Wealth Maximization Theory

Under wealth maximization theory, large dividends is announced and distributed to shareholders in order to (or in hope with) maximize the wealth of the shareholders. Basically, it is applicable for those companies, which are just established and to those companies it will be beneficial whose financial profits are in decreasing trends. 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.

2.4 Major Forms of Dividend

Keeping these theories into considerations, dividend can be paid in different forms. Among them some are discuss below:

A. Cash Dividend

The most common way to pay dividend is in the form of cash. A company should have enough cash in its bank account when cash dividends are declared. If the company doesn't have enough cash at the time of paying cash dividend, arrangement should be made to borrow funds. Payment of cash dividend shouldn't lead to liquidity problem for the company.

The cash account and the reserve account of a company will be reduced when the cash dividend I paid. Both the total assets and the net worth of the company are reduced by the distribution of cash dividend. Beside the market price of share affected in most cases by the amount of cash dividend distributed.

Cash dividend has the direct impact on the shareholders. The volume of the cash dividend depends upon earnings of the firm and on the management attitude or policy. Cash dividend has psychological value for stockholders. Each and everyone like to 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 improvement in the capital market. The objectives of the cash dividend are:

- To distribute the earnings to shareholders, as they hold the proportion of the share.
- To build an image in the capital market so as to create favorable condition to raise the fund at the needs.
- To make distribution easy and to account easily.

B. Stock Dividend/Bonus Share

A stock dividend occurs when the board of directors authorizes a distribution of common stock to existing shareholders. Stock dividend increases the number of outstanding shares of the firm's stock. Although stock dividend does not have a real value, firms pay stock dividend, shareholders receive additional shares of the company in lieu of cash dividends. Stock dividend requires an accounting entry transfer from the retained earnings account to the common stock and paid in capital accounts.

Rupees transferred from retained earnings = Number of shares outstanding*percentage of stock dividend*Market price of the stock.

This has the effect of increasing the number of outstanding shares of the company as a result the decrease in EPS which effect the reduction in the market price of the share. Since the shares are distributed proportionately, shareholders retain his proportionate ownership of the company.

C. Scrip Dividend

A scrip dividend is a distribution of surplus to the stockholders in the form of notes or promises to pay the amount of dividend at a certain time. The notes are called dividend certificates or scrip. Sometime companies need cash generated by business earning to meet business requirements or withhold the payment of cash dividend because of the temporary shortage of cash. In such circumstance the company may issue scrip dividend payable at future dates.

D. Bond Dividend

With the theory and concept of scrip dividend, if dividends are paid in the form of bond (to shareholders), promising that it will mature in future date is known as bond dividend. Therefore the intention and purpose of bond dividend is also the postponement of dividend payment for some time. The only difference between bond and scrip dividend is that bond carries relatively longer maturity date than scrip dividend.

Bond used to pay carrying interest and it means that the company assumes the fixed obligation of interest payment annually and principal amount of bond at maturity date. Bond dividend possesses the following characteristic:

- Bond dividends are the means to dividend postponement for a while but more it is obligation.
- It couldn't bring back the psychological value as the cash dividend.
- Bond and scrip dividend are same, only the difference between these are maturity time i.e. scrip has relatively less maturity time than bond dividend.

E. Stock Split and Reverse Split

This method is commonly used to lower the market price of a firm's stock by increasing the number of shares belonging to each shareholder.

The effect of a stock split is an increase in the number of shares outstanding and a reduction in the par, or stated, value of shares. The total net worth of the firm remains unchanged. The stock split does not involve any cash payment, only additional certificates representing new shares.

This method is used to raise the market price of a firm's stock by exchanging certain number of outstanding shares for one new share of stock.

The effect of a reverse split is a decrease in the number of shares outstanding and an increase in the par, or stated, value of shares. The total net worth of the firm remains unchanged. The reverse split does not involve any cash payment, only additional certificates representing new shares.

When the market price of share of a company is falling gradually, the company may adopt reverse split which may increase the market price of the share and help to maintain efficient situation of the company.

F. Stock Repurchase

It is the process of repurchasing back outstanding share of any company. A corporation's repurchase of its stock can serve as a tax advantages substitute for dividend payout. Repurchase have the effect of raising share prices so that shareholders can be taxes at the capital gain rate instead of ordinary dividend rate on cash dividend. Company can repurchase its shares in two ways:

- Open market repurchase
- Tender(Offer) repurchase

Open market repurchase usually (but not always) involve gradual programs to buy back shares over a period of time. In tender offer, the company usually specifies the number of shares it is offering to repurchase, a tender price and a period of time during which the offer is in effect. If the number of shares actually tendered by the shareholders exceeds the maximum number specified by the company, then the purchases are usually made on a pro-rata basis. Alternatively, if the tender offer is under subscribed the firm may decide to cancel the offer or extend to expiration date. Share tendered during the extension may be purchased on either pro-rata or first-come, first-served basis.(Weston and Copeland,1991,682)

The repurchase of stock holds major three reasons i.e. for stock option, for acquisition and for retiring the stock. However, Nepalese Company Act 1997, section 47 has prohibited company for repurchasing its own shares, it states that no company shall purchase its own shares or supply loans against the security of its own shares.

Stock is repurchased specially when the firm has abnormally high profits and is not in a position to effectively utilize surpluses.

The repurchase effects are as follows:

- The stock repurchases reduce the number of outstanding stocks.
- It increases EPS and also DPS if the payout ratio is not changed.
- It increases the proportional ownership of existing stockholders.
- It increases the stock as net worth per share increase.

2.5 Dividend Policy

Dividend policy determines the decision of earnings between payment to stockholders and reinvestment in the firm. Retained earnings are one of the most significant sources of funds for financing corporate growth, but dividends constitute the cash flow that accrues to stockholders. (Weston and Copeland,1991,p.657)

The third major decision of the firm is its dividend policy, the percentage of earnings it pays in cash to its stockholders. Dividend payout, of course, reduces the amount of earnings retained in the firm and affects the total amount of internal financing. The dividend payout ratio obviously depends on the way earnings are measured for case of exposition, we use account net earnings but assume that these earnings can form true economic earnings. In practice, net earnings may not conform and may not be an appropriate major of the ability of the firm to pay dividends. (Van Horne,2000,p.350)

Dividend policy refers to the issue of how much of the total profit a firm should pay to its stockholders and how much to retain for investment so that the combined present and future benefits maximize the wealth of stockholders. The dividend policy, however, not only specifies the amount of dividend, but also form of dividend, payment procedure etc.

Dividend policy according to the application could be categorized as follows:

A. Stable Dividend Policy

When the firm constantly pays a fix amount of dividend and maintains it for all times to come regardless of fluctuations in the level of its earnings, it is called a stable dividend policy. This policy is considered as a desirable policy by the management of companies. Most of the shareholders also prefer stable dividends because all other things remaining same, stable dividends have a positive impact on the market price of the share. By stability, we mean maintaining their positions in relation to a trend live preferably one that is upward sloping. Three of the common used dividend policies are:

i) Constant dividend per share

Constant dividend policy is based on the payment of a fixed rupee dividend in each period. A number of companies follow the policy of paying fixed amount per share as dividend every

period, without considering the fluctuation in the earnings of the company. The policy does not imply that the dividend per share or dividend rate will never be increased. When the company reaches new level of earnings and expects to maintain it the annual dividend per share may be increased. Investors who have dividends as the only source of their income prefer the constant dividend policy.

ii) Constant payout ratio

The ratio of dividend to earnings is known as payout ratio. When fixed percentage of earnings is paid as dividend in every period, the policy is called constant payout ratio. Since earnings fluctuate, following this policy necessarily means that the rupee amount of dividends will fluctuate. It ensures that dividends are paid when profits are earned and avoided when it incurs losses.

iii) Low regular plus extra policy

The policy of paying a low regular dividend plus extras is a compromise between a stable dividend (or stable growth rate) and a constant payout rate. Such a policy gives the firm flexibility, yet investors can count on receiving at least a minimum dividend. It is often followed by firms with relatively volatile earnings from year to year. The low regular dividend can usually be maintained even when earnings decline and extra dividends can be paid when excess funds are available.

B. No immediate dividend policy

If the company does not declare dividend unless the company earn large income is called no immediate dividend policy. In other words, if there is not any hurry about dividend payment and if it could be paid only when the company earns more profit is known as no immediate dividend policy. This policy is usually pursued the following circumstances:

- When the firm is new and rapidly growing concern, which needs large amount of funds to finance its expansion program,
- When the firm's excess to capital market is difficult,
- When availability of funds is costlier.
- When stockholders have agreed to accept higher return in future.

In fact, this policy should follow by issue of bonus shares.

C. Regular stock dividend policy

If the company regularly pays dividends to its shareholders in stock instead of cash, then it is called regular stock dividend policy. Regular stock dividend policy is designated as bonus shares. Such policy should follow under the following circumstances:

- When firm needs cash generated by earning to cover its modernization and expansion of projects.
- When the firm is lacking in cash despite high earning, this is particularly true when the firm's sales is affected through credit and entire sales proceeds are tied in receivables.

D. Irregular dividend policy

It is the policy in which, the firm does not pay any fixed amount of dividend every year or dividend varied in correspondence with change in level of earning, i.e. higher earnings means higher dividend and vice-versa. The firm with unstable earnings also adopts this policy, when there are investable opportunities the company retains more and when there is not any investable opportunities, the company distributes the earnings as dividend or there is not regularity of dividend payment therefore it is the most used type of dividend policy in the Nepalese context at present.

2.6 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.

2.6.1 Legal Requirements

The legal rules provide that the dividends must be paid from earnings either from the current year's earnings or from past year's earnings as reflected in the balance sheet account 'retained earnings'. State laws emphasize three rules:

- a) Capital impairment rules

The firm cannot pay dividend out of its paid up capital. If it does so there would be reduction in the capital that would affect the creditors of a corporation.

b) **Insolvency rules**

This rules state that cash dividend should be prohibited, if the company is insolvent. Insolvency in the legal services defined as the situation when the recorded value of liabilities exceeds the recorded value of assets. Similarly in the technical sense, it is the firm's inability to pay its current debtors.

c) **Net profit rules**

This rule provides that dividend can be paid from past and present earnings.

2.6.2 Liquidity position

The cash or liquidity position of the firm influences its ability to pay dividends. A firm may have sufficient retained earnings, but if they are invested in fixed assets, cash may not be available to make dividend payment. Thus, the company must have adequate cash available as well as retained earnings to pay dividends.

2.6.3 Access to the capital markets

A large, well-established firm with a record of profitability and stability of earnings has easy access to capital markets and other forms of external financing. A small, new or venturesome firm, however, is riskier for potential investors. Its ability to raise equity or debt funds from capital markets is restricted, and it must retain more earnings to finance its operations. A well-established firm is thus likely to have a higher dividend payout ratio than a new or small firm.

2.6.4 Need to repay debt

Firm may have the policy to retire its past debts by means of retained earnings. If such alternative are being adopted then such firm will retain more and pays less dividend.

2.6.5 Restrictions in debt contracts

Debt contracts, particularly when long-term debt is involved, frequently restrict a firm's ability to pay cash dividends. Such restrictions, which are designed to protect the position of the lender, usually state that (i) future dividends can be paid only out of earnings generated after the signing of the loan agreement(i.e. they cannot paid out of past retained earnings) and (ii) dividends cannot be paid when net working capital is below a specified amount. Similarly, preferred stock agreements generally state that no cash dividends can be paid on the common stock until all accrued preferred dividends have been paid.

2.6.6 Growth rate of firm

A rapidly growing concern will have constant needs of long-term funds to seize favorable opportunities for which it has to retain more and pays fewer dividends.

2.6.7 Control

Another important variable is the effect of alternative sources of financing on the control situation of the firm. As a matter of policy, some corporations expand only to the extent of their internal earnings. This policy is defended on the ground that raising funds by selling additional common stock dilutes the control of the dominant group in that company. At the same time, selling debt increases the risks of fluctuating earnings to the present owners of the company. Reliance on internal financing in order to maintain control reduces the dividend payout.

2.6.8 Stability of earnings

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

2.6.9 Tax position of shareholders

The tax position of a corporation's owners greatly influences the desire for dividends. For e.g. a corporation owned by largely taxpayers in high income tax brackets tend toward lower dividend payout where as corporations owned by small investors tend toward higher dividend payout.

2.7 Payment Procedure followed by Companies

The actual payment procedure is of some importance, and the following is an outline of the payment sequence.

1. Declaration date: This is the day on which board of directors declare the dividend. At this time they set the amount of the dividend to be paid, the holder-of-record date and payment date.

2. Holder-of-record date: This is the date the company opens the ownership books to determine who will receive the dividend, the stockholders of record on this date receive the dividend. In that date, the company closed its stock transfer books and make up a list of the shareholders as of that day.

3. Ex-dividend date: The date when the right to the dividend leaves the stock is called the ex-dividend date. In this case, the ex-dividend date is four days before holder of record date. Therefore if someone wants to receive the dividend, he/she must buy the stock four days before the holder of record day.

4. Payment date: This is the day when dividend checks are actually mailed to the holder's record. (Weston and Copeland,1992,p.658)

2.8 Legal Provisions Regarding Dividend Practice

In Nepal, the Nepal Companies Act 1993(Amendment act-1997) makes some legal provisions for dividend payments. These provisions may be seen as under;

Section 2 (m) states that bonus shares (stock dividends) means shares issued in the form of additional shares to shareholders by capitalizing the surplus from the profits or the reserve fund

of a company. The term also denotes an increase in the paid up values of the shares after capitalizing surplus or reserve funds (Endi Consultants Research Group Kathmandu, 1997).

Section 47 has prohibited company from purchasing its own shares. This Section states that no company shall purchase its own shares or supply loans against the security of its own shares.

Section 137 Bonus Shares and Sub-Section (1) states that the company must inform the Office before issuing bonus shares under Sub-Section (1), this may be done only according to a special resolution passed by the meeting.

Section 140: Dividends and Sub-Sections of this Section are as follows:

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

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

Sub section (2): In case dividends are not distributed within the time-limit mentioned in Sub-section (1), this shall be done by adding interest at the prescribed rate.

Sub section(3): Only the person whose name stands registered in the register of existing shareholders at the time of declaring the dividend shall be entitled to it.

The above indicates that Nepalese law prohibits repurchase of stock which is against the theory of finance. The reason for this kind of provision is not known.

2.9 Review of Major Studies in the Relevant Field

This section is devoted to the review of the major studies in related field concerning dividend, dividends effect on market price of share, behavioral aspect of dividend policy and dividends effect upon the value of enterprises.

Modigliani & Miller's Study

In their 1961 article, Modigliani & Miller for the first time in the history of finance, there is a new argument that dividend policy does not affect the value of the firm. They said that dividend policy has no effect on the share price of the firm. They argued that the value of the firm depends upon the firm's earnings which depend on its investment policy. Therefore as per MM theory, a firm's value is dependent of dividend policy. According to MM dividend policy of a firm's is irrelevant as it does not affect the wealth of shareholders.

Their study of irrelevance of dividend was based on the following assumptions.

- The capital structure of firm consists of only equity.
- The common share can be sold at an expected share price but the flotation cost doesn't incur.
- There is no transaction cost.
- There are no taxes.
- The firm has a defined investment policy.
- Risk of uncertainty does not exist.

On the basis of above assumptions, they introduced the following formula to determine the value of the firm.

$$p_0 = \frac{P_1(n_1 + n_2) - I + E}{1 + k_e}$$

Where,

p_0 = Value of the firm.

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

n_1 = Number of existing shares

n_2 = Number of additional shares

I = Total new investment requirement

E = Total earning of the firm

The above equation indicates that dividend and dividend policy have no effect on the share price as well as value of the firm.

Limitation of the model: it is mentioned earlier that the MM model is based on some condition, those assumptions are not well founded in the reality, perfect capital market world without taxes,

and perfect flow of information are far behind the real world, tax rate on dividend is less than that of capital gain, hence shareholders don't remain indifferent between dividend and capital gain.

Gordon's Study

Myron Gordon argues that dividend policy affects the value of shares even in a situation where the return on investment and required rate of return are equal. He explains that investors are not indifferent between current dividend and retention of earnings with the prospects of future dividend, capital gain and both. The conclusion of his study is that investors give more emphasis to the present dividend more than future capital gain.

Gordon's theory is also described as "a bird in hand argument". It believes that what is available at present is preferable than what may be available in the future. That is to say current dividend is considered certain. So, the rational investor would naturally like to avoid uncertainty. Therefore, the current dividends are given more weight than the expected future dividend by the investor. So, the value per share increases if dividend payout ratio is increasing. His theory is based on the following assumptions.

- The firm uses equity capital only.
- There is no tax on corporate income.
- The source of financing for new investment is only retained earnings. No external financing is available.
- The firm has a perpetual life.
- The internal rate of return(r) and cost of capital(k) of the firm remain constant.
- The retention ratio, once decided upon is constant (i.e. b is constant forever).
- The cost of capital for the firm is greater than the growth rate i.e. $k > g$.

On the basis of above assumptions, the formula to find out the market value per share proposed by him is given below:

$$P = \frac{E(1 - b)}{k_e - b.r}$$

Where,

- P = Market value per share
- E = Earnings per share
- b = Percentage of retained earnings or Retention ratio.
- 1 – b = Percentage of earning distributed as dividend.
- E(1 – b) = Dividend per share
- k_e = Capitalization rate or cost of capital
- br = Growth rate in r, i.e. rate of return on investment of an all equity firm.

Gordon's relevant theory is a popular theory of dividend. As investors prefer current dividend earnings rather than expected higher future income so as to eliminate the risk associated with future capital gain.

Walter's Study

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 opposite of what Modigliani and Miller said. Walter argued that dividend policy affects the stock prices, i.e. dividend is relevant with stock prices.

In the determination of enterprise value it is generally generated funds to finance all investment opportunities perceived without resorting to outside financing either in terms of debt or issue of new equity. Then, it is followed by the assumption of having consistency of internal rate of return and cost of capital viewed thus, the actual capitalization on one hand and normal capitalization rate or simply cost of capital tends to remain constant. Also assumed in his own right is that there exists no change in initial earnings and dividend. In a way, depending on the scope of the investment opportunities and growth prospects, it must be a decision policy of the firm to distribute all earnings or retain them for reinvestment. Given, these assumptions, Walter enunciated a dividend model in measuring the relationship between dividends per share plus retained earnings per share multiplied by the ratio of actual capitalization rated normal capitalization rate. If the firm in question exhibits simple investment opportunities, the dividend per share is reduced to the extent of enhancing earnings per share multiplied by the reciprocal of actual capitalization rate to normal capitalization rate and vice versa. But this is again dividend by the normal capitalization rate. For simplification, the Walter model can be presented in formula form as:

$$P = \frac{DPS + (R/k)*EPS}{k}$$

Where,

P = Market price per share

DPS = Dividend per share

R = Internal rate of return

EPS = Earnings per share

K = Cost of capital

According to Walter's models the dividend of the firm depends upon the ability of investment opportunity and the relationship between the firm's internal rate of return and its cost of capital (k) thus he tried to control some decision on following condition.

Growth Firm($r > k$):

If internal rate of return is higher than its required rate of return the firm is said to be a growth firm. Such firms usually have plenty of profitable reinvestment opportunities and maximize the value of share by retaining all earning for internal investment. Thus the optimum pay out of the growth firm is zero.

Normal Firm($r = k$):

If internal rate of return of firm is equal with its required rate of return, the dividend payout does not affect the market value of share. This kind of firm is known as normal firm. In such case market value of share remaining constant for the entire, be it zero and hundred.

Declining Firm($r < k$):

Firms have no profitable investment opportunities are declining firm. These firms have lower internal rate of return than its cost of capital. In such case shareholders can earn higher return by investing elsewhere themselves, hence increasing the dividend payout increases the market value per share. Therefore distribution entire earnings as dividend maximize the market price of shares.

Van Horne & Mc Donald's Study:

Van Horne and Mc Donald conducted a more comprehensive study on dividend policy and new equity financing. The purpose of this study was to investigate the combined effect of dividend policy and new equity financing decision on the market value of the firm's 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. 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 dividend by average EPS 1967 & 1968.

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

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

U = Error term.

D^0/E_0 = Dividend payout, measured by cash dividend in 1968 dividend by earnings in 1968.

The second model was:

$$P_0/E_0 = a_0 + a_1(g) + a_2(D^0/E_0) + a_3(Lev) + a_4(F_a) + a_5(F_b) + a_6(F_c) + a_7(F_d) + U$$

Where,

F_a, F_b, F_c & F_d are dummy variables corresponding to new issue ratio(NIR) group A & B.

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

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

$$P_0/E_0 = a_0 + a_1(g) + a_2(D^0/E_0) + a_3(Lev) + a_4(OR) + U$$

Where,

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

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

By using this models or methodology, they compared the result obtained for the firms, which both pay dividends and engage in new equity financing with other firms in an industry. They concluded that for electric utility firms 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 repayment of dividends through excessive equity financing reduced share prices for electronics, electronic components industries, a significant relationship between new equity financing and value was not demonstrated.

Deepak Chawla & G.Srinivasan's Study:

Chawla and Srinivasan studied the impact of dividend and retention on share price. They took 18 chemicals and 13 sugar companies and estimated cross relationship for the year 1969 and 1979. The required data were collected from the official directory of Bombay stock exchange. They used two stage least square technique of for estimation. They also used lagged earnings price ratio instead of lagged price earnings ratio i.e. (P/E). The basic objectives of the study were:

- To estimate a model to explain share price, dividend and retained earnings relationship.
- To test the dividend, retained earnings hypothesis.
- To examine the structural changes in the estimated relations over time.
- To explain the price behavior, they used simultaneous equation model as developed by friend and Puckett(1964). The model in its unspecified form was as follows.

1. Price function.

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

2. Dividend supply function.

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

3. Identity

$$E_t = D_t + R_t$$

Where,

P = Market price per share

D = Dividend per share

R = Retained earnings per share

E = Earnings per share

(P/E) = price earnings ratio.

t = Subscript for time

As per financial theories they expected the coefficients of both dividend and retained earnings to be positive in the price equation. Similarly, in the dividend supply function also they expected on positive sign for current earnings and previous dividend.

They used two stage least square techniques for estimation. In case of chemical industry, they found the estimated coefficient had the correct sign and coefficients of determination of all equations were very high. It implies that the stock price and dividend supply variation can be explained by their independent variables. But in case of sugar industry, they found the sign of negative retained earnings in both years. So they left sugar industry for further analysis. For the chemical industry, they observed the coefficient of dividend was very high as compared to retained earnings. They also found that coefficient of dividend was significant at one percent level in both years. Coefficient of retained earnings was significance at the level of 10% in 1969 and at the level one percent level in 1973.

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

Watt and Pettit's Study

Watt and Pettit have attempted two extensive empirical studies to measure the impact of dividends on stock price. One was a study made by Rose Watt which was published in the journal *Business* in April 1973. He focused more on the measurement of the relation between unexpected changes in annual dividends which are means to serve as conveyors of the information he used the following equation for the analysis.

$$VD_t = D_t - D_{t-1} = \beta_1 D_{t-1} - \beta_2 E_t + \beta_3 E_{t-1} + e_t$$

Where,

D = Dividend per share

E = Earnings per share

e_t = Time series error terms.

R. Watt concludes his study that there is little potential information in dividends. R. Richardson Pettit completed another study, which was published in the journal of finance in December 1972. He concluded that market participants make considerable use of implicit information in announcement of changes in dividend payout.

Nils H. Hankinson's Study

Nils H. Hankinson's study was conducted on daily share price change around the announcement of dividends. The study showed that the results were consistent with the dividend announcement effects.

Increasing in dividends leading to positive excess returns and decrease in dividends leading to negative excess return. The effects seem to be more applied for companies that previously overinvested free cash flow in projects with returns less than the financing market requires. The firms paying dividends after a long interruption that dividend policy conveys valuable information to investors over the above that available from other sources.

2.9 Review of Thesis:

Adhikari Umesh (1999) carried out a research on corporate dividend practices in Nepal using primary as well as secondary data. The main objectives of his research were to analyze the properties of portfolios formed on dividend, to examine the relationship between dividend and stock prices and to survey the opinions of financial executives on corporate dividend practices. This study found that the financial position of high dividend paying companies is comparatively better than that of low dividend paying companies. Market price of stock of both finance and non finance sectors are affected by dividends. There is a positive relationship between dividend and stock price. There is a negative relationship between dividend payout and earnings before tax to net worth. Stocks with larger ratio of DPS to book value per share have higher profitability. These profitability ratios of stocks paying larger dividends are also more variable as compared to stocks paying smaller dividends. Companies paying higher dividend are reluctant to employ higher degree of leverage in their capital structures. The stocks with larger ratio of dividend per share to book value per share have also higher turnover ratio and higher interest coverage.

Rajbhandari Santosh (2001) has conducted research on dividend policy; a comparative study between banks and insurance companies through data collected from 1994/99 with three joint venture commercial banks and three insurance companies. The main objectives of her research were to examine the relationship between dividend and market price of the stock, to analyze the relation between dividend policy decision of the bank and insurance companies and to identify the appropriate dividend policy followed by the banks and insurance companies. Rajbhandari found that the average DPS and all concerned institution except SBL and EPS of all sample seem satisfactory. The analysis of dividend payout ratio shows none of the banks or insurance companies has constant payout ratio each year. It has been fluctuating from year to year. The analysis of coefficient of variation shows that there is the largest fluctuation in EPS and DPS. Other companies seem to be relatively more consistent.

Katwal Ashok (2001) has conducted a thesis on a comparative study of dividend policy in commercial bank of Nepal based on data collected from 1994/95 to 1998/99 for six sample commercial banks. The main objectives of his research were to study the current practice of dividend policy in commercial banks, to find out the impact of dividend on share prices and to

analyze the relationship of financial indicators. The result of the study found that the analysis of the DPR shows that none of the sample banks have consistent dividend policy. No specific dividend payment strategy is following by these banks. Payment of cash dividend and stock dividend are made without wise managerial decision.

Sharma Neelam (2002) has conducted the study on dividend policy with respect to insurance companies in Nepal from 1998/99 with four Insurance companies of Nepal. The major objectives of her research were to find out the impact of dividend on market price of stock, to examine whether there is significant difference or not among DPS, EPS and DPR of the selected companies and to know if there is any relationship between market value per share and dividend policy and other financial indicator such as DPS, EPS, DPR, PE Ratio, Liquidity Ratio. Major findings of the study were the average DPS and EPS of NLGICO and NICO is satisfactory compared to PICO and UICO. Since, later insurance companies are new in dividend distribution. The analysis of coefficient of variation indicates largest fluctuation in PICO and UICO. The dividend yield analysis is fluctuating in all sample insurance companies.

Ghimire Navin (2002) has conducted the study on dividend policy of listed companies with reference to Banks, Finance and Insurance Companies. The main objectives of his research were to identify the relationship between dividend policy and other financial indicators, to find out whether dividend policy affects value of the firm or not, to analyze the relationship between DPS and MPS, to identify the relationship between dividend policy and other financial indicators. The study found that the DPS of the finance companies are more fluctuating in comparison to banks among them HBL has more fluctuation and NGBL being consistent. Dividend yield of the finance and insurance companies are higher than banks and more consistent. Banks are following aggressive dividend policy due to higher DPR where as finance and insurance companies have implemented moderate dividend policy.

Adhikari Samita (2008) has performed a thesis entitled “ A comparative Study of dividend Policy in Commercial Banks(with reference to SCBNL, and NABIL Bank) with five years data. Major objectives of the study are to study the dividend practices of the commercial Banks, to study the relationship between DPS and other financial indicators such as EPS, Net profits, net

worth, and MPS of stocks, to study the relationship between dividend per share, EPS and dividend policy, to examine whether or not dividend influences the liquidity position and share prices of Sample banks.

And major finding of the study are, the average EPS of the banks under the study shows a positive result. But the coefficient of variation indicates that there is no consistency of EPS, the average EPS shows that there is no regularity in dividend payment. The SCBNL has highest DPS, the analysis of DPR also shows that the DPR of the banks are not stable. Among the banks under the study, SCBNL has the highest average DPR and NABIL has the least fluctuation in DPR, regarding the MPPS, SCBNL has the highest average MPPS and NSBL has the lowest average MPPS.

Koirala Jeevan(2009) has done a thesis entitled “ Dividend Policy and It’s Practices in Nepal”.

With reference to four selected joint venture commercial banks.

Major objectives of the study are to Study and highlight the prevailing dividend policy adopted by selected commercial banks, to analyze the relationship of dividend policy with various financial indicators like EPS, MPS, DPR in the sample firms, to analyze the impact of dividend policy on market process of sample banks, to provide fruitful suggestion and recommendation to the chosen banks.

And major findings of the study are MPS of the banks is average fluctuating every year. NABIL has got success to keep the EPS more than average throughout the study period. Whereas EBL, HBL and SBI have less than average throughout the study period, DPS of the commercial banks are also fluctuating every year. NABIL has kept the DPS more than average throughout the study period. All the banks have distributed dividend during the study period, DPR of the commercial banks is also fluctuating every year. DPR of NABIL is more than average throughout the study period, MPS of the selected commercial banks is also in fluctuating trend. The coefficient of variance shows that there is no consistency of MPS.

Samjhana K.Lama’s Study

This study on comparative analysis of dividend policy of the selected Joint venture banks from 1996 to 2003. The main objective of her study is as follows:

- To analyze, evaluate, interpret and compare dividend policy of selected bank.
- To define what kind of dividend policy should be followed by Nepalese Joint Venture Bank.
- To provide the workable suggestion to overcome the various issues and gaps based on the finding of the study.
- To access the relationship between the dividend with earnings per share, market price share and net worth.
- Summary of the major findings are as follows:
 - The NSCB has paid regular dividend but NBBL has been seen irregular dividend. She has considering only cash dividend.
 - EPS of both selected bank under this study shows satisfactory result. In comparison there is high fluctuation in EPS of NBBL than NSCB.
 - Correlation between DPS and MPS shows negative for NBBL and positive for NSCB.
 - Market price of share of both banks under study prior seems higher than the par value of share.

Hari Ram Aryal's Study

A thesis titled "Dividend policy: comparative study between Nepal Arab Bank Ltd. and Nepal Grindlays Bank Ltd." written by Hari Ram Aryal in 1997. The main objectives of this study are:

- To highlight the various aspects of dividend and practices of NABL & NGBL.
- To analyze the relationship of dividend with various key variables as dividend per share and earnings per share, net profit, net worth and stock price.
- To recommend to the policy makers and executives to overcome variable issues and gaps based on the findings of the analysis.
- He concluded some finding related to his study.
- The relationship between dividend per share and earnings per share, net profit, net worth and stock price were found positive in these banks.
- A change in dividend per share affects the prices differently in different banks.
- There is no uniform dividend distribution policy in both the banks.

Rishi Raj Gautam's Study

Another study conducted by Rishi Raj Gautam. He has undertaken a study entitled “Comparative study of dividend policy of Nepal Grindlays Bank, Nepal Indosuez Bank” in year 1998. He says that average earning per share of all three sample banks is satisfactory where as dividend per share is not satisfactory. He further states that there is no consistence in dividend payment and its growth rate is also fluctuated. There is no prominent difference in dividend per share and dividend payout ratio of all three sample banks. However, there is no uniformity in earning per share. He recommends as follows regarding the findings of his research.

- To follows clearly defined dividend strategy as lack of it causes serious inconvenience to shareholders of finance sectors.
- The market price of share does not seem to be more or less dependent on EPS and DPS.
- Interest and expectations of the investors should be considered by banks while making dividend decisions.

2.10 Concluding remarks

The literature review of authentic books and journals has been very helpful to understand on practical issues. Even a casual review of the literature brings one quickly to the key impression about dividend decision by the companies. Academics and practitioners developed a number of theories, which have been subjected to empirical test. The various financing decision are vital for the financial welfare of the company. Dividend decision is one of the major decisions to be made.

The policy of a company on the division of its profits between distribution to shareholders as dividend and retention for its investment is known as dividend policy. There is a reciprocal relationship between retained changes and cash dividends. If retained earnings are kept more by the company less will be dividend and vice versa. Dividend 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 the wealth of the owners. If not, it is better to retain them to finance investment programs. Dividend policy affects the financial structure, the flow of funds, corporate liquidity, and investors' attitudes. Thus, it is one of the central decision area related to policies seeking to maximize the value of firm's

common stock. One of the interesting implications found from the literature review is that dividends can be shown to be relevant in the presence of moral hazard and hidden information, even when the agency contract is optimally chosen.

Many studies have been done in the context of Nepal; it has now become necessary to find out whether their findings are still valid or not. Many changes have taken place in and outside Nepal. Like other countries, Nepal has also followed a policy of liberalization, privatization and globalization. Most of the studies conducted in the context of Nepal are based on secondary data. There is a need to conduct a survey of financial executives in order to find out more qualitative facts on dividends which cannot be determined through the use of secondary data. Besides the analysis of secondary data this study attempts to make an opinion survey among the financial executives of different commercial banks of Nepal. Moreover, the earlier studies on dividends have become old and need to be updated and validated because of the rapid changes taking place in financial market of Nepal.

CHAPTER – III

RESEARCH METHODOLOGY

3.1 Introduction:

Research methodology is a composed by two word Research and Methodology. Research is a systematic and organized effort to investigate a specific problem that needs a solution. While Methodology is the research method used to test the hypothesis. Therefore, Research Methodology is a way to systematically solve the research problem.

In other word, research methodology describes the methods and process applied in the entire aspect of the study. “Research methodology refers to the various sequential steps adopted by a researcher in studying a problem with certain objective in view” (Kerlinger, C.R.). The basic objective of the study is to compare the dividend policy and practices of Nepalese Joint Venture banks and the factors that affect it. It also tries to find out the relationship between dividend and earnings per share, net profit after tax, market price of share and net worth of joint venture banks. As the number of whole population of joint venture banks are very large. A sample of institutions of joint venture banks are taken as sample for data analysis purposes. Basically secondary data will be used for analysis.

3.2 Research Design:

The Research design is the specification of methods and procedure for acquiring the information needed to structure or solve the problem. “Research design is the plan, structure and strategy of investigation conceived as so as to obtain answers to research questions and to control actual variance”(Kerlinger,F.M.). Research design helps the research to control the experimental extraneous and error variance of the particular research problems under the study topic. It is invented to enable the researcher to answer research questions as variedly, objectively, accurately and economically as possible. It set up the frame work to test the relation among variables.

These are so many questions in our statement of problems to be answered and to answer these questions and to fulfill the objectives of the study topic, research study is designed under descriptive and quantitative methods. The present research specially deals with secondary data. The research designed basically followed the evaluation of dividend decision in the selected firm and their effect on the stock price. Analytical and descriptive approaches are used to evaluate the dividend decision of the selected firm. The problems are discussed basically on the basis of secondary data, financial statement of five year taken for JVBs.

3.3 Population and Sample:

Since mid 1980s when HMG of Nepal adopted economic liberalization policy in Nepal, many Joint venture banks are established within a short span of time. As a result nowadays many joint venture banks are operating in the country.

There are many JVBs whose shares are treated actively in the stock market; it is not possible to study all of them regarding the study topic. Therefore sampling techniques will be used for selecting sample from population. List of Joint venture banks in Nepal are as follows:

Table No.3.1

S.N.	Bank	Date of Operation (B.S.)	Foreign Share (%)	Foreign Bank
1.	Nabil Bank Ltd.	2041.03.29	50	National Bank Ltd.; Bangladesh
2.	Nepal SBI Bank Ltd.	2050.03.23	50	State Bank Of India; India
3.	Everest Bank Ltd.	2051.07.21	20	Punjab National Bank; India
4.	Standard Chartered Bank Nepal Ltd.	2043.10.16	75	Standard Chartered Grind Lays Bank Ltd.; Australia & UK
5.	Nepal Bangladesh Bank Ltd.	2051.02.23	25	IFIC Bank; Bangladesh
6.	Himalayan Bank Ltd.	2049.10.05	20	Habib Bank Ltd.; Pakistan
7.	NMB Bank Ltd.	2065.02.20	15	Young Lien Reality SDN BHD; Malaysia

Source: Nepal Rastra Bank

Sample of the study:

1. Nabil Bank Ltd.
2. Nepal SBI Bank Ltd.
3. Everest Bank Ltd.
4. Standard Chartered Bank Nepal Ltd.

3.4 Sources of Data:

Mainly the study is conducted on the basis of secondary data. The major sources of secondary data for this study are as follows:

- a) Annual reports of the bank.
- b) Previous studies and reports.
- c) Unpublished official records.
- d) Published and unpublished bulletins and reports of the bank.
- e) Reports published by Nepal Stock Exchange.
- f) Reports of Nepal Rastra Bank Samachar and Banking and Financial Statistics published by Nepal Rastra Bank.
- g) Journal and other publish and unpublished related document and reports form Library of TRM Campus.
- h) Various Internet Websites related to banking and finance.
- i) Other materials published in daily, weekly, monthly newspaper and magazines.

3.5 Methods of Analysis:

The analysis of the Joint venture banks data will be done according to pattern of data available. Various financial and statistical tools have been applied the various regarding the study topic. The analysis will be done by using various financial and statistical tools. The various calculated results have been obtained through financial and statistical tools are tabulated under different headings by using various financial and statistical tools; the relationship between different variables dividend will be drawn out. Thereafter, the results will be compared with each other to interpret.

3.6 Tools Defined About Certain Financial Indicators:

a) Earnings per share (EPS):

Earnings per share refer the rupee amount earned per share of common stock outstanding. It means the profitability of the shareholders investment. EPS is one of the factors that affect the dividend policy and stock price of the firm. EPS is calculated by dividing the net profit after taxes by the total number of the common shares outstanding.

$$\text{EPS} = \frac{\text{Net profit after taxes}}{\text{Number of common shares outstanding}}$$

b) Dividend per share (DPS):

Dividend per share indicates the part of earnings distributed to the shareholders on per share hold by them. It gives the financial soundness of the company. Only financial strong companies call distribute dividend. It is calculated by dividing the total dividend to equity shareholders by the total no of equity shares.

$$\text{DPS} = \frac{\text{Total dividend to common shareholders}}{\text{Number of common shares outstanding}}$$

c) Price-earnings ratio (P/E ratio):

This ratio reflects the market value per share for each rupee of currently reported earnings per share. It is calculated by dividing the market value per share (MVPS) by earnings per share (EPS).

$$\text{P/E ratio} = \frac{\text{Market value per share (MVPS)}}{\text{Earnings per share (EPS)}}$$

d) Dividend payout ratio (D/P ratio):

Dividend payout ratio reflects what percentage of the profit is distributed as dividend and what percentage is retained as reserve and surplus for the growth of the bank. It is calculated by dividing the DPS by the EPS.

$$\text{Dividend payout ratio} = \frac{\text{DPS}}{\text{EPS}}$$

There is an inverse relationship between dividend and retained earnings. The higher the dividend payout ratio, the lower will be the proportion of retained earnings and vice-versa.

e) Market value per share to book value per share ratio (MVPS/BVPS):

This ratio shows the relation between market value per share and book value per share. It also shows the market price of stock as a percentage of book value per share and effect of later on the former.

$$\text{MVPS/BVPS} = \frac{\text{Market value per share}}{\text{Book value per share}}$$

f) Earning yield ratio (EY ratio):

It may be defined as the ratio as earnings per share to the market price per share at a particular time. From the point of view of common shareholders, Earning yield as an important profitability ratio. Earnings yield affected the EPS as the percentage of MPPS in the stock market.

$$\text{EY ratio} = \frac{\text{DPS}}{\text{MPPS}}$$

h) Return on Net worth (RONW):

It is also known as Return on equity (ROE) and describes the portion of net income that is eventually returned as a percentage of the equity held by shareholders in a company. It reveals the amount of return earned by investors on their investments in a business. This particular calculation makes it easier to understand how much profit the business is generating with the

investments provided by the shareholders. This is the indicator of banks good financial performance that means it indicates how well these institutions have used the resources of the investors. It is calculated by dividing net profit after taxes by net worth.

$$\text{RONW} = \frac{\text{Net profit after taxes}}{\text{Net worth}}$$

i) Market price per share (MPPS):

Market price per share is valued of stock, which can be obtained by a firm from market. Market value per share is one of the variables, which is affected by the dividend per share and earnings per share of the firm. If the EPS and DPS are high the market price of share will also be high. Market price per share may be lower or higher than the book value.

3.7 Statistical Tools:

a) Arithmetic Mean or Average Mean:

The most popular and widely used measure of representing the entire data by one value is what most laymen call an average. Arithmetic mean of a given set of observation is their sum divided by the number of observation. In general, X_1, X_2, \dots, X_n are the given “n” observation then there arithmetic mean. Adding together the entire item and dividing this total by number of item obtained its value under this study mean calculation of EPS, DPS, P/E ratio, Dividend Yield, Earning Yield, RONW and MPPS. Symbolically,

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

b) Standard Deviation ():

Karl Pearson introduces the standard deviation concept in 1923. It is most important and widely used measures of studying dispersion. The measurement of the scatterness of the data from mass

of figures in a series about an average is known as dispersion. The greater the amount of dispersion results greater the amount of standard deviation. A small standard deviation means a high degree of uniformity of the observation as well as homogeneity of a series and vice-versa. In this study, standard deviation is calculated for Dividend per share, Net profit after tax, Market price per share and Net worth.

$$\text{Standard deviation ()} = \sqrt{\frac{(X - \bar{X})^2}{n}}$$

c) Coefficient of Variation(C.V.)

The relative measure of dispersion based on standard deviation is called coefficient of standard deviation.

Thus,

$$\text{Coefficient of Standard Deviation} = \frac{\text{Standard Deviation}}{\bar{X}}$$

100 times coefficient of standard deviation is called coefficient of variation. It is denoted by C.V.

Thus,

$$\text{Coefficient of Variation (C.V.)} = \frac{\text{Standard Deviation}}{\bar{X}} \times 100$$

Coefficient of variation being a pure number is independent of the units of measurement and thus is suitable for comparing the variability, homogeneity or uniformity of true or more distributions. A distribution having less C.V. is said to be less variable or more homogenous or more consistent or more uniform or more stable or more equitable than others and vice versa.

d) Correlation Coefficient (r_{xy}):

The Correlation Coefficient measures the degree of relationship between two set of figures. Two variables are said to be correlated if change in the value of one variable appears to be related with the change in other variable. In this study simple Correlation Coefficient is used to determine the relationship of different factors with dividend and other variables. The data related to dividend over different year are tabulated and their relationship with each other is drawn out.

In this study the Correlation Coefficient is calculated to know the relationship of dividend per share with earning per share, net profit, market price per share and net worth.

Correlation coefficient lies between -1 to +1. When $r = +1$, it shows perfect positive correlation and when $r = -1$, it shows perfect negative correlation.

$$\text{Correlation Coefficient } (r_{xy}) = \frac{xy}{x^2 y^2}$$

e) Coefficient of Determination (r^2)

The square root of correlation coefficient is known as the coefficient of determination and it is used to interpret the value of correlation coefficient. It is the fraction that represents the proportion of total variation of dependent variable that is explained by regression line. Coefficient of determination is the ratio of the explained variation to the total variation. Coefficient of determination measures how well the regression line represents the data. The coefficient of determination, value can have ranging from zero to one. If the regression line is a perfect, estimator, r^2 will be equal to +1. Thus the value of r^2 is zero, when there is no correlation. In the study coefficient of determination is calculated to know the degree of correlation of dividend per share with earning per share, net profit, market price per share and net worth.

f) Probable Error (P.E.)

It is the measure of testing the reliability of the calculated value of correlation. The probable error of the coefficient of correlation helps in interpreting its value. With the help of probable error, it is possible to determine the reliability of the value of the coefficient in so far as it depends on the conditions of random sampling. The probable error of the coefficient of correlation is defined.

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

Where,

r = Correlation coefficient

N = Number of pairs of observations

If the value of r is less than the probable error ($r < PE$), there is no evidence of correlation, i.e. the value of r is not at all significant. Then, if the value of r is more than six times of the probable error ($r > 6PE$), the coefficient of correlation is practically certain, i.e. the value of r is significant. If r is greater than probable error and less than six times of the Probable error ($PE < r < 6PE$) then nothing can be concluded that means this is the situation neither r is significant nor r is insignificant.

g) Regression analysis:

Regression analysis is a statistical device with the help of which we are in a position to determine the value of unknown variables from one or two known variables. Simple regression analysis has been used in this study to determine whether the variable of EPS, MPPS and NPAT is related to dividend decision of the company or not. For this question following regression equation model has been applied.

The regression equation of y on x be

$$Y = a + bX$$

Where,

Y = Dependent variable

X = Independent variable

a = Intercept

b = Regression Coefficient of Y on X (it measures the change in Y per Unit change in X)

This model has been applied to examine the relationship between the DPS and Eps, MPPS and EPS, MPPS and DPS & DPS and NPAT of the banks in the current five year data.

h) Standard Error of Estimate (SEE) :

The standard error of estimate is a measure of error in prediction. It measures the variability of the actual values from its predicted values. The standard deviation around the line of regression is called standard error of the estimate. In other words, the standard error of estimate measures the variability around the line of regression. The standard error of estimate can be used to determine whether statistically significant relationship exists between the dependent and given independent variables and also make inferences about the predicted values. The larger its value, less well the regression model fits the data and the worse prediction. The smaller the value of SEE, the closer will be the dots to the estimates based on the equation for this line. If SEE is zero, then there is no variation about the line and correlation will be perfect. It is calculated as follows:

Standard error of estimate (Y on X)

$$S_{YX} = \sqrt{\frac{(Y - \hat{Y})^2}{n-2}}$$

= predicted value of Y as calculated from the fitted regression equation.

i) Graphic Presentation:

Graphic presentation is a powerful and effective way for highlighting variables. A very common way of presenting data for two variables which have a relationship is in a figure or chart. Not all data can be presented in figures. It works best when data is continuous. This is a characteristic of parametric data.

CHAPTER - IV

DATA PRESENTATION AND ANALYSIS

4. PRESENTATION AND ANALYSIS OF DATA :

Dividend policy is a major decision of the firm due to its decision of dividing net earnings into two parts the retained earnings and dividends and its impact upon the value of the firm. The study contains different objectives which have already mentioned in the introduction chapters. In order to achieve these objective, several tools and techniques have been used which is clearly described in the Research methodology chapter. Now, in this chapter, the effort has been made to analyze the comparative dividend decision of JVB's in Nepal and the attitude of management towards the optimum dividend decision. This analysis is highly supported by the practices of dividend distribution by JVB's. Presentation and interpretation of financial statement are done here to determine the meaning of financial data. Some graphs and diagrams are also used to highlight the company's DPS, EPS, MPPS, BVPS and NPAT trend over the five year period.

4.1 Analysis of Financial Tools(Indicators):

4.1.1 Earnings per share(EPS):

Normally, the success and failure of any business organization are measured in terms of its capacity to generate earning. The earnings of any business organization also help to evaluate performance. Higher earnings shows higher strength while lower earning shows weaker strength of business organization because the earning of any organization helps for its growth, expansion and diversification. EPS is calculated by dividing the net profit after tax (NPAT) by the total number of common shares outstanding. EPS is the measurement of good or bad performance of business organization. Higher EPS shows good or lower EPS shows bad performance of business organization. As a result, EPS, the achievement of the institutions are measured with the help of its capacity to generate higher earnings per share. So, EPS is the most important financial tools of the institutions.

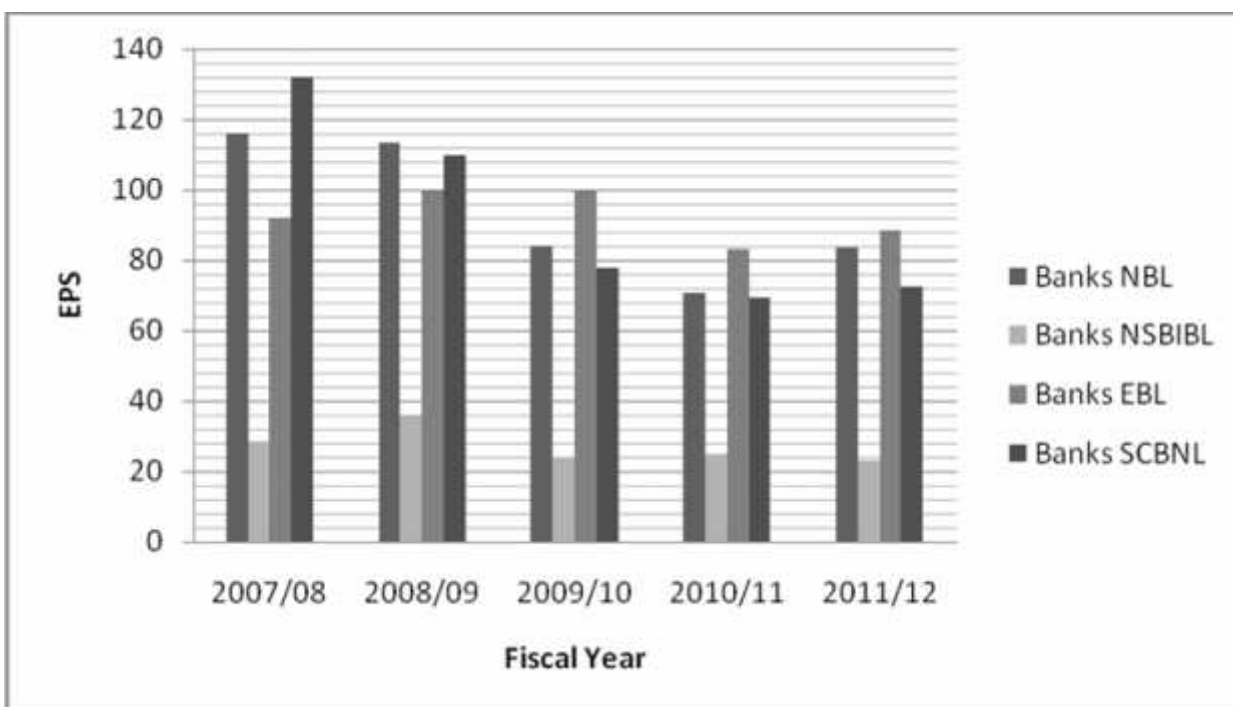
The followings table shows all the details regarding earnings per share.

Table No.4.1
Earnings per share (EPS)

Fiscal Year	Banks			
	NBL	NSBIBL	EBL	SCBNL
2007/08	115.86	28.33	91.82	131.92
2008/09	113.44	36.18	100	109.99
2009/10	83.81	23.69	100.16	77.65
2010/11	70.67	24.85	83.18	69.51
2011/12	83.57	22.93	88.55	72.60
Average	93.47	27.20	92.74	92.33
	17.95	4.86	6.60	24.51
C.V.(%)	19.20	17.87	7.12	26.55

Source: Annual reports of joint venture banks

Figure No.1



NBL = Nabil Bank Ltd.
NSBIBL = Nepal SBI Bank Ltd.
EBL = Everest Bank Ltd.
SCBNL = Standard Chartered Bank Nepal Ltd.

The above mentioned comparative table and figure shows that EPS of selected joint venture banks. The EPS of NBL and SCBNL is in decreasing trend up to 2010/11 then after increased in 2011/12. Whereas, EPS of NSBIBL is in increasing trend up to 2008/09 then after is in decreasing trend. EPS of EBL is in increasing trend up to 2009/10 then after is in decreasing trend.

The average EPS of NBL is 93.47 under five year data period. In the fiscal year 2007/08, the EPS of NBL was 115.86. In the fiscal year 2008/09, the EPS of NBL was 113.44. There was decrease in EPS as compare to previous year by 2.42. In the fiscal year 2009/10, the EPS of NBL was 83.81; there was decrease in EPS as compare to previous year by 29.63. In the fiscal year 2010/11, the EPS of NBL was 70.67; there was decrease in EPS as compare to previous year by 13.14. The EPS was 83.57 in the fiscal year 2011/12 which was higher than 2010/11 by 12.90. The standard deviation is 17.95 and C.V. is 19.20 which show that only 19.20% instability in EPS under 5-year data period.

The average EPS of NSBIBL is 27.20 under five year data period. In the fiscal year 2007/08, the EPS was 28.33. In the fiscal year 2008/09, the EPS was 36.18, which was greater than previous year by 7.85. Similarly, the EPS in the year 2009/10 was 23.69; there was decrease in EPS by 12.49 as compared to previous year. The EPS was 24.85 in the year 2010/11; there was increment in EPS by 1.16 as compared to previous year. In the fiscal year 2011/12, the EPS was 22.93 which is less than previous year by 1.92. The standard deviation is 4.86 and C.V. is 17.87 which show that only 17.87% instability in EPS under 5-year data period.

The average EPS of EBL is 92.74 under five year data period. In the fiscal year 2007/08, the EPS was 91.82. In the fiscal year 2008/09, the EPS was 100, which was greater than previous year by 8.18. The EPS in the year 2009/10 was 100.16; there was increment in EPS by 0.66 as compared

to previous year. The EPS was 83.18 in the year 2010/11, which was decreased by 16.98 as compared to previous year. In the fiscal year 2011/12, the EPS was 88.55; there was increment in EPS by 5.37 as compared to previous year. The standard deviation is 6.60 and C.V. is 7.12 which show that only 7.12% instability in EPS under 5-year data period.

The average EPS of SCBNL is 92.33 under five year data period. In the fiscal year 2007/08, the EPS was 131.92. In the year 2008/09, the EPS was 109.99; which was less than previous year by 21.93. The EPS in the year 2009/10 was 77.65, which was lower than previous year by 32.34. In the fiscal year 2010/11, the EPS was 69.51; there was decrease in the EPS by 8.14 as compared to previous year. In the fiscal year 2011/12, the EPS was 72.60; there was increment in EPS by 3.09 as compared to previous year.

The C.V. of NBL, NSBIBL, EBL & SCBNL are 19.20, 17.87, 7.12 & 26.55 respectively. Among them SCBNL has highest C.V., it means SCBNL has less consistent EPS among selected banks and EBL has lowest C.V., it means EBL has more consistent EPS among selected banks. More consistent earnings attract more potential investors than with inconsistent earnings.

4.1.2 Dividend per share (DPS)

DPS indicates the portion of earnings distributed to the stockholders on per share basis. It is calculated by dividing the total dividend distributed to equity shareholder by the total number of common shares outstanding. This is the important stage of this study for the purpose of analysis regarding the dividend. For this analysis purpose, only cash dividend per share for the period of five years has been taken.

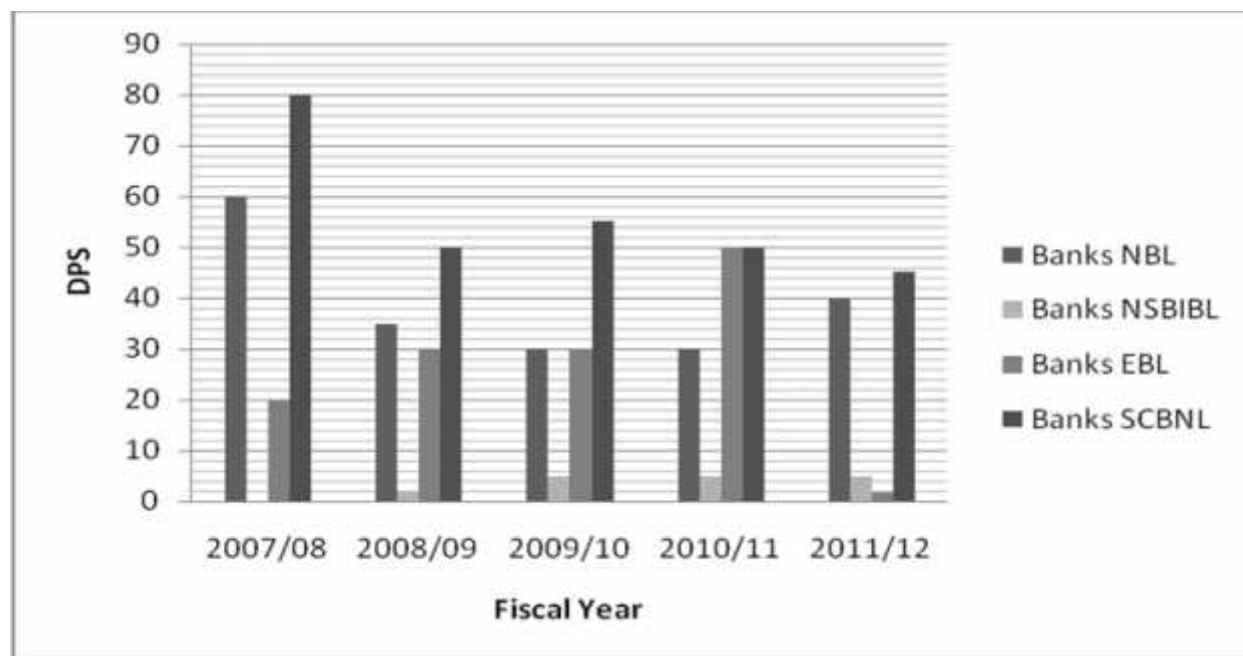
The followings table shows all the details regarding Dividend per share.

Table No.4.2
Dividend per share (DPS)

Fiscal Year	Banks			
	NBL	NSBIBL	EBL	SCBNL
2007/08	60	0	20	80
2008/09	35	2.11	30	50
2009/10	30	5	30	55
2010/11	30	5	50	50
2011/12	40	5	1.58	45
Average	39	3.42	26.32	56
	11.13	2.04	11.07	12.41
C.V.(%)	28.54	59.65	49.60	22.16

Source: Annual reports of joint venture banks

Figure No.2



The DPS of NBL are decreasing and then increasing trend, which are 60, 35, 30, 30, 40 for the year 2007/08, 2008/09, 2009/10, 2010/11 & 2011/12 respectively. The maximum dividend paid in the year 2007/08 which was 60 and the minimum dividend paid in the year 2009/10 & 2010/11, which was 30. The average DPS is 39. There is fluctuation in the DPS due to the instability in DPS under five year data period. The standard deviation is 11.13 and C.V. is 28.54% which show the degree of instability in DPS during 5 year data period.

Calculation of growth rate of dividend (g)

Dividend in the base year 2007/08 (D_1) = 60

Dividend in the final year 2011/12 (D_5) = 40

No. of years (n) = 5

Growth rate (g) = ?

We have,

$$D_5 = D_1 (1+g)^{n-1}$$

$$40 = 60 (1+g)^{5-1}$$

$$g = (0.66667)^{0.25} - 1$$

$$g = -0.0964$$

$$g = -9.64$$

From the above calculation, NBL has negative growth rate which shows the dissatisfactory dividend policy.

The DPS of NSBIBL are increasing trend up to 2009/10 then after constant amount of dividend per share. The DPS of NSBIBL are 0, 2.11, 5, 5, 5 for the year 2007/08, 2008/09, 2009/10, 2010/11 & 2011/12 respectively. The NSBIBL paid maximum and constant amount of dividend in the year 2009/10, 2010/11 and 2011/12 which is 5 and did not pay dividend in the year 2007/08. The average DPS of NSBIBL is 3.42. There is also fluctuation in the DPS of NSBIBL due to instable DPS for five year data period. The standard deviation is 2.04 and C.V. is 59.65% which show the degree of instability in DPS during 5 year data period.

Calculation of growth rate of dividend (g)

Dividend in the base year 2007/08 (D_1) = 0

Dividend in the final year 2011/12 (D_5) = 5

No. of years (n) = 5

Growth rate (g) = ?

We have,

$$D_5 = D_1 (1+g)^{n-1}$$

$$5 = 20 (1+g)^{5-1}$$

$$g =$$

From the above calculation, NSBIBL has infinitive growth rate which shows the dissatisfactory dividend policy.

The DPS of EBL are increasing trend up to 2008/09 then after constant amount of dividend per share up to 2009/10 and again dividend increased in 2010/11 and decreased in 2011/12. The DPS of EBL are 20, 30, 30, 50, 1.58 for the year 2007/08, 2008/09, 2009/10, 2010/11 & 2011/12 respectively. The EBL paid maximum amount of dividend in the year 2010/11 which is 50 and minimum dividend in the year 2011/12 which is 1.58. The average DPS of EBL is 26.32. There is also fluctuation in the DPS of EBL due to instable DPS for five year data period. The standard deviation is 11.07 and C.V. is 49.60% which show the degree of instability in DPS during 5 year data period.

Calculation of growth rate of dividend (g)

Dividend in the base year 2007/08 (D_1) = 20

Dividend in the final year 2011/12 (D_5) = 1.58

No. of years (n) = 5

Growth rate (g) = ?

We have,

$$D_5 = D_1 (1+g)^{n-1}$$

$$1.58 = 20 (1+g)^{5-1}$$

$$(1+g)^{5-1} = 0.079$$

$$1+g = (0.079)^{0.25}$$

$$g = 0.5302 - 1$$

$$g = -46.98 \%$$

From the above calculation, EBL has negative growth rate which shows the dissatisfactory dividend policy.

The DPS of SCBNL are decreasing trend up to 2008/09 then after increased in dividend per share in 2009/10 and again decreased in 2010/11 and finally increased in 2011/12. The DPS of SCBNL are 80, 50, 55, 50, 45 for the year 2007/08, 2008/09, 2009/10, 2010/11 & 2011/12 respectively. The SCBNL paid maximum amount of dividend in the year 2007/08 which is 80 and minimum dividend in the year 2011/12 which is 45. The average DPS of SCBNL is 56. There is also fluctuation in the DPS of SCBNL due to instable DPS for five year data period. The standard deviation is 12.41 and C.V. is 22.16% which show the degree of instability in DPS during 5 year data period.

Calculation of growth rate of dividend (g)

Dividend in the base year 2007/08 (D_1) = 80

Dividend in the final year 2011/12 (D_5) = 45

No. of years (n) = 5

Growth rate (g) = ?

We have,

$$D_5 = D_1 (1+g)^{n-1}$$

$$45 = 80 (1+g)^{5-1}$$

$$(1+g)^{5-1} = 0.5625$$

$$1+g = (0.5625)^{0.25}$$

$$g = 0.8660 - 1$$

$$g = -13.40 \%$$

From the above calculation, SCBNL has negative growth rate which shows the dissatisfactory dividend policy.

4.1.3 Dividend Payout Ratio:

This ratio shows the amount of dividend as a percentage of earnings available for equity shares. These dividend payout ratios obviously depend on earnings. So, the greater earnings enable the

ability of making higher dividend payment. Dividend payout ratio is calculated by dividing per share by earning per share.

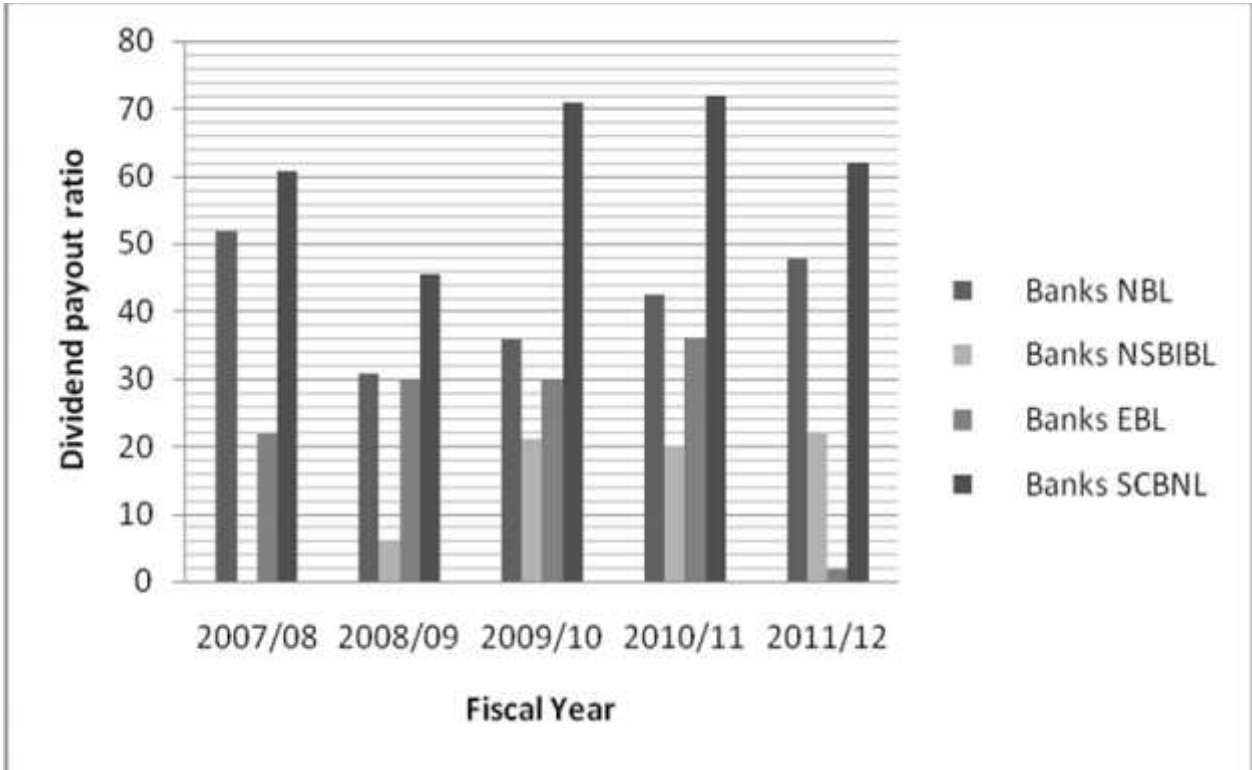
The followings table shows all the details regarding Dividend payout ratio.

Table No.4.3
Dividend payout ratio (%)

Fiscal Year	Banks			
	NBL	NSBIBL	EBL	SCBNL
2007/08	51.78	0	21.78	60.64
2008/09	30.85	5.83	30	45.46
2009/10	35.79	21.11	30	70.83
2010/11	42.45	20.12	36.07	71.93
2011/12	47.86	21.80	1.78	61.98
Average	41.75	13.77	23.93	62.17

Source: Annual reports of joint venture banks

Figure No.3



The dividend payout ratio of NBL is 51.78 in 2007/08 but decreased to 30.85 in the next year. Again the ratio starts increasing from 2009/10 to 2011/12. The average ratio is 41.75.

The dividend payout ratio of NSBIBL is zero in 2007/08 and 5.83 in 2008/09 and increased in 2009/10 then decreased in 2010/11 and again increased in 2011/12. The average ratio is 13.77.

The dividend payout ratio of EBL is 21.78 in 2007/08 and increased in 2008/09 and was stable up to 2009/10. It increased in 2010/11 and again decreased in 2011/12. The average ratio is 23.93.

The dividend payout ratio of SCBNL is 60.64 in 2007/08 but decreased to 45.46 in the next year. The ratio starts increasing from 2009/10 to 2010/11 and again decreased in 2011/12. The average ratio is 62.17.

In conclusion, SCBNL were distributed highest average dividend which is 62.17% of earnings to the shareholders. Similarly, the NBL, NSBIBL & EBL were distributed average dividend which is 41.75%, 13.77%, 23.93% of earnings to the shareholders respectively.

4.1.4 Price earnings ratio:

Price earnings ratio reflects the price, which is currently paid by the market for each rupee of currently reported earnings per share. Price earnings ratio helps to judge the investors' expectations about the performance of finance companies. PE ratio could be calculated by dividing the market value per share by earnings per share. Higher the price earnings ratio, it is better for owners.

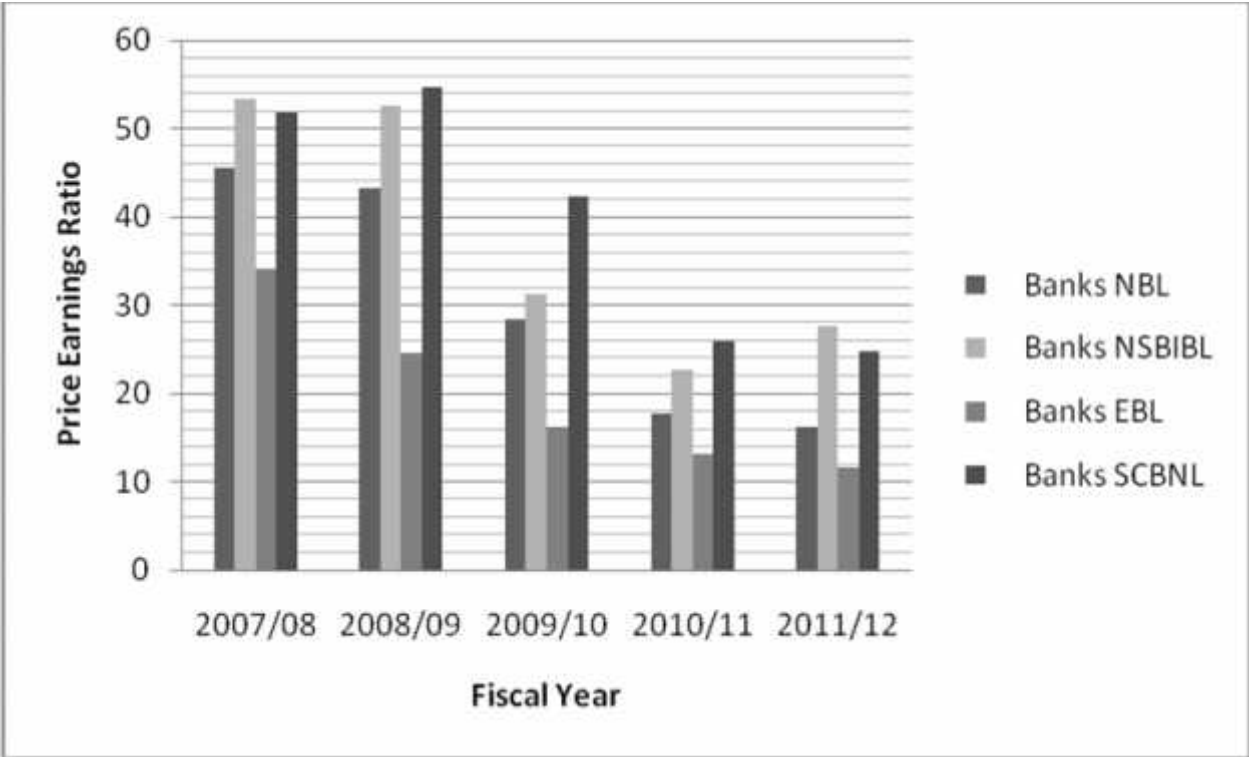
The followings table shows all the details regarding Price earnings ratio.

Table No.4.4
Price Earnings Ratio (MVPS/EPS)

Fiscal Year	Banks			
	NBL	NSBIBL	EBL	SCBNL
2007/08	45.53	53.34	34.11	51.77
2008/09	43.19	52.52	24.55	54.64
2009/10	28.45	31.28	16.27	42.23
2010/11	17.72	22.74	13.15	25.90
2011/12	16.21	27.69	11.67	24.78
Average	30.22	37.51	19.95	39.86

Source: Annual reports of joint venture banks

Figure No.4



The P/E ratios of NBL are decreasing trend from 2007/08 to 2011/12. The highest P/E ratio is 45.53 in the year 2007/08 and lowest is 16.21 in the year 2011/12. The average P/E ratio is 30.22.

The P/E ratios of NSBIBL are decreasing trend from 2007/08 to 2010/11 and increased in the year 2011/12. The highest P/E ratio is 53.34 in the year 2007/08 and lowest is 22.74 in the year 2010/11. The average P/E ratio is 37.51.

The P/E ratios of EBL are decreasing trend from 2007/08 to 2011/12. The highest P/E ratio is 34.11 in the year 2007/08 and lowest is 11.67 in the year 2011/12. The average P/E ratio is 19.95.

The P/E ratios of SCBNL are increasing trend from 2007/08 to 2008/09 then after decreasing trend up to 2011/12. The highest P/E ratio is 54.64 in the year 2008/09 and lowest is 24.78 in the year 2011/12. The average P/E ratio is 39.86.

Among these selected joint venture banks SCBNL has highest average P/E ratio. Therefore, SCBNL has better position than other selected banks.

4.1.5 Market value per share to Book value per share ratio:

This ratio indicates the price that the market is paying for the share that is reported from the net worth of the banks. In other words, it is the price the outsider is paying for each rupee reported by the balance sheet of the company. Market value per share to Book value per share ultimately evaluates the net present value of shares in the market.

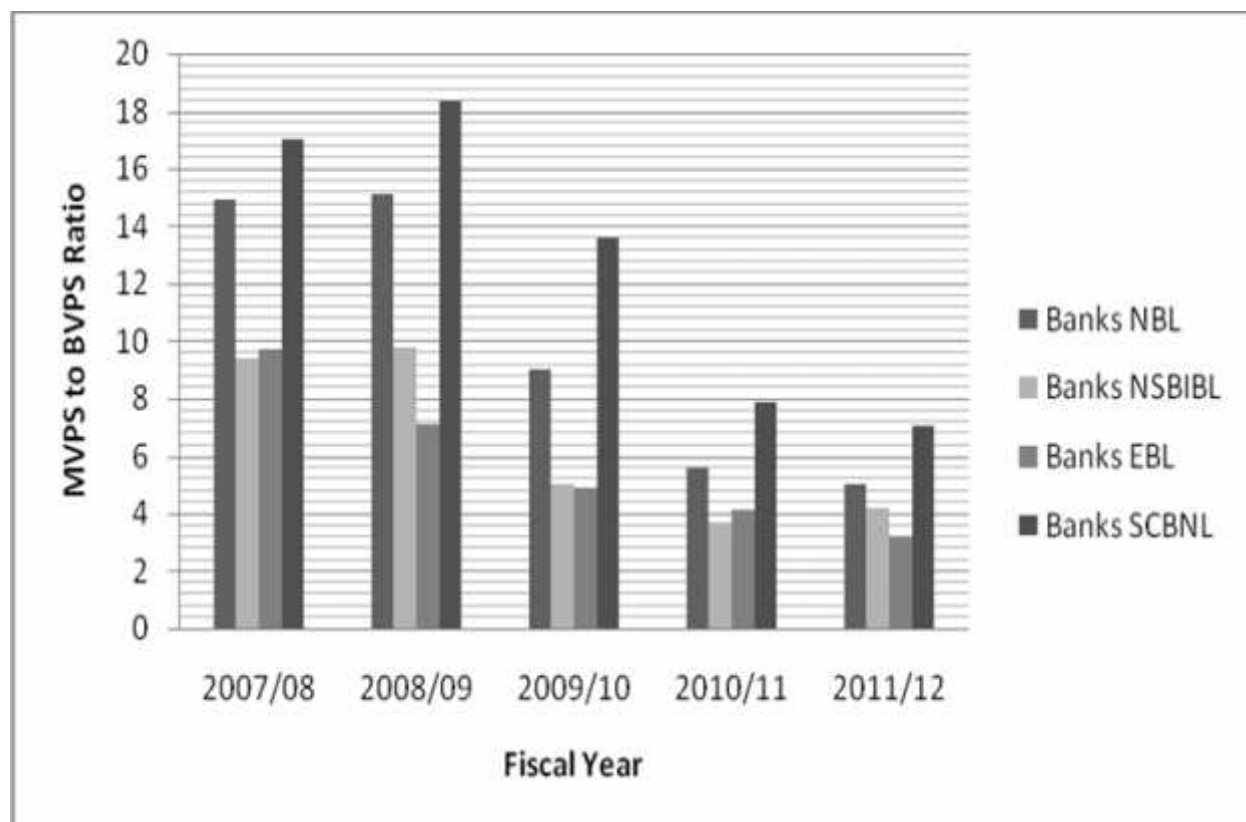
The followings table shows all the details regarding Market value per share to Book value per share ratio.

Table No.4.5
Market value per share to Book value per share ratio.(MVPS/BVPS)

Fiscal Year	Banks			
	NBL	NSBIBL	EBL	SCBNL
2007/08	14.90	9.41	9.73	16.99
2008/09	15.12	9.76	7.11	18.32
2009/10	8.996	5.02	4.91	13.60
2010/11	5.56	3.68	4.15	7.89
2011/12	5.04	4.16	3.17	7.03
Average	9.92	6.41	5.81	12.77

Source: Annual reports of joint venture banks

Figure No.5



The market value per share to book value per share ratio of NBL is increasing trend up to 2008/09 and then after decreasing trend up to 2011/12. The average ratio of NBL is 9.92.

The market value per share to book value per share ratio of NSBIBL is increasing trend up to 2008/09 and then after decreasing trend up to 2010/11 and increased in 2011/12. The average ratio of NSBIBL is 6.41.

The market value per share to book value per share ratio of EBL is increasing trend up to 2011/12. The average ratio of EBL is 5.81.

The market value per share to book value per share ratio of SCBNL is increasing trend up to 2008/09 and then after decreasing trend up to 2011/12. The average ratio of SCBNL is 12.77.

In conclusion, SCBNL has the highest average market value per share to book value per share ratio so the shareholders of SCBNL get the higher capital gain than other bank's shareholders. EBL has the lowest average ratio so the shareholders of EBL get the lowest capital gain than other bank's shareholders.

4.1.6 Dividend yield ratio:

This ratio highly influences the market value per share because a small change in the dividend per share can bring effective change in market value of the share. Therefore, before allocation of dividend to stockholders, the impact of market scenario and price fluctuation has to be analyzed and evaluated for the long run survival of the institutions.

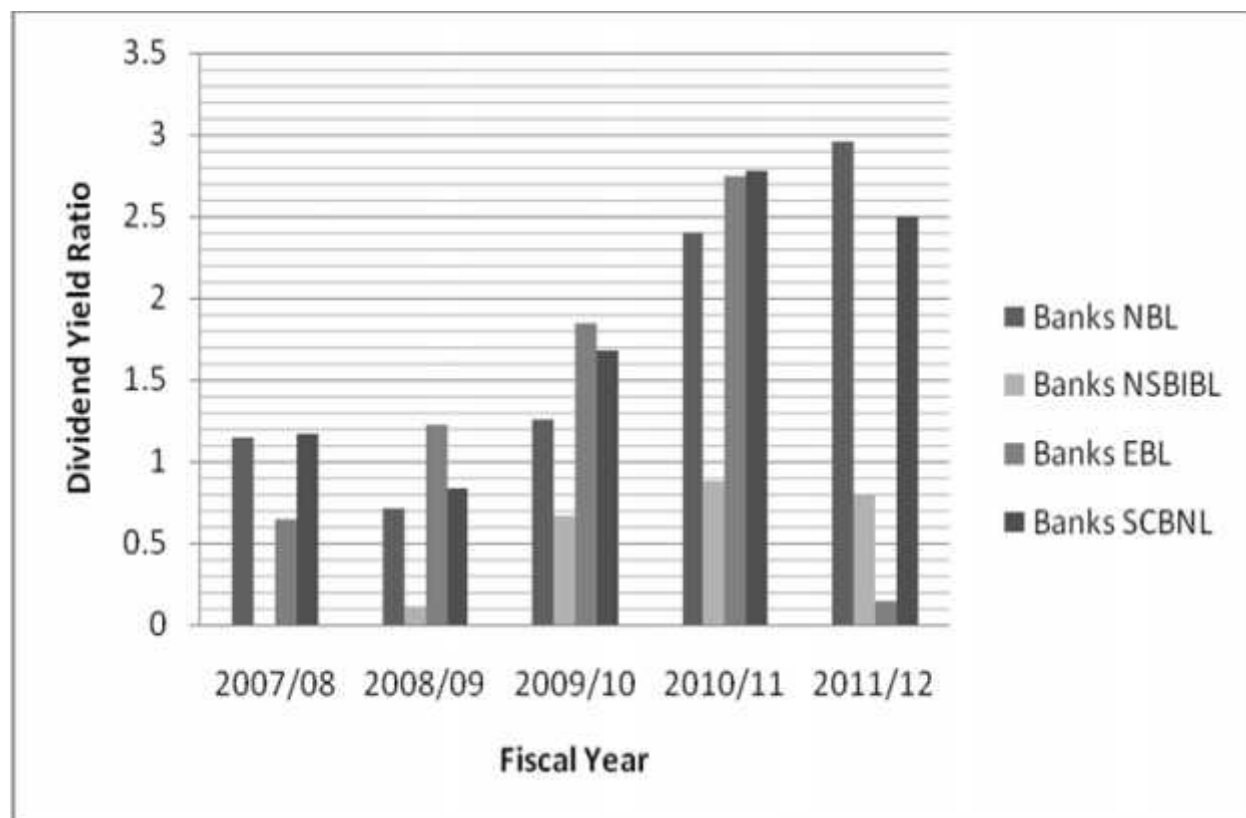
The followings table shows all the details regarding Dividend yield ratio.

Table No.4.6
Dividend yield ratio (DPS/MVPS)

Fiscal Year	Banks			
	NBL	NSBIBL	EBL	SCBNL
2007/08	1.14	0	0.64	1.17
2008/09	0.71	0.11	1.22	0.83
2009/10	1.26	0.67	1.84	1.68
2010/11	2.40	0.88	2.74	2.78
2011/12	2.95	0.79	0.15	2.50
Average	1.69	0.49	1.32	1.79

Source: Annual reports of joint venture banks

Figure No.6



The dividend yield ratio of NBL in the year 2007/08 is 1.14 and decreased in the next year to 0.71. The ratio of NBL is increasing trend from 2009/10 to 2011/12. The highest ratio is 2.95 in the year 2011/12. The average ratio is 1.69.

The dividend yield ratio of NSBIBL in the year 2007/08 is zero and it has increasing trend from 2008/09 to 2011/12. The highest ratio is 0.88 in the year 2010/11. The average ratio is 0.49.

The dividend yield ratio of EBL in the year 2007/08 is 0.64 and it has increasing trend up to 2010/11 and decreased in the year 2011/12 to 0.15. The highest ratio is 2.74 in the year 2010/11. The average ratio is 1.32.

The dividend yield ratio of SCBNL in the year 2007/08 is 1.17 and decreased in the next year to 0.83. The ratio of SCBNL is increasing trend from 2009/10 to 2010/11 and again decreased in 2011/12. The highest ratio is 2.78 in the year 2010/11. The average ratio is 1.79.

The average dividend yield ratio of SCBNL is comparatively highest than other selected banks which is 1.79 so the SCBNL is in better position than other banks.

4.1.7 Return on net worth (RONW):

It is also known as Return on equity (ROE) and describes the portion of net income that is eventually returned as a percentage of the equity held by shareholders in a company. It reveals the amount of return earned by investors on their investments in a business. This particular calculation makes it easier to understand how much profit the business is generating with the investments provided by the shareholders. This is the indicator of banks good financial performance that means it indicates how well these institutions have used the resources of the investors.

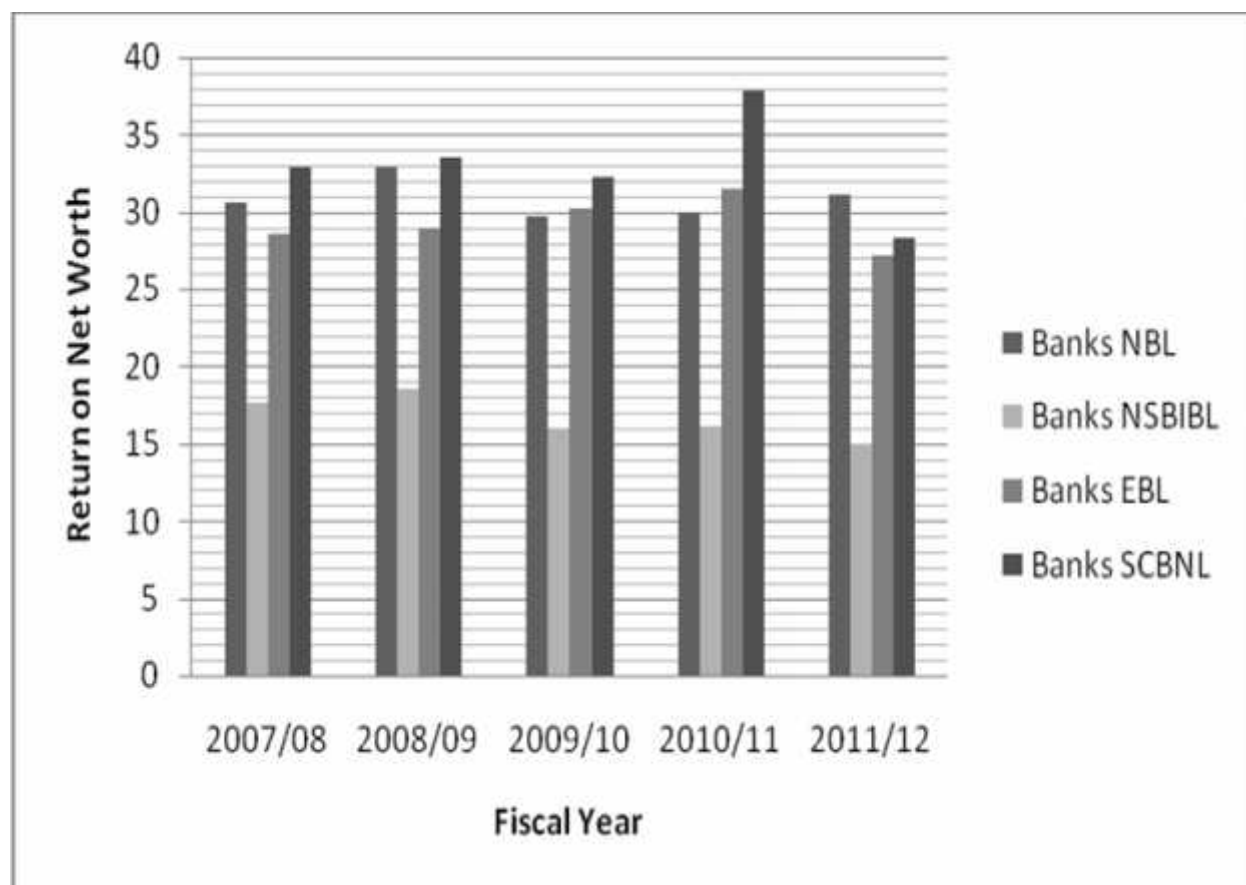
The followings table shows all the details regarding Return on net worth.

Table No.4.7
Return on net worth (NPAT/Net worth)

Fiscal Year	Banks			
	NBL	NSBIBL	EBL	SCBNL
2007/08	30.60	17.64	28.54	32.85
2008/09	32.95	18.58	28.96	33.58
2009/10	29.66	16.05	30.17	32.22
2010/11	29.93	16.19	31.53	37.89
2011/12	31.07	15.02	27.15	28.36
Average	30.84	16.70	29.27	32.98

Source: Annual reports of joint venture banks

Figure No.7



The RONW of NBL is fluctuating trend that it increased up to 2008/09 and decreased in 2009/10 and increased from 2010/11 to 2011/12. The average RONW of NBL is 30.842.

The RONW of NSBIBL is fluctuating trend that it increased up to 2008/09 and decreased in 2009/10 and increased in 2010/11 and again decreased in 2011/12. The average RONW of NSBIBL is 16.70.

The RONW of EBL is increasing trend from 2007/08 to 2010/11 and it decreased in the year 2011/12. The average RONW of EBL is 29.27.

The RONW of SCBNL is fluctuating trend that it increased up to 2008/09 and decreased in 2009/10 and increased in 2010/11 and again decreased in 2011/12. The average RONW of SCBNL is 32.98.

Among these banks SCBNL has the maximum average RONW which is 32.98 than other banks so the SCBNL is in good position.

4.1.8 Analysis of Statistical Tools

Financial tools are not sufficient to describe the relationship among the various interrelated variable. So statistical tools are utilized to make the analysis more research oriented. For this purpose same financial data are used to determine how one variable is related to another variable. So, it is better to determine the degree of correlation between dividend per share & earnings per share, dividend per share & market value per share, earnings per share & market value per share, dividend per share & net profit after tax, dividend per share & return on net worth. Similarly, mean & standard deviation of all variable, coefficient of determination (r^2), probable error & standard error of estimate are to determine for the purpose of analysis.

The following table shows the relationship between DPS with EPS all sample of JVB's.

Table No.4.8

Result	Joint Venture Banks			
	NBL	NSBIBL	EBL	SCBNL
X(EPS)	93.47	27.20	92.74	92.33
x	17.95	4.86	6.60	24.51
C.V. _x (%)	19.20	17.87	7.12	26.55
Y(DPS)	39	3.42	22.32	56
y	11.13	2.04	11.07	12.41
C.V. _y (%)	28.54	59.65	49.60	22.16
r_{XY}	0.67	-0.64	0.35	0.80
r^2	0.45	0.41	0.12	0.64
P.E.	0.17	0.18	0.26	0.11
6P.E.	1.02	1.08	1.56	0.66
a	-0.257	3.172	-32.40	18.14
b	0.42	0.0092	0.59	0.41
S_{YX}	10.64	2.67	13.38	7.49
n	5	5	5	5

The above table shows that average EPS of NBL is highest among selected banks and average DPS of SCBNL is highest among selected banks. Standard deviation of EPS and DPS of SCBNL is highest than other banks which shows low degree of uniformity.

Coefficient of variation for EPS of SCBNL is highest than other banks which shows low consistency of EPS in comparison to other banks. C.V. for DPS of NSBIBL is highest than other banks which shows low consistency of DPS than others. Similarly, C.V. for EPS of NSBIL is lowest among banks therefore high consistency of EPS and C.V. for DPS of SCBNL is lowest , therefore SCBNL is high consistent in DPS.

Correlation coefficient between EPS and DPS of NBL, NSBIBL, EBL and SCBNL are 0.67, -0.64, 0.35 and 0.80. Correlation coefficient between EPS and DPS of NBL, EBL and SCBNL is positive so there is positive relationship between EPS and DPS but NSBIBL has negative correlation coefficient so there is negative relationship between EPS and DPS. The SCBNL has the higher positive correlation coefficient among these banks and the relationship also indicates the payment of dividend depends upon the EPS.

Coefficient of determination of NBL, NSBIBL, EBL and SCBNL are 0.45, 0.41, 0.12 & 0.64. Coefficient of determination of SCBNL is highest among other banks which show the high degree of correlation between DPS and EPS.

Here, correlation coefficient of NBL and EBL is greater than PE but less than 6PE ($PE < r < 6PE$) so nothing can be concluded that means this is the situation neither r is significant nor r is insignificant. Correlation coefficient of NSBIBL is less than PE ($r < PE$), the correlation coefficient or relationship between DPS and EPS is not significant. Correlation coefficient of SCBNL is higher than 6PE ($r > 6PE$), the correlation coefficient or relationship between DPS and EPS is highly significant.

The regression coefficient (b) of NBL, NSBIBL, EBL and SCBNL are 0.42, 0.0092, 0.59 and 0.41 respectively. It indicates that one rupee increase in EPS leads to an average about 0.42, 0.0092, 0.59 and 0.41 increases in DPS.

The standard error of estimate DPS(Y) on EPS(X) of NBL, NSBIBL, EBL and SCBNL are 10.64, 2.67, 13.38 and 7.49 respectively. NSBIBL has lowest value of SEE therefore there is less error in prediction and regression line fits the data in a well manner.

In conclusions, the relationship between EPS and DPS of the entire selected banks are positive except NSBIBL and EPS is also a factor that affects DPS.

The following table shows the relationship between MVPS with DPS all the sample of JVB's.

Table No.4.9

Result	Joint Venture Banks			
	NBL	NSBIBL	EBL	SCBNL
X(DPS)	39	3.42	22.32	56
x	11.14	2.04	11.07	12.41
C.V. _x (%)	28.56	59.65	49.60	22.16
Y(MVPS)	3033	1070.40	1868.80	3943.60
y	772.46	535.89	811.81	2108.90
C.V. _y (%)	25.47	50.06	43.44	53.48
r _{XY}	0.62	0.84	0.25	0.81
r ²	0.384	0.71	0.06	0.656
P.E.	0.19	0.087	0.28	0.07
6P.E.	1.14	0.522	1.68	0.42
a	-729.33	1823.58	1462.87	-2892.32
b	96.47	-220.10	18.19	122.07
S _{YX}	1746.20	460.04	1015.42	1894.20
n	5	5	5	5

The above table shows that average DPS and MVPS of SCBNL is highest among selected banks. Standard deviation of MVPS and DPS of SCBNL is highest than other banks which shows low degree of uniformity.

Coefficient of variation for DPS of NSBIBL is highest than other banks which shows low consistency of DPS in comparison to other banks. C.V. for MVPS of SCBNL is highest than other banks which shows low consistency of MVPS than others. Similarly, C.V. for DPS of

SCBNL is lowest among banks therefore high consistency of DPS and C.V. for MVPS of NBL is lowest , therefore NBL is high consistent in MVPS.

Correlation coefficient between DPS and MVPS of NBL, NSBIBL, EBL and SCBNL are 0.62, 0.84, 0.25 and 0.81. Correlation coefficient between DPS and MVPS of NBL, NSBIBL, EBL and SCBNL is positive so there is positive relationship between DPS and MVPS. The NSBIBL has the higher positive correlation coefficient among these banks and the relationship also indicates that the market value per share depends upon the DPS.

Coefficient of determination of NBL, NSBIBL, EBL and SCBNL are 0.384, 0.71, 0.06 & 0.656. Coefficient of determination of NSBIBL is highest among other banks which show the high degree of correlation between MVPS and DPS.

Here, correlation coefficient of NBL is greater than PE but less than 6PE ($PE < r < 6PE$) so nothing can be concluded that means this is the situation neither r is significant nor r is insignificant. Correlation coefficient of EBL is less than PE ($r < PE$), the correlation coefficient or relationship between MVPS and DPS is not significant. Correlation coefficient of NSBIBL and SCBNL is higher than 6PE ($r > 6PE$), the correlation coefficient or relationship between MVPS and DPS is highly significant.

The regression coefficient (b) of NBL, NSBIBL, EBL and SCBNL are 96.47, -220.10, 18.19 & 122.07 respectively. It indicates that one rupee change in DPS leads to an average about 96.47, -220.10, 18.19 & 122.07 changes in MVPS.

The standard error of estimate MVPS(Y) on DPS(X) of NBL, NSBIBL, EBL and SCBNL are 1746.20, 460.04, 1015.42 & 1894.20 respectively. NSBIBL has lowest value of SEE therefore there is less error in prediction and regression line fits the data in a well manner.

In conclusions, the relationship between MVPS and DPS of the entire selected banks are positive. DPS is also a factor that affects MVPS.

The following table shows the relationship between MVPS with EPS all the sample of JVB's.

Table No.4.10

Result	Joint Venture Banks			
	NBL	NSBIBL	EBL	SCBNL
X(EPS)	93.47	27.20	92.74	92.33
x	17.95	4.86	6.60	24.51
C.V. _x (%)	19.20	17.87	7.12	26.55
Y(MVPS)	3033	1070.40	1868.80	3943.60
y	772.46	535.89	811.81	2108.90
C.V. _y (%)	25.47	50.06	43.44	53.48
r _{XY}	0.97	0.93	0.46	0.97
r ²	0.94	0.86	0.21	0.94
P.E.	0.02	0.04	0.24	0.02
6P.E.	0.12	0.24	1.44	0.12
a	-5723.27	-1730.24	-3345.16	-3792.14
b	93.68	102.98	56.22	83.78
S _{YX}	513.09	248.05	932.31	1058.17
n	5	5	5	5

The above table shows that average EPS of NBL is highest among selected banks and average MVPS of SCBNL is highest among selected banks. Standard deviation of EPS and MVPS of SCBNL is highest than other banks which shows low degree of uniformity.

Coefficient of variation for EPS and MVPS of SCBNL is highest than other banks which shows low consistency of EPS and MVPS in comparison to other banks. Similarly, C.V. for EPS of EBL is lowest among banks therefore high consistency of EPS and C.V. for MVPS of NBL is lowest , therefore NBL is high consistent in MVPS.

Correlation coefficient between EPS and MVPS of NBL, NSBIBL, EBL and SCBNL are 0.97, 0.93, 0.46 & 0.97. Correlation coefficient between EPS and MVPS of NBL, NSBIBL, EBL and SCBNL is positive so there is positive relationship between EPS and MVPS. The SCBNL and NBL have the higher positive correlation coefficient among these banks and the relationship also indicates that the MVPS depends upon the EPS.

Coefficient of determination of NBL, NSBIBL, EBL and SCBNL are 0.94, 0.86, 0.21 and 0.94. Coefficient of determination of NBL and SCBNL is highest among other banks which show the high degree of correlation between MVPS and EPS.

Here, correlation coefficient of EBL is greater than PE but less than 6PE ($PE < r < 6PE$) so nothing can be concluded that means this is the situation neither r is significant nor r is insignificant. Correlation coefficient of NBL, NSBIBL and SCBNL is higher than 6PE ($r > 6PE$), the correlation coefficient or relationship between MVPS and EPS is highly significant.

The regression coefficient (b) of NBL, NSBIBL, EBL and SCBNL are 93.68, 102.98, 56.22 and 83.78 respectively. It indicates that one rupee change in EPS leads to an average about 93.68, 102.98, 56.22 and 83.78 changes in MVPS.

The standard error of estimate MVPS(Y) on EPS(X) of NBL, NSBIBL, EBL and SCBNL are 513.09, 248.05, 932.31 and 1058.17 respectively. NSBIBL has lowest value of SEE therefore there is less error in prediction and regression line fits the data in a well manner.

In conclusions, the relationship between MVPS and EPS of the entire selected banks are positive. EPS is also a factor that affects MVPS.

The following table shows the relationship between DPS with NPAT all the sample of JVB's.

Table No.4.11

Result	Joint Venture Banks			
	NBL	NSBIBL	EBL	SCBNL
X(NPAT)	1190.13	380.112	788.70	1043.61
x	317.09	88.14	223.50	121.69
C.V. _X (%)	26.64	23.19	28.34	11.66
Y(DPS)	39	3.42	22.32	56
y	11.14	2.04	11.07	12.41
C.V. _Y (%)	28.56	59.65	49.60	22.16
r _{XY}	-0.51	0.94	-0.42	-0.95
r ²	0.26	0.88	0.18	0.90
P.E.	0.22	0.04	0.25	0.03
6 P.E.	1.32	0.24	1.50	0.18
a	17.58	-4.94	5.75	160.36
b	0.018	0.022	0.021	-0.10
S _{YX}	19.22	0.91	17.71	5.14
n	5	5	5	5

The above table shows that average NPAT of NBL is highest among selected banks and average DPS of SCBNL is highest among selected banks. Standard deviation of NPAT of NBL is highest than other banks and standard deviation of SCBNL is highest than other banks which shows low degree of uniformity.

Coefficient of variation for NPAT of EBL is highest than other banks which shows low consistency of NPAT in comparison to other banks. C.V. for DPS of NSBIBL is highest than other banks which shows low consistency of DPS than others. Similarly, C.V. for NPAT of

SCBNL is lowest among banks therefore high consistency of NPAT and C.V. for DPS of SCBNL is lowest , therefore SCBNL is high consistent in DPS.

Correlation coefficient between NPAT and DPS of NBL, NSBIBL, EBL and SCBNL are -0.51, 0.94, -0.42 and -0.95. Correlation coefficient between NPAT and DPS of NSBIBL is positive so there is positive relationship between NPAT and DPS but NBL, EBL and SCBNL has negative correlation coefficient so there is negative relationship between NPAT and DPS. The NSBIBL has the higher positive correlation coefficient among these banks and the relationship also indicates that DPS depends upon NPAT.

Coefficient of determination of NBL, NSBIBL, EBL and SCBNL are 0.26, 0.88, 0.18 and 0.90. Coefficient of determination of SCBNL is highest among other banks which show the high degree of correlation between DPS and NPAT.

Here, Correlation coefficient of NBL, EBL and SCBNL is less than $PE(r < PE)$, the correlation coefficient or relationship between NPAT and DPS is not significant. Correlation coefficient of NSBIBL is higher than $6PE (r > 6PE)$, the correlation coefficient or relationship between NPAT and DPS is highly significant.

The regression coefficient (b) of NBL, NSBIBL, EBL and SCBNL are 0.018, 0.022, 0.021 and -0.10 respectively. It indicates that one rupee change in NPAT leads to an average about 0.018, 0.022, 0.021 and -0.10 changes in DPS.

The standard error of estimate DPS(Y) on NPAT(X) of NBL, NSBIBL, EBL and SCBNL are 19.22, 0.91, 17.71 and 5.14 respectively. NSBIBL has lowest value of SEE therefore there is less error in prediction and regression line fits the data in a well manner.

In conclusions, the relationship between NPAT and DPS of the NSBIBL is positive and rests of others are negative. The positive correlation coefficient value of NSBIBL shows that NPAT is also a factor that affects DPS.

The following table shows the relationship between DPS with RONW all the sample of JVB's.

Table No.4.12

Result	Joint Venture Banks			
	NBL	NSBIBL	EBL	SCBNL
X(RONW)	30.71	16.70	29.27	32.98
x	1.29	1.26	1.49	3.05
C.V. _x (%)	4.20	7.54	5.09	9.25
Y(DPS)	39	3.42	22.32	56
y	11.14	2.04	11.07	12.41
C.V. _y (%)	28.56	59.65	49.60	22.16
r _{XY}	0.17	-0.79	0.82	0.08
r ²	0.028	0.624	0.67	0.0064
P.E.	0.29	0.11	0.10	0.30
6 P.E.	1.74	0.66	0.60	1.80
a	-2.185	24.826	-156.82	45.05
b	1.341	-1.282	6.12	0.332
S _{YX}	14.20	1.62	40.39	15.97
n	5	5	5	5

The above table shows that average RONW of SCBNL is highest among selected banks and average DPS of SCBNL is highest among selected banks. Standard deviation of RONW and DPS of SCBNL is highest than other banks which shows low degree of uniformity.

Coefficient of variation for RONW of SCBNL is highest than other banks which shows low consistency of RONW in comparison to other banks and C.V. for DPS of NSBIBL is highest than other banks which shows low consistency of DPS in comparison to other banks. Similarly, C.V. for RONW of NBL is lowest among banks therefore high consistency of RONW and C.V. for DPS of SCBNL is lowest , therefore SCBNL is high consistent in DPS.

Correlation coefficient between RONW and DPS of NBL, NSBIBL, EBL and SCBNL are 0.17, -0.79, 0.82 and 0.08. Correlation coefficient between RONW and DPS of NBL, EBL and SCBNL is positive so there is positive relationship between RONW and DPS. The EBL has the higher positive correlation coefficient among these banks and the relationship also indicates that the DPS depends upon the RONW.

Coefficient of determination of NBL, NSBIBL, EBL and SCBNL are 0.028, 0.624, 0.67 and 0.0064. Coefficient of determination of EBL is highest among other banks which show the high degree of correlation between RONW and DPS.

Here, Correlation coefficient of EBL is higher than $6PE$ ($r > 6PE$), the correlation coefficient or relationship between RONW and DPS is highly significant. Correlation coefficient of NBL, NSBIBL and SCBNL is less than PE ($r < PE$), the correlation coefficient or relationship between RONW and DPS is not significant.

The regression coefficient (b) of NBL, NSBIBL, EBL and SCBNL are 1.341, -1.282, 6.12 and 0.332 respectively. It indicates that one percent change in RONW leads to an average about 1.341, -1.282, 6.12 and 0.332 changes in DPS.

The standard error of estimate DPS(Y) on RONW(X) of NBL, NSBIBL, EBL and SCBNL are 14.20, 1.62, 40.39 and 15.97 respectively. NSBIBL has lowest value of SEE therefore there is less error in prediction and regression line fits the data in a well manner.

In conclusions, the relationship between RONW and DPS of the entire selected banks are positive except NSBIBL. RONW is also a factor that affects DPS.

CHAPTER - V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Progress and prosperity of a country largely depend upon growth and development of various sectors such as economic, social, cultural, industrial, technology, education and safety. Economic development is the most important for development of a country. When the government of Nepal has adopted economic liberalization, globalization and open market policy, through this policy the government has allowed private sector both domestic and global to enter in this banking system in order to bring healthy competition among commercial banks and global investment in Nepal. As a result different commercial banks got their existence with the participation of global banks in the short period. Many joint venture banks are established to expand their activities because the initially established companies are unable to supply credit need and expectation timely and carry capital market activities towards the growth position.

Dividend policy decision is one of the major decisions among three major decisions taken by the financial manager in the financial management among the three decisions payment of dividend to the shareholders is an effective decision taken by the financial manager to attract potential investors to invest the capital in the stock. The dividend policy decision affects the operation and prosperity of the firms because it has the power to influence others to make decisions of the firms that is capital structure decision and investment decision.

A brief introduction of this study has been already represented in the first chapter. Besides, the reviews of literature with possible review of ideas, theories and research findings have also been presented in the second chapter. Moreover, research methodology is described in the third chapter. The available data are represented and analyzed in the fourth chapter relating to dividend policy in these samples of JVB's.

In this concluding chapter, an attempt has been made to present main findings, suggestion, summary and conclusion. The findings regarding dividend policy, certainly has shown necessity for improvement of existing condition of the JVB's. The findings are highlighted as follows.

The main findings of the research work are summarized in numeric order:-

1. There is fluctuation in the EPS of selected joint venture banks that means there is in increasing as well as decreasing trend. The EPS of NBL is in decreasing trend up to 2010/11 then after increased in 2011/12 whereas EPS of NSBIBL is increasing up to 2008/09 then decreased in 2009/10 and increased in 2010/11 and again decreased in 2011/12, there is high fluctuation in EPS of NSBIBL. Similarly, the EPS of EBL is in increasing trend up to 2009/10 then after decreased in 2010/11 and increased in 2011/12. The SCBNL has decreasing trend of EPS up to 2010/11 and increased in 2011/12. NBL has higher average EPS which shows the better earning position.
2. The average DPS of NBL is higher than other banks that mean NBL is paying higher cash dividend in comparison to others. There is fluctuating trend in DPS of selected joint venture banks. The standard deviation of DPS of SCBNL is lower than others that mean there is high degree of uniformity in DPS of SCBNL.
3. There is fluctuating trend in dividend payout ratio of joint venture banks. The average dividend payout ratio of SCBNL is higher than others, it indicate cash dividend payment of SCBNL from its earning is better than other banks.
4. The average P/E ratio of NBL, NSBIBL, EBL and SCBNL are 30.22, 37.51, 19.95 and 39.86. SCBNL has higher P/E ratio in comparison to other banks, it indicate that SCBNL is in good position.
5. The average Market value per share to book value per share of NBL, NSBIBL, EBL and SCBNL are 9.92, 6.41, 5.81 and 12.77 times. SCBNL has higher average market value per share to book value per share and EBL has lower average market value per share to book value per share.

6. Fluctuating trend also occurs in dividend yield ratio of joint venture banks as there is increasing and decreasing in dividend yield ratio. The SCBNL has higher average dividend yield ratio and NSBIBL has lower.
7. Average return on net worth of SCBNL is higher than other banks as it indicate the better position of SCBNL.

On the Basis of Statistical tools

1. The average mean of EPS of NBL is higher than others and NSBIBL has lower, it indicates the better position of NBL. SCBNL has higher average mean of DPS than others and NSBIBL has lower average mean of DPS in comparison to other banks. The average mean of MVPS of SCBNL is higher than others and NSBIBL is lower than others, it indicates the better position of SCBNL in share market. The average mean of NPAT of SCBNL is highest and NSBIBL is lowest, it means SCBNL has good earning. SCBNL has highest average mean of RONW than others and NSBIBL has lowest.
2. The standard deviation and C.V. of EPS of SCBNL is highest than others and EBL has lowest, as it indicates there is more consistency in EPS of EBL. Standard deviation of DPS of SCBNL is higher and C.V. of DPS of NSBIBL is higher than others, it indicates less consistency in DPS of NSBIBL. SCBNL has highest standard deviation and C.V. of MVPS as it indicates less uniformity in MVPS in comparison to other banks. There is less C.V. of NPAT of SCBNL than other banks as it shows more consistency in NPAT. The standard deviation of RONW NSBIBL is lower than other as there is high degree of uniformity in RONW.
3. Correlation coefficient between EPS and DPS of NBL, EBL and SCBNL is positive so there is positive relationship between EPS and DPS but NSBIBL has negative correlation coefficient so there is negative relationship between EPS and DPS. Correlation coefficient between DPS and MVPS of NBL, NSBIBL, EBL and SCBNL is positive so there is positive relationship between DPS and MVPS. Correlation coefficient between EPS and MVPS of NBL, NSBIBL, EBL and SCBNL is positive so there is positive

relationship between EPS and MVPS. Correlation coefficient between NPAT and DPS of NSBIBL is positive so there is positive relationship between NPAT and DPS but NBL, EBL and SCBNL has negative correlation coefficient so there is negative relationship between NPAT and DPS. Correlation coefficient between RONW and DPS of NBL, EBL and SCBNL is positive so there is positive relationship between RONW and DPS.

4. Coefficient of determination of DPS with EPS of NBL, NSBIBL, EBL and SCBNL are 0.45, 0.41, 0.12 & 0.64. Coefficient of determination of SCBNL is highest among other banks which show the high degree of correlation between DPS and EPS. Coefficient of determination of MVPS with DPS of NBL, NSBIBL, EBL and SCBNL are 0.384, 0.71, 0.06 & 0.656. Coefficient of determination of NSBIBL is highest among other banks which show the high degree of correlation between MVPS and DPS. Coefficient of determination of MVPS with EPS of NBL, NSBIBL, EBL and SCBNL are 0.94, 0.86, 0.21 and 0.94. Coefficient of determination of NBL and SCBNL is highest among other banks which show the high degree of correlation between MVPS and EPS. Coefficient of determination of DPS with NPAT of NBL, NSBIBL, EBL and SCBNL are 0.26, 0.88, 0.18 and 0.90. Coefficient of determination of SCBNL is highest among other banks which show the high degree of correlation between DPS and NPAT. Coefficient of determination of RONW with DPS of NBL, NSBIBL, EBL and SCBNL are 0.028, 0.624, 0.67 and 0.0064. Coefficient of determination of EBL is highest among other banks which show the high degree of correlation between RONW and DPS.
5. Correlation coefficient between DPS and EPS of SCBNL is higher than 6PE ($r > 6PE$), the correlation coefficient or relationship between DPS and EPS is highly significant. Correlation coefficient between MVPS and DPS of NSBIBL and SCBNL is higher than 6PE ($r > 6PE$), the correlation coefficient or relationship between MVPS and DPS is highly significant. Correlation coefficient between MVPS and EPS of NBL, NSBIBL and SCBNL is higher than 6PE ($r > 6PE$), the correlation coefficient or relationship between MVPS and EPS is highly significant. Correlation coefficient between NPAT and DPS of NSBIBL is higher than 6PE ($r > 6PE$), the correlation coefficient or relationship between NPAT and DPS is highly significant. Correlation coefficient between RONW and DPS of

EBL is higher than 6PE ($r > 6PE$), the correlation coefficient or relationship between RONW and DPS is highly significant.

6. The regression coefficient (b)(EPS with DPS) of NBL, NSBIBL, EBL and SCBNL are 0.42, 0.0092, 0.59 and 0.41 respectively. It indicates that one rupee increase in EPS leads to an average about 0.42, 0.0092, 0.59 and 0.41 increases in DPS. The regression coefficient (b)(MVPS with DPS) of NBL, NSBIBL, EBL and SCBNL are 96.47, -220.10, 18.19 & 122.07 respectively. It indicates that one rupee change in DPS leads to an average about 96.47, -220.10, 18.19 & 122.07 changes in MVPS. The regression coefficient (b)(MVPS with EPS) of NBL, NSBIBL, EBL and SCBNL are 93.68, 102.98, 56.22 and 83.78 respectively. It indicates that one rupee change in EPS leads to an average about 93.68, 102.98, 56.22 and 83.78 changes in MVPS. The regression coefficient (b)(NPAT with DPS) of NBL, NSBIBL, EBL and SCBNL are 0.018, 0.022, 0.021 and -0.10 respectively. It indicates that one rupee change in NPAT leads to an average about 0.018, 0.022, 0.021 and -0.10 changes in DPS. The regression coefficient (b)(RONW with DPS) of NBL, NSBIBL, EBL and SCBNL are 1.341, -1.282, 6.12 and 0.332 respectively. It indicates that one percent change in RONW leads to an average about 1.341, -1.282, 6.12 and 0.332 changes in DPS.
7. The standard error of estimate DPS(Y) on EPS(X) of NBL, NSBIBL, EBL and SCBNL are 10.64, 2.67, 13.38 and 7.49 respectively. NSBIBL has lowest value of SEE therefore there is less error in prediction and regression line fits the data in a well manner. The standard error of estimate MVPS(Y) on DPS(X) of NBL, NSBIBL, EBL and SCBNL are 1746.20, 460.04, 1015.42 & 1894.20 respectively. NSBIBL has lowest value of SEE therefore there is less error in prediction and regression line fits the data in a well manner. The standard error of estimate MVPS(Y) on EPS(X) of NBL, NSBIBL, EBL and SCBNL are 513.09, 248.05, 932.31 and 1058.17 respectively. NSBIBL has lowest value of SEE therefore there is less error in prediction and regression line fits the data in a well manner. The standard error of estimate DPS(Y) on NPAT(X) of NBL, NSBIBL, EBL and SCBNL are 19.22, 0.91, 17.71 and 5.14 respectively. NSBIBL has lowest value of SEE therefore there is less error in prediction and regression line fits the data in a well manner. The

standard error of estimate $DPS(Y)$ on $RONW(X)$ of NBL, NSBIBL, EBL and SCBNL are 14.20, 1.62, 40.39 and 15.97 respectively. NSBIBL has lowest value of SEE therefore there is less error in prediction and regression line fits the data in a well manner.

5.2 Conclusion and Recommendations

Based on the finding, the gaps perceived in this study will be presented in this chapter. These issues related to dividend and other relevant factors found while analyzing the variables are also presented here. All these are given below.

1. There is lack of proper legal provision regarding the dividend payment. The government as well as the central bank of Nepal should pay their attention in this matter for prescribing certain provisions and rules regarding the percentage of earning as payment of dividend.
2. The practice of dividend payment adopted by the banks is not stable. In many cases a small amount of dividend is paid without considering the risk free rate of return. Further the prices of shares on which the dividend is not paid on upward trend. So, the management should play active role in determining dividend instead of shareholder collective opinion.
3. Payment of dividend is neither static nor constantly growing. It is highly fluctuating. Such way of paying dividend could not impress the market positively. So, these financial institutions are advised to follow either static or constantly growing dividend payment policy. It would be better to fix the amount of dividend in the general annual meeting. This is an important not only point of view of adequate return to shareholder but also to generate stable and increasing market value per share, long run survival of financial institutions, efficient management and socially acceptable distribution of income, ability to maintain linkage of the earning power for dynamic growth stability.

4. Issue of stock dividend decrease market value per share and earnings per share. But issue of cash dividend increases market value per share and earnings per share. So, due to this reason common shareholders should be given a choice whether they prefer stock dividend or cash dividend. Therefore, all the financial institutions are suggested to take care regarding the interest of shareholders.
5. Formulation of dividend policy will clearly guide the way to follow dividend distribution. There should determine whether the company is going to adopt stable dividend policy, constant payout ratio or low regular plus extra dividend. What should be the long run dividend payout policy or smoothed residual dividend policy should have been clearly explained by the dividend policy.
6. Since, financial institutions are dealing with public money collected by way of deposit in different sectors, there should be active supervision and credit monitoring role of NRB becomes important progress reporting should be a continuous and financial institutions should make their performance transparent to investing public. Moreover, there should be also professional representation in the credit information bureau instead of having only member of it.
7. As financial institutions are assisting to promote the capital market and improve the economic condition of nation through collecting the scattered resources and utilizing them into productive ways. The government should provide facilities to improve the efficiency of the financial institutions and reduce the interference in daily affair. Similarly, the management should be careful about their duties and responsibilities for operation of the financial institutions, towards the interest of the shareholders as well as the improvement of national economy.

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10. Annual Report of Standard Chartered Bank Nepal Ltd. 2011/12

Appendices

A. Nabil Bank Ltd.

Fi sc al Ye ar	D P S	E P S	M V P S	B V P S	NP AT (in mil lio ns)	Ne t wo rth (in mil lio ns)	R O N W
20 07 /0 8	6 0	1 1 5. 8 6	5 2 7 5	3 5 4	74 6.4 7	24 39. 82	30 .5 9
20 08 /0 9	3 5	1 1 3. 4 4	4 8 9 9	3 2 4	10 31. 05	31 29. 02	32 .9 5
20 09 /1 0	3 0	8 3. 8 1	2 3 8 4	2 6 5	11 39. 10	38 40. 18	29 .6 6
20 10 /1 1	3 0	7 0. 6 7	1 2 5 2	2 2 5	13 37. 74	45 66. 98	29 .2 9
20 11 /1 2	4 0	8 3. 5 7	1 3 5 5	2 6 9	16 96. 28	54 60. 08	31 .0 7

A.1 Variables used for correlation & regression analysis relation between EPS & DPS:

			X ₂	Y ₂	X _Y	X ₂	X ₂	xy
			1	3	6	2	5	47
			3	6	9	2	0	0.1
			4	0	5	2	1	9
			2	0	1	3	3	
			3		.6	9	3	
			5		0		1	
			4				2	
			1	1	3	1	3	-
			2	2	9	9	9	79.
			8	2	7	.9	8	88
			6	5	0	9	.	
			8		.4	7	8	
			.6		0		0	
			3					
			7	9	2	-	9	86.
			0	0	5	9	3	94
			2	0	1	.9	.	
			4		4	6	3	
			.1		.3	6	2	
			2		0			
			4	9	2	-	5	20
			9	0	1	2	1	5.2
			9	0	2	2	9	0
			4		0	.8	.	
			.2		.1		8	
			5		0		4	
			6	1	3	-	9	-
			9	6	3	9	8	9.9
			8	0	4	.	.	0
			3	0	2	9	0	
			.		.			

			94		80		0		1	
			X	Y	X			X		x
			2	2	Y			2		y=
			=	=	=			=		67
			4	8	1			1		2.5
			5	2	8			6		5
			2	2	8			1		
			9	5	9			1		
			4		9			.		
			.		.			2		
			4		2			8		
			8		0			2		

Calculation of Arithmetic Mean (A.M.)

$$X(\text{EPS}) = \frac{\sum X}{n} = \frac{467.35}{5} = 93.47$$

$$Y(\text{DPS}) = \frac{\sum Y}{n} = \frac{195}{5} = 39$$

Calculation of Standard deviation()

$$\text{Standard deviation}(x) = \sqrt{\frac{\sum (X-X)^2}{n}} = \sqrt{\frac{1611.282}{5}} = 17.95$$

$$\text{Standard deviation}(y) = \sqrt{\frac{\sum (Y-Y)^2}{n}} = \sqrt{\frac{620}{5}} = 11.13$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\sigma_x}{\bar{X}} \times 100 = \frac{17.95}{93.47} \times 100 = 19.20\%$$

$$\text{C.V. for Y} = \frac{\sigma_y}{\bar{Y}} \times 100 = \frac{11.13}{39} \times 100 = 28.54\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} = \frac{672.55}{\sqrt{1611.282 \times 620}} = 0.67$$

Calculation of coefficient of determination (r^2)

$$r^2 = r \times r = 0.67 \times 0.67 = 0.45$$

Calculation of Probable Error (P.E.)

$$P.E. = 0.6745 \times \frac{1 - r^2}{n} = 0.6745 \times \frac{1 - 0.45}{5} = 0.17$$

Regression analysis between DPS & EPS

Let, the regression equation of Y(DPS) on X(EPS) be

$$Y = a + bX$$

Where,

$$Y = na + b \frac{\sum X}{n} \quad (i)$$

$$\sum XY = a \sum X + b \frac{\sum X^2}{n} \quad (ii)$$

Substitute the value in equation (i) and (ii)

$$195 = 5a + 467.35b \quad (iii)$$

$$18899.20 = 467.35a + 45294.48b \quad (iv)$$

Multiply equation (iii) by 467.35 and equation (iv) by 5 and subtract

$$91133.25 = 2336.75a + 218416.022b$$

$$94496 = 2336.75a + 226472.40b$$

$$\begin{array}{r} - \\ - \\ - \\ \hline -3362.75 = 0 - 8056.378b \end{array}$$

$$b = \frac{3362.75}{8056.378}$$

$$b = 0.42$$

Now, substitute the value of b in equation (iii)

$$195 = 5a + 467.35 \times 0.42$$

$$195 = 5a + 196.287$$

$$a = -0.257$$

The required equation is,

$$Y = -0.257 + 0.42X$$

Thus,

$$Y_{DPS} = -0.257 + 0.42X_{EPS}$$

Calculation of Standard error of estimate

Year	X(EP S)	Y(DP S)	$\hat{Y} = 0.257 + 0.42X$	Y-	(Y-) ²
2007/0 8	115.8 6	60	48.40	11.6 0	134.56
2008/0 9	113.4 4	35	47.39	12.3 9	153.51
2009/1 0	83.81	30	34.94	- 4.94	24.40
2010/1 1	70.67	30	29.42	0.58	0.3364
2011/1 2	83.57	40	34.84	5.16	26.63
Total					(Y-) ² =339.43 64

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \sqrt{\frac{\sum (Y - \hat{Y})^2}{n-2}}$$

$$= \sqrt{\frac{339.4364}{5-2}}$$

$$= 10.64$$

A.2 Variable used for correlation & regression analysis relation between MVPS & DPS

	Y (P V P S)	Y ²	X Y	x ²	y ²	xy
	5	25	30	4	5	47
	2	4	10	4	0	08
	7	49	60		2	

		5	2	5		1	6	2
			5	0			5	
			6	0			6	
			2				4	
			5					
		4	2	1		1	3	-
		8	4	7		6	4	74
		9	0	1			8	64
		9	0	4			1	
			0	6			9	
			2	5			5	
			0				6	
			1					
		2	5	7		8	4	58
		3	6	1		1	2	41
		8	8	5			1	
		4	3	2			2	
			4	0			0	
			5				1	
			6					
		1	1	3		8	3	16
		2	5	7		1	1	02
		5	6	5			7	9
		2	7	6			1	
			5	0			9	
			0				6	
			4				1	
		1	1	5		1	2	-
		3	8	4			8	16
		5	3	2			1	78
		5	6	0			5	
			0	0			6	
			2				8	
			5				4	
		Y	Y	X		x	y	x
		=	²	²		²	²	y=
		1	=	=		=	=	59
		5	6	6		6	1	81
		1	0	5		2	4	0
		6	9	1		0	9	
			1	2			1	
			2	4			7	
			8	5			3	
			1				6	

				1					6	
--	--	--	--	---	--	--	--	--	---	--

Calculation of Arithmetic Mean (A.M.)

$$X(\text{DPS}) = \frac{\sum X}{n} = \frac{195}{5} = 39$$

$$Y(\text{MVPS}) = \frac{\sum Y}{n} = \frac{15165}{5} = 3033$$

Calculation of Standard deviation ()

$$\text{Standard deviation (} x) = \sqrt{\frac{\sum (X-X)^2}{n}} = \sqrt{\frac{620}{5}} = 11.14$$

$$\text{Standard deviation (} y) = \sqrt{\frac{\sum (Y-Y)^2}{n}} = \sqrt{\frac{14917366}{5}} = 772.46$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\sum x}{X} \times 100 = \frac{11.14}{39} \times 100 = 28.56\%$$

$$\text{C.V. for Y} = \frac{\sum Y}{Y} \times 100 = \frac{772.46}{3033} \times 100 = 25.47\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2} \sqrt{\sum y^2}} = \frac{59810}{\sqrt{620} \times \sqrt{14917366}} = 0.62$$

Calculation of coefficient of determination(r²)

$$r^2 = r \times r = 0.62 \times 0.62 = 0.384$$

Calculation of Probable Error(P.E.)

$$\text{P.E.} = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.384}{5} = 0.19$$

Regression analysis between MVPS & DPS

Let, the regression equation of Y(MVPS) on X(DPS) be

$$Y = a + bX$$

Where,

$$Y = na + b \sum X \quad (i)$$

$$XY = aX + bX^2 \quad \text{(ii)}$$

Substitute the value in equation (i) and (ii)

$$15165 = 5a + 195b \quad \text{(iii)}$$

$$651245 = 195a + 8225b \quad \text{(iv)}$$

Multiply equation (iii) by 195 and equation (iv) by 5 and subtract

$$2957175 = 975a + 38025b$$

$$3256225 = 975a + 41125b$$

$$\begin{array}{r} - \\ - \\ - \\ \hline -299050 = 0 - 3100b \end{array}$$

$$b = \frac{299050}{3100}$$

$$b = 96.47$$

Now, substitute the value of b in equation (iii)

$$15165 = 5a + 195 \times 96.47$$

$$15165 = 5a + 18811.65$$

$$a = -729.33$$

The required equation is,

$$Y = -729.33 + 96.47X$$

Thus,

$$Y_{MVPS} = -729.33 + 96.47X_{DPS}$$

Calculation of Standard error of estimate

Year	X(DPS)	Y(MVPS)	=- 729.33+96.47X	Y-	(Y-) ²
2007/ 08	60	5275	5058.87	216.1 3	46712.18
2008/ 09	35	4899	2647.12	2251. 88	5070963. 53
2009/ 10	30	2384	2164.77	219.2 3	48061.79
2010/ 11	30	1252	2164.77	- 912.7 7	833149.0 7

2011/ 12	40	1355	3129.47	- 1774. 47	3148743. 78
Total					(Y-) ² = 9147630. 35

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \frac{\sqrt{\sum (Y - \hat{Y})^2}}{n-2}$$

$$= \frac{\sqrt{9147630.35}}{5-2}$$

$$= 1746.20$$

A.3 Variable used for correlation & regression analysis relation between MVPS & EPS

			X ₂	Y ₂	X _Y			x ₂	y ₂	x _y
			1	2	6			5	5	5
			3	7	1			0	0	0
			4	8	1			1	2	1
			2	2	1			.	6	9
			3	5	6			3	5	8
			.	6	1.			1	6	.

			5 4	2 5	5 0			2 4	3 8
			1 2 8 6 8 . 6 3	2 4 0 0 2 0 1	5 5 5 7 4 2. 5 6			3 9 8 . 8 0	3 4 8 1 9 5 6
			7 0 2 4 . 1 2	5 6 8 3 4 5 6	1 9 9 8 0 3. 0 4			9 3 . 3 2	4 2 1 2 0 1
			4 9 9 4 . 2 5	1 5 6 7 5 0 4	8 8 4 7 8. 8 4			5 1 9 . 8 4	3 1 7 1 9 6 1
			6 9 8 3 . 9 4	1 8 3 6 0 2 5	1 1 3 2 3 7. 3 5			9 8 . 0 1	2 8 1 5 6 8 4
			X 2 = 4 5 2 9 4 . 4 8	Y 2 = 6 0 9 1 2 8 1	X Y = 1 5 6 8 4 2 3. 2 9			x 2 = 1 6 1 1 . 2 8 2	y 2 = 1 4 9 1 7 3 6
									x y = 1 5 0 9 5 0 . 7 4

				1					6
--	--	--	--	---	--	--	--	--	---

Calculation of Arithmetic Mean (A.M.)

$$X(\text{DPS}) = \frac{\sum X}{n} = \frac{467.35}{5} = 93.47$$

$$Y(\text{MVPS}) = \frac{\sum Y}{n} = \frac{15165}{5} = 3033$$

Calculation of Standard deviation ()

$$\text{Standard deviation (} \sigma_x \text{)} = \sqrt{\frac{\sum (X-X)^2}{n}} = \sqrt{\frac{1611.282}{5}} = 17.95$$

$$\text{Standard deviation (} \sigma_y \text{)} = \sqrt{\frac{\sum (Y-Y)^2}{n}} = \sqrt{\frac{14917366}{5}} = 772.46$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\sigma_x}{\bar{X}} \times 100 = \frac{17.95}{93.47} \times 100 = 19.20\%$$

$$\text{C.V. for Y} = \frac{\sigma_y}{\bar{Y}} \times 100 = \frac{772.46}{3033} \times 100 = 25.47\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2} \sqrt{\sum y^2}} = \frac{150950.74}{\sqrt{1611.282} \times \sqrt{14917366}} = 0.97$$

Calculation of coefficient of determination(r²)

$$r^2 = r \times r = 0.97 \times 0.97 = 0.94$$

Calculation of Probable Error(P.E.)

$$\text{P.E.} = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.94}{5} = 0.02$$

Regression analysis between MVPS & EPS

Let, the regression equation of Y(MVPS) on X(EPS) be

$$Y = a + bX$$

Where,

$$Y = na + b \frac{\sum X}{n} \quad \text{(i)}$$

$$\sum XY = a \sum X + b \frac{\sum X^2}{n} \quad \text{(ii)}$$

Substitute the value in equation (i) and (ii)

$$15165 = 5a + 467.35b \quad \text{(iii)}$$

$$1568423.29 = 467.35a + 45294.48b \quad \text{(iv)}$$

Multiply equation (iii) by 467.35 and equation (iv) by 5 and subtract

$$7087362.75 = 2336.75a + 218416.02b$$

$$7842116.45 = 2336.75a + 226472.43b$$

$$-754753.70 = 0 - 8056.41b$$

$$b = 93.68$$

Now, the substitute the value of b in equation (iii)

$$15165 = 5a + 467.35 \times 93.68$$

$$15165 = 5a + 43781.348$$

$$a = -5723.27$$

The required equation is,

$$Y = -5723.27 + 93.68X$$

Thus,

$$Y_{MVPS} = -5723.27 + 93.68X_{EPS}$$

Calculation of Standard error of estimate

Year	X(EPS)	Y(MVPS)	$-5723.27 + 93.68X$	Y-	$(Y-)^2$
2007/08	115.86	5275	5130.76	144.24	20805.52
2008/09	113.44	4899	4903.79	-4.79	22.94
2009/10	83.81	2384	2128.05	255.95	65510.40
2010/11	70.67	1252	897.10	354.90	125954.01
2011/12	83.57	1355	2114.93	-759.93	577493.60

Total	$(Y - \bar{Y})^2 =$ 789786.4 7
--------------	----------------------------------------------------

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \sqrt{\frac{(Y - \bar{Y})^2}{n-2}}$$

$$= \sqrt{\frac{789786.47}{5-2}}$$

$$= 513.09$$

A.4 Variable used for correlation & regression analysis relation between DPS & NPAT

	X (N P A T)	Y (D P S)	X ²		X Y		x ²		x y
	746.47	60	55		44		196		-93
			72		78		68		31
			21		88		36		68
			7.4		.2		4		.8
			46		20		20		66
	1031.05	35	1063		36086		2536		636
			63		806		30		63
			30		66		6		32
			4.1		.7		4		2

			0		5			5		
	1 1 3 9 . 1 0	3 0	1 2 9 7 5 4 8. 8 1		3 4 1 7 3			2 6 0 4 . 0 6		4 5 9 . 2 7
	1 3 3 7 . 7 4	3 0	1 7 8 9 5 4 8. 3 1		4 0 1 3 2 . 2 0			2 1 7 8 8 . 7 1		- 1 3 2 8 . 4 9
	1 6 9 6 . 2 8	4 0	2 8 7 7 3 6 5. 8 4		6 7 8 5 1 . 2 0			2 5 6 1 8 7 . 8 2		5 0 6 . 1 5
	X = 5 9 5 0 . 6 4	Y = 1 9 5	X ² = 7 5 8 4 7 4 4. 5 2		X Y = 2 2 3 0 3 1 . 3 5			x ² = 5 0 2 7 2 1 . 2 4		x y = - 9 0 4 3 . 6 1

Calculation of Arithmetic Mean (A.M.)

$$\bar{X}(\text{NPAT}) = \frac{\sum X}{n} = \frac{5950.64}{5} = 1190.13$$

$$\bar{Y}(\text{DPS}) = \frac{\sum Y}{n} = \frac{195}{5} = 39$$

Calculation of Standard deviation ()

$$\text{Standard deviation (} \sigma_x) = \sqrt{\frac{\sum (X-\bar{X})^2}{n}} = \sqrt{\frac{502721.24}{5}} = 317.09$$

$$\text{Standard deviation (} \sigma_y) = \sqrt{\frac{\sum (Y-\bar{Y})^2}{n}} = \sqrt{\frac{620}{5}} = 11.14$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\sigma_x}{\bar{X}} \times 100 = \frac{317.09}{1190.13} \times 100 = 26.64\%$$

$$\text{C.V. for Y} = \frac{\sigma_y}{\bar{Y}} \times 100 = \frac{11.14}{39} \times 100 = 28.56\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2} \sqrt{\sum y^2}} = \frac{-9043.61}{\sqrt{502721.24} \times \sqrt{620}} = -0.51$$

Calculation of coefficient of determination(r²)

$$r^2 = r \times r = (-0.51) \times (-0.51) = 0.26$$

Calculation of Probable Error(P.E.)

$$\text{P.E.} = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.26}{5} = 0.22$$

Regression analysis between DPS & NPAT

Let, the regression equation of Y(DPS) on X(NPAT) be

$$Y = a + bX$$

Where,

$$\sum Y = na + b \sum X \quad \text{(i)}$$

$$\sum XY = a \sum X + b \sum X^2 \quad \text{(ii)}$$

Substitute the value in equation (i) and (ii)

$$195 = 5a + 5950.64b \quad \text{(iii)}$$

$$223031.35 = 5950.64a + 7584744.52b \quad \text{(iv)}$$

Multiply equation (iii) by 5950.64 and equation (iv) by 5 and subtract

$$1160374.80 = 29753.20a + 35410116.41b$$

$$1115156.75 = 29753.20a + 37923722.60b$$

$$-45218.05 = 0 - 2513606.19b$$

$$b = 0.018$$

Now, the substitute the value of b in equation (iii)

$$195 = 5a + 5950.64 \times 0.018$$

$$5a = 195 - 107.111$$

$$a = 17.58$$

The required equation is,

$$Y = 17.58 + 0.018X$$

Thus,

$$Y_{DPS} = 17.58 + 0.018X_{NPAT}$$

Calculation of Standard error of estimate

Year	X(NPAT)	Y(DPS)	=- 5723.27 + 93.68X	Y-	(Y-) ²
2007/08	746.47	60	31.02	29.98	839.84
2008/09	1031.05	35	36.14	-1.14	1.30
2009/10	1139.10	30	38.08	-8.08	65.29
2010/11	1337.74	30	41.66	-11.66	135.96
2011/12	1696.28	40	48.11	-8.11	65.77
Total					(Y-) ² =
					1108.16

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \frac{\sum (Y - \hat{Y})^2}{n-2}$$

$$= \sqrt{\frac{1108.16}{5-2}}$$

$$= 19.22$$

A.5 Variable used for correlation and regression analysis between DPS & RONW.

	X (R O N W)	Y (D P S)	X ²		X Y		X ²		X Y
	30.59	60	935		1817		0		-
	32.95	35	1086		1153		5		-
	29.6	30	876		888		1		9

	6		2		80			25		5
	29	30	85		87			20		12
	29		0		70			16		78
	31	40	96		124			02		03
	07		53		220			96		69
	X	Y	X		X			x		x
	=	=	²		Y			²		y
	15	19	=		=			=		=
	33	5	4		59			82		12
	55		7		99			22		12
	66		4		99			80		19
			4		0			5		
			2		5					

Calculation of Arithmetic Mean (A.M.)

$$X(\text{NPAT}) = \frac{X}{n} = \frac{153.56}{5} = 30.71$$

$$Y(\text{DPS}) = \frac{Y}{n} = \frac{195}{5} = 39$$

Calculation of Standard deviation()

$$\text{Standard deviation}(x) = \sqrt{\frac{(X-X)^2}{n}} = \sqrt{\frac{8.2805}{5}} = 1.29$$

$$\text{Standard deviation}(y) = \sqrt{\frac{(Y-Y)^2}{n}} = \sqrt{\frac{620}{5}} = 11.14$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\bar{x}}{X} \times 100 = \frac{1.29}{30.71} \times 100 = 4.20\%$$

$$\text{C.V. for Y} = \frac{\bar{y}}{Y} \times 100 = \frac{11.14}{39} \times 100 = 28.56\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{xy}{x^2 y^2} = \frac{12.19}{8.2805 \times 620} = 0.17$$

Calculation of coefficient of determination(r²)

$$r^2 = r \times r = 0.17 \times 0.17 = 0.028$$

Calculation of Probable Error(P.E.)

$$\text{P.E.} = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.028}{5} = 0.29$$

Regression analysis between DPS & RONW

Let, the regression equation of Y(DPS) on X(RONW) be

$$Y = a + bX$$

Where,

$$Y = na + b \frac{\sum X}{n} \quad \text{(i)}$$

$$\sum XY = a \sum X + b \frac{\sum X^2}{n} \quad \text{(ii)}$$

Substitute the value in equation (i) and (ii)

$$195 = 5a + 153.56b \quad \text{(iii)}$$

$$5999.95 = 153.56a + 4724.42b \quad \text{(iv)}$$

Multiply equation (iii) by 153.56 and equation (iv) by 5 and subtract

$$29944.20 = 767.80a + 23580.67b$$

$$29999.75 = 767.80a + 23622.10b$$

$$\begin{array}{r} - \\ - \\ - \\ \hline -55.55 = 0 - 41.43b \\ b = 1.341 \end{array}$$

Now, the substitute the value of b in equation (iii)

$$195 = 5a + 153.56 \times 1.341$$

$$a = -2.185$$

The required equation is,

$$Y = -2.185 + 1.341X$$

Thus,

$$Y_{\text{DPS}} = -2.185 + 1.341X_{\text{RONW}}$$

Calculation of Standard error of estimate

Year	X(ROW)	Y(DPS)	=- 5723.27 + 93.68X	Y-	(Y-) ²
2007/0 8	30.59	60	38.84	21.1 6	447.7 5
2008/0 9	32.95	35	42	-7	49
2009/1 0	29.66	30	37.59	-7.59	57.61
2010/1 1	29.29	30	37.09	-7.09	50.27
2011/1 2	31.07	40	39.48	0.52	0.27
Total					(Y-) ² = 604.9 0

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \frac{(Y-)^2}{n-2}$$

$$= \sqrt{\frac{604.90}{5-2}}$$

$$= 14.20$$

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Year	D P S	E P S	M V P S	B V P S	N P A T (in mi lli on)	Ne t wo rt h (in mi lli on)	R O N W
20 07 /0 8	0	2 8 .3 3	1 5 1 1	1 6 0. 5 7	24 7.7 71	14 04. 26	17 .6 4
20 08 /0 9	2 .1 1	3 6 .1 8	1 9 0 0	1 9 4. 6 8	31 6.3 73	17 02. 57	18 .5 8
20 09 /1 0	5	2 3 .6 9	7 4 1	1 4 7. 6 1	39 1.7 42	24 40. 86	16 .0 5
20 10 /1 1	5	2 4 .8 5	5 6 5	1 5 3. 5 1	46 4.5 65	28 69. 60	16 .1 9

20	5	2	6	1	48	31	15
11		2	3	5	0.1	96.	.0
/1		.	5	2.	05	71	2
2		9		6			
		3		6			

B.1 Variables used for correlation & regression analysis relation between EPS & DPS:

			X ²	Y ²	X Y	x	x ²	xy
			8	0	0	1	1	-
			0			.	.	3.8
			2			1	2	6
			.			3	8	
			5					
			9					
			1	4	7	8	8	-
			3	.	6	.	0	11.
			0	4	.	9	.	76
			8	5	3	8	6	
			.	2	4		4	
			9					
			9					
			5	2	1	-	1	-
			6	5	1	3	2	5.5
			1		8	.	.	4
			.		.	5	3	
			2		4	1	2	
			2		5			
			6	2	1	-	5	-
			1	5	2	2	.	3.7
			7		4	.	5	1
			.		.	3	2	
			5		2			

			2		5	5			
			5	2	1	-		1	-
			2	5	1	4		8	6.7
			5		4	.		.	5
			7		6	2		2	
			8		5	7		3	
			X	Y	X			X	X
			2	2	Y			2	y=
			=	=	=			=	-
			3	7	4			1	31.
			8	9	3			1	62
			1	.	3			7	
			6	4	.			.	
			1	5	6			9	
			0	2	9			4	

Calculation of Arithmetic Mean (A.M.)

$$X(\text{EPS}) = \frac{X}{n} = \frac{135.98}{5} = 27.20$$

$$Y(\text{DPS}) = \frac{Y}{n} = \frac{17.11}{5} = 3.42$$

Calculation of Standard deviation ()

$$\text{Standard deviation (} x) = \sqrt{\frac{(X-X)^2}{n}} = \sqrt{\frac{117.94}{5}} = 4.86$$

$$\text{Standard deviation (} y) = \sqrt{\frac{(Y-Y)^2}{n}} = \sqrt{\frac{20.92}{5}} = 2.04$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\underline{x}}{X} \times 100 = \frac{4.86}{27.20} \times 100 = 17.87\%$$

$$\text{C.V. for Y} = \frac{\underline{y}}{Y} \times 100 = \frac{2.04}{3.42} \times 100 = 59.65\%$$

Y 3.42

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{xy}{x^2 y^2} = \frac{-31.62}{117.94 \times 20.92} = -0.64$$

Calculation of coefficient of determination(r²)

$$r^2 = r \times r = (-0.64) \times (-0.64) = 0.41$$

Calculation of Probable Error(P.E.)

$$P.E. = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.41}{5} = 0.18$$

Regression analysis between DPS & EPS

Let, the regression equation of Y(DPS) on X(EPS) be

$$Y = a + bX$$

Where,

$$Y = na + b \frac{X}{n} \quad (i)$$

$$XY = a \frac{X}{n} + b \frac{X^2}{n} \quad (ii)$$

Substitute the value in equation (i) and (ii)

$$17.11 = 5a + 135.98b \quad (iii)$$

$$433.69 = 135.98a + 3816.10b \quad (iv)$$

Multiply equation (iii) by 135.98 and equation (iv) by 5 and subtract

$$2326.62 = 679.90a + 1849.06b$$

$$2168.45 = 679.90a + 19080.50b$$

$$158.17 = 0 - 17231.44b$$

$$b = \frac{158.17}{-17231.44}$$

$$b = -0.0092$$

Now, the substitute the value of b in equation (iii)

$$17.11 = 5a + 135.98 \times (-0.0092)$$

$$17.11 = 5a - 1.2510$$

$$a = 3.672$$

The required equation is,

$$Y = 3.672 - 0.0092X$$

Thus,

$$Y_{DPS} = 3.672 - 0.0092X_{EPS}$$

Calculation of Standard error of estimate

Year	X(EPS)	Y(DPS)	$=3.672 - 0.0092X$	Y-	$(Y-)^2$
2007/08	28.33	0	3.41	- 3.41	11.63
2008/09	36.18	2.11	3.34	- 1.23	1.51
2009/10	23.69	5	3.45	1.55	2.40
2010/11	24.85	5	3.44	1.56	2.43
2011/12	22.93	5	3.46	1.54	2.37
Total					$(Y-)^2=20.34$

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \frac{(Y-)^2}{n-2}$$

$$= \sqrt{\frac{20.34}{5-2}}$$

$$= 2.60$$

B.2 Variable used for correlation & regression analysis relation between MVPS & DPS

		Y (M V P S)	Y ²				x ²	y ²	xy
		1511	22283121				1170	194128.36	-1506.85
		19000	36100000				172	688236.16	-1086.78
		741	5449081				250	108504.36	-520.45
		565	319225				250	255429.16	-798.53

$$\text{C.V. for Y} = \frac{\sum Y}{Y} \times 100 = \frac{535.89}{1070.40} \times 100 = 50.06\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2} \sqrt{\sum y^2}} = \frac{4600.54}{\sqrt{20.92} \times \sqrt{1435871.20}} = 0.84$$

Calculation of coefficient of determination(r²)

$$r^2 = r \times r = 0.84 \times 0.84 = 0.71$$

Calculation of Probable Error(P.E.)

$$\text{P.E.} = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.71}{5} = 0.087$$

Regression analysis between MVPS & DPS

Let, the regression equation of Y(MVPS) on X(DPS) be

$$Y = a + bX$$

Where,

$$Y = na + b \sum X \quad \text{(i)}$$

$$\sum XY = a \sum X + b \sum X^2 \quad \text{(ii)}$$

Substitute the value in equation (i) and (ii)

$$5352 = 5a + 17.11b \quad \text{(iii)}$$

$$13714 = 17.11a + 79.452b \quad \text{(iv)}$$

Multiply equation (iii) by 17.11 and equation (iv) by 5 and subtract

$$91572 = 85.55a + 292.752b$$

$$68570 = 85.55a + 397.26b$$

$$\begin{array}{r} - \\ - \\ - \\ \hline 23002.72 = 0 - 104.51b \end{array}$$

$$b = -220.10$$

Now, substitute the value of b in equation (iii)

$$5352 = 5a + 17.11 \times (-220.10)$$

$$5352 = 5a - 3765.911$$

$$a = 1823.58$$

The required equation is,

$$Y = 1823.58 - 220.10X$$

Thus,

$$Y_{\text{MVPS}} = 1823.58 - 220.10X_{\text{DPS}}$$

Calculation of Standard error of estimate

Year	X(DP S)	Y(MVP S)	=- 729.33+96.4 7X	Y-	(Y-) ²
2007/ 08	0	1511	1823.58	- 312. 58	97706.2 6
2008/ 09	2.11	1900	1359.17	540. 83	292497
2009/ 10	5	741	723.08	17.9 2	321.126
2010/ 11	5	565	723.08	- 158. 08	24989.2 9
2011/ 12	5	635	723.08	- 88.0 8	7758.09
Total					(Y-) ² = 423271. 77

Now,

$$\begin{aligned}
 \text{Standard error of estimate of Y on X } (S_{YX}) &= \sqrt{\frac{(Y-)^2}{n-2}} \\
 &= \sqrt{\frac{423271.77}{5-2}} \\
 &= 460.04
 \end{aligned}$$

B.3 Variable used for correlation & regression analysis relation between MVPS & EPS

			X ₂	Y ₂	X _Y			X ₂	y ₂	x _y
			8 0 2 . 5 9	2 2 8 3 1 2 1	4 2 8 0 6. 6 3			1 . 2 8	1 9 4 1 2 8 . 3 6	4 9 7 . 8 8
			1 3 0 8 . 9 9	3 6 1 0 0 0 0	6 8 7 4 2			8 0 . 6 4	6 8 8 2 3 6 . 1 6	7 4 4 9 . 8 1
			5 6 1 . 2 2	5 4 9 0 8 1	1 7 5 5 4. 2 9			1 2 . 3 2	1 0 8 5 0 4 . 3 6	1 1 5 6 . 1 9
			6 1 7 . 5 2	3 1 9 2 2 5	1 4 0 4 0. 2 5			5 . 5 2	2 5 5 4 2 9 . 1	1 1 8 7 . 6 9

									6	
			5	4	1			1	1	1
			2	0	4			8	8	8
			5	3	5			.	9	5
			7	2	6			2	5	9
			8	5	0.			3	7	.
					5				3	1
					5				.	6
									1	
									6	
			X	Y	X			x	y	x
			2	2	Y			2	2	y
			=	=	=			=	=	=
			3	7	1			1	1	1
			8	1	5			1	4	2
			1	6	7			7	3	1
			6	4	7			.	5	5
			.	6	0			9	8	0
			1	5	3.			4	7	.
			0	2	7				1	7
					2				.	3
									2	
									0	

Calculation of Arithmetic Mean (A.M.)

$$X(DPS) = \frac{\sum X}{n} = \frac{135.98}{5} = 27.20$$

$$Y(MVPS) = \frac{\sum Y}{n} = \frac{5352}{5} = 1070.40$$

Calculation of Standard deviation()

$$\text{Standard deviation}(x) = \sqrt{\frac{\sum (X-X)^2}{n}} = \sqrt{\frac{117.94}{5}} = 4.86$$

$$\text{Standard deviation}(y) = \sqrt{\frac{\sum (Y-Y)^2}{n}} = \sqrt{\frac{1435871.20}{5}} = 535.89$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\bar{x}}{X} \times 100 = \frac{4.86}{27.20} \times 100 = 17.87\%$$

$$\text{C.V. for Y} = \frac{\bar{y}}{Y} \times 100 = \frac{535.89}{1070.40} \times 100 = 50.06\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} = \frac{12150.73}{\sqrt{117.94 \times 1435871.20}} = 0.93$$

Calculation of coefficient of determination(r²)

$$r^2 = r \times r = 0.93 \times 0.93 = 0.86$$

Calculation of Probable Error(P.E.)

$$\text{P.E.} = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.86}{5} = 0.04$$

Regression analysis between MVPS & EPS

Let, the regression equation of Y(MVPS) on X(EPS) be

$$Y = a + bX$$

Where,

$$Y = na + b \sum X \quad \text{(i)}$$

$$XY = a \sum X + b \sum X^2 \quad \text{(ii)}$$

Substitute the value in equation (i) and (ii)

$$5352 = 5a + 135.98b \quad \text{(iii)}$$

$$157703.72 = 135.98a + 3816.40b \quad \text{(iv)}$$

Multiply equation (iii) by 135.98 and equation (iv) by 5 and subtract

$$727764.96 = 679.90a + 18490.56b$$

$$788518.60 = 679.90a + 19080.50b$$

$$\begin{array}{r} - \\ - \\ - \\ \hline -60753.64 = 0 - 589.94b \end{array}$$

$$b = 102.98$$

Now, the substitute the value of b in equation (iii)

$$5352 = 5a + 135.98 \times 102.98$$

$$a = -1730.24$$

The required equation is,

$$Y = -1730.24 + 102.98X$$

Thus,

$$Y_{MVPS} = -1730.24 + 102.98X_{EPS}$$

Calculation of Standard error of estimate

Year	X(EPS)	Y(MVPS)	=- 5723.27 + 93.68X	Y-	(Y-) ²
2007/08	28.33	1511	1187.18	323.82	104857.19
2008/09	36.18	1900	1995.58	-95.58	9134.85
2009/10	23.69	741	709.60	31.404	986.20
2010/11	24.85	565	828.81	-263.81	69597.30
2011/12	22.93	635	631.09	3.91	15.28
Total					(Y-) ² = 184590.82

Now,

$$\begin{aligned} \text{Standard error of estimate of Y on X } (S_{YX}) &= \sqrt{\frac{\sum (Y - \hat{Y})^2}{n-2}} \\ &= \sqrt{\frac{184590.82}{5-2}} \\ &= 248.05 \end{aligned}$$

B.4 Variable used for correlation & regression analysis relation between DPS & NPAT

	X (P F A I L)	Y (D P S)	X ²		X Y			X ²		X Y
	2 4 7 . 7 7 1	0	6 1 3 9 0. 4 7		0			1 7 5 1 4 . 1 4		4 5 2 . 6 1
	3 1 6 . 3 7 3	2. 1 1	1 0 0 0 9 1. 8 6		6 6 7 . 5 5			4 0 6 2 . 6 6		8 3 . 5 0
	3 9 1 . 7 4 2	5	1 5 3 4 6 1. 7 9		1 9 5 8 . 7 1			1 3 5 . 2 6		1 8 . 3 8
	4 6 4 . 5 6 5	5	2 1 5 8 2 0. 6 4		2 3 2 2 . 8 2			7 1 3 3 . 3 1		1 3 3 . 4 3
	4 8	5	2 3		2 4			1 0		1 5

	0		0		0		0		8
	.1		5		0		0		
	0		0		.5		0		
	5		8		2				
			1						
	X	Y	X		X		X		X
	=	=	²		Y		²		Y
	1	1	=		=		=		=
	9	7.	7		7		3		8
	0	1	6		3		8		4
	0	1	1		4		8		5
	.5	1	2		9		4		.9
	6		6		.6		.3		2
			5.		0		7		
			5						
			7						

Calculation of Arithmetic Mean (A.M.)

$$X(\text{NPAT}) = \frac{X}{n} = \frac{1900.56}{5} = 380.112$$

$$Y(\text{DPS}) = \frac{Y}{n} = \frac{17.11}{5} = 3.42$$

Calculation of Standard deviation ()

$$\text{Standard deviation (} \sigma_x) = \sqrt{\frac{(X-X)^2}{n}} = \sqrt{\frac{38844.37}{5}} = 88.14$$

$$\text{Standard deviation (} \sigma_y) = \sqrt{\frac{(Y-Y)^2}{n}} = \sqrt{\frac{20.92}{5}} = 2.045$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\sum x}{X} \times 100 = \frac{88.14}{380.112} \times 100 = 23.19\%$$

$$\text{C.V. for Y} = \frac{\sum y}{Y} \times 100 = \frac{2.045}{3.42} \times 100 = 59.80\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} = \frac{845.92}{\sqrt{38844.37 \times 20.92}} = 0.94$$

Calculation of coefficient of determination(r^2)

$$r^2 = r \times r = 0.94 \times 0.94 = 0.88$$

Calculation of Probable Error(P.E.)

$$\text{P.E.} = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.88}{5} = 0.04$$

Regression analysis between DPS & NPAT

Let, the regression equation of Y(DPS) on X(NPAT) be

$$Y = a + bX$$

Where,

$$Y = na + b \sum X \quad \text{(i)}$$

$$\sum XY = a \sum X + b \sum X^2 \quad \text{(ii)}$$

Substitute the value in equation (i) and (ii)

$$17.11 = 5a + 1900.56b \quad \text{(iii)}$$

$$7349.60 = 1900.56a + 761265.57b \quad \text{(iv)}$$

Multiply equation (iii) by 1900.56 and equation (iv) by 5 and subtract

$$32518.58 = 9502.80a + 3612128.31b$$

$$36748 = 9502.80a + 3806327.85b$$

$$-4229.42 = 0 - 194199.54b$$

$$b = 0.022$$

Now, the substitute the value of b in equation (iii)

$$17.11 = 5a + 1900.56 \times 0.022$$

$$a = -4.94$$

The required equation is,

$$Y = -4.94 + 0.022X$$

Thus,

$$Y_{\text{DPS}} = -4.94 + 0.022X_{\text{NPAT}}$$

Calculation of Standard error of estimate

Year	X(NPAT)	Y(DPS)	$=-4.94 + 0.022X_{NPA}$ T	Y-	(Y-) ²
2007/08	247.771	0	0.51	-0.51	0.26
2008/09	316.373	2.11	2.02	0.090	0.008
2009/10	391.742	5	3.68	1.32	1.75
2010/11	464.565	5	5.28	-0.28	0.08
2011/12	480.105	5	5.62	-0.62	0.38
Total					(Y-) ² =
					2.478

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \sqrt{\frac{(Y-)^2}{n-2}}$$

$$= \sqrt{\frac{2.478}{5-2}}$$

$$= 0.91$$

B.5 Variable used for correlation and regression analysis between DPS & RONW.

	X	Y	X ²	X ²	X ²	X ²	X ²	X ²	X ²	X ²
	((
	D	D								
	P	P								
	S	S								
	V									

))								
	1 7 . 6 4	0	3 1 1. 1 7		0			0 . 8 8		- 3 . 2 1 5
	1 8 . 5 8	2. 1 1	3 4 5. 2 2		3 9 . 2 0 4			3 . 5 3		- 2 . 4 6 3
	1 6 . 0 5	5	2 5 7. 6 0		8 0 . 2 5			0 . 4 2		- 1 . 0 2 7
	1 6 . 1 9	5	2 6 2. 1 2		8 0 . 9 5			0 . 2 6		- 0 . 8 0 6
	1 5 . 0 2	5	2 2 5. 6 0		7 5 . 1 0			2 . 8 2		- 2 . 6 5 4
	X = 8 3 .	Y = 1 7.	X ² = 1 4		X Y = 2 7			x ² = 7 .		x y = - 1

	4	1	0		5			9		0
	8	1	1.		.			1		.
			7		5					1
			1		0					6
					4					5

Calculation of Arithmetic Mean (A.M.)

$$X(\text{NPAT}) = \frac{\sum X}{n} = \frac{83.48}{5} = 16.70$$

$$Y(\text{DPS}) = \frac{\sum Y}{n} = \frac{17.11}{5} = 3.42$$

Calculation of Standard deviation()

$$\text{Standard deviation } (s_x) = \sqrt{\frac{\sum (X-X)^2}{n}} = \sqrt{\frac{7.91}{5}} = 1.26$$

$$\text{Standard deviation } (s_y) = \sqrt{\frac{\sum (Y-Y)^2}{n}} = \sqrt{\frac{20.92}{5}} = 2.045$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{s_x}{\bar{X}} \times 100 = \frac{1.26}{16.70} \times 100 = 7.54\%$$

$$\text{C.V. for Y} = \frac{s_y}{\bar{Y}} \times 100 = \frac{2.045}{3.42} \times 100 = 59.80\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} = \frac{-10.165}{\sqrt{\dots}} = -0.79$$

$$x^2 \quad y^2 \quad 7.91 \times 20.92$$

Calculation of coefficient of determination(r^2)

$$r^2 = r \times r = (-0.79) \times (-0.79) = 0.624$$

Calculation of Probable Error(P.E.)

$$P.E. = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.624}{5} = 0.11$$

Regression analysis between DPS & RONW

Let, the regression equation of Y(DPS) on X(RONW) be

$$Y = a + bX$$

Where,

$$Y = na + b \frac{\sum X}{n} \quad (i)$$

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

Substitute the value in equation (i) and (ii)

$$17.11 = 5a + 83.48b \quad (iii)$$

$$275.504 = 83.48a + 1401.71b \quad (iv)$$

Multiply equation (iii) by 83.48 and equation (iv) by 5 and subtract

$$1428.34 = 417.40a + 6968.91b$$

$$1377.52 = 417.40a + 7008.55b$$

$$50.82 = 0 - 39.64b$$

$$b = -1.282$$

Now, the substitute the value of b in equation (iii)

$$17.11 = 5a + 83.48 \times (-1.282)$$

$$a = 24.826$$

The required equation is,

$$Y = 24.826 - 1.282X$$

Thus,

$$Y_{DPS} = 24.826 - 1.282X_{RONW}$$

Calculation of Standard error of estimate

Year	X(RONW)	Y(DPS)	=- 5723.27 + 93.68X	Y-	(Y-) ²
2007/08	17.64	0	2.21	- 2.2 1	4.89
2008/09	18.58	2.11	1.01	1.1 0	1.21
2009/10	16.05	5	4.25	0.7 5	0.56
2010/11	16.19	5	4.07	0.9 3	0.86
2011/12	15.02	5	5.57	0.5 7	0.33
Total					(Y-) ² =7.85

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \sqrt{\frac{(Y-)^2}{n-2}}$$

$$= \sqrt{\frac{7.85}{5-2}}$$

$$= 1.62$$

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Fi sc al Ye ar	D P S	E P S	M V P S	B V P S	N P A T (in mi lli on)	Ne t wo rt h (in mi lli on)	R O N W
20 07 /0 8	2 0	9 1. 8 2	3 1 3 2	3 2 1. 7 7	45 1.2 0	15 81. 20	28 .5 4
20 08 /0 9	3 0	1 0 0	2 4 5 5	3 4 5. 2 3	63 8.6 0	22 05. 40	28 .9 6
20 09 /1 0	3 0	1 0 0. 1 6	1 6 3 0	3 3 2	83 1.8 0	27 57. 10	30 .1 7
20 10 /1 1	3 0	8 3. 1 8	1 0 9 4	2 6 3. 8 0	93 1.3 0	29 53. 50	31 .5 3
20 11 /1 2	1 .5 8	8 8. 5 5	1 0 3 3	3 2 6. 1 8	10 90. 60	40 17. 30	27 .1 5

C.1 Variables used for correlation & regression analysis relation between EPS & DPS:

			X ²	Y ²	X Y	x		x ²		xy
			8	4	1	-		0		2.1
			4	0	8	0		0		34
			3	0	3	.		8		
			0		6	9		4		
			.		.	2		6		
			9		4			4		
			1		0					
			1	9	3	7		5		55.
			0	0	0	.		2		76
			0	0	0	2		.		
			0	0	0	6		7		
			0					1		
			1	9	3	7		5		57
			0	0	0	.		5		
			0	0	0	4		.		
			3		4	2		0		
			2		.			6		
			.		8					
			0							
			2							
			6	9	2	-		9		-
			9	0	4	9		1		73.

			1 8 . 9 1	0	9 5 . 4 0	. 5 6	. 3 9	42
			7 8 4 1 . 1 0	2 . 4 9 6	1 3 9 . 9 1	. 4 . 1 9	1 7 . 5 6	86. 90
			X 2 = 4 3 2 2 2 . 9 4	Y 2 = 3 1 0 2 . 5 0	X Y = 1 0 4 7 6 . 5 1		x 2 = 2 1 7 . 5 7	x y= 12 8.3 74

Calculation of Arithmetic Mean (A.M.)

$$X(\text{EPS}) = \frac{\sum X}{n} = \frac{463.71}{5} = 92.74$$

$$Y(\text{DPS}) = \frac{\sum Y}{n} = \frac{111.58}{5} = 22.32$$

Calculation of Standard deviation ()

$$\text{Standard deviation (} \sigma_x) = \sqrt{\frac{\sum (X-X)^2}{n}} = \sqrt{\frac{217.57}{5}} = 6.60$$

$$\text{Standard deviation (} \sigma_y) = \sqrt{\frac{\sum (Y-Y)^2}{n}} = \sqrt{\frac{612.47}{5}} = 11.07$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\sigma_x}{\bar{x}} \times 100 = \frac{6.60}{92.74} \times 100 = 7.12\%$$

$$X \quad 92.74$$

$$\text{C.V. for } Y = \frac{\bar{Y}}{Y} \times 100 = \frac{11.07}{22.32} \times 100 = 49.60\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} = \frac{128.374}{\sqrt{217.57 \times 612.47}} = 0.35$$

Calculation of coefficient of determination(r^2)

$$r^2 = r \times r = 0.35 \times 0.35 = 0.12$$

Calculation of Probable Error(P.E.)

$$\text{P.E.} = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.12}{5} = 0.26$$

Regression analysis between DPS & EPS

Let, the regression equation of Y(DPS) on X(EPS) be

$$Y = a + bX$$

Where,

$$\sum Y = na + b \sum X \quad \text{(i)}$$

$$\sum XY = a \sum X + b \sum X^2 \quad \text{(ii)}$$

Substitute the value in equation (i) and (ii)

$$111.58 = 5a + 463.71b \quad \text{(iii)}$$

$$10476.51 = 463.71a + 43222.94b \quad \text{(iv)}$$

Multiply equation (iii) by 463.71 and equation (iv) by 5 and subtract

$$51740.76 = 2318.55a + 215026.96b$$

$$52382.55 = 2318.55a + 216114.70b$$

$$\begin{array}{r} - \\ - \\ - \\ \hline -641.79 = 0 - 1087.74b \end{array}$$

$$b = 0.59$$

Now, the substitute the value of b in equation (iii)

$$111.58 = 5a + 463.71 \times 0.59$$

$$a = -32.40$$

The required equation is,

$$Y = -32.40 + 0.59X$$

Thus,

$$Y_{\text{DPS}} = -32.40 + 0.59X_{\text{EPS}}$$

Calculation of Standard error of estimate

Year	X(EPS)	Y(DPS)	$= -32.40 + 0.59X$	Y-	$(Y-)^2$
2007/08	91.82	20	21.77	-1.77	3.146
2008/09	100	30	26.60	3.40	11.56
2009/10	100.16	30	26.69	3.31	10.93
2010/11	83.18	30	16.68	13.32	177.52
2011/12	88.55	1.58	19.84	-18.26	333.59
Total					$(Y-)^2=536.746$

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \sqrt{\frac{(Y-)^2}{n-2}}$$

$$= \sqrt{\frac{536.746}{5-2}}$$

$$= 13.38$$

C.2 Variable used for correlation & regression analysis relation between MVPS & DPS

		Y (M V P S)	X ²	Y ²	X Y				y ²	x y

		3 1 3 2	4 0 0	9 8 0 9 4 2 4	6 2 6 4 0				15 95 67 4.2 4	- 2 9 3 0 . 6 2 4
		2 4 5 5	9 0 0	6 0 2 7 2 5	7 3 6 5 0			34 36 30. 44	4 5 0 2 . 0 2	
		1 6 3 0	9 0 0	2 6 5 6 9 0 0	4 8 9 0 0			57 02 5.4 4	- 1 8 3 3 . 9 8	
		1 0 9 4	9 0 0	1 1 9 6 8 3 6	3 2 8 2 0			60 03 15. 04	- 5 9 5 0 . 4 6 4	
		1 0 3 3	2 . 4 9 6	1 0 6 7 0 8 9	1 6 3 2 . 1 4			69 85 61. 64	1 7 3 3 4 . 4 9	
		Y	X	Y	X			y 2= 32	x	

Calculation of coefficient of determination(r^2)

$$r^2 = r \times r = 0.25 \times 0.25 = 0.06$$

Calculation of Probable Error(P.E.)

$$P.E. = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.06}{5} = 0.28$$

Regression analysis between MVPS & DPS

Let, the regression equation of Y(MVPS) on X(DPS) be

$$Y = a + bX$$

Where,

$$Y = na + b \sum X \quad (i)$$

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

Substitute the value in equation (i) and (ii)

$$9344 = 5a + 111.58b \quad (iii)$$

$$219642.14 = 111.58a + 3102.496b \quad (iv)$$

Multiply equation (iii) by 111.58 and equation (iv) by 5 and subtract

$$1042603.52 = 557.90a + 12450.10b$$

$$1098210.70 = 557.90a + 15512.48b$$

$$-55607.18 = 0 - 3062.38b$$

$$b = 18.19$$

Now, the substitute the value of b in equation (iii)

$$9344 = 5a + 111.58 \times 18.19$$

$$a = 1462.87$$

The required equation is,

$$Y = 1462.87 + 18.19X$$

Thus,

$$Y_{MVPS} = 1462.87 + 18.19X_{DPS}$$

Calculation of Standard error of estimate

Year	X(DP S)	Y(MVP S)	=1462. 87 + 18.19X	Y-	(Y-) ²
2007/	20	3132	1826.67	1305.	1703886.

08				33	41
2008/ 09	30	2455	2008.57	446.4 3	199299.7 5
2009/ 10	30	1630	2008.57	- 378.7 0	143315.2 5
2010/ 11	30	1094	2008.57	- 914.5 7	836438.2 9
2011/ 12	1.58	1033	1491.61	- 458.6 1	210323.3 1
Total					(Y-) ² = 3093263. 01

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \sqrt{\frac{(Y-)^2}{n-2}}$$

$$= \sqrt{\frac{3093263.01}{5-2}}$$

$$= 1015.42$$

C.3 Variable used for correlation & regression analysis relation between MVPS & EPS

			$\frac{x}{2}$	$\frac{Y}{2}$	$\frac{X}{Y}$			$\frac{x}{2}$	$\frac{y}{2}$	$\frac{x}{y}$

			8 4 3 0 . 9 1	9 8 0 9 4 2 4	2 8 7 5 8 0 . 2 4			0 . 8 4 6 4	1 5 9 5 6 7 4. 2 4	- 1 1 6 2 . 1 4 4
			1 0 0 0 0	6 0 2 7 2 5	2 4 5 5 0 0			5 2 . 7 1	3 4 3 6 3 0. 4 4	4 2 5 5 . 8 1 2
			1 0 0 3 2 . 0 2	2 6 5 6 9 0 0	1 6 3 2 6 0 . 8 0			5 5 . 0 6	5 7 0 2 5. 4 4	- 1 7 7 1 . 8 9
			6 9 1 8 . 9 1	1 1 9 6 8 3 6	9 0 9 9 8 . 9 2			9 1 . 3 9	6 0 0 3 1 5. 0 4	7 4 0 7 . 0 9
			7 8 4 1 . 1 0	1 0 6 7 0 8 9	9 1 4 7 2 . 1 5			1 7 . 5 6	6 9 8 5 6 1. 6 4	3 5 0 2 . 0 0 2
			X	Y	X			x	y	x

			2	2	Y			2	2	y
			=	=	=			=	=	=
			4	2	8			2	3	1
			3	0	7			1	2	2
			2	7	8			7	9	2
			2	5	8			.	5	3
			2	7	1			5	2	0
			.	2	2			7	0	.
			9	7	.				6.	8
			4	4	1				8	7
					1				0	

Calculation of Arithmetic Mean (A.M.)

$$X(\text{DPS}) = \frac{\sum X}{n} = \frac{463.71}{5} = 92.74$$

$$Y(\text{MVPS}) = \frac{\sum Y}{n} = \frac{9344}{5} = 1868.80$$

Calculation of Standard deviation()

$$\text{Standard deviation}(x) = \sqrt{\frac{\sum (X-X)^2}{n}} = \sqrt{\frac{217.57}{5}} = 6.60$$

$$\text{Standard deviation}(y) = \sqrt{\frac{\sum (Y-Y)^2}{n}} = \sqrt{\frac{3295206.80}{5}} = 811.81$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\sigma_x}{\bar{X}} \times 100 = \frac{6.60}{92.74} \times 100 = 7.12\%$$

$$\text{C.V. for Y} = \frac{\sigma_y}{\bar{Y}} \times 100 = \frac{811.81}{1868.80} \times 100 = 43.44\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} = \frac{12230.87}{\sqrt{217.57 \times 3295206.80}} = 0.46$$

Calculation of coefficient of determination(r^2)

$$r^2 = r \times r = 0.46 \times 0.46 = 0.21$$

Calculation of Probable Error(P.E.)

$$P.E. = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.21}{5} = 0.24$$

Regression analysis between MVPS & EPS

Let, the regression equation of Y(MVPS) on X(EPS) be

$$Y = a + bX$$

Where,

$$Y = na + b \sum X \quad (i)$$

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

Substitute the value in equation (i) and (ii)

$$9344 = 5a + 463.71b \quad (iii)$$

$$878812.11 = 463.71a + 43222.94b \quad (iv)$$

Multiply equation (iii) by 463.71 and equation (iv) by 5 and subtract

$$4332906.24 = 2318.55a + 215026.96b$$

$$4394060.55 = 2318.55a + 216114.70b$$

$$-61154.31 = 0 - 1087.74b$$

$$b = 56.22$$

Now, the substitute the value of b in equation (iii)

$$9344 = 5a + 463.71 \times 56.22$$

$$a = -3345.16$$

The required equation is,

$$Y = -3345.16 + 56.22X$$

Thus,

$$Y_{MVPS} = -3345.16 + 56.22X_{EPS}$$

Calculation of Standard error of estimate

Year	X(EP S)	Y(MVP S)	$-\frac{3345.16}{5} + 56.22X$	Y-	$(Y-)^2$
2007/0 8	91.82	3132	1816.9 6	1315.0 4	1729329.1 5

2008/09	100	2455	2276.84	178.16	31740.99
2009/10	100.16	1630	2285.84	-655.84	430119.81
2010/11	83.18	1094	1331.22	-237.22	56273.14
2011/12	88.55	1033	1633.12	-600.12	360145.21
Total					(Y-) ² = 2607608.30

Now,

$$\text{Standard error of estimate of Y on X (S}_{YX}) = \sqrt{\frac{(Y-)^2}{n-2}}$$

$$= \sqrt{\frac{2607608.30}{5-2}}$$

$$= 932.31$$

C.4 Variable used for correlation & regression analysis relation between DPS & NPAT

	X (N P A T)	Y (D P S)	X ²	XY	x ²	y
	4	2	2	9	1	7
	5	0	0	0	1	8
	1	3	3	2	3	3
	2	5	5	4	9	
	2	8	8		0	
	0	1.	1.		6.	
		4	4		2	

			4					5		
	6 3 8 . 6 0	3 0	4 0 7 8 0 9. 9 6			1 9 1 5 8		2 2 5 3 0. 0 1		- 1 1 5 2 . 7 7
	8 3 1 . 8 0	3 0	6 9 1 8 9 1. 2 4			2 4 9 5 4		1 8 5 7. 6 1		3 3 1
	9 3 1 . 3 0	3 0	8 6 7 3 1 9. 6 9			2 7 9 3 9		2 0 3 3 4. 7 6		1 0 9 5 . 1 7
	1 0 9 0 . 6 0	1 . 5 8	1 1 8 9 4 0 8. 3 6			1 7 2 3 . 1 4 8		9 1 1 4 3. 6 1		- 6 2 6 1 . 4 1
	X = 3 9 4 3 . 5 0	Y = 1 1 1 . 5 8	X 2 = 3 3 6 0 0 1 0. 6 9			X Y = 8 2 7 9 8 . 1 4 8		x 2 = 2 4 9 7 7 2. 2 4		x y = - 5 2 0 5 . 0 1

Calculation of Arithmetic Mean (A.M.)

$$X(\text{NPAT}) = \frac{\sum X}{n} = \frac{3943.50}{5} = 788.70$$

$$Y(\text{DPS}) = \frac{\sum Y}{n} = \frac{111.58}{5} = 22.32$$

Calculation of Standard deviation ()

$$\text{Standard deviation (} \sigma_x) = \sqrt{\frac{\sum (X-X)^2}{n}} = \sqrt{\frac{249772.24}{5}} = 223.50$$

$$\text{Standard deviation (} \sigma_y) = \sqrt{\frac{\sum (Y-Y)^2}{n}} = \sqrt{\frac{612.47}{5}} = 11.07$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\sigma_x}{\bar{X}} \times 100 = \frac{223.50}{788.70} \times 100 = 28.34\%$$

$$\text{C.V. for Y} = \frac{\sigma_y}{\bar{Y}} \times 100 = \frac{11.07}{22.32} \times 100 = 49.60\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2} \sqrt{\sum y^2}} = \frac{-5205.01}{\sqrt{244772.24} \times \sqrt{612.47}} = -0.42$$

Calculation of coefficient of determination(r²)

$$r^2 = r \times r = (-0.42) \times (-0.42) = 0.18$$

Calculation of Probable Error(P.E.)

$$\text{P.E.} = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.18}{5} = 0.25$$

Regression analysis between DPS & NPAT

Let, the regression equation of Y(DPS) on X(NPAT) be

$$Y = a + bX$$

Where,

$$Y = na + b \frac{\sum X}{n} \quad \text{(i)}$$

$$\sum XY = a \sum X + b \sum X^2 \quad \text{(ii)}$$

Substitute the value in equation (i) and (ii)

$$111.58 = 5a + 3943.50b \quad \text{(iii)}$$

$$82798.148 = 3943.50a + 3360010.69b \quad \text{(iv)}$$

Multiply equation (iii) by 3943.50 and equation (iv) by 5 and subtract

$$440015.73 = 19717.50a + 15551192.25b$$

$$413990.74 = 19717.50a + 16800053.45b$$

$$\begin{array}{r} - \\ - \\ - \\ \hline -26024.99 = 0 - 1248861.20b \\ b = 0.021 \end{array}$$

Now, the substitute the value of b in equation (iii)

$$111.58 = 5a + 3943.50 \times 0.021$$

$$a = 5.75$$

The required equation is,

$$Y = 5.75 + 0.021X$$

Thus,

$$Y_{DPS} = 5.75 + 0.021X_{NPAT}$$

Calculation of Standard error of estimate

Year	X(NPAT)	Y(DPS)	$=5.75 + 0.021X_{NPAT}$	Y-	(Y-) ²
2007/08	451.20	20	15.22	4.77	22.80
2008/09	638.60	30	19.16	10.84	117.49
2009/10	831.80	30	23.22	6.78	46
2010/11	931.30	30	25.31	4.69	22.02
2011/12	1090.60	1.58	28.65	-27.07	732.92

Total	(Y-) ² = 941.23
	3

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \sqrt{\frac{(Y-)^2}{n-2}}$$

$$= \sqrt{\frac{941.23}{5-2}}$$

$$= 17.71$$

C.5 Variable used for correlation and regression analysis between DPS & RONW.

	X (F C P S)	Y (D P S)	X ²		X Y		X ²		X Y
	2	2	8		5		0		1
	8	0	1		7		0		6
	5		4		0		5		9
	4		5		3		3		4
	2	3	8		8		0		2
	8	0	3		6		0		3
	9		6		8		9		8
	6		8		8		6		

					0				
	3 0 . 1 7	3 0	9 1 0. 2 3		9 0 5 . 1 0			0 . 8 1	6 . 9 1
	3 1 . 5 3	3 0	9 9 4. 1 4		9 4 5 . 9 0			5 . 1 1	1 7 . 3 6
	2 7 . 1 5	1. 5 8	7 3 7. 1 2		4 2 . 9 0			4 . 4 9	4 3 . 9 7
	X = 1 4 6 . 3 5	Y = 1 1 1. 5 8	X ² = 4 2 9 4. 7 0		X Y = 3 3 3 3 . 5 0			X ² = 1 1 . 0 3 6	X Y = 6 7 . 5 5 4

Calculation of Arithmetic Mean (A.M.)

$$X(\text{NPAT}) = \frac{\sum X}{n} = \frac{146.35}{5} = 29.27$$

$$Y(\text{DPS}) = \frac{\sum Y}{n} = \frac{111.58}{5} = 22.32$$

Calculation of Standard deviation()

$$\text{Standard deviation (} \sigma_x) = \sqrt{\frac{\sum (X-\bar{X})^2}{n}} = \sqrt{\frac{11.036}{5}} = 1.49$$

$$\text{Standard deviation (} \sigma_y) = \sqrt{\frac{\sum (Y-\bar{Y})^2}{n}} = \sqrt{\frac{612.47}{5}} = 11.07$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\sigma_x}{\bar{X}} \times 100 = \frac{1.49}{29.27} \times 100 = 7.54\%$$

$$\text{C.V. for Y} = \frac{\sigma_y}{\bar{Y}} \times 100 = \frac{11.07}{22.32} \times 100 = 49.60\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2} \sqrt{\sum y^2}} = \frac{67.554}{\sqrt{11.036} \times \sqrt{612.47}} = 0.82$$

Calculation of coefficient of determination(r²)

$$r^2 = r \times r = 0.82 \times 0.82 = 0.67$$

Calculation of Probable Error(P.E.)

$$\text{P.E.} = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.67}{5} = 0.10$$

Regression analysis between DPS & RONW

Let, the regression equation of Y(DPS) on X(RONW) be

$$Y = a + bX$$

Where,

$$Y = na + b \sum X \quad \text{(i)}$$

$$XY = a \sum X + b \sum X^2 \quad \text{(ii)}$$

Substitute the value in equation (i) and (ii)

$$111.58 = 5a + 146.35b \quad \text{(iii)}$$

$$3333.50 = 146.35a + 4294.70b \quad \text{(iv)}$$

Multiply equation (iii) by 146.35 and equation (iv) by 5 and subtract

$$16329.733 = 731.75a + 21418.32b$$

$$16667.50 = 731.75a + 21473.50b$$

$$\begin{array}{r} - \\ - \\ - \\ \hline -337.77 = 0 - 55.18b \end{array}$$

$$b = 6.12$$

Now, the substitute the value of b in equation (iii)

$$111.58 = 5a + 146.35 \times 6.12$$

$$a = -156.82$$

The required equation is,

$$Y = -156.82 + 6.12X$$

Thus,

$$Y_{DPS} = -156.82 + 6.12X_{RONW}$$

Calculation of Standard error of estimate

Year	X(RONW)	Y(DPS)	$-156.82 + 6.12X$	Y-	$(Y-)^2$	
2007/08	28.54	20	17.84	2.16	4.66	
2008/09	28.96	30	20.41	9.59	91.96	
2009/10	30.17	30	27.82	2.18	4.75	
2010/11	31.53	30	36.14	-6.14	37.70	
2011/12	27.15	1.58	70.54	-68.96	4755.48	
Total					$(Y-)^2 =$	4894.55

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \frac{\sum (Y-)^2}{n-2}$$

$$= \sqrt{\frac{4894.55}{5-2}}$$

$$= 40.39$$

D. Standard Chartered Bank Nepal Ltd.

Fiscal Year	DPS	EPS	MVP	BVPS	NPAT (in million)	Net worth (in million)	RONW
2007/08	80	131.92	6830	402	818.92	2492.55	32.85
2008/09	50	109.99	6010	328	1025.11	3052.47	33.58
2009/10	55	77.65	3279	241	1085.87	3369.71	32.22
2010/11	50	69.51	1800	228	1119.17	3677.78	37.89
2011/12	45	72.60	1799	256	1168.97	4122.17	28.36

D.1 Variables used for correlation & regression analysis relation between EPS & DPS:

			X ₂	Y ₂	X _Y	x	X ₂	xy
			1 7 4 0 2 . 8 9	6 4 0 0	1 0 5 5 3 . 6 0	3 9 . 5 9	1 5 6 7 . 3 7	95 0.1 6
			1 2 0 9 7 . 8 0	2 5 0 0	5 4 9 9 . 5 0	1 7 . 6 6	3 1 1 . 8 8	- 10 5.9 6
			6 0 2 2 9 . 5 2	3 0 2 5	4 2 7 0 . 7 5	- 1 4 . 6 8	2 1 5 . 5 0	14. 68
			4 8 3 1 . 6 4	2 5 0 0	3 4 7 5 . 5 0	- 2 2 . 8 2	5 2 0 . 7 5	13 6.9 2
			5 2 7 0 . 7	2 0 2 5	3 2 6 7	- 1 9 . 7	3 8 9 . 2	21 7.0 3

			6		3		7	
			X	Y	X		X	x
			2	2	Y		2	y=
			=	=	=		=	12
			4	1	2		3	12.
			5	6	7		0	83
			6	4	0		0	
			3	5	6		4	
			2	0	6		.	
			.		.		7	
			6		3		7	
			1		5			

Calculation of Arithmetic Mean (A.M.)

$$X(\text{EPS}) = \frac{\sum X}{n} = \frac{461.67}{5} = 92.33$$

$$Y(\text{DPS}) = \frac{\sum Y}{n} = \frac{280}{5} = 56$$

Calculation of Standard deviation ()

$$\text{Standard deviation (} x) = \sqrt{\frac{\sum (X-X)^2}{n}} = \sqrt{\frac{3004.77}{5}} = 24.51$$

$$\text{Standard deviation (} y) = \sqrt{\frac{\sum (Y-Y)^2}{n}} = \sqrt{\frac{770}{5}} = 12.41$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\sigma_x}{\bar{X}} \times 100 = \frac{24.51}{92.33} \times 100 = 26.55\%$$

$$\text{C.V. for Y} = \frac{\sigma_y}{\bar{Y}} \times 100 = \frac{12.41}{56} \times 100 = 22.16\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2} \sqrt{\sum y^2}} = \frac{1212.83}{\sqrt{3004.77} \times \sqrt{770}} = 0.80$$

Calculation of coefficient of determination (r^2)

$$r^2 = r \times r = 0.80 \times 0.80 = 0.64$$

Calculation of Probable Error(P.E.)

$$P.E. = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.64}{5} = 0.11$$

Regression analysis between DPS & EPS

Let, the regression equation of Y(DPS) on X(EPS) be

$$Y = a + bX$$

Where,

$$Y = na + b \sum X \quad (i)$$

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

Substitute the value in equation (i) and (ii)

$$280 = 5a + 461.67b \quad (iii)$$

$$27066.35 = 461.67a + 45632.61b \quad (iv)$$

Multiply equation (iii) by 461.67 and equation (iv) by 5 and subtract

$$129267.60 = 2308.35a + 213139.19b$$

$$135331.75 = 2308.35a + 228163.05b$$

$$-6064.15 = 0 - 15023.86b$$

$$b = 0.41$$

Now, the substitute the value of b in equation (iii)

$$280 = 5a + 461.67 \times 0.41$$

$$a = 18.14$$

The required equation is,

$$Y = 18.14 + 0.41X$$

Thus,

$$Y_{DPS} = 18.14 + 0.41X_{EPS}$$

Calculation of Standard error of estimate

Year	X(EPS)	Y(DPS)	$= 18.14 + 0.41X$	Y-	$(Y-)^2$
2007/08	131.92	80	72.23	7.77	60.42

2008/09	109.99	50	63.23	-13.23	175.03
2009/10	77.65	55	49.98	5.02	25.23
2010/11	69.51	50	46.64	3.36	11.30
2011/12	72.60	45	47.91	-2.91	8.44
Total					(Y-) ² = 280.42

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \frac{(Y - \hat{Y})^2}{n-2}$$

$$= \sqrt{\frac{280.42}{5-2}}$$

$$= 7.49$$

D.2 Variable used for correlation & regression analysis relation between MVPS & DPS

				Y ²	X ²	Y	X	Y ²	X ²
				4	5	2		833	6
				6	4	8		130	9
				6	6	8		4.96	2
				4	4	6.			7
				8	0	4			3
				9	0	0			.6

				0					0
				3 6 1 2 0 1 0	3 0 0 5 0 0		2 0 6 6. 4 0	427 000 8.96	- 1 2 3 9 8 . 4 0
				1 0 7 5 1 8 4 1	1 8 0 3 4 5		- 6 6 4. 6 0	441 693. 16	6 6 4 . 6 0
				3 2 4 0 0 0 0	9 0 0 0 0		- 2 1 4 3. 6 0	459 502 0.96	1 2 8 6 1 . 6 0
				3 2 3 6 4 0 1	8 0 9 5 5		- 2 1 4 4. 6 0	459 930 9.16	2 3 5 9 0 . 6 0
				Y 2 = 9 9 9 9 7 2 4 2	X Y = 1 1 9 8 2 0 0		y ² = 222 378 79.6 7	x y = 1 0 6 3 9 0 . 4 0	

Calculation of Arithmetic Mean (A.M.)

$$X(\text{DPS}) = \frac{\sum X}{n} = \frac{280}{5} = 56$$

$$Y(\text{MVPS}) = \frac{\sum Y}{n} = \frac{19718}{5} = 3943.60$$

Calculation of Standard deviation()

$$\text{Standard deviation}(x) = \sqrt{\frac{\sum (X-X)^2}{n}} = \sqrt{\frac{770}{5}} = 12.41$$

$$\text{Standard deviation}(y) = \sqrt{\frac{\sum (Y-Y)^2}{n}} = \sqrt{\frac{22237337.20}{5}} = 2108.90$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for } X = \frac{\sum x}{X} \times 100 = \frac{12.41}{56} \times 100 = 22.16\%$$

$$\text{C.V. for } Y = \frac{\sum Y}{Y} \times 100 = \frac{2108.90}{3943.60} \times 100 = 53.48\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sum x^2 \sum y^2} = \frac{106390.40}{770 \times 22237337.20} = 0.81$$

Calculation of coefficient of determination(r²)

$$r^2 = r \times r = 0.81 \times 0.81 = 0.656$$

Calculation of Probable Error(P.E.)

$$\text{P.E.} = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.656}{5} = 0.07$$

Regression analysis between MVPS & DPS

Let, the regression equation of Y(MVPS) on X(DPS) be

$$Y = a + bX$$

Where,

$$Y = na + b \frac{\sum X}{n} \quad (i)$$

$$XY = a \sum X + b \frac{\sum X^2}{n} \quad (ii)$$

Substitute the value in equation (i) and (ii)

$$19718 = 5a + 280b \quad (iii)$$

$$1198200 = 280a + 16450b \quad (iv)$$

Multiply equation (iii) by 280 and equation (iv) by 5 and subtract

$$5521040 = 1400a + 78400b$$

$$5991000 = 1400a + 82250b$$

$$\begin{array}{r} - \\ - \\ - \\ \hline -469960 = 0 - 3850b \end{array}$$

$$b = 122.07$$

Now, the substitute the value of b in equation (iii)

$$19718 = 5a + 280 \times 122.07$$

$$a = -2892.32$$

The required equation is,

$$Y = -2892.32 + 122.07X$$

Thus,

$$Y_{MVPS} = -2892.32 + 122.07X_{DPS}$$

Calculation of Standard error of estimate

Year	X(DPS)	Y(MVPS)	$\frac{-2892.32 + 122.07X}{n}$	Y-	$(Y-)^2$
2007/08	80	6830	6873.28	-43.28	1873.16
2008/09	50	6010	3211.18	2798.82	7833393.39
2009/10	55	3279	3821.53	-542.53	294338.80
2010/11	50	1800	3211.18	-1411.18	1991428.99

2011/1 2	45	1799	2600.8 3	- 801.83	642931.35
Total					(Y-) ² = 10763965. 69

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \sqrt{\frac{\sum (Y - \hat{Y})^2}{n-2}}$$

$$= \sqrt{\frac{10763965.69}{5-2}}$$

$$= 1894.20$$

D.3 Variable used for correlation & regression analysis relation between MVPS & EPS

			X ²	Y ²	X Y		y = Y - Y	y ²	x y
			1	4	9		2	83	1
			7	6	0		8	31	1
			4	6	1		8	30	4
			0	4	0		6	4.9	2
			2	8	1		.	6	7
			.	9	3.		4		2
			8	0	6		0		.
			9		0				5
									8
			1	3	6		2	42	3

			2 0 9 7 . 8 0	6 1 2 0 1 0	6 1 0 3 9. 9 0		0 6 6 . 4 0	70 00 8.9 6	6 4 9 2 . 6 2
			6 0 2 9 . 5 2	1 0 7 5 1 8 4 1	2 5 4 6 1 4. 3 5		- 6 6 4 . 6 0	44 16 93. 16	9 4 6 2 . 7 3
			4 8 3 1 . 6 4	3 2 4 0 0 0 0	1 2 5 1 1 8		- 2 1 4 3 . 6 0	45 95 02 0.9 6	4 8 9 0 9 . 1 9
			5 2 7 0 . 7 6	3 2 3 6 4 0 1	1 3 0 6 0 7. 4 0		- 2 1 4 4 . 6 0	45 99 30 9.1 6	4 2 3 1 2 . 9 6
			Y 2 = 4 5 6 3 2 . 6 1	Y 2 = 9 9 9 9 7 2 4 2	X Y = 2 0 7 3 9 3. 2 5			y 2= 22 23 78 79. 67	x y = 2 5 1 4 5 0 . 0 8

Calculation of Arithmetic Mean (A.M.)

$$X(\text{DPS}) = \frac{\sum X}{n} = \frac{461.67}{5} = 92.33$$

$$Y(\text{MVPS}) = \frac{\sum Y}{n} = \frac{19718}{5} = 3943.60$$

Calculation of Standard deviation()

$$\text{Standard deviation}(x) = \sqrt{\frac{\sum (X-X)^2}{n}} = \sqrt{\frac{3004.77}{5}} = 24.51$$

$$\text{Standard deviation}(y) = \sqrt{\frac{\sum (Y-Y)^2}{n}} = \sqrt{\frac{22237879.67}{5}} = 2108.93$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\sigma_x}{\bar{X}} \times 100 = \frac{24.51}{92.33} \times 100 = 26.55\%$$

$$\text{C.V. for Y} = \frac{\sigma_y}{\bar{Y}} \times 100 = \frac{2108.93}{3943.60} \times 100 = 53.48\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} = \frac{251450.08}{\sqrt{3004.76 \times 22237879.67}} = 0.97$$

Calculation of coefficient of determination(r²)

$$r^2 = r \times r = 0.97 \times 0.97 = 0.94$$

Calculation of Probable Error(P.E.)

$$\text{P.E.} = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.94}{5} = 0.02$$

Regression analysis between MVPS & EPS

Let, the regression equation of Y(MVPS) on X(EPS) be

$$Y = a + bX$$

Where,

$$Y = na + bX \quad (i)$$

$$Y = a + bX \quad (ii)$$

Substitute the value in equation (i) and (ii)

$$19718 = 5a + 461.67b \quad (iii)$$

$$2072393.25 = 461.67a + 45632.61b \quad (iv)$$

Multiply equation (iii) by 461.67 and equation (iv) by 5 and subtract

$$9103209.06 = 2308.35a + 213139.19b$$

$$10361966.25 = 2308.35a + 228163.05b$$

$$\begin{array}{r} - \\ - \\ - \\ \hline -1258757.19 = 0 - 15023.86b \\ b = 83.78 \end{array}$$

Now, substitute the value of b in equation (iii)

$$19718 = 5a + 461.67 \times 83.78$$

$$a = -3792.14$$

The required equation is,

$$Y = -3792.14 + 83.78X$$

Thus,

$$Y_{MVPS} = -3792.14 + 83.78X_{EPS}$$

Calculation of Standard error of estimate

Year	X(EPS)	Y(MVPS)	$-3792.14 + 83.78X$	Y-	$(Y -)^2$
2007/08	131.92	6830	7260.12	-430.12	185001.15

2008/09	109.99	6010	5422.82	587.18	344777.77
2009/10	77.65	3279	2713.38	565.62	319929.38
2010/11	69.51	1800	2031.41	-231.41	53549.57
2011/12	72.60	1799	3965.89	-2166.89	4695403.61
Total					(Y-) ² = 5598661.48

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \sqrt{\frac{(Y-)^2}{n-2}}$$

$$= \sqrt{\frac{5598661.48}{5-2}}$$

$$= 1058.17$$

D.4 Variable used for correlation & regression analysis relation between DPS & NPAT

	X	Y	X ²	X	Y	X ²	X	Y	X ²	Y ²
--	---	---	----------------	---	---	----------------	---	---	----------------	----------------

	8 1 8 . . 9 2	8 0	6 7 0 6 2 9. 9 7		6 5 5 1 3 . . 6 0			5 0 4 8 5. 6 0		- 5 3 9 2 . . 5 6
	1 0 2 5 . . 1 1	5 0	1 0 5 0 8 5 0. 5 1		5 1 2 5 5 . . 5 0		3 4 2. 2 5		1 1 1	
	1 0 8 5 . . 8 7	5 5	1 1 7 9 1 1 3. 6 6		5 9 7 2 2 . . 8 5		1 7 8 5. 9 1		- 4 2 . . 2 6	
	1 1 1 9 . . 1 7	5 0	1 2 5 2 5 4 1. 4 9		5 5 9 5 8 . . 5 0		5 7 0 9. 3 1		- 4 5 3 . . 3 6	
	1 1 6 8 . .	4 5	1 3 6 6 4		5 2 6 0 3		1 5 7 1 5.		- 1 3 7 8	

	9 7	9 0. 8 6		. 6 5		1 3		. 9 6
	X =	Y =	X ²	X Y		x ²		x y
	5 2 1 1 8 0 4	2 8 0	= 5 5 1 9 6 2 6. 4 9	= 2 8 5 0 5 4 . 1 0		= 7 4 0 3 8. 2 0		= - 7 1 5 6 . 1 4

Calculation of Arithmetic Mean (A.M.)

$$X(\text{NPAT}) = \frac{X}{n} = \frac{5218.04}{5} = 1043.61$$

$$Y(\text{DPS}) = \frac{Y}{n} = \frac{280}{5} = 56$$

Calculation of Standard deviation()

$$\text{Standard deviation}(x) = \sqrt{\frac{(X-X)^2}{n}} = \sqrt{\frac{74038.20}{5}} = 121.69$$

$$\text{Standard deviation}(y) = \sqrt{\frac{(Y-Y)^2}{n}} = \sqrt{\frac{770}{5}} = 12.41$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\bar{x}}{X} \times 100 = \frac{121.69}{1043.61} \times 100 = 11.66\%$$

$$\text{C.V. for Y} = \frac{\bar{y}}{Y} \times 100 = \frac{12.41}{56} \times 100 = 22.16\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} = \frac{-7156.14}{\sqrt{74038.20 \times 770}} = -0.95$$

Calculation of coefficient of determination(r²)

$$r^2 = r \times r = (-0.95) \times (-0.95) = 0.90$$

Calculation of Probable Error(P.E.)

$$\text{P.E.} = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.90}{5} = 0.03$$

Regression analysis between DPS & NPAT

Let, the regression equation of Y(DPS) on X(NPAT) be

$$Y = a + bX$$

Where,

$$Y = na + b \sum X \quad \text{(i)}$$

$$\sum XY = a \sum X + b \sum X^2 \quad \text{(ii)}$$

Substitute the value in equation (i) and (ii)

$$280 = 5a + 5218.04b \quad \text{(iii)}$$

$$285054.10 = 5218.04a + 5519626.49b \quad \text{(iv)}$$

Multiply equation (iii) by 5218.04 and equation (iv) by 5 and subtract

$$1461051.20 = 26090.20a + 27227941.44b$$

$$14252270.50 = 26090.20a + 27598132.45b$$

$$\begin{array}{r} - \\ - \\ - \\ \hline 35780.70 = 0 - 370191.01b \end{array}$$

$$b = -0.10$$

Now, the substitute the value of b in equation (iii)

$$280 = 5a + 5218.04 \times (-0.10)$$

$$a = 160.36$$

The required equation is,

$$Y = 160.36 - 0.10X$$

Thus,

$$Y_{DPS} = 160.36 - 0.10X_{NPAT}$$

Calculation of Standard error of estimate

Year	X(NPAT)	Y(DPS)	$=160.36 - 0.10X$	Y-	$(Y-)^2$	
2007/08	818.92	80	78.47	1.53	2.341	
2008/09	1025.11	50	57.85	-7.85	61.61	
2009/10	1085.87	55	51.77	3.23	10.41	
2010/11	1119.17	50	48.44	1.56	2.42	
2011/12	1168.97	45	43.46	1.54	2.36	
Total					$(Y-)^2 =$	79.141

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \sqrt{\frac{(Y-)^2}{n-2}}$$

$$= \sqrt{\frac{79.141}{5-2}}$$

$$= 5.14$$

D.5 Variable used for correlation and regression analysis between DPS & RONW.

	X (F C 7 4)	Y (D P S)	X ²		X Y			X ²	X Y
	3 2 . 8 5	8 0	1 0 7 9. 1 2		2 6 2 8			0 . 0 1 7	- 3 . 1 2
	3 3 . 5 8	5 0	1 1 2 7. 6 2		1 6 7 9			0 . 3 6	- 3 . 6
	3 2 . 2 2	5 5	1 0 3 8. 1 3		1 7 7 2 . 1 0			0 . 5 8	0 . 7 6
	3 7 . 8 9	5 0	1 4 3 5. 6 5		1 8 9 4 . 5 0			2 4 . 1 1	- 2 9 . 4 6
	2 8 . 3 6	4 5	8 0 4. 2 9		1 2 7 6 . 2			2 1 . 3 4	5 0 . 8 2

					0					
	X	Y	X	X	X				X	X
	=	=	²		Y				²	Y
	1	2	=	=	=			=	=	=
	6	8	5	9	9			4	4	1
	4	0	4	2	2			6	6	5
	.		8	4	4			.	.	.
	9		4	9	9			4	4	4
	0		8	.	.			1	1	0
			1	8	8					
				0	0					

Calculation of Arithmetic Mean (A.M.)

$$X(\text{NPAT}) = \frac{\sum X}{n} = \frac{164.90}{5} = 32.98$$

$$Y(\text{DPS}) = \frac{\sum Y}{n} = \frac{280}{5} = 56$$

Calculation of Standard deviation ()

$$\text{Standard deviation (} \sigma_x) = \sqrt{\frac{\sum (X - \bar{X})^2}{n}} = \sqrt{\frac{46.41}{5}} = 3.05$$

$$\text{Standard deviation (} \sigma_y) = \sqrt{\frac{\sum (Y - \bar{Y})^2}{n}} = \sqrt{\frac{770}{5}} = 12.41$$

Calculation of Coefficient of Variation (C.V.)

$$\text{C.V. for X} = \frac{\sigma_x}{\bar{X}} \times 100 = \frac{3.05}{32.98} \times 100 = 9.25\%$$

$$\text{C.V. for Y} = \frac{\sigma_y}{\bar{Y}} \times 100 = \frac{12.41}{56} \times 100 = 22.16\%$$

Calculation of correlation coefficient(r) between X & Y

$$r_{xy} = \frac{xy}{x^2 y^2} = \frac{15.40}{46.41 \times 770} = 0.08$$

Calculation of coefficient of determination(r²)

$$r^2 = r \times r = 0.08 \times 0.08 = 0.0064$$

Calculation of Probable Error(P.E.)

$$P.E. = 0.6745 \times \frac{1-r^2}{n} = 0.6745 \times \frac{1-0.0064}{5} = 0.30$$

Regression analysis between DPS & RONW

Let, the regression equation of Y(DPS) on X(RONW) be

$$Y = a + bX$$

Where,

$$Y = na + bX \quad (i)$$

$$XY = a \cdot a + bX^2 \quad (ii)$$

Substitute the value in equation (i) and (ii)

$$280 = 5a + 164.90b \quad (iii)$$

$$9249.80 = 164.90a + 5484.81b \quad (iv)$$

Multiply equation (iii) by 164.90 and equation (iv) by 5 and subtract

$$46172 = 824.50a + 27192.01b$$

$$46249 = 824.50a + 27424.05b$$

$$\begin{array}{r} - \\ - \\ - \\ \hline -77 = 0 - 232.04b \\ b = 0.332 \end{array}$$

Now, the substitute the value of b in equation (iii)

$$280 = 5a + 164.90 \times 0.332$$

$$a = 45.05$$

The required equation is,

$$Y = 45.05 + 0.332X$$

Thus,

$$Y_{DPS} = 45.05 + 0.332X_{RONW}$$

Calculation of Standard error of estimate

Year	X(RONW)	Y(DPS)	= 45.05 + 0.332X	Y-	(Y-) ²
2007/08	32.85	80	55.96	24.04	578.10
2008/09	33.58	50	56.20	-6.20	38.42
2009/10	32.22	55	55.75	-0.75	0.56
2010/11	37.89	50	57.63	-7.63	58.21
2011/12	28.36	45	54.46	-9.46	89.60
Total					(Y-) ² = 764.89

Now,

$$\text{Standard error of estimate of Y on X } (S_{YX}) = \sqrt{\frac{(Y-)^2}{n-2}}$$

$$= \sqrt{\frac{764.89}{5-2}}$$

$$= 15.97$$