## CHAPTER – 2

CONCEPTUAL FRAMEWORK OF DU PONT MODEL AND RATIO ANALYSIS

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2.1 INTRODUCTION

The performance of the firm can be measured by its financial results, i.e., by its size of earnings. Riskiness and profitability are two major factors which jointly determine the value of the concern. Financial decisions which increase risks will decrease the value of the firm and on the other hand, financial decisions which increase the profitability will increase value of the firm. Risk and profitability are two essential ingredients of a business concern.

There has been a considerable wonder about the ultimate objective of firm performance, whether it is profit maximization or wealth maximization. It is observed that while considering the firm performance, the profit and wealth maximization are linked and are effected by one-another.

Financial performance refers to the act of performing financial activity. In broader sense, financial performance refers to the degree to which financial objectives being or has been accomplished. It is the process of measuring the results of a firm's policies and operations in monetary terms. It is used to measure firm's overall financial health over a given period of time and can also be used to compare similar firms across the same industry or to compare industries or sectors in aggregation.

Financial performance analysis is the process of identifying the financial strengths and weaknesses of the firm by properly establishing the relationship between the items of balance sheet and profit and loss account. It also helps in short-term and long term forecasting and growth can be identified with the help of financial performance analysis.

Financial performance is an ordinary amongst the perspective of various stakeholders, be it in the management, lenders, owners and investors’ perspective. And it is out of analysis of financial statements. Financial performance is critical for taking financial decisions related to planning and control. Hence, it forms the basis as one of the paramount importance for taking financial decisions effectively.
2.2 MEANING OF FINANCIAL PERFORMANCE

A subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation.

The word ‘Performance is derived from the word ‘parfourmen’, which means ‘to do’, ‘to carry out’ or ‘to render’. It refers the act of performing; execution, accomplishment, fulfilment, etc. In border sense, performance refers to the accomplishment of a given task measured against preset standards of accuracy, completeness, cost, and speed. In other words, it refers to the degree to which an achievement is being or has been accomplished.

In the words of Frich Kohlar “The performance is a general term applied to a part or to all the conducts of activities of an organization over a period of time often with reference to past or projected cost efficiency, management responsibility or accountability or the like”. Thus, not just the presentation, but the quality of results achieved refers to the performance. Performance is used to indicate firm’s success, conditions, and compliance.

Financial performance means performing financial activities about any organization or business. We can decide the financial soundness of organization by analyzing financial performance. Financial performance refers to the act of performing financial activity. It is used to measure firm’s overall financial health over a given period of time and can be also used to compare similar firms across the same industry or to compare industries or sectors in aggregation.

There are many different ways to measure financial performance, but all measures should be taken in aggregation. Line items such as revenue from operations, operating income or cash flow from operations can be used, as well as total unit sales. Furthermore, the analyst or investor may wish to look deeper into financial statements and seek out margin growth rates or any declining debt.
2.3 EVOLUTION OF FINANCIAL PERFORMANCE

As we talk about measurement of financial performance it can be measure through various techniques like trend analysis, ROI, ROE, ROA, Ratio Analysis etc. In the present study all techniques has been applied to measure financial performance to selected BSE – 30 Companies. For that purpose deferent - deferent researcher has been made attempt as follow:

Juliet D’Souza and William L. Megginson (1999) studied the financial and operating performance of privatized firms during the period of 1990 to 1996. For that purpose researcher took sample of 85 companies from 28 industrialized countries. Researcher has analyzed that the significant increases in profitability, output, operating efficiency, dividend payments and significant decreases in leverage ratios for the full sample of firms after privatization were noticed. Capital expenditures increase significantly in absolute terms, but not relative to sales. Employment declines, but insignificantly. The findings of the study strongly suggest that privatization yields significant performance improvements. Debasish Sur and Kaushik Chakraborty (2006) in his study financial performance of Indian Pharmaceutical Industry: The Indian Pharmaceutical Industry has been playing a very significant role in increasing the life expectancy and in decreasing the mortality rate. It is the 5th largest in terms of volume and 14th largest in value terms in the world. The comparative analysis the financial performance of Indian pharmaceutical industry for the period 1993 to 2002 by selecting six notable companies of the industry. The comparison has been made from almost all points of view regarding financial performance using relevant statistical tools. Philip L. Little, John W. Mortimer, Marvin A. Keene, Linda R. Henderson (2008) financial performance of retail firms through the use of a modified Du Pont model of financial ratio analysis in order to identify the drivers of financial success using the alternative business strategies of cost leadership and differentiation. Study found that retail firms pursuing a differentiation strategy are more likely to achieve a higher return on net operating assets than those firms pursuing a cost leadership strategy. Dr Ahmed Arif Almazari (2012) studied the financial performance of the Jordanian Arab commercial bank for the period 2000-2009 by using the Du Pont system of financial analysis which is
based on analysis of return on equity model. The return on equity model disaggregates performance into three components: net profit margin, total asset turnover, and the equity multiplier. It was found that the financial performance of Arab Bank is relatively steady and reflects minimal volatility in the return on equity. Net profit margin and total asset turnover exhibit relative stability for the period from 2001 to 2009. The equity multiplier also show almost stable indicators for the period from 2001-2005 and the ratios declined from 2006-2009 which indicates that the Arab bank had less financial leverage in the recent years, which means the bank is relying less on debt to finance its assets. Sorina Simona BUMBESCU (2015) studied financial performance of selected 20 farms of Romania. Researcher conclude that the farms that have the highest profits are less attractive for investors because have the lowest rates of return; using the Pearson correlation coefficient, it was shown that there is a strong correlation between ROA-ROE, ROA-ROS, ROE-ROS.

2.4 MEANING OF FINANCIAL STATEMENTS

The financial statements are prepared with a view to depict the financial position of the concern. They are based on the recorded facts and are usually expressed in monetary terms. The financial statement are prepared periodically that is generally for the accounting period.

Summary report that shows how a firm has used the funds entrusted to it by its stockholders (shareholders) and lenders, and what is its current financial position. The term financial statement has been widely used to represent two statements prepared by accountants at the end of specific period. They are basic financial statements: (i) Profit and Loss Account or Income Statement, which shows how the net income of the firm is arrived at over a stated period; (ii) Balance Sheet or statement of financial position, which shows firm's assets, liabilities, and net worth on a stated date; and (iii) cash flow statement, which shows the inflows and outflows of cash caused by the firm's activities during a stated period. It is also called business financials.
2.5 DEFINITIONS OF FINANCIAL STATEMENTS

According to John N. Meyer, “The financial statement provides summary of accounts of a business enterprise, the balance sheet reflecting assets, liabilities and capital as on a certain date and the income statement showing the result of operation during a certain period.”

In the words of Myer, “The term financial statements, as used in modern business, refer to the two statements which the accountants prepares at the end of a period of time for a business enterprise. They are the balance sheet or statement of financial position and the income statement or profit and loss statement.”

According to Himpton John, “A financial statement is an organized collection of data according to logical and consistent accounting procedures.”

As McMullen has stated, “The principal financial statements published for the information of outsides are the balance sheet, the income statement, the statement of retained earnings or owner’s equity and the statement of changes in financial position (formerly usually known as the statement of sources and application of funds).”

“Financial Statements refer to the statement that shows the financial position and results of business activities at the end of the accounting period.”

In the words of Metcalf and Titard, “Analyzing financial statements is a process of evaluating relationship between component parts of financial statements to obtain a better understanding of a firm’s position and performance.”

2.6 OBJECTIVES OF FINANCIAL STATEMENTS

As stated by the Accounting Standards Board of India that, “the objective of financial statements is to provide information about the financial position, performance and cash flows of an enterprise that is useful to a wide range of users in making economic decisions.”

The Accounting Principles Board of America mentions the objectives of financial statements as follows:
To provide reliable financial information about economic resources and obligations of a business enterprise.

To provide reliable information about in net resources (resources less obligations) of an enterprise that results from its activities.

To provide financial information that assist in estimating the earning potentials of a business.

To provide other needed information about changes in economic resources of obligation.

To disclose, to the extent possible, other information related to the financial statements that is relevant to the needs of the users of these statements.

2.7 NATURES OF FINANCIAL STATEMENTS

The Financial Statements reflect the financial position of the company as at a point of time (Balance Sheet) and the financial result of the company for a particular period (Profit and Loss Account). Financial statements are prepared for the purpose of presenting a periodical review or report on the progress made by the firm to the management. These statements deal with the status of investments in the business and the results achieved during the period under review. The American Institute of Certified Public Accountants states that, “Financial Statements reflect a combination of recorded facts, accounting conventions and personal judgments and the judgments and conventions applied affect them materially.”

There are various natures of financial statements are as following:

1) Recorded Facts:
The term ‘recorded facts’ means that data used for preparing financial statements are taken out from the accounting records. The financial statements do not disclose such facts which are not recorded in the accounting books whether such facts are important or not. The market price or replacement cost of fixed assets is not stated in the balance sheet, because the cost price of the fixed assets is a recorded fact as per accounting records.
2) Accounting Conventions and Postulates:
The Financial Statements are affected to a very great extent by Accounting Principles, Concepts and Conventions like Going Concern Concept, Accounting Period Concept, Matching Concept, Conservatism Convention, Consistency Convention, Monetary Postulate, Realization Postulate, etc. These concepts and conventions provide a guideline to the accountant for arriving at the decision as to the amount to be charged to the Profit and Loss Account of the current year and amount to be carried forward as an expired cost to be shown in the Balance Sheet.

3) Personal Judgment:
Although accounting concepts and conventions provide good guidelines to the accountant, yet the application of these concepts and conventions depends upon the personal judgment of the accountant. For example, in the application of depreciation, the accountant has scope of exercising his personal judgment in the use of the depreciation method and in deciding the rate of depreciation. Again, in deciding the method of valuing the stock in trade, he can make a choice of the various methods available like FIFO, LIFO, Average Method, etc. Whether a particular item should be capitalized or charged to Profit and Loss Account again depends to a great extent on the personal judgment of the accountant.

2.8 CHARACTERISTICS OF FINANCIAL STATEMENTS

The characteristics of financial statements are as following:

1) Understandability:
An essential quality of information provided in financial statements is that it is readily understandable by users. For this purpose, users are assumed to have a reasonable knowledge of business and economic activities, accounting and willingness to study the information with reasonable diligence.

2) Relevance:
To be useful, information must be relevant to the decision making needs of users. Information has the quality of relevance when it influences the economic decisions of
users by helping them to evaluate past, present or future events or confirming or correcting their past evaluations.

3) **Materiality:**
The relevance information is affected by its nature and materiality. Information is material if its omission or misstatement could influence the economic decisions of users taken on the basis of the financial statements. Materiality depends on the size of the item or error judged in the particular circumstances of its omission or misstatement.

4) **Reliability:**
To be useful, information must also be reliable. Information has the quality of reliability when it is free from material error and bias and the users can be depend upon it for reliable information. To be reliable, information must represent faithfully the transactions and other events it either purports to represent or could reasonably be expected to represent.

5) **Substance:**
If information is to represent faithfully the transactions and other events that it purports to represent, it is necessary that they are accounted for and presented in accordance with their substance and economic reality and not merely their legal form.

6) **Prudence:**
Where an accountant could deal with an item in more than one way, his choice between the alternatives should give precedence to that which provides the most conservative result.

7) **Completeness:**
To be reliable, the information in financial statements must be complete within the bounds of materiality and cost. An omission can cause information to be false or misleading and thus unreliable and deficient in terms of its relevance.

8) **Neutrality:**
To be reliable, the information contained in financial statements must be neutral, that is, free from bias. Financial statements are not neutral if, by the selection or
presentation of information, they influence the making of a decision or judgment in order to achieve a predetermined result or outcome.

9) **Comparability:**
Users must be able to compare the financial statements of an enterprise through time in order to identify trends in its financial position and performance. Users must also be able to compare the financial statements of different enterprises in order to evaluate their relative financial position, performance and changes in financial position. Hence, the measurement and display of the financial effect of like transactions and other events must be carried out in a consistent way throughout an enterprise and over time for that enterprise and in a consistent way for different enterprises.

2.9 **ADVANTAGES OF FINANCIAL STATEMENTS**

The advantages of financial statements are as follows:

1) **Management:**
Financial statements are used by those persons who direct and control the business. These persons are known as ‘Management’. Management desires such information from these statements by which the efficiency and earning power of the firm can be measured and rational decisions for its efficient operation can be taken. These financial statements will serve the business executives as gauges and charts serve an engineer.

2) **Investors:**
Shareholders and long-term lenders fall in the category of investors. They need information to aid their decisions of buying, selling or holding shares or debentures of reporting entity. Thus, through financial statements, investors get information regarding administrative efficiency, financial position and profit earning capacity of the company.

3) **Banks:**
Banks provide credit facilities to their customers. They are very careful while granting loans as their margin of profit is very low. Banks want to be assured, while granting
loans, that their loans will be paid on due dates. Therefore, they need adequate information regarding financial position, especially, solvency and profit earning capacity of the customer. These statements also help the banker to determine the amount of securities that he will ask from the customers as a cover for the loans.

4) **Trade Creditors:**
Creditors are the persons who supply goods on credit. It is usual that they are interested to know the financial soundness before granting credit. The progress and prosperity of the firm is watched by the creditors from the point of view of security and further credit. Financial statements help to know the soundness i.e. liquidity and short-term solvency position of the firm.

5) **Government and their Agencies:**
Due to separation of management and ownership in companies; the government has enacted some laws for the protection of shareholders. In these laws, it is necessary to provide information regarding operations of business and financial position according to government rules and regulations.

6) **Customers:**
Customers have an interest in information about the continuance of an enterprise, especially when they have a long-term involvement with, or are dependent on the enterprise.

7) **Public:**
Enterprises affect members of the public in a variety of ways. Financial statements may assist the public by providing information about the trends and recent developments in the prosperity of the enterprise and the range of its activities.

8) **Employees:**
Employees and their representative bodies are interested in the financial statements to ascertain the ability of the enterprise to maintain the existing staff and serve them through appropriate remuneration and retirement benefits. On the basis of these statements, employees come to know about the profit earning capacity and
productivity of the company. The demand of wage rise, bonus, better working conditions, labour welfare facilities etc. depend upon the profitability of the firm.

9) **Trade Associations:**
Trade associations are non-profit making organization whose objective is, by congregating the owners of different industries, to safeguard their interests and development of industries. These associations study the industry’s trend of progress by analyzing the financial statements received from member companies. They may develop standard ratios and design uniform system of accounting to compare the competitive position of different companies.

10) **Stock Exchanges:**
The importance of stock exchanges is growing in view of growing and enlarging capital market. Stock exchanges do like to examine the financial statements of few years while granting listing of shares to a company. Thus, these statements are useful instruments in examining the track record of the company. Moreover, the fixation of prices of shares and debentures is also based on these statements.

### 2.10 LIMITATIONS OF FINANCIAL STATEMENTS

The financial statements are subject to the following limitations:

- In Profit and Loss Account net profit is ascertained on the basis of historical costs.
- Profit arrived at by the profit and loss account is of interim nature. Actual profit can be ascertained only after the firm achieves its maximum capacity.
- The net income disclosed by the profit and loss account is not absolute but only relative.
- The profit and loss account does not disclose factors like quality of product, efficiency of the management etc.
- The net income is the result of personal judgment and bias of accountants cannot be removed in the matters of depreciation, stock valuation, etc.
There are certain assets and liabilities which are not disclosed by the balance sheet. For example, the most tangible asset of a company is its management force and an unsatisfied labour force is its liability which is not disclosed by the balance sheet.

The book value of assets is shown as original cost less depreciation. But in practice, the value of the assets may differ depending upon the technological and economic changes.

The assets are valued in a balance sheet on a going concern basis. Some of the assets may not realize their value on winding up.

The accounting year may be fixed to show a favourable picture of the business. In case of sugar industry the balance sheet prepared in off-season depicts a better liquidity position than in the crushing season.

An investor likes to analyze the present and future prospects of the business, while the balance sheet shows past position. As such the use of a balance sheet is only limited.

Due to flexibility of accounting principles, certain liabilities like provision for gratuity etc. are not shown in the balance sheet, giving the outsiders a misleading picture.

The financial statements are generally prepared from the point of view of shareholders and their use is limited in decision making by the management, investors and creditors.

Even the audited financial statement does not provide complete accuracy.

Financial statements do not disclose the changes in management, loss of markets, etc. which have a vital impact on the profitability of the concern.

The financial statements are based on accounting policies which may vary from company to company and as such cannot be formed as a reliable basis of judgment.
2.11 TOOLS & TECHNIQUES OF FINANCIAL STATEMENTS

The important techniques used of financial statements are as follows:

1) Comparative Financial Statements

Comparative Financial Statements are statements of financial position of a business designed to provide time perspective to the consideration of various elements of financial position embodied in such statements. Comparative financial statements are those statements which summarize and present related accounting data for a number of years incorporating therein the changes in individual items. Comparative figures indicate the trend and direction of the financial position and the operating results. This analysis is also known as ‘Horizontal Analysis’. The comparative financial statements are designed to disclose the following:

- Absolute data (money values or rupee amounts)
- Increase or reduction in absolute data in terms of money values
- Increase or reduction in absolute data in terms of percentages
- Comparison in terms of ratios
- Percentage of totals

Financial statements of two or more firms can also be compared for drawing inferences. This is called ‘inter-firm comparison’.

Comparative Income Statements: A comparative income statement shows the absolute figures for two or more periods and the absolute change from one period to another. Since the figures are shown side by side, the user can quickly understand the operational performance of the firm in different periods and draw conclusions.

Comparative Balance Sheet: Balance sheets as on two or more different dates are used for comparing the assets, liabilities and the net worth of the company. Comparative balance sheet is useful for studying the trends of an undertaking.

Recognizing the importance of comparative figures, the Companies Act 1956 made it compulsory to show the numbers of the previous years also in the Balance Sheet to facilitate comparison.
2) **Common - Size Financial Statements**

The figures shown in financial statements viz; profit and loss account and balance sheet are converted to percentages so as to establish each element to the total figure of the statement and these statements are called ‘Common Size Statements’. Common Size Statements are useful, both, in intra - firm comparisons over a series of different years and also in making inter firm comparisons for the same year or for several years. This analysis is also known as ‘Vertical Analysis’.

The following statements show the method of presentation of the data.

**Common Size Income Statement:** In common size income statement, the sales figure is taken as 100 and all other figures of costs and expenses are expressed as percentage to sales. When other costs and expenses are reduced from sales figures of ‘100’, the balance figure is taken as net profit. This reveals the efficiency of the firm in generating revenue which leads to profitability and we can make analysis of different components of cost as proportion to sales. Inter – firm comparison of common size income statements reveal the relative efficiency of costs incurred.

**Common Size Balance Sheet:** In common size balance sheet, the total of assets side or liabilities side is taken as ‘100’ and all figures of assets and liabilities, capital and reserves are expressed as a proportion to the total i.e. 100. The common size balance sheet reveals the proportion of fixed assets to current assets, comparison of fixed assets and current assets, proportion of long-funds to current liabilities and provisions, comparison of current liabilities etc. It also helps in making inter firm comparison and highlights the financial health and long-term solvency, ability to meet short-term obligations and liquidity position of the enterprise.

3) **Trend Analysis**

The Trend Analysis is the method of analyzing financial position of a business on the basis of changes in the items of financial statements of successive years in comparison to a specific date or period of commencement of study. The trend ratios of different items are calculated for various periods for comparison purpose. The trend analyses are the index numbers of the movements of reported financial items in
Chapter 2 Conceptual Framework of Du Pont Model and Ratio Analysis

the financial statements which are calculated for more than one financial year. The calculation of trend ratios are based on statistical technique called ‘Index Numbers’. The trend analyses help in making horizontal analysis of comparative statements. It reflects the behaviour of items over a period of time.

The methodology used in computation of trend ratios in as follows:

1. The accounting principles and policies should be consistently followed throughout the period for which the trend ratios are calculated.
2. The trend analyses should be calculated only for the items which have logical relationship with one another.
3. The trend analysis should be made at least for four consecutive years.
4. The financial statements of one financial year should be selected as a base statement and financial items of it should be assigned with value as 100.
5. Then trend analyses of subsequent years’ financial statements should be calculated by applying the following formula:

\[
\text{Tabulate the trend ratios for analysis of trend over a period.}
\]

The trend percentages are calculated for select major financial items in the financial statements to arrive at the conclusions for important changes. The trend may sometimes be affected by external factors like government policies, economics conditions, changes in income distribution, technology development, population growth, changes in tastes and habits etc. The trend analysis is a simple technique and does not involve tedious calculations.

4) Fund Flow Analysis

It refers to the movement of funds into the business and out of the business during a given accounting period. The flow of funds into the business is called as sources of funds and flow of funds out of the business is called as user or application of funds. The difference in the inflow or outflow of funds is the change in the working capital during a given accounting period. When the sources of funds exceed the use of funds,
it results in an increase in the working capital and when the uses exceed the sources of funds, it is a case of decrease in the working capital.

R. A. Faulke, “A statement of source and application of fund is a technical device designed to analyze the changes in the financial condition of a business enterprise between two dates”.

The main sources of funds are funds from operations, issue of share capital, issue of debentures, sales of fixed assets and long term borrowings and the applications of funds are purchase of fixed assets, repayment of borrowings, redemption of debentures, payments of dividends and taxes.

5) Cash Flow Analysis

The statement which gives information of change occurred in the position of cash of a business enterprise during the period of balance sheets of two different dates is cash flow statement. The cash flow statement deals with the provisions of information about the historical change in cash equivalents of an enterprise by means of cash flow statement which classified cash flows during the period from operating, investing and financial activities. The purpose of cash flow is to give an idea about the capability of raising cash and cash equivalent resources and receipt and payment flow of cash.

The Institute of Cost and Works Accountants of India defines in its glossary of Management Accounting Terms, “Cash Flow Statement is a statement setting out the cash under different heads of sources and their utilization to determine the requirements of cash during the given period and to prepare for its adequate provisions”.

It refers to the analysis of actual movement of cash into and out of an organization. The flow of cash into the business is called as cash inflow or positive cash flow and the flow of cash out of the firm is called as cash outflow or a negative cash flow. The difference between the inflow and outflow of cash is the net cash flow representing surplus or a deficit. Cash Flow Statement is prepared to project the manner in which the cash received has been utilized during an accounting year. It includes only cash transactions. It is a statement, which shows the sources of cash receipts and also the
purposes for which payments are made. Thus, it summarizes the causes for the changes in cash position of a business enterprise between dates of two Balance Sheets.

6) **Ratio Analysis**

Ratio analysis has emerged as the principle technique of analysis of financial statements. It is an attempt to present the information of the financial statements in simplified, systematized and summarized from by establishing the quantitative relationship of the item or group of items of financial statements. The analysis of the financial statements and interpretations of financial results of a particular period of operations with the help of 'Ratio' is termed as "Ratio Analysis". Ratio analysis used to determine the financial soundness of a business concern. Alexander Wall designed a system of ratio analysis and presented it in useful form in the year 1909. The relationship between the two related accounting figures, expressed mathematically, is known as a ‘Financial Ratio’. In Financial Analysis, Ratios are used as yardstick for evaluating the financial position and performance of a firm. Ratio analysis is particularly helpful in providing valuable insight into a company’s financial representation.

2.12 **INTRODUCTION OF DU PONT MODEL**

The Du Pont Model was created in the early 1900s but is still a model valid to use for assessment of the profitability. Using the Du Pont Model for risk analysis is not very common but if you as a risk analysis specialist want to talk the language of the business, it can be valuable to you. Before discussing the mechanics and usefulness of Du Pont, it may be of some interest to learn about its development. The maturation of the Du Pont Model parallels the progress made in the field of financial analysis itself. Three distinct versions of Du Pont have been created and used to help unravel the underlying drivers of profitability and return over time, beginning nearly 90 years ago.

The model was created by **F. Donaldson Brown** who came up with the model when he was assigned to clean up the finances in General Motors and has ever since been an
important model for financial analysis. Remarkably it has not been used in the
security community for risk prioritization or impact analysis. The original Du Pont
method of financial ratio analysis was developed in 1918 by an engineer at Du Pont
who was charged with understanding the finances of a company that Du Pont was
acquiring. In this method of performance measurement that was started by the Du
Pont Corporation in the 1920s. With this method, assets are measured at their gross
book value rather than at net book value in order to produce a higher Return on Equity
(ROE). It is also known as "Du Pont identity".

2.12.1 Concept of Du Pont Model

The Du Pont Model is a typical traditional model of measuring financial performance
on the basis of accounting income concept. The idea behind the model is that the
Return on Investment (ROI) is the best overall financial performance measure and all
activities of an organization ultimately contribute to the ROI. For such an analysis
much emphasis is laid on financial ratios based on four related financial aspects of
business i.e. Profitability, Liquidity, Leverage and Activity. This chart is known as Du
Pont Control Chart since it was first used by Du Pont Company of the USA.

ROI represents the earning power of the company. ROI depends on two ratios (i) Net
Profit Ratio and (ii) Capital Turnover Ratio. A change in any of these ratios will
change the firms earning power. These two ratios are affected by many factors.

A change in any of these factors will change these ratios also. The various factors
affecting the ROI can be put through a chart given above. This chart is known as Du –
Pont Control Chart since it was first used by Du – Pont Company of the USA. The
chart helps the management in concentrating attention on different forces affecting
profit. An increase in profit can be achieved either by more effective use of capital
which will result in a higher turnover ratio or better sales efforts which will result in a
higher net profit ratio. The same rate of return can be obtained either by a low net
profit ratio but a high turn over ratio or vice versa.
2.12.2 Meaning of Du Pont Model or Analysis

The Du Pont Company of USA has introduced a system of financial analysis which has received wider acceptance. The Du Pont chart is a chart of financial ratios, which analyses the Net Profit Margin in terms of asset turnover. The Du Pont Analysis is used as a tool in measuring the managerial performance by linking the net profit margin to total assets turnover. Du Pont Analysis is an extension of Return on Investment ratio, which measures the overall profitability and operational efficiency of the firm. The Du Pont Analysis considers the inter-relationship of accounting information given in financial statements. Comparative analysis can be done with reference to the data of previous period or industry data or competitor’s data. The Du Pont chart indicates that the return on investment is ascertained as a product of Net Profit Margin ratio and Investment turn over ratio. The Du Pont chart is useful in segregation and identification of factors that affect the overall performance of the company.

Chart 2.1
Du Pont Analysis

(DU – PONT MODEL)

\[
\text{Return on Investment} = \text{Net Profit Ratio} \times \text{Capital Turnover Ratio}
\]

\[
= \left( \frac{\text{Net Profit}}{\text{Sales}} \right) \times \left( \frac{\text{Sales}}{\text{Capital Employed}} \right)
\]

\[
= \left( \frac{\text{Sales} - \text{Cost of Goods Sold}}{\text{Sales}} \right) \times \left( \frac{\text{Sales}}{\text{Working Capital} + \text{Fixed Assets}} \right)
\]

\[
= \frac{\text{Current Assets} - \text{Current Liabilities}}{\text{Current Assets}} \times \frac{\text{Current Assets}}{\text{Working Capital} + \text{Fixed Assets}}
\]

(Source: Vidyasagar University Journal of Commerce, Vol.11, March 2006)
It will be seen from the above chart that, Return on Investment can be improved by increasing one or both of its components viz., the net profit margin and the investment turnover in any of the following ways:

a) Increasing the net profit margin, or

b) Increasing the investment turnover, or

c) Increasing both net profit margin and investment turnover.

The obvious generalization that can be made about ROI that any action is beneficial provided that it:

i) Boosts sales

ii) Reduces invested capital

iii) Reduced cost (while holding the other two factors constant).

Table No. 2.1

Calculation of Capital Employed

<table>
<thead>
<tr>
<th>Particular</th>
<th>Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share capital of the company</td>
<td>xxxxxxxx</td>
</tr>
<tr>
<td>Reserves and surplus</td>
<td>xxxxxxxx</td>
</tr>
<tr>
<td>Loans (Secured/Unsecured)</td>
<td>xxxxxxxx</td>
</tr>
<tr>
<td>Less: (a) Capital-in-progress</td>
<td>xxxxxxxx</td>
</tr>
<tr>
<td>(b) Investment outside the business</td>
<td>xxxxxxxx</td>
</tr>
<tr>
<td>(c) Preliminary Expenses</td>
<td>xxxxxxxx</td>
</tr>
<tr>
<td>(d) Debit balance of Profit and Loss A/C</td>
<td>xxxxxxxx</td>
</tr>
<tr>
<td><strong>Capital Employed</strong></td>
<td>xxxxxxxx</td>
</tr>
</tbody>
</table>

2.12.3 Definition of Du Pont analysis

A type of analysis that examines a company's Return on Equity (ROE) by breaking it into three main components: profit margin, asset turnover and leverage factor. By breaking the ROE into distinct parts, investors can examine how effectively a
company is using equity, since poorly performing components will drag down the overall figure. To calculate a firm's ROE through Du Pont analysis, multiply the profit margin (net income divided by sales), asset turnover (sales divided by assets) and leverage factor (total assets divided by shareholders' equity) together. If higher result, the higher the return on equity.

2.12.4 Measurement of Du Pont Model

Du Pont analysis takes into account four indicators to measure firm profitability: ROS, ROA, ROE and ROI.

Return on Sales – ROS offers a different take on management effectiveness and related profit earns for assets. Assets include things like cash in the bank, accounts receivable, property, equipment, inventory and furniture. \( \text{ROS} = \frac{\text{Sales}}{\text{Total Assets}} \).

Return on Assets – ROA offers a different take on management effectiveness and reveals how much profit a company earns for every dollar of its assets. Assets include things like cash in the bank, accounts receivable, property, equipment, inventory and furniture. \( \text{ROA} = \frac{\text{Total Assets}}{\text{Net income}} \).

Return on Equity – ROE is a basic test of how effectively a company's management uses investors’ money – ROE shows whether management is growing the company's value at an acceptable rate. Also, it measures the rate of return that the firm earns on stockholder’s equity. Because only the stockholder’s equity appears in the denominator, the ratio is influenced directly by the amount of debt a firm is using to finance assets. Practically, ROE reflects the profitability of the firm by measuring the investors’ return. \( \text{ROE} = \frac{\text{Stockholder’s equity}}{\text{Total Assets} \times \text{Net income} \times \text{Stockholder's equity} \times \text{Total Assets}} \).

Return on Investment – ROI is the return earned from the investment made by the firm. This gives the actual position of the firm. ROI shows whether the management is in profitable position or not. It measures the earnings of the firm. It multiplies profit margin and Asset Turnover. \( \text{ROI} = \frac{\text{Operating Income}}{\text{Total Assets}} \times \frac{\text{Operating Income}}{\text{Total Assets}} \times \frac{\text{EBIT}}{\text{Operating Income}} \).
Chapter 2 Conceptual Framework of Du Pont Model and Ratio Analysis

There are basic measured the ratios of ROE, ROA applying the Du Pont analyses, which have been demonstrated with the aim of show the change periodically. Du Pont analysis (ROI and ROE) is an important tool for judging the operating financial performance. It is an indication of the earning power of the firm.

2.13 INTRODUCTION OF RATIO ANALYSIS

The system of analysis of financial statements by means of ratios was first made in 1919 by Alexander Wall. Ratio analysis is an important and age-old technique. It is a powerful tool of financial Analysis. It is defined as “The indicated measure of two mathematical expressions” and as “the relationship between two or more things”. Systematic use of ratio is to interpret the financial statement so that the strength and weakness of a firm as well as its historical performance and current financial condition can be determined.

A ratio is only comparison of the numerator with the denominator. The term ratio refers to the numerical or quantitative relationship between two figures. Thus, ratio is the relationship between two figures and obtained by dividing a former by the latter. Ratios are designed show how one number is related to another.

The data given in the financial statements are in absolute form and are dumb and are unable to communicate anything. Ratios are relative form of financial data and are very useful technique to check upon the efficiency of a firm. Some ratios indicate the trend or progress or downfall of the firm.

2.13.1 Meaning of Ratio Analysis

The accounting ratios indicate a quantitative relationship which is used for analysis and decision making. It provides basis for inter-firm as well as intra-firm comparison. The ratios will be effective only when they are compared with ratios of base period or with standards or with the industry ratios. The financial statement as Income statement and Balance Sheet report what has actually happened to earnings during a specified period and presents a summary of financial position of the company at a given point of time. The statement of retained earnings reconciles income earned
during the year and any dividends distributed with the change in retained earnings between the start and end of the financial year under study. A ratio is a quotient of two numbers and the relation expressed between two accounting figures is known as ‘accounting ratio’.

Ratio analysis is a process of comparison of one figure against another, which makes a ratio. The appraisal of the ratios will make proper analysis about the strengths and weaknesses of the firm’s operations. The calculation of ratios is a relatively easy and simple task but the proper analysis and interpretation of the ratios can be made only by the skilled analyst. While interpreting the financial information, the analyst has to be careful in limitations imposed by the accounting concepts and methods. Information of non-financial nature will also be taken into consideration before a meaningful analysis is made. Ratio analysis is extremely helpful in providing valuable insight into a company’s financial picture.

2.13.2 Definitions of Ratio Analysis

- **According to J. Batty**, “The term accounting ratio is used to describe significant relationships which exist between figures shown in a balance sheet, in a profit and loss account, in a budgetary control system or in any other part of the accounting management”.

- **According to Dr. S. N. Maheshwary**, “Accounting ratios are relationship expressed in mathematical terms between figures which are connected with each other in some manners”.

- **According to James C. Van Harne**, “Ratio is a yardstick used to evaluate the financial condition and performance of a firm relating to two pieces of financial data to each other”.

- **According to H. G. Guthmann**, “Ratio is the relationship or proportion that one amount bears to another, the first number being the numerator and the later denominator”.


According to Kohler, “The relation of one amount, A to another B, expressed as the ratio of A to B”.

According to Hingorani, Ramanatnans and Grewal, “The relationship between the two figure expressed mathematically is called a ratio”.

According to Accountant’s Handbook by Wixon, Kell and Bedford, “A ratio is an expression of the quantitative relationship between two numbers”.

2.13.3 Mode of Expression of Ratios

This is quantitative relationship ratios may be expressed in either of the following ways:

1) **As Ratio or Proportion**: In this form, the relationship between two figures is expressed in a common denominator. It is obtained by the simple division of one number by another so that the proportionate relationships become clear. **For example**, if current assets are Rs. 12000 and current liabilities are Rs. 3000, the ratio between current assets and current liabilities i.e. current ratio will be 4:1.

2) **As Ratio or Turnover**: In this form, a ratio is calculated between two numerical facts for which one item is divided by another and the quotient so obtained is taken as unit of expression. When ratio is expressed in this form, it is called as ‘turnover’ and is written in ‘times’. **For example**, sales for the year are Rs. 60000 and fixed assets are Rs. 20000; it indicates that sales are 3 times of fixed assets.

3) **As Percentage**: In this form, the relationship between two item is expressed in percentage for which one item is divided by another and the quotient is multiplied by one hundred. **For example**, if sales are Rs. 40000 and gross profit is Rs. 10000, and then percentage of gross profit to sales i.e. gross profit ratio will be 25%.
Chapter 2 Conceptual Framework of Du Pont Model and Ratio Analysis

2.13.4 Objectives of Ratio Analysis

The objectives of Ratio Analysis are as follows:

- Ratio simplifies, summarize and systematize accounting figures which can easily be understood by those who do not know the language of accounting.

- Ratio analysis helps in measuring the liquidity position of the firm. Liquidity position of a firm is said to be satisfactory if it is able to meet its current obligations as and when they mature.

- Ratio analysis is measured long-term solvency of the firm. These are helpful to long-term creditors, security analysis and present and prospective investors because they reveal the financial soundness or weakness of the firm.

- Ratios are useful tools in the hands of management to evaluate the firm’s performance over a period of time by comparing the present ratios with the past ratios. In this various activity or turnover ratios measure the operational efficiency of the firm.

- Ratio analysis is facilitates inter-firm and intra-firm comparisons of the firm. It is the basis for comparing the efficiency of various firms in the industry and various divisions of a business firm.

- Ratio analysis enables a firm to take the time dimension into account. Trend Analysis of ratios reveals whether financial position of the firm is improving over years. With the help of such analysis, one can ascertain whether the trend is favourable or adverse.

- Ratios derived after analyzing the past results, help the management in prepare budgets and formulate future policies and plans of action. Thus, ratios are of immense help aid in business planning and forecasting.

- Trend ratios are compared with standard ratios to measure the degree of variance with the actual. It is comparison report management take corrective action control. Thus, ratio analysis helps aid in the effective control of the business affairs.
Ratios are effective means of communication. They play an important role in informing about the progress made by the firm to the owners and other parties interested therein. Aid in communication by simplified and summarized ratio is more easy and understandable.

Ratio analysis highlights on the degree of efficiency of the management and utilization of assets. These are helps management aid in business decision making.

2.13.5 Categories of Ratio Analysis

The ratio analysis is made fewer than six broad categories as follows:

1) Liquidity or Short term Solvency Ratios

The liquidity ratios measure the liquidity of the firm and its ability to meet its maturing short-term obligations. Liquidity Ratios are also termed as Short-Term Solvency Ratios. The term liquidity means the extent of quick convertibility of assets in to money for paying obligation of short-term nature. Accordingly, liquidity ratios are useful in obtaining an indication of a firm’s ability to meet its current liabilities, but it does not reveal how effectively the cash resources can be managed. To measure the liquidity of a firm, the following ratios are commonly used:

**Current Ratio**

This ratio measures the solvency of the company in the short-term. Current Assets are those assets which can be converted into cash within a year. Current Liabilities and Provisions are those liabilities that are payable within a year. Current Ratio establishes the relationship between Current Assets and Current Liabilities. This is also known as working capital ratio. It attempts to measure the ability of a firm to meet its current obligations. In order to compute this ratio, the following formula is used:

\[
\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}
\]

The following table represents the **Components** of Current Assets and Current Liabilities in order to measure the Current Ratios:
Table No. 2.2

Components of Current Assets and Current Liabilities

<table>
<thead>
<tr>
<th>Current Assets</th>
<th>Current Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔ Short-term Investments or Marketable Securities</td>
<td>✔ Sundry Creditors</td>
</tr>
<tr>
<td>✔ Sundry Debtors</td>
<td>✔ Bills Payable</td>
</tr>
<tr>
<td>✔ Closing Stock</td>
<td>✔ Bank Overdraft</td>
</tr>
<tr>
<td>✔ Bills Receivable</td>
<td>✔ Provision for Taxation</td>
</tr>
<tr>
<td>✔ Cash and Bank Balance</td>
<td>✔ Unpaid or Unclaimed Dividend</td>
</tr>
<tr>
<td>✔ Prepaid Expenses</td>
<td>✔ Proposed Dividend</td>
</tr>
<tr>
<td>✔ Advance Payment</td>
<td>✔ Outstanding Expenses</td>
</tr>
<tr>
<td></td>
<td>✔ Short-term Loans</td>
</tr>
</tbody>
</table>

**Interpretation:** The ideal current ratio of 2:1 indicates a highly solvent position. A current ratio of 1.33:1 is considered by banks as the minimum acceptable level for providing working capital finance. A very high current ratio will have unfavorable impact on the profitability of the organization. A high current ratio may be due to the support up of inventory, inefficiency in collection of debtors, high balances in cash and bank accounts without proper investment etc.

**Advantages of Current Ratios**

- Current ratio helps to measure the liquidity of a firm.
- It represents general picture of the adequacy of the working capital position of a company.
- It indicates liquidity of a company.
- It represents a margin of safety, i.e. reduce of protection against current creditors.
- It helps to measure the short-term financial position of a company or short-term solvency of a firm.
Disadvantages of Current Ratio

- Current ratios can not be appropriate to all business it depends on many other factors.
- Window covering is another problem of current ratio. For example, overvaluation of closing stock.
- It is a simple measure of a firm's liquidity only on the basis of quantity and not quality of current assets.

Quick or Acid Test or Liquid Ratio

Quick ratio is used as a measured of the company’s ability to meet its current obligations. Since bank overdraft is secured by the inventories, the other current assets must be sufficient to meet other current liabilities. Quick Ratio also termed as Acid Test or Liquid Ratio. It is additional to the current ratio. The acid test ratio is a more severe and stringent test of a firm's ability to pay its short-term obligations and when they become due. Quick Ratio establishes the relationship between the quick assets and current liabilities. In order to compute this ratio, the below presented formula is used:

\[
\text{Liquidity or Quick Ratio} = \frac{\text{Liquid or Quick Assets}}{\text{Quick Liabilities}}
\]

**Quick Assets** = Current Assets – Stock and Prepaid expenses

**Quick Liabilities** = Current Liabilities – Bank Overdraft

**Interpretation:** The ideal Quick Ratio of 1:1 is considered to be satisfactory. High Acid Test Ratio is an indication that the firm has relatively better position to meet its current obligation in time. On the other hand, a low value of quick ratio exhibiting that the firm's liquidity position is not good.

Advantages of Quick Ratio

- Quick Ratio helps to measure the liquidity position of a firm.
- It is used as a complementary to the current ratio.
Chapter 2 Conceptual Framework of Du Pont Model and Ratio Analysis

It is used to remove intrinsic defects of current ratio.

**Absolute Liquid or Super Quick Ratio**

Absolute Liquid Ratio is also called as Cash Position Ratio or Over Due Liability Ratio. This ratio established the relationship between the absolute liquid assets and current liabilities. This ratio is calculated by dividing the Absolute Liquid Assets by Current Liabilities. The formula used is:

\[
\text{Absolute Liquid Ratio} = \frac{\text{Absolute Liquid Assets}}{\text{Current Liabilities}}
\]

**Absolute Liquid Assets** = Cash in Hand + Cash at Bank + Marketable Securities or Short-term Investments

**Interpretation:** The ideal absolute liquid ratio is taken as 0.5:1 or 1:2. If the ratio is relatively lower than one, it represents that the company's day-to-day cash management is poor. If the ratio is considerably more than one, the absolute liquid ratio represents enough funds in the form of cash to meet its short-term obligations in time.

2) **Leverage or Capital Structure Ratios**

Leverage or Capital Structure ratios are calculated to judge the long-term solvency or financial position of the firm. Therefore, these ratios are also known as Long-term Solvency ratios. The term 'Solvency' generally refers to the capacity of the business to meet its short-term and long-term obligations. Short-term obligations include creditors, bank loans and bills payable etc. Long-term obligations consist of debenture, long-term loans and long-term creditors etc. The ratios which are important in measuring the long-term solvency are as follows:

**Debt-Equity Ratio**

This ratio indicates the relative proportion of debt and equity in financing the assets of a firm. In other words, these ratios indicate the relationship between loan funds and net worth of the company, which is also called as gearing or External-Internal Equity Ratio. The formula used as under:
Chapter 2 Conceptual Framework of Du Pont Model and Ratio Analysis

\[
\text{Debt Equity Ratio} = \frac{\text{Long term debt}}{\text{Shareholders funds}}
\]

**Interpretation:** A debt equity ratio of 2:1 is the norm accepted by financial institutions for financing of projects. If the proportion of debt to equity is low, a company is said to be low-geared, and vice versa. Higher debt equity ratio may be permitted for highly capital intensive industries like fertilisers, power, petrochemicals etc. The higher gearing more volatile the return to the shareholders. A ratio of 1:1 may be usually considered to be a satisfactory ratio although there can not be any ‘rule of thumb’ or standard norm for all types of business.

**Advantages of Debt-Equity Ratio**
- This ratio is a measure of contribution of owners to the business as compared to long term creditors.
- This ratio also tells the extent to which the firm depends upon outsiders for its existence.
- It indicates the state of both the parties.
- It tests the long term liquidity or solvency of an organisation.

**Proprietary Ratio**

The proprietary ratios express relationship between shareholders’ net worth and total assets. It is also called owner equity or net worth to total assets ratio. This ratio shows the long term solvency of the firm. The formula for this ratio may be written as follows:

\[
\text{Proprietary Ratio} = \frac{\text{Shareholders Networth}}{\text{Total Assets}}
\]

\[
\text{Shareholders Net worth} = \text{Equity Share Capital} + \text{Preference Share Capital} + \text{Reserves} - \text{Fictitious Assets}
\]

\[
\text{Total Assets} = \text{Fixed Assets} + \text{Current Assets} - \text{Fictitious Assets}
\]

**Advantages of Proprietary Ratio**
- This ratio used to determine the financial stability of the concern in general.
Proprietary Ratio indicates the share of owners in the total assets of the company.

It serves as an indicator to the creditors who can find out the proportion of shareholders' funds in the total assets employed in the business.

A higher proprietary ratio indicates relatively little secure position in the event of solvency of a concern.

A lower ratio indicates greater risk to the creditors. A ratio below 0.5 is alarming for the creditors.

**Shareholders Equity Ratio**

It is assumed that larger the proportion of the shareholders’ equity, the stronger is the financial position of the firm. This ratio will supplement the debt-equity ratio. In this ratio the relationship is established between the shareholders’ funds and the total assets.

\[
\text{Shareholders Equity Ratio} = \frac{\text{Shareholders Equity}}{\text{Total Assets (tangible)}}
\]

Shareholders funds represent equity and preference capital plus reserves and surplus less loss. A reduction in shareholder’s equity signalling the over dependence on outside sources for long-term financial needs and this carries the risk of higher levels of gearing. This ratio indicates the degree to which unsecured creditors are protected against loss in the event of liquidation.

**Long-term Debt to Shareholders Net worth Ratio**

This ratio is calculated as follows:

\[
\text{Debt to Net worth Ratio} = \frac{\text{Long - term debt}}{\text{Shareholders Net worth}}
\]

The ratio compares long-term debt to the net worth of the firm i.e., the capital and free reserves less intangible assets. This ratio is finer than the debt-equity and includes capital which is invested in fictitious assets like deferred expenditure and carried forward losses. This ratio would be of more interest to the contributories of long-term
finance to the firm, as the ratio gives a factual idea of the assets available to meet the long-term liabilities.

**Capital Gearing Ratio**

The capital gearing ratio is mainly used to analyse the capital structure of a company. According to Howard and Brown, “the word capital gearing is applied to express the proportion between equity share capital and fixed cost bearing securities of a company”. This ratio is also known as capitalisation ratio or leverage ratio. The formula used in calculating the ratio as under:

\[
\text{Capital Gearing Ratio} = \frac{\text{Fixed interest bearing funds}}{\text{Equity shareholder’s funds}}
\]

The fixed interest bearing funds include Debentures, long-term loans and preference share capital. The equity shareholders funds include equity share capital, reserves and surplus. This ratio signals the firm which is operating on trading on equity. It also indicates the changes in benefits accruing to equity shareholders by changing the levels of fixed interest bearing funds in the organisation.

**Advantages of Capital Gearing Ratio**

- This ratio shows the claim of owners as against the claim of lenders and preference shareholders.
- This ratio measures the company’s capitalisation.
- This ratio is useful to the new investors for making sound investment decision.

**Fixed assets to Long-term funds Ratio**

The fixed asset is shown as a proportion to long-term funds as follows:

\[
\text{Fixed assets to long-term funds Ratio} = \frac{\text{Fixed assets}}{\text{Long-term funds}}
\]

This ratio indicates the proportion of long-term funds deployed in fixed assets. Fixed assets represent the gross fixed assets minus depreciation provided on this till the date of calculation. Long-term funds include share capital, reserves and surplus and long-term loans. This higher the ratio indicates the safer the funds available in case of
liquidation. It also indicates the proportion of long-term funds that is invested in working capital.

**Interest Cover Ratio**

The interest coverage ratio shows how many times interest charges are covered by funds that are available for payment of interest. It is calculated as follows:

\[
\text{Interest Cover Ratio} = \frac{\text{Profit before interest, depreciation and tax}}{\text{Interest}}
\]

A very high ratio indicates that the firm is conservative in using debt and a very low ratio indicates excessive use of debt. Interest cover indicates how many times a company can cover its current interest payments out of current profits. It gives an indication of problem in servicing the debt. An interest cover of more than 7 times is regarded as safe and more than 3 times is desirable. An interest cover of 2 times is considered reasonable by financial institutions.

**Dividend Cover Ratio**

This ratio indicates the number of times the dividends are covered by net profit. This highlights the amount retained by a company for financing of future operations. The dividend cover is calculated as follows:

\[
\text{Dividend Cover Ratio} = \frac{\text{Net profit after tax}}{\text{Dividend}}
\]

\[
\text{Preference Dividend Cover} = \frac{\text{Net profit after tax}}{\text{Preference Dividend}}
\]

\[
\text{Equity Dividend Cover} = \frac{\text{Net profit after tax} - \text{Preference Dividend}}{\text{Equity Dividend}}
\]

**Debt Service Coverage Ratio**

This ratio is the key indicator to the lender to assess the extent of ability of the borrower to service the loan in regard to timely payment of interest and repayment of loan installment. It indicates whether the business is earning sufficient profits to pay not only the interest charges, but also the installments due of the principal amount. The ratio is calculated as follows:
A ratio of 2 is considered satisfactory by the financial institutions. The greater debt service coverage ratio indicates the better debt servicing capacity of the organization.

3) Activity or Asset Management or Efficiency Ratios

These ratios measure how effectively the firm employed its resources in the business activity. These ratios are also called ‘activity or turnover ratios’ which involve comparison between the level of sales and investment in various accounts – inventories, debtors, fixed assets, etc. These ratios are used to measure the speed with which various accounts are converted into sales or cash. The following asset management ratios are calculated for analysis.

**Inventory Turnover Ratio**

A considerable amount of a company’s capital may be tied up in the financing of raw materials, work-in-progress and finished goods. It is important to ensure that the level of stocks is kept as low as possible, consistent with the need to fulfill customer’s orders in time.

\[
\text{Inventory Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Average inventory}} \quad \text{or} \quad \frac{\text{Sales}}{\text{Average inventory}}
\]

\[
\text{Average inventory} = \frac{\text{Opening stock} + \text{Closing stock}}{2}
\]

The higher the stock turnover rate or the lower the stock turnover rate period the better, although the ratios will very between companies.

The inventory turnover ratio measures how many times a company’s inventory has been sold during the year. If the inventory turnover ratio has decreased from past, it means that either inventory is growing or sales is dropping. In addition to that, if a firm has a turnover that is slower than for its industry, then there may be obsolete goods on hand or inventory stocks may be high. Low inventory turnover has impact on the liquidity of the business.
Advantages of Inventory Turnover Ratio

- This ratio indicates whether investment in stock in trade is efficiently used or not.
- This ratio is widely used as a measure of investment in stock is within proper limit or not.
- This ratio highlights the operational efficiency of the business concern.
- This ratio is helpful in evaluating the stock utilization.
- It measures the relationship between the sales and the stock in trade.
- This ratio indicates the number of times the inventories have been turned over in business during a particular period.

> **Inventory Ratio**

The level of inventory in a company may be assessed by the use of the inventory ratio, which measures how much has been tied up in inventory.

\[
\text{Inventory Ratio} = \frac{\text{Inventory}}{\text{Current Assets}} \times 100
\]

> **Debtor Turnover Ratio**

Debtor turnover, which measures whether the amount of resources tied up in debtors, is reasonable and whether the company has been efficient in converting debtors into cash. The formula is as under:

\[
\text{Debtor Turnover Ratio} = \frac{\text{Credit Sales}}{\text{Average Debtors}}
\]

The higher ratio, if the position is better.

Advantages of Debtor's Turnover Ratio

- This ratio indicates the efficiency of firm's credit collection and efficiency of credit policy.
- This ratio measures the quality of receivable, i.e., debtors.
- It enables a firm to judge the adequacy of the liquidity position of a concern.
This ratio highlights the probability of bad debts lurking in the trade debtors.

This ratio measures the number of times the receivables are turned over in business during a particular period.

It points out the liquidity of trade debtors, i.e., higher turnover ratio and shorter debt collection period indicate prompt payment by debtors. Similarly, low turnover ratio and higher collection period implies that payment by trade debtors is delayed.

**Average Collection Period**

Average collection period, which measures how long it take to collect amounts from debtors. The formula is as under (in days):

\[
\text{Average Collection Period} = \frac{\text{Average Debtors}}{\text{Credit Sales}} \times 365
\]

The actual collection period can be compared with the stated credit terms of the company. If it is longer than those terms, then this indicates some insufficiency in the procedures for collecting debts.

**Bad Debts to Sales Ratio**

It measures the proportion of bad debts to sales:

\[
\text{Bad Debts to Sales Ratio} = \frac{\text{Bad Debts}}{\text{Sales}} \times 100
\]

This ratio indicates the efficiency of the credit control procedures of the company. Its level will depend on the type of business. Mail order companies have to accept a fairly high level of bad debts, while retailing organizations should maintain very low levels of ratio. The actual ratio is compared with the target or norm to decide whether it is acceptable or not.

**Creditors Turnover Ratio**

This ratio measures the number of times the creditors balance turned over in credit purchase:
Chapter 2 Conceptual Framework of Du Pont Model and Ratio Analysis

The term creditors include trade creditors and bills payable. The more number of times the better management of creditors balances.

Advantages of Creditors Turnover Ratio

- It is simple to understand, particularly when expressed as a payment period.
- It shows the average period of credit received from creditors.
- It helps to monitor credit and collection policies.

Creditors Payment Period

The measurement of the creditor turnover period shows the average time taken to pay for goods and services purchased by the company. The formula is as under (in days):

\[
\text{Creditors Payment Period} = \frac{\text{Average Creditors}}{\text{Creditors Purchases}} \times 365
\]

In general the longer the credit period achieved the better, because delays in payment mean that the operation of the company are being financed interest free by suppliers of funds. But there will be a point beyond which delays in payment will damage relationships with suppliers which, if they are operating in a seller’s market, may harm the company. If too long a period is taken to pay creditors, the credit rating of the company may suffer, thereby making it more difficult to obtain suppliers in the future.

Fixed Assets Turnover Ratio

This ratio will be analyzed further with ratios for each main category of asset. This is a difficult set of ratios to interpret as asset values are based on historic cost. An increase is the fixed asset figure may result from the replacement of an asset at an increased price or the purchase of an additional asset intended to increase production capacity. This ratio measures the efficiency in utilization of fixed assets in attainment of sales. The formula is as under:

\[
\text{Fixed Assets Turnover Ratio} = \frac{\text{Sales}}{\text{Fixed Assets}}
\]
Chapter 2 Conceptual Framework of Du Pont Model and Ratio Analysis

The ratio of the accumulated depreciation provision to the total of fixed assets at cost might be used as an indicator to the average age of the assets, particularly when depreciation rates are noted in the accounts. The ratio of sales value per square foot of floor space occupied is particularly significant for trading concerns, such as a wholesale warehouse or a departmental store.

**Advantages of Fixed Assets Turnover Ratio**

- This ratio is simple to understand.
- This ratio indicates how the fixed assets of an organization are used in achieving the sales.

**Current Assets Turnover Ratio**

This ratio expresses the relationship between current assets and net sales or cost of goods sold. It is calculated using the following formula as under:

\[
\text{Current Assets Turnover Ratio} = \frac{\text{Sales}}{\text{Current Assets}}
\]

**Advantages of Current Assets Turnover Ratio**

- This ratio is simple to understand.
- This ratio shows how the current assets are being used in the organization.

**Total Assets Turnover Ratio**

This ratio indicates the number of times total assets are being turned over in a year. The formula is as under:

\[
\text{Total Assets Turnover Ratio} = \frac{\text{Sales}}{\text{Total Assets}}
\]

The higher the ratio indicates overtrading of total assets, while a low ratio indicates idle capacity.

**Advantages of Total Assets Turnover Ratio**

- Total assets turnover ratio measures overall performance of the business organization.
- This ratio shows how the total resources of the organization are being utilized.
Working Capital Turnover Ratio

This ratio is calculated as follows:

\[ \text{Working Capital Turnover Ratio} = \frac{\text{Sales}}{\text{Working Capital}} \]

This ratio indicates the extent of working capital turned over in achieving sales of the firm.

Sales to Capital Employed Ratio

This ratio is ascertained by dividing sales with capital employed.

\[ \text{Sales to Capital Employed Ratio} = \frac{\text{Sales}}{\text{Capital Employed}} \]

This ratio indicates efficiency in utilization of capital employed in generating revenue.

4) Profitability Ratios

The purpose of study and analysis of profitability ratios are to help assessing the adequacy of profit earned by the company and also to discover whether profitability is increasing or declining. The profitability of the firm is the net result of a large number of policies and decisions. The profitability ratios show the combined effects of liquidity, asset management and debt management on operating results. Profitability ratios are measured with reference to sales, capital employed, total assets employed, shareholders funds etc. The major profitability rates are as follows:

Gross Profit Ratio

The gross profit margin is calculated as follows:

\[ \text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100 \]

or

\[ \text{Gross Profit Ratio} = \frac{\text{Sales} - \text{Cost of Goods Sold}}{\text{Sales}} \times 100 \]

The ratio measures the gross profit margin on the total net sales made by the company. The gross profit represents the excess of sales proceeds during the period under observation over their cost, before taking into account administration, selling
and distribution and financing charges. The ratio measures the efficiency of the company’s operations and this can also be compared with the previous year’s results to ascertain the efficiency. When everything is normal, the gross profit margin should remain unchanged, irrespective of the level of production and sales, since it is based on the assumption that all costs deducted when computing gross profit which are directly variable with sales.

Higher Gross Profit Ratio is an indication that the firm has higher profitability. It also reflects the effective standard of performance of firm's business.

Higher Gross Profit Ratio will be result of the following factors:

- Increase in selling price, i.e., sales higher than cost of goods sold.
- Decrease in cost of goods sold with selling price remaining constant.
- Increase in selling price without any corresponding proportionate increase in cost.
- Increase in the sales mix.

A low gross profit ratio generally indicates the result of the following factors:

- Increase in cost of goods sold.
- Decrease in selling price.
- Decrease in sales volume.
- High competition.
- Decrease in sales mix.

**Advantages of Gross Profit Ratio**

- It helps to measure the relationship between gross profit and net sales.
- It reflects the efficiency with which a firm produces its product.
- This ratio tells the management, that a low gross profit ratio may indicate unfavourable purchasing and mark-up policies.
A low gross profit ratio also indicates the inability of the management to increase sales.

- **Operating Profit Ratio**

Operating Profit Ratio indicates the operational efficiency of the firm and is a measure of the firm's ability to cover the total operating expenses. Operating Profit means the net profit arising from the normal operations and activities of business without taking account of extraneous transactions and expenses of purely financial nature. In other words, operating profit is calculated by subtracting all direct and indirect expenses relating to main business from net sales. Operating Profit Ratio is calculated by using the following formula as under:

\[
\text{Operating Profit Ratio} = \frac{\text{Operating Profit}}{\text{Net Sales}} \times 100
\]

or

\[
\text{Operating Profit Ratio} = \frac{\text{Gross Profit} - \text{Operating Expenses}}{\text{Net Sales}} \times 100
\]

This ratio indicates the net profitability of the main business i.e. operating efficiency of a firm. In some firms, the profit from main business is very low, while the profit from secondary functions is so much that the net profit of the firm at the end is enhanced. Therefore, the higher the operating ratio, the better would be the operational efficiency of the firm. A higher operating profit ratio means that a firm has been able not only to increase its sales but also been able to cut down its operating expenses.

- **Net Profit Ratio**

Net Profit Ratio is also termed as Sales Margin Ratio (or) Profit Margin Ratio (or) Net Profit to Sales Ratio. This ratio reveals the firm's overall efficiency in operating the business. Net profit Ratio is used to measure the relationship between net profit (either before or after taxes) and sales. This ratio can be calculated by the following formula:

\[
\text{Net Profit Ratio} = \frac{\text{Net Profit (after tax)}}{\text{Sales}} \times 100
\]
The ratio is designed to focus attention on the net profit margin arising from business operations before interest and tax is deducted. The convention is to express profit after tax and interest as a percentage of sales. A drawback is that the percentage which results varies depending on the sources employed to finance business activity; interest is charged upper the line while dividends are deducted down the line. It is for this reason that net profit i.e., earning before interest and tax (EBIT) is used.

This ratio reflects net profit margin on the total sales after deducting all expenses but before deducting interest and taxation. This ratio measures the efficiency of operation of the company. The net profit is arrived at from gross profit after deducting administration, selling and distribution expenses. The non-operating income and expenses are ignored in computation of net profit before tax, deprecation and interest.

**Advantages of Net Profit Ratio**

- This is the best measure of profitability and liquidity.
- It helps to measure overall operational efficiency of the business concern.
- It facilitates to make or buy decisions.
- It helps to determine the managerial efficiency to use a firm's resources to generate income on its invested capital.
- Net profit Ratio is very much useful as a tool of investment evaluation.

#### Cash Profit Ratio

Cash profit ratio measures the cash generation in the business as a result of the operations expressed in terms of sales. This ratio can be calculated by the following formula:

\[
\text{Cash Profit Ratio} = \frac{\text{Cash Profit}}{\text{Sales}} \times 100
\]

Where as, **Cash Profit** = Net Profit + Depreciation
The cash profit ratio is a more reliable indicator of performance where there are sharp fluctuations in the profit before tax and net profit from year to year owing to difference in depreciation charged. Cash profit ratio evaluates the efficiency of operations in terms of cash generation and is not affected by the method of depreciation charged. It also facilitates inter-firm comparison of performance since different methods of depreciation may be adopted by different companies.

**Return on Total Assets**

This ratio is calculated as follows:

\[
\text{Return on Total Assets} = \frac{\text{Net Profit after tax}}{\text{Total Assets}} \times 100
\]

The profitability of the firm is measured by establishing relation of net profit with the total assets of the organization. This ratio indicates the efficiency of utilization of assets in generating revenue.

**Return on Shareholders Funds or Return on Net worth**

This ratio expresses the net profit in terms of the equity shareholders funds. This ratio is an important yardstick of performance for equity shareholders since it indicates the return on the funds employed by them. However, this measure is based on the historical net worth and will be high for old plants and low for new plants. This ratio can be calculated by the following formula:

\[
\text{Return on Net worth} = \frac{\text{Net Profit after interest and tax}}{\text{Net worth}} \times 100
\]

**Net worth** = Equity Capital + Reserves and Surplus

**Advantages of Return on Net worth**

- This ratio determines the incentive to owners.
- This ratio helps to measure the profit as well as net worth.
- This ratio indicates the overall performance and effectiveness of the firm.
- This ratio measures the efficiency with which the resources of a firm have been employed.
The factor which motivates shareholders to invest in a company is the expectation of an adequate rate of return on their funds and periodically, they want to assess the rate of return earned in order to decide whether to continue with their investment. This ratio is useful in measuring the rate of return as a percentage of the book value of shareholders equity. The further modification of this ratio is given as under:

**Return on Equity (ROE)**

\[
\text{Return on Equity} = \frac{\text{Profit after Tax}}{\text{Net Sales}} \times \frac{\text{Net Sales}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Net worth}}
\]

i.e., \( \text{ROE} = \text{Net Profit Margin} \times \text{Total Assets Turnover Ratio} \times \frac{\text{Total Assets}}{\text{Net worth}} \)

The ratio indicates:
- ✓ Measure of profitability
- ✓ The efficiency in use of assets in achieving sales
- ✓ Measure of leverage.

**Return on Equity Capital**

Ordinary shareholders are more interested in the profitability of a company and the performance of company should be judged on the basis of return on equity capital of the company. The return on equity capital shows the relationship between profits of a company and its equity capital. This is considered to be a better measure of profitability for inter-firm comparison. This ratio is calculated as follows:

\[
\text{Return on Equity Capital} = \frac{\text{Net Profit (after tax & preference dividend)}}{\text{Equity Share Capital (paid up)}} \times 100
\]

**Return on Capital Employed**

The rate of return on investment is determined by dividing net profit or income by the capital employed or investment made to achieve that profit. This ratio is also called as Return on Investment (ROI). The strategic aim of a business enterprise is to earn a return on capital. The formula used is as follows:
The concept of capital employed can be considered further into the following ways:

(a) Gross Capital Employed
\[
\text{Return on Gross Capital Employed} = \frac{\text{Adjusted Net Profit}}{\text{Gross Capital Employed}} \times 100
\]

Gross Capital Employed = Fixed Assets + Current Assets

(b) Net Capital Employed
\[
\text{Return on Net Capital Employed} = \frac{\text{Adjusted Net Profit}}{\text{Net Capital Employed}} \times 100
\]

Net Capital Employed = Total Assets – Current Liabilities

(c) Average Capital Employed
\[
\text{Average Capital Employed} = \frac{\text{Opening Capital Employed} + \text{Closing Capital Employed}}{2}
\]

(d) Owner's Capital Employed
\[
\text{Return on Owner's Capital Employed} = \frac{\text{Adjusted Net Profit}}{\text{Owner's Capital Employed}} \times 100
\]

Owner's Capital Employed = Equity Share Capital + Preference Share Capital + General Reserve + Share Premium + Profit and Loss Account

Advantages of Return on Capital Employed

- This ratio highlights the success of the business from the owner's point of view.
- It helps to measure an income on the shareholders' or proprietor's investments.
- This ratio helps to the management for important decisions making.
- It facilitates in determining efficiently handling of owner's investment.
5) Operating Ratios

The ratio of all operating expenses to sales is the operating ratio. A comparison of the operating ratio would indicate whether the cost content is high or low in the figure of sales. If the annual comparison shows that the sales has increased the management would be naturally interested and concerned to know as to which element of the cost has gone up. It is not necessary that the management should be concerned only when the operating ratio goes up. If the operating ratio has fallen, though the unit selling price has remained the same, still the position need analysis as it may be the sum total of efficiency in certain departments and inefficiency in others. It is, therefore, necessary to break-up the operating ratio into various cost ratios. The major components of cost are: Material, Labour and Overheads. Therefore, it is worthwhile to classify the cost ratio as under:

\[
\text{Operating Ratio} = \frac{\text{Cost of Goods Sold} + \text{Operating Expenses}}{\text{Net Sales}} \times 100
\]

or

\[
\text{Operating Ratio} = \frac{\text{Operating Costs}}{\text{Net Sales}} \times 100
\]

Advantages of Operating Ratio

- The operating ratio is a useful yardstick to measure the efficiency of the enterprise, with respect to the inputs associated with the various functional areas of business management viz., production, marketing, administration and finance.

- The operating ratio provides a useful link with the profitability of an enterprise in as much as the operating ratio bears an inverse relationship with the net profit ratio. Again, by a meaningful analysis and interpretation of the gross profit ratio vis-à-vis the operating ratio, further insight relating to the quality of internal operations can be obtained.

- The operating ratio leads itself to the idea of standards and standard costs. Hence, an evaluation of the efficiency of an enterprise can be made with a fair
degree of precision. Every enterprise has a typical operating ratio. The idea of having down norms is therefore, a feasible proposition.

\[
\text{Materials Cost Ratio} = \frac{\text{Materials Consumed}}{\text{Sales}} \times 100
\]

\[
\text{Labour Cost Ratio} = \frac{\text{Labour Cost}}{\text{Sales}} \times 100
\]

\[
\text{Factory Overhead Ratio} = \frac{\text{Factory Expenses}}{\text{Sales}} \times 100
\]

\[
\text{Administrative Expenses Ratio} = \frac{\text{Administrative Expenses}}{\text{Sales}} \times 100
\]

\[
\text{Selling and Distribution Expenses Ratio} = \frac{\text{Selling and Distribution Expenses}}{\text{Sales}} \times 100
\]

Generally all these ratios are expressed in terms of percentage. Then total up all the operating ratios. This is deducted form 100 will be equal to the net profit ratio. If possible, the total expenditure for effecting sales should be divided into two categories, viz. Fixed and variable and then ratios should be worked out. The ratio of variable expenses to sales will be generally constant; that of fixed expenses should fall if sales increase; it will increase if sales fall.

**Advantages of Expense Ratio**

- The expense ratios presented in logical form can throw light on the efficiencies of internal operations of a business unit viz., factory and non-manufacturing operations of business.

- The ratios are easy to compute and simple to understand. This advantage strongly speaks of these expense ratios as a practical tool of financial analysis.

- The expense ratios lend themselves to scientific standards and, therefore, provide readymade norms which can be used to compare the actual performance with predetermined performance.
6) Market Based Ratios

The market base ratios relate the firm’s stock price to its earning and stock book value per share. These ratios give management an indication of what investors think of the company’s past performance and future prospects. If firm’s profitability, solvency and turnover ratios are good, then the market based ratios will be high and its share price is also expected to be high. The market based ratios are as follows:

**Earning Per Share (EPS)**

The objective of Financial Management is wealth or value maximization of a corporate entity. The value is maximized when market price of equity shares is maximized. The use of the objective of wealth maximization or net present value maximization has been advocated as an appropriate and operationally feasible criterion to choose among the alternative financial actions. In practice, the performance of a corporation is better judged in terms of its earning per share. The EPS is one of the important measures of economic performance of a corporate entity. The flow of capital to the companies under the present imperfect capital market conditions would be made on the evaluation of EPS. Investors lacking inside and detailed information would look upon the EPS as the best base to take their investment decisions. A higher EPS means better capital productivity.

\[
\text{Earning Per Share} = \frac{\text{Net Profit after tax and Preference Dividend}}{\text{No. of Equity Shares}}
\]

EPS is one of the most important ratios which measures the net profit earned per share. EPS is one of the major factors affecting the dividend policy of the firm and the market prices of the company. Growth in EPS is more relevant for pricing of shares from absolute EPS. A steady growth in EPS year after indicates a good track of profitability.

**Advantages of Earning Per Share**

- This ratio helps to measure the price of stock in the market place.
- This ratio highlights the capacity of the concern to pay dividend to its shareholders.
This ratio used as a yardstick to measure the overall performance of the concern.

**Cash Earning Per Share**

The cash earning per share is calculated by dividing the Net profit before depreciation with number of equity shares.

\[
\text{Cash Earning Per Share} = \frac{\text{Net Profit after tax} + \text{Depreciation}}{\text{No. of Equity Shares}}
\]

This is a more reliable yardstick for measurement of performance of companies, especially for highly capital intensive industries where provision for depreciation is substantial. This measures the cash earnings per share and is also a relevant factor for determining the price for the company’s share. However, this method is not as popular as EPS and is used as a supplementary measure of performance only.

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

The ratio indicates the market price of an equity share to the earning per share. It measures the number of times the earning per share discounts the market price of an equity share.

\[
\text{Price Earning Ratio} = \frac{\text{Current Market Price of Equity Share}}{\text{Earning Per Share}}
\]

The ratio indicates how much an investor is prepared to pay per rupee of earnings. The ratio helps to ascertain the value of equity share, if the EPS and probable Price Earning ratio of the industry to which the company belongs. The intrinsic value of share may be more or less than the market value which is influenced by company’s track record and dividend distribution policy, speculative trading, stage of economy, efficiency of management, capital gearing etc. Price-earning approach to share valuation is simple and more popular. This ratio reflects the market’s assessment of the future earnings potential of the company. A ratio reflects high earnings potential and a low ratio reflects the low earnings potential. The ratio reflects the market’s confidence on company’s equity.
Dividend Per Share (DPS)

Dividend per share ratio represents the dividend paid to the shareholders on per share basis. The DPS ratio is calculated by dividend paid to equity shareholders by the number of equity shares issued. The formula used is as follows:

\[ \text{Dividend Per Share} = \frac{\text{Dividend paid to Shareholders}}{\text{No. of Shares}} \]

This ratio represents to what extent the profits have been received by the owners as dividend. An investor, desiring more income would like to invest in the shares of a high dividend paying company. It should be noted that dividend per share is not a measure of profitability of a company, since retained earnings might have been utilized for payment of dividend. It is increase the distributable amount without increasing number of shares.

Dividend Payout Ratio

Dividend payout ratio is the dividend per share divided by the earning per share. Dividend payout indicates the extent of the net profit distributed to the shareholders as dividend. A high payout signifies a liberal distribution policy and a low payout reflects conservative distribution policy.

\[ \text{Dividend Payout Ratio} = \frac{\text{Dividend Per Share}}{\text{Earning Per Share}} \]

Dividend Yield Ratio

This ratio reflects the percentage yield that an investor receives on this investment at the current market price of the shares. This measure is useful for investors who are interested in yield per share rather than capital appreciation.

\[ \text{Dividend Yield Ratio} = \frac{\text{Dividend Per Share}}{\text{Market Price Per Share}} \times 100 \]

Book Value Per Share

This ratio indicates the net worth per equity share. The book value is a reflection of the past earnings and the distribution policy of the company. A high book value indicates that a company has huge reserves and is a potential bonus candidate. A low
value signifies a liberal distribution policy of bonus and dividends or alternatively, a poor track record of profitability. Book value is considered less relevant for the market price as compared to EPS, as it reflects the past record whereas the market discounts the future prospects.

\[
\text{Book Value Per Share} = \frac{\text{Equity Shareholders' Funds}}{\text{Number of Equity Shares}}
\]

**Market Price to Book Value Ratio (P/BV Ratio)**

This ratio measures the relationship between the accounting value of the firm’s assets and the market price of its stock. The ratio is calculated by dividing the stock price per share by the book value of share.

\[
\text{Market Price to Book Value Ratio} = \frac{\text{Market Price Per Share}}{\text{Book Value Per Share}}
\]

Generally, the higher the rate of return a firm is earning on its common equity the higher will be the P/BV ratio. In case of growth firm i.e. firms with high growth of sales and earnings will have this ratio higher than one, for the reason that the potential future growth in earnings is reflects in the current stock price. Where as the book value of equity share is based on historical costs and it does not consider the potential growth.

**Reserves to Capital Ratio**

This ratio explains the profit allocation policy of a company. It is calculated by dividing reserves by equity share capital. The formula used is as follows:

\[
\text{Reserves to Capital Ratio} = \frac{\text{Reserves}}{\text{Equity Share Capital}}
\]

This ratio depicts the progress or development made by a company, when it follows conservative policy in dividend distribution, and then this ratio will be high. A high ratio reveals sound financial position and the capacity of the company to absorb losses arising in future. It also indicates that the prices of its shares have gone up.
2.13.6 Advantages of Ratio Analysis

Ratio analysis is necessary to establish the relationship between two accounting figures to highlight the significant information to the management or users who can analyse the business situation and to monitor their performance in a meaningful way. The following are the advantages of ratio analysis:

- It facilitates the accounting information to be summarized and simplified in a required form.
- It highlights the inter-relationship between the facts and figures of various segments of business.
- Ratio analysis helps to remove all type of wastages and inefficiencies.
- It provides necessary information to the management to take prompt decision relating to business.
- It helps to the management for effectively discharge its functions such as planning, organizing, controlling, directing and forecasting.
- Ratio analysis reveals profitable and unprofitable activities. Thus, the management is able to concentrate on unprofitable activities and consider improving the efficiency.
- Ratio analysis is used as a measuring rod for effective control of performance of business activities.
- Ratios are an effective means of communication and informing about financial soundness made by the business concern to the proprietors, investors, creditors and other parties.
- Ratio analysis is an effective tool which is used for measuring the operating results of the enterprises.
- It facilitates control over the operation as well as resources of the business.
- Effective co-operation can be achieved through ratio analysis.
Ratio analysis provides all assistance to the management to fix responsibilities.

Ratio analysis helps to determine the performance of liquidity, profitability and solvency position of the business concern.

2.13.7 Limitations of Ratio Analysis

Ratio analysis is one of the important techniques of determining the performance of financial strength and weakness of a firm. Though ratio analysis is relevant and useful technique for the business concern, the analysis is based on the information available in the financial statements. There are some situations, where ratios are misused; it may lead the management to wrong direction. The ratio analysis suffers from the following limitations:

- Ratio analysis is used on the basis of financial statements. Number of limitations of financial statements may affect the accuracy or quality of ratio analysis.

- Ratio analysis heavily depends on quantitative facts and figures and it ignores qualitative data. Therefore this may limit accuracy.

- Ratio analysis is a poor measure of a firm's performance due to lack of adequate standards laid for ideal ratios.

- It is not a substitute for analysis of financial statements. It is merely used as a tool for measuring the performance of business activities.

- Ratio analysis clearly has some autonomy for window dressing.

- It makes comparison of ratios between companies which is questionable due to differences in methods of accounting operation and financing.

- Ratio analysis does not consider the change in price level, as such; these ratios will not help in drawing meaningful inferences.

- Ratios are computed on the basis of financial statements which are historical in nature.
The ratios calculated at a point of time are less informative and defective as they suffer from short term changes.

The differences in the definitions of items in the balance sheets and income statements make the interpretation of ratios difficult.

While making inter-firm comparison, the analyst must keep in mind that different firms follow different accounting policies e.g., depreciation allowance, valuation of inventory etc.

The standards will differ from industry to industry. Comparison of ratios of firms belonging to different industries is not suggested.

Since ratios are calculated from past records, there are no indicators of future.

Proper care should be exercised to study only such figures as have a cause and effect relationship, otherwise ratios will only be meaningless or misleading.

The reliability and significance attached to ratios depends on the accuracy of data based on which ratios are calculated.

Ratios of a company can have meaning only when they are compared against standards. Past performance of the same company cannot be benchmarked when there is change in circumstances.

The change in price levels due to inflation will distort the reliability of ratio analysis.
2.13.8 Precautions in using Ratios

Ratio analysis is a widely used technique in analyzing the financial activities of a firm. If ratios are used in a wrong way or carelessly, there is a possibility of conclusions being misleading. Therefore, while using ratios, following precautions should be taken into consideration:

- **Ability to Understand Accounting Data:** The user must be capable to understand the nature of accounting data, used in preparing financial statements, from which ratios are calculated. It is more essential when efficiency of one firm is compared with that of another firm.

- **Speedy Compilation:** Speedy compilation of ratios is desirable as the utility of these ratios depends upon the timely availability to the person concerned. How speedy these should be made available, depends upon the nature and urgency of ratios.

- **Cost-Benefit:** There is a cost of calculating ratios. Therefore, undesired or useless ratios should not be computed and an equilibrium between cost and benefit be maintained.

- **Presentation:** The utility of ratios, to a great extent, depends upon their presentation. Only those ratios should be presented before the concerned person whom is to be considered. For example, ratios of productivity should be presented before the production manager.

- **Incorporation of Changes:** Ratios should be revised as per changing business conditions and assumptions. In the beginning, a few ratios are computed, but as business grows or expands, new ratios should be incorporated.
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