



**PERIYAR INSTITUTE OF DISTANCE EDUCATION  
(PRIDE)**

**PERIYAR UNIVERSITY  
SALEM - 636 011.**

**B.Sc. COMPUTER SCIENCE  
SECOND YEAR  
ALLIED - II : MANAGEMENT ACCOUNTING**

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## **MANAGEMENT ACCOUNTING**

### **UNIT- I**

Management Accounting-Nature And Scope- Meaning- Definitions- Objects Of Management Accounting And Financial Accounting –Management Accounting And Cost Accounting.

### **UNIT-II**

Analysis And interpretation Of Financial statements- The Concept Of Financial Statement- Limitations Of Financial Statements-Analysis And Interpretation- Tools-comparative Financial Statements- Common Size Financial Statements And Trend Percentages.

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### **UNIT-IV:**

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### **UNIT-V:**

Marginal Costing And Break - Even Analysis For Profit Management and Control. Capital Budgeting - Nature of Capital expenses - Concept Of Capital Budgeting- Capital Budgeting Procedures- Methods Of Ranking Investment Proposals- Simple Problems Involving Payback Method- Average Rate Method And Discounted Cash Flow Methods.

### **TEXT BOOK:**

“Principles of management Accounting” S.N. Maheshwari, Sultan & Sons, New Delhi.

“Management Accounting” Dr.s.Ganeshan &S.R.Kalavathi, Thirumalai Publication, Nagercoil.

### **REFERNCE BOOKS:**

Principles of management Accounting, Man Mohan and S.N.Goyal, Sahithya Bhanvnan, Agra

Management Accounting T.S. Reddy & Hair Prasad Reddy, Markham Publication, Chennai-17

**NOTE:**

- i) 70% of the question shall be problems oriented and 30% theory oriented.
- ii) This Paper has to be taught and examination papers to be valued only by commerce Board.

**UNIT – I**  
**MANAGEMENT ACCOUNTING**

**OBJECTIVES:**

After reading this lesson the student should be able to

- ❖ Understanding the meaning of Management accounting
- ❖ Understanding the objectives of Management accounting
- ❖ Appreciate the importance of Management accounting in decision- making.
- ❖ Distinguish Management accounting from cost accounting and Financial accounting.
- ❖ Realize the limitations of Management accounting.

**STRUCTURE:**

1. Introduction
2. Meaning and definitions of Management Accounting.
3. Objectives of Management Accounting
4. Functions of Management Accounting
5. Advantages of Management Accounting
6. Limitations of Management Accounting
7. Management Accounting Vs Financial Accounting
8. Management Accounting Vs Cost Accounting
9. Summary

**1. INTRODUCTION:-**

Management Accounting is a primarily concerned with providing information relating to the conduct of the various aspects of a business like cost or profit associated with some portions of business operations to the internal parties viz; management. This category of accounting is called as “Management Accounting”.

**EVOLUTION OF MANAGEMENT ACCOUNTING :-**

The objective of accounting is not only to keep records and prepare final accounts but also to help management in its basic functions which are becoming day-by-day more complex and complicated. But it was found that the traditional accounting i.e financial accounting could not meet requirements of the management today due to many reasons. The first and foremost reason is that financial accounting provides information only about past records. It does

not tell the management as to how the business has fared at each stage of operation. It also does not tell what should be the future policy of the management in order to achieve the targets set or to set new targets. Thus financial accounting cannot cope with the various business problems. So to overcome the defects and limitations of financial accounting which is said to be static, management accounting which is a dynamic process has been evolved.

#### **MEANING OF MANAGEMENT ACCOUNTING :-**

The term Management accounting refers to accounting for the Management - Management accounting provides necessary information to assist the management in the creation of policy and in the day-to-day operations. It enables the management to discharge all its functions that is planning, organizing, staffing, direction and control. efficiently with the help of accounting information.

#### **DEFINITIONS:-**

“Management accounting is concerned with accounting information that is useful to management” ---R.N.Anthony

As per Anglo American council of productivity, “Management accounting is the presentations of accounting information in such a way as to assist management in the creation of policy and in the day-to-day operations of an undertaking”.

According to John seizer Management accounting as “ The application of accounting techniques to the provisions of information designed to assist all levels of management in planning and controlling the activities of the firm”.

#### **OBJECTIVES OF MANAGEMENT ACCOUNTING:-**

The objectives of management accounting are :-

1. To assist the management in promoting efficiency. Efficiency includes best possible services to the customers, investors and employees.
2. To prepare budgets covering all functions of a business. i.e. production, sales, research and finance
3. To analysis monetary and non- monetary transactions.
4. To compare the actual performance with plan for identifying divisions' and their causes.
5. To interpret financial statements to enable the management to formulate future policies.
6. To submit to the management at frequent intervals operating statements and short-term financial statements.
7. To an analyse for the systematic allocation of responsibilities.

In short, the objective of management accounting is to help the management in making decisions and implementing them efficiently.

## **FUNCTIONS OF MANAGEMENT ACCOUNTING:-**

Function of Management accounting include all activities connected with collecting, processing, interpreting and presenting information to the management. The main function of Management accounting are:-

1. **Fore casting**:- Making short-term and long-term forecasts and planning the future operations of the business
2. **Organizing**:- organizing the human and physical resources of the business. This is done by assisting specific responsibilities' to different people.
3. **Co-ordination**:- providing different tools of co-ordination. Examples of such tools are budgeting, financial reporting, financial analysis, interpretation etc.
4. **Controlling**:- controlling performance by using standard costing, various analysis and budgetary control.
5. **Analysis and inter predation**:- Analyzing and interpreting financial data in a simple and purposeful manner.
6. **Communicating**: Communicating the results of business activities through prompt and accurate reporting system.
7. **Economic appraisal**:- Appraising of social and economic forces and government policies and interpreting their effect on business.

## **ADAVANTAGES OF MANAGEMANT ACCOUNTING**

As management accounting has emerged to overcome the limitations of financial accounting, it is needless to point out that many advantages which are not associated with financial accounting are available with management accounting. The advantages of management accounting are summarized below:-

1. **Helps in decision making**:- Management accounting helps in decision-making such as pricing, make or buy, acceptance of additional orders, selection of suitable product mix etc. These important decisions are takenwith the help of marginal costing technique
2. **Helps in planning**:- planning includes profit planning, preparation of budgets, programmes of capital investments and financing. Management accounting assists in planning through budgery control, capital budgeting and cost- volume profit analysis.
3. **Helps in organizing**:- Management accounting uses various tools and techniques like budgeting, responsibility accounting and standard costing. A sound organisational structure is developed to facilitate the use of these techniques.

4. **Facilitates communication:-** Management accounting is provided with up-to-date information through periodical reports. These reports assist the management in the evaluation of performance and control.

5. **Helps in co-ordination:** The functional budgets ( purchase budget, sales budget, overhead budget etc ) are integrated into one, Known as master budget. This facilitates clear definition of departmental goals and co- ordination of their activities.

6. **Evaluation and control of performance:-**

Management accounting is a convenient tool for evaluation of performance- with the help of ratios and variance analysis, the efficiency of departments can be measured. Management accounting assists the management in the location of weak spots and in taking corrective actions.

7. **Inter predation of financial information:-**

Management accounting presents information in a simple and purpose full manner. This facilitates quick decision-making.

8. **Economic appraisal:-** Management accounting includes appraisal of social and economic forces and government policies. This appraisal helps the management in assessing their impact on the business.

#### **LIMITATIONS OF MANAGEMENT ACCOUNTING**

No system in the universe is perfect. This applies to accounting system also. This applies to management accounting system also. The management accounting system suffers from certain limitations. These limitations are taken into account the so-called advantages cannot be reaped. The various limitations of management accounting are listed below:-

1. **Based on accounting information :-** Management accounting derives information from past financial accounting and cost accounting records. If the past records are not reliable, it will affect the effectiveness of management accounting.

2. **Wide scope:-** Management accounting has a very wide scope incorporating many disciplines. This results in inaccuracy and other practical difficulties.

3. **Costly:-** The installation of management accounting system requires a large organization. Hence, it is very costly and only big concerns can afford to adopt it.

4. **Evolutionary stage:-** Management accounting is still in its initial stages. Tools and techniques are not fully developed. This creates doubts about the utility of management accounting

5. **Opposition to change:-** Introduction of management accounting system requires a number of change in the organization structure, rules and regulations. This rearrangement is not generally liked by the people involved.



6. **Intuitive decisions:-** Management accounting helps in scientific decisions making. Yet because of simplicity and personal factors the management has a tendency to arrive at decisions by intuition.

7. **Not a alternative to management:-** Management accounting will not replace the management and administration. It is a tool of the management. Decisions are of the management and not of the management accountant.

### **MANAGEMENT ACCOUNTING VS FINANCIAL ACCOUNTING**

Financial accounting and Management accounting are two interrelated facts of the accounting system. They are not independent of each other. They are interdependent. They are Supplementary in nature.

A distinction is always drawn between financial accounting and management accounting since they differ in their emphasis and approaches. Some of the points of differences between these two accounting systems are given below:-

1. **Objectives:-** The main objective of financial accounting is to supply information in the form of profit and loss account and Balance sheet to outside parties like share holders, creditors, government etc. But the objective of management accounting is to provide information for internal use of management.

2. **Performance analysis:-** Financial accounting is concerned with the overall performance of the business. On the other hand management accounting is concerned with the departments. It reports about the performance and profitability of each of them.

3. **Data used:** Financial accounting is mainly concerned with the recording of past events where as management accounting is concerned with future plans and policies.

4. **Nature:-** Financial accounting is based on measurement while management accounting is based on judgement. Because of this financial accounting is more objective and management accounting is more subjective.

5. **Accuracy:-** Accuracy is an important factor in financial accounting. But approximations are widely used in management accounting. This is because most of the information is related to the future and interest for internal use.

6. **Legal compulsion:-** Financial accounting is compulsory for joint stock companies. But management accounting is only optional.

7. **Monetary transactions:-** Financial accounting records only those transactions which can be expressed in terms of money. On the other hand, management accounting records not only monetary transactions but also non-monetary events, namely technical changes, government polices etc.

8. **Control:-** Financial accounting will not reveal whether plans are properly implemented. Whereas management accounting will reveal the deviations of

actual performance from plans. It will also indicate the causes for such deviations.

### **MANAGEMENT ACCOUNTING Vs COST ACCOUNTING.**

Costing has been defined as classifying recording and appropriate allocation of expenditure for the determination of the costs of products or services. Cost accounting will tell the management as to how the business has fared and each stage of operation. But cost accounting will not tell them anything about the future policy to be adopted.

The following are the main differences between cost accounting and management accounting:

1. **Objective:-** The objective of cost accounting is the ascertainment and control of costs of products or services. But the objective of management accounting is to help the management in decision making, planning, control etc. This objective is achieved by furnishing relevant accounting information to the management.
2. **Scope:-** cost accounting deals primarily with cost data. But management accounting deals with both cost and revenue. It includes financial accounting, cost accounting, budgeting, reporting to management and interpretation of financial data. Thus the scope of management accounting is wider than that of cost accounting.
3. **Data used:-** In cost accounting, only those transactions which can be expressed in figures are taken. only quantitative aspect is recorded in cost accounting. But management accounting uses both quantitative and qualitative information.
4. **Nature:-** Cost accounting uses both past and present figures. But management accounting is concerned with the projection of figures for future. The policies and plans are prepared for providing future guidelines.

However, cost accounting and management accounting are Complementary in nature. Cost accounting furnishes detailed cost information. Management accounting analysis and presents the data in a more meaningful and informative manner. It helps the management to use the cost data effectively.

### **Summary:-**

Accounting can no longer be considered as a mere language of business. Now a need has arisen for accounting to provide information, relating to the conduct of the aspects of a business like cost or profit associated with some portions of business operations to the internal parties viz. Management. Traditional accounting i.e financial accounting cannot provide this. Hence management accounting was evolved to fulfill this need. Thus the objectives of

management accounting are to present the required facts and information for the use of management in a quantive form and to help in effective performance of managerial functions i.e. planning, organizing, controlling, and decision-making etc-

A concern will derive many advantages with the help of management accounting like systematic regularity in the business activities through efficient planning and effective organization, increase in efficiency of the concern by comparing actual performance with expected performance and suggesting remedial measures to avoid the recurrence of adverse variances, cost reduction and consequent price reduction by the application of various types of controls in accounting areas etc.

**NOTES**

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## UNIT-II

### FINANCIAL STATEMENT ANALYSIS

After reading this lesson the student should be able to Understand the implications of financial statements as performance records of an enterprise Appreciate the methods to carry out Financial statement analysis, Learn the procedure to prepare comparative financial statements, Trend percentages and common size statements

Financial statements refers to a package of statements such as Balance sheet, income statement, fund flow statement, cash flow statement and statement of retained earnings. The balance sheet and income statement are traditional financial statement. Other statements are prepared to supplement them.

**Objectives:-** The following are the main objectives of financial statements analysis:-

1. To establish the earning capacity of the concern.
2. To judge the financial (both liquidity and solvency) Position and financial performance of the concern.
3. To determine the debt capacity of the concern.
4. To decide about the future prospects of the concern.

#### **NATURE OF FINANCIAL STATEMENTS:-**

According to the American Institute of certified public Accounts, "Financial statements reflect a combination of recorded facts, accounting principles and personal judgments". The following points explain the nature of financial statements:-

1. **Recorded facts:-** The term recorded facts refers to the data taken out from accounting records. Facts which have not been recorded in the financial books are not depicted in financial statements however important they might be. For example. Fixed assets are shown at cost irrespective of their market or replacement price, since only cost price is recorded in the books.
2. **Accounting principles:-** Certain accounting principles concepts and conventions are followed in the preparation of financial statements. For example, the convention of valuing stock and cost or mark price whichever is less is followed. The principle of valuing assets at cost less depreciation is followed for balance sheet purpose.
3. **Personal judgment:-** personal judgment has as important bearing on the financial statements. For example, the selection of a method for stock valuation depends on the personal judgment of the accountant.

## **LIMITATIONS OF FINANCIAL STATEMENTS**

Financial statements are relevant and useful for a concern. But they do not present a final picture. Financial statements suffer from the following limitations:

1. Financial statements are only interim reports. They are not final, because the exact financial position can be known only when the business is closed.
2. Many items in the financial statements are based on the personal judgment of the accountant.
3. In the balance sheet, assets are recorded at their original costs. Replacement cost or realisable value of the assets is ignored. Hence it does not reveal the true position of the business.
4. No monetary factors such as credit worthiness reputation of the management, influence the financial position of a concern. But the financial statements do not take in to account these factors.
5. Financial statements ignore the changes in price level. Hence their use is limited during inflationary periods.
6. Financial statements are records of past events only. past can never be a hundred percent representative of the future.
7. Financial statements are prepared on the basis of certain accounting concepts and conventions. Any change in the method or procedure of accounting limits the utility of financial statements.
8. The balance sheet fails to show how working capital was raised and used during the year. This is a serious limitation as changes in working capital are important to assess the financial health of a company.

## **INTERPRETATION OF FINANCIAL STATEMENTS**

Analysis and interpretation of financial statements is the most important step in accounting. To have a very clear understanding of the profitability and financial position of a company, the financial statements have to be analysis and interpreted. Analysis refers to the methodical classification of the data given in the financial statements. For example, the amount of capital employed is not directly available in the balance sheet. The figures have to be re-arranged to calculate the amount of capital employed.

The term “ interpretation” means explain the meaning and significance of the data so arranged It is the study of the relationship between various financial factors. The relationship between profit and capital employed, current assets and current liabilities. sales and gross profit have to be explained. Further to make interpretation more meaningful, comparisons have to be made. comparison of relationship between various financial factors of the same company over a period of time can be made. For, Example, gross profit ratios

of several years may be compared similarly comparisons can be made between two or more companies. This is popularly known as inter firm comparisons.

Analysis and interpretation are closely related. Interpretation is not possible without analysis and without interpretation analysis has no value. Hence, the term analysis is widely used to refer both analysis and interpretation. In short, analysis and interpretation of financial statements require the following:

1. Methodical classification of the data given in the financial statements.
2. Explaining the meaning and significance of the relationship between various financial factors.
3. Comparisons of these relationships.

It is a process of evaluating the relationship between the various components of a financial statement to obtain a clear understanding of a firms position and performance.

#### **METHOD OF FINANCIAL STATEMENTS ANALYSIS**

It is now clear that the analysis of financial statements provide necessary insights towards establishing relationships and trends to determine whether or not the financial position and length of operations as well as financial progress of the company are satisfactory or not. some of the analytical methods used to analyses financial statements are:

1. Comparative financial statements
2. Common size financial statements
3. Trend percentages
4. Ratio analysis
5. Fund flow analysis.

#### **1. Comparative statements:-**

Financial statements are prepared as on a particular date or for a particular period. For example, balance sheet indicates the financial position as at the end of the period and the income statement shows the operating results for a period (usually a year). But a financial analyst is interested in knowing whether the business is moving in a favorable or unfavorable direction. For this purpose, figures of the current year, have to be compared with those of the previous year. Compared financial statements provide information to assess the direction of change in the business. In these statements, figures for two or more periods are placed side by side to facilitate comparisons.

Any financial statement can be proponed in a comparative form. But in practice, balance sheet and income statement are alone prepared in a comparative form. Under the companies Act, 1956, companies are required to

show figures for the previous year together with current year figures in their profit and loss account and balance sheet.

**roforma of Balance sheet as on.....**

particulars	Current year Figures(Rs)	Previous year Figures(Rs)
<b>1.Liquid assets</b>		
Cash at bank	xxx	xxx
Cash in hand	xxx	xxx
Bills receivable	xxx	xxx
Marketable securities	xxx	xxx
<b>Total(1)</b>	<b>xxx</b>	<b>xxx</b>
<b>II Inventories:-</b>		
Raw materials		xxx      xxx
Finished goods		xxx      xxx
<b>Total(2)</b>		<b>xxx      xxx</b>
<b>III. Total current assets (1+2)=3</b>		<b>xxx      xxx</b>
<b>Iv current liabilities:</b>		
Bills payable		xxx      xxx
Creditors		xxx      xxx
Bank over draft		xxx      xxx
Out Sanding		xxx      xxx
<b>Total(4)</b>		<b>xxx      xxx</b>
<b>V. provisions:-</b>		
Provision for taxation		xxx      xxx
Proposed Dividends		xxx      xxx
Other provisions		xxx      xxx
<b>Total (5)</b>		<b>xxx      xxx</b>
<b>Vi Total current liabilities and Provisions (4+5)=6</b>		
		<b>xxx      xxx</b>
<b>Vii Net working capital (6-3)=7</b>		<b>xxx      xxx</b>
<b>Viii Net Block.</b>		
Land and buildings		xxx      xxx
Plant and machinery		xxx      xxx
Furniture and fixtures		xxx      xxx
Equipment and tools		xxx      xxx
<b>Total (8)</b>		<b>xxx      xxx</b>



Total capital employed (7+8)=9	xxx	xxx
ix capital employed as represented by equity:-		
Equity share capital:-l	xxx	xxx
Reserves and profit and loss:-		
a/c Balance		
Less Balance	xxx	xxx
Total	xxx	xxx
x capital employed as represented by bonds and debentures:-		
Debentures	xxx	xxx
LT loans	xxx	xxx
other secured loans	xxx	xxx

#### Performa of profit and loss a/c as an...

Particulars	current year figures Rs	previous year figures Rs.
Sales	xxx	xxx
Less: cost of goods sold (cost of materials consumed + direct wages + other direct expenses)	xxx	xxx
Gross profit	_____	_____
Less: overhead expenses:		
Adm : overhead expenses	xxx	xxx
Distribution over head expenses	xxx	xxx
Selling overhead expenses	xxx	xxx
Financial overhead expenses	xxx	xxx
	_____	_____
Net profit	_____	_____

#### COMPARATIVE BALANCE SHEET

The single balance sheet shows assets and liabilities as an a particular data. The comparative balance sheet shows the value of assets and liabilities on two diffident dates. If helps in comparison. A comparative balance sheet has two columns to record the figures of the current year and the previous year. A third column is used to show the increase or decrease in figures. A forth column may be added for giving percentage of increase or decrease.

Thus, while in the balance sheet the emphasis is on status in the comparative balance sheet it is on change. Comparative balance sheet indicates

whether the business is moving in a favorable or unfavorable direction it is very useful for studying the trends in an enterprise.

Comparative income statement:-

An income statement shows the operating results of a business for a designated period of time. A comparative income statement shows the operating results for a number of accounting periods so as to facilitate comparison. It gives an idea of the progress of a business over a period of time. It gives an idea about the improvement in sales, profit and other expenses over the previous year.

A comparative income statement has two columns for the figures of the current year and the previous year. A third column is used to show the increase or decrease in figures. A fourth column may be added for giving percentage of increase or decrease.

## **2. COMMON SIZE STATEMENTS:-**

Financial statements present absolute figures. A comparison of absolute figures could be misleading. For example, cost of sales in absolute figures might have gone up but as a percentage of sales it might have come down. Hence, for a better understanding and comparison, the figures are converted into percentage of some common base. The statements which report the figures as a percentage of some common base are called common size statements.

Sales is taken as the common base in the common size income statements. All expenses are recorded as a percentage of sales. In the common size balance sheet, total assets or liabilities is taken as the common base. Each item is expressed as a percentage of the total. Common size statements are useful to a financial analyst. They make comparison easy and meaningful.

## **3. TREND PERCENTAGES:-**

Trend analysis is very helpful in making a comparative study of the financial statements of several years. Under this technique, information for a number of years is taken up and one year (usually the first year) is taken as the base year. Each item of the base year is taken as 100 and on that basis, the percentage for other years are calculated. For example, if sales in the base year is Rs.10,000 and in the next year it is 20,000, the trend percentages will be 100 and 200 respectively. Substitution of percentages for large amounts makes the statements brief and easily understandable.

In short, comparative statements, common size statements and trend analysis present the information contained in balance sheet and income statement in a form suitable for analysis. Such presentation helps in a better understanding of the financial statements.

**Summary:**

Financial statements convey a lot of information to both the external as well as internal users. Meaningful comparison can be drawn from a systematic analysis of the financial statements by carrying out the comparative analysis, constructing common size statements as well as Trend percentages.

The construction of comparative statement explores the periodic changes in various items listed in both balance sheet as well as in profit and loss account. This periodic changes could be analysed either in absolute values or in terms of percentage changes

The common size statements analysis tries to provide an in-depth examination of each of the financial statements by developing inter relationship between various items with one 'base' figure. In case of income statement the annual 'sales' figure acts as the 'base' to find the proportionate changes in different costs and the profit margins annually. The Trend percentage method tries to explore into possible trends in the operating performance of the enterprise through the construction of trend percentages keeping one of the year's performance as the 'base'. Therefore this method examines more number of years of information compared to the earlier one. So, these analysed figures of financial statements are more meaning full for decision making.



## **UNIT-III**

### **RATIO ANALYSIS**

Financial statements are statements of income and balance sheet which highlight the income or profitability and change in the fixed assets and capital during a specific period. It provide a summarized analysed view of the operations of a firm. These statements may be more fruitfully used if they are analysed and interpreted to have an insight into the strengths and weakness of the firm. The success of the company's financial plans is based on the financial analysis which is the starting point for making plans, before using any sophisticated forecasting and budgeting procedures.

Various tools are employed by the interested parties in analysing the financial information contained in these statements. Ratio analysis one of the important techniques to explain salient features of financial statements It is needed for evaluating the financial statements.

#### **Meaning**

The relationship between two figures expressed mathematically is called a 'Ratio' It is a numerical relationship between two numbers which are related in some manner. Ratio analysis is a technique of analysis and interpretation of financial statements. It is the process of determination and interpretation of various rations for helping in decision making.

Ratio analysis involves thtee steps:

1. Calculation of appropriate rations from the financial statements.
2. Comparision of the rations with standards or with rations of the past period-comparision can also be made with the ratios of other firms.
3. Interpretation of ratio.

#### **DEFINITION**

“Ratio is expression of the quantitative relationship between two numbers”

-Wixon,Kell and Bedford,

“Ratio as simple one number expressed in terms of another”

-Robert Anthony

#### **SIGNIFICANCE/MERTS/IMPORTANCE OF RATIO ANALYSIS**

##### **1. Test of solvency:-**

The use of ratio is useful in testing the solvency position of the company. when percentage of gross profit to sales is increasing, it shows the efficiency of profitability. Likewise, when ratio of current assets to current liabilities shows upward trend, it means sufficient working capital. Thus the claim of creditors can be paid easily.

##### **2. Helpful in decision making:-**

The main object of financial statement is to tell the financial position of the company up on which management takes decision.

### **3. Helpful in financial forecasting and planning:-**

The ratios are utmost use in financial planning, forecasting and work as a future guide. The ratios are used for drawing conclusion such as current ratio is 5:1, it means blocking up of capital as the ideal ration is 2:1 whereas we have 5:1, Rs.3/- are unneessanily blocked.

### **4. Useful in knowing profitability:-**

The ratios are most useful when comparison is made between companies for profitability. Two types of comparison of percent ratio with past ratio and the second comparison of several previous years are computed with the objective of knowing improvements or down falls in the financial position.

### **5. Liquidity position:-**

With the use of ratio analysis the meaningful conclusion regarding the sound liquidity position of the firm. The liquidity position is sound if it has the ability to pay its debts when these are due for payments.

### **6. Helpful in knowing operating efficiency:-**

The ratios are important from the management point of view where in the management measures the efficiency of the assets. The sale and its percentage to net profit is increasing every year is a test of increasing in efficiency.

### **7. Business Trend:-**

The ratio analysis speaks of the financial discipline of the firm with raged to additions and down fall. When the trends is for downfall the management can take corrective decisions.

### **8. Helpful In Cost Control:-**

Comparison of actual ratios with the standard reveals the deviations and weaknesses. This helps the management to take corrective action at the right time. Control of costs as well as performance are ensured.

### **9. Helpful in analysing the financial health of the company:-**

The ratio are very useful in highlighting the liquidity, solvency, profitability and Capital gearing. Thus, these are a useful tool of analysing financial performance.

## **INTERPRETATION OF RATIOS**

The importance of ratios, as a tool of analysis, lies in its proper interpretation by the financial analyst. There are four different method applied for interpretation of ratios.

1. The individual ratio by itself may convey a significant meaning of the related items. For instance, if the current ratio consistently falls below one, it may reveal the impending financial solvency of the concern which only means that the current assets of the units are not even sufficient to meet current

liabilities. It is very rare with regard to a business concern under normal circumstances and one cannot also jump to any hasty conclusion after studying the ratios in isolation.

Moreover a single ratio at times may fail to reveal the exact financial position.

2. The interpretation of ratios can be effected by taking into analysis a group of related ratios in sufficient number. By compilation and analysis of group of inter related ratios, the significance of ratios can be fully understood when the same cannot be achieved in isolation. For instance, the value of net profit ratio is increased by taking the ratio disclosing the number of times the proprietor's investment is turned over in sales every year.

3. The interpretation of ratios involves comparison of ratios of one business concern with those of others which is often referred to as "inter firm comparison". This comparison provides the valuable information as in most cases, members of the same industry face similar problems – internal as well as external. These comparisons are often facilitated by the use of the tables summarising the ratios of units in a particular industry. These tables are usually prepared by trade associations and credit agencies.

4. The interpretation of ratios involves making comparison of ratios of the unit over a period of years. By this, the same ratio or a group of related ratios of a business concern is compiled and evaluated over a period of years. This study highlights significant trends showing the rise, fall or stability achieved by the unit. The average value of a particular ratio for a number of years can serve as a standard against which the future performance can also be compared.

### **LIMITATIONS OF RATIOS**

No doubt ratios are useful tools yet these should be used with utmost care as these suffer from certain drawbacks, which are as:

#### **1. Need detailed knowledge:-**

The calculation of ratio is not so much difficult as its interpretation. Ratios are tools of quantitative analysis and not of qualitative analysis. Thus, one should have a fair knowledge of qualitative and quantitative analysis.

#### **2. Lack of reliable data:-**

Ratio can give misleading results if the analyst does not know the reality and correctness of figures. For example, the value of closing stock is overstated, profit will be inflated, this will result in more taxation when actual profits are less than the profits on which tax has been paid.

### **3. Different Basis:-**

There are different methods of valuation of closing stock (i) LIFO (ii) FIFO in both profit will differ. Similarly profit has different meanings. Some one may say profit before tax and interest, while others may take profit after tax and Interest. Similarly, different methods of depreciation, each method will show different amount of profit.

### **4. Different accounting policies:-**

Different firms follow different policies with regard to depreciation, fixed instalments or diminishing balance method or stock valuation. LIFO, FIFO, thus profit so calculated will not be comparable unless adjustment for profit is not made.

### **5. Effects of price level change:-**

While ratio are calculated, no thought is given to inflationary measures which is responsible for change in price level. Thus the whole utility of ratio analysis becomes stand still.

### **6. Bios option:-**

Ratios are only tools it depends upon the uses how to give them practical shape. For example, profit has different meanings such as EBIT (Earning before Interest and Tax). Some says profit is before interest. Thus personal opinion is different from business to business.

### **7. Lack of Comparison:-**

Different firms adopt different procedures, records, objectives, and policies in such situations, comparison will become more complicated.

### **8. Evaluation:-**

There are different tools of ratio analysis, which tool is to be needed in a particular situation depends upon the skill, training, intelligence and expertise of the analyst.

## **CLASSIFICATION OF RATIOS**

In order, that ratios serve as a tool for financial analysis, they are classified as:

- I PROFITABILITY RATIOS
- II FINANCIAL RATIOS
- III TURNOVER RATIOS
- IV CAPITAL STRUCTURE RATIOS



### (I) Profitability Ratios:-

Profits are always measured in term of sales (or) investment. Profitability ratios measure the profitability of a firm's business operations. These ratios are expressed in terms of percentage and always on sales. The following are the important profitability ratios:-

#### 1. Overall profitability Ratio:-

It is also called as "Return on Investment" (ROI) or Return on Capital Employed (ROCE). It indicates the relationship between net profit after interest and Tax and the proprietor's fund. It is most widely used to measure the overall profitability and efficiency of the business.

This ratio is useful to share holder's and management of the company. Higher the ratio reveals how efficiently the company has used share holder's fund

$$\text{ROI} = \frac{\text{Net Profit (after tax and interest)}}{\text{Share holder's fund}} \times 100$$

Share holder's fund = Equity + Preference share capital, Share Premium, Retained Earnings + Surpluses, General Reserves – Accumulated loss if any.

#### 2. Return of Equity Share holder's Fund:-

The rate of dividend on equity shares differ year to year, depending upon the amount of profit. The performance of a Company is judged by the amount of return of equity capital.

$$\text{ROE} = \frac{\text{Net Profit after tax and preference dividend}}{\text{Equity share capital paid – up}} \times 100$$

(ie. share holder's fund)

This ratio is most suitable to equity share holder's who want to know how much profit are earned by the company and they can be known how much of dividend will be received by them.

#### 3. Return on Total Assets:-

This ratio is computed to know the productivity of the total assets.

$$\text{Return of Assets (ROA)} = \frac{\text{Net Profit after Tax + Interest}}{\text{Total assets excluding fictitious assets}} \times 100$$

Note: Exclude only fictitious assets and not all intangible assets. Fictitious assets includes assets such as preliminary expenses, Debit balance in the profit and Loss account.

The inclusion of interest is conceptually sound because total assets have been financed from the 'pool' of funds supplied by the creditors and the owners . The objective of computing the 'Return on Total assets' is to find out how effectively the funds pooled together have been used. Hence, it will be proper to include the interest in computing the return on total assets.

#### 4. Earning per share (EPS):-

This ratio indicates the availability of total profits per share. It is the small variation of return on equity capital and is calculated by dividing the net profit after taxes and preference dividend by the total number of equity shares.

$$\text{EPS} = \frac{\text{Net profit after tax and preference dividend}}{\text{Number of equity shares}}$$

The EPS is a good measure of profitability and for comparing EPS of similar companies. EPS calculated for a number of years indicates whether or not earning power of the company has increased.

#### Illustration – 1.

Calculate the Earning per share (EPS) from the following date:-

Net Profit before Tax Rs. 50,000/-, Tax rate 50%

10% preference share capital (Rs.10/- each) Rs.50,000/-

Equity share capital (Rs.10/- each) Rs. 50,000/-

#### Solution:

$$\text{Earning per share} = \frac{\text{Net profit after tax and preference dividend}}{\text{Number of equity share}}$$

Net Profit after Tax	=	Profit before tax - tax
		=Rs. 50,000 - 25,000 (50%) = Rs. 25,000
Preference dividend	=	10% of Rs. 50,000/- = Rs. 5,000
No. of Equity Shares	=	Rs.50,000 ÷ Rs. 10 = 5000 shares

$$\begin{aligned} \text{Earning per share} &= \text{Rs. } 20,000 \div 5000 \text{ shares} \\ &= \text{Rs. } 4 \text{ per share.} \end{aligned}$$

**Illustration – 2.** From the following information calculate

1. Return on capital employed
2. Return on share holder's funds
3. Return on total assets

Balance sheet as on .....

Liabilities	Rs.	Assets	Rs.
Share Capital	1,00,000	Fixed assets	8,00,000
Reserves	2,00,000	Current assets	2,00,000
10% Debentures	6,00,000		
Creditors	1,00,000		
	10,00,000		10,00,000
	10,00,000		10,00,000

Profit before tax is Rs.1,20,000. Tax rate is 40%

**Solution:**

Net profit after tax and interest

$$1. \text{Return on capital employed} = \frac{\text{Net profit after tax and interest}}{\text{Share holder's fund or capital employed}} \times 100$$

Profit before tax	=	Rs.1,20,000
Add interest (10% on debenture of 6,00,000)=	=	Rs. 60,000
		Rs. 1,80,000
		Rs. 1,80,000

$$\begin{aligned} \text{Share holder's fund} &= \text{Share Capital} + \text{Reserves} + \text{long term debt} \\ &= 1,00,000 + 2,00,000 + 60,000 = 9,00,000 \\ &\quad 1,80,000 \end{aligned}$$

$$\text{Return on capital employed} = \frac{1,80,000}{9,00,000} \times 100 = 20\%$$

	Net Profit after tax	
2. Return on share holder's funds	Equity Share Capital	x 100
Profit before tax	Rs. 1,20,000	
Less: Tax @ 40%	Rs. 48,000	
	-----	
	72,000	
	-----	
Share holder's funds:-		
Share Capital	Rs. 1,00,000	
Reserves	Rs. 2,00,000	
	-----	
	Rs. 3,00,000	
	-----	
Return on share holder's fund =	$\frac{72,000}{3,00,000} \times 100 = 24\%$	

	Net Profit after tax and interest	
3. Return on total assets =	-----	x 100
	Total assets excluding fictitious assets	
	72,000	
	= ----- x 100	
	10,00,000	
	= 7.2%	

## II. General Profitability Ratio:-

### 1. Operating Ratio:-

This ratio establishes the relationship between cost of goods sold and other operating expenses on the one hand and the sales on the other hand. It measures the cost of operations per rupee of sales. This ratio is calculated by dividing operating costs with the net sales and is generally represented as a

percentage. Operating ratio is considered to be yard stick of operating efficiency.

$$\text{Operating Ratio} = \frac{\text{Operating cost}}{\text{Net Sales}} \times 100$$

$$\text{Operating cost} = \text{Cost of goods sold} + \text{Operating expenses}$$

$$\text{Cost of Goods sold} = \text{Opening stock} + \text{Purchases} - \text{Closing stock}$$

$$\text{Operating expenses} = \left\{ \begin{array}{l} \text{Manufacturing and} \\ \text{Administrative} \\ \text{expenses} \end{array} \right\} + \left\{ \begin{array}{l} \text{Financial} \\ \text{expenses} \end{array} \right\} + \left\{ \begin{array}{l} \text{Selling} \\ \text{expenses} \end{array} \right\}$$

This ratio indicates the percentage of net sales that is consumed by operating cost. Higher operating ratio the less favourable it; because it would have a small margin to cover interest, income tax, dividend, reserves. So lower ratio is more favourable.

## 2. Operating Profit Ratio:-

This percentage speaks of how much sales is consumed by operating cost. Higher operating ratio is always harmful as a small margin is left for interest, income tax, dividend and reserves. It is a test of operating efficiency.

$$\text{Operating Profit Ratio} = \frac{\text{Operating profit}}{\text{Net sales}} \times 100$$

## 3. Gross Profit Ratio:-

This ratio expresses the relationship between gross profit and net sales and is usually represented as a percentage. It is calculated by dividing the gross profit by sales.

$$\text{Gross Profit Ratio} = \frac{\text{Gross profit}}{\text{Net Sales}} \times 100$$

$$\text{Gross profit} = \text{Sales} - \text{Cost of goods sold}$$

$$\text{Cost of Goods sold} = \text{Opening stock} + \text{Purchase} + \text{All direct expenses} - \text{Closing stock}$$

It indicates the efficiency of production or trading operations. A high gross profit ratio is a sign of good management as it implies that the cost of production is relatively low.

#### 4. Net Profit Ratio:-

This ratio establishes a relationship between net profit (after taxes) and sales and indicates the efficiency of the management in manufacturing, selling and administrative and other activities of the firm. This ratio is the overall measure of firm's profitability and is calculated as :

$$\text{Net Profit Ratio} = \frac{\text{Net Profit after tax}}{\text{Net sales}} \times 100$$

It shows what percentage of sales is left to the owners after meeting all costs. An increase in net profit ratio year after year is an indication of improving working conditions and vice versa.

#### 5. Expense Ratios:-

This ratios indicate the relationship between various expenses and net sales. The operating ratio reveals the average total variations in expenses. But some of the expenses may be increasing while some be falling. Hence, expenses ratios are calculated by each item of expenses or group of expenses with the net sales to analyse the cause of variations of the operating ratio. The lower ratio is an indication of greater profitability whereas higher the ratio, lower is the profitability.

$$\text{Particular expense ratio} = \frac{\text{Particular expense}}{\text{Net sales}} \times 100$$

Specific expenses ratio may be calculated as :

$$\text{a) Selling and Distribution Expenses Ratio} = \frac{\text{Selling and Distribution Expenses}}{\text{Net Sales}} \times 100$$

$$\text{b) Non-operating Expenses Ratio} = \frac{\text{Non Operating Expenses}}{\text{Net Sales}} \times 100$$

$$\text{c) Cost of Goods Sold Ratio} = \frac{\text{Cost of goods sold}}{\text{Net Sales}} \times 100$$

$$\text{d) Administrative \& Office Expenses Ratio} = \frac{\text{Selling and Distributive Expenses}}{\text{Net Sales}} \times 100$$

**Illustration:**

The following figures relate to Kannan Trades Ltd for the year ended 31<sup>st</sup> March 2007

Trading and Profit and Loss Account for the year ended on 31<sup>st</sup> March 2007

	Rs.			Rs.	Rs.
To Opening stock	75,000	By	Sales	5,20,000	
To purchases	3,25,000	By	<b>Less:</b> Returns	20,000	5,00,000
To Gross Profit	2,00,000	By	Closing stock		1,00,000
	<b>6,00,000</b>				<b>6,00,000</b>
To <b>Operating expenses:</b>		By	Gross Profit		2,00,000
Administration Expenses	40,000				
Selling & Distribution	25,000	By	<b>Non operating Income:</b>		
	65,000		Dividend	9,000	
To <b>Non operating Expenses:-</b>			Profit on sale of Shares		11,000
Loss on sale on assets	5,000				20,000
To Net Profit	1,50,000				
	<b>2,20,000</b>				<b>2,20,000</b>

Calculate

- 1) Operating ratio    2) Operating profit Ratio    3) Gross Profit Ratio    4) Net Profit Ratio    5) Expenses Ratio

Solution:

- 1) Operating Ratio:-

$$\text{Operating ratio} = \frac{\text{Operating Cost}}{\text{Net Sales}} \times 100$$



$$\begin{aligned}
\text{Operating Cost} &= \text{Cost of goods sold} + \text{Operating expenses} \\
\text{Cost of goods sold stock} &= \text{Opening stock} + \text{Purchases} - \text{Closing stock} \\
&= 75,000 + 3,25,000 - 1,00,000 \\
&= 4,00,000 - 1,00,000 \\
\text{Rs.} &= 3,00,000 \\
&= \frac{3,00,000 + 65,000}{5,00,000} \times 100 \\
&= 73\%
\end{aligned}$$

2) Operating Profit Ratio:-

$$\begin{aligned}
\text{Operating Profit Ratio} &= \frac{\text{Operating Profit}}{\text{Net Sales}} \times 100 \\
\text{Operating Profit} &= \text{Gross Profit} - \text{Operating Expenses} \\
&= 2,00,000 - 65,000 = 1,35,000 \\
&= \frac{1,35,000}{5,00,000} \times 100 \\
&= 27\%
\end{aligned}$$

3.

$$\begin{aligned}
\text{Gross Profit Ratio} &= \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100 \\
&= \frac{2,00,000}{5,00,000} \times 100 \\
&= 40\%
\end{aligned}$$

4. Net Profit Ratio:-

$$\begin{aligned}
\text{Net Profit Ratio} &= \frac{\text{Net Profit}}{\text{Net Sales}} \times 100 \\
\text{F} &= \frac{1,50,000}{5,00,000} \\
&= 30\%
\end{aligned}$$

## 5. Expenses Ratio:

$$\begin{aligned} \text{a) Administrative Expense Ratio} &= \frac{\text{Administrative Expenses}}{\text{Net Sales}} \times 100 \\ &= \frac{40,000}{5,00,000} \times 100 \\ &= 8\% \end{aligned}$$

$$\begin{aligned} \text{b) Selling and distribution} &= \frac{\text{Selling and distribution expenses}}{\text{Net Sales}} \times 100 \\ \text{expenses ratio} &= \frac{25,000}{5,00,000} \times 100 \\ &= 5\% \end{aligned}$$

## II. FINANCIAL (OR) SOLVENCY RATIOS

Financial Ratios indicate about the financial position of the company. A Company is deemed to be financially sound, if it is in a position to carry on its business smoothly and meet its obligation, both short-term and long-term without strain. It is a sound principle of finance that the short-term requirements of funds should be met out of long-term funds. For example if the payment of raw materials, purchases are made through issue of debentures it will create a permanent interest burden on the enterprise. Similarly, if fixed assets are purchased out of funds provided by bank overdraft, the firm will come to grief because such assets cannot be sold away when payment will be demanded by the bank.

Financial ratios can be divided into two broad categories:-

1. Liquidity Ratios
2. Stability Ratios

### I Liquidity (Short-term solvency) Ratios:

Liquidity ratios measure the ability of the firm to meet its current obligations. They indicate whether the firm has sufficient liquid resources to meet its short-term liabilities. The following are important liquidity ratios:-

#### 1. Current Ratio:-

Current ratio is the relationship between current assets and current liabilities. It is calculated by dividing current assets by current liabilities.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

The current assets of a firm represent those assets which can be converted into cash within a short period of time, normally not exceeding one year and include cash and bank balances, marketable securities, inventory of raw materials, semi finished and finished goods debtors, provision for bad and doubtful debts, bills receivable and prepaid expenses. The current liabilities defined as liabilities which are short-term maturing obligations to be met within a year, consist of Trade creditors, bills payable, bank credit, provision for taxation, dividends payable and outstanding expenses.

It is also known as working capital ratio, since it is related to working capital of the firm. A current ratio of 2:1 is considered ideal. That it is, for every one rupee of current liability there must be current assets of Rs.2. If the ratio is less than two, it may be difficult for a firm to pay current liabilities. If the ratio is more than two, it is an indicator of idle funds.

Limitation:- It is a crude ratio because it measure only the quantity and not the quality of current assets.

## 2. Quick Ratio or Liquidity /Acid Test Ratio:-

It is the relationship between quick assets and quick liabilities. Quick assets are those assets which readily converted into cash. They include cash and bank balances, bills receivables, debtors, short-term investments. Quick liabilities include creditors, bills payable, outstanding expenses.

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Quick liabilities}}$$

$$\text{Quick assets} = \text{Current assets} - (\text{Stock} + \text{prepaid expenses})$$

$$\text{Quick Liabilities} = \text{Current Liabilities} - \text{Bank overdraft}$$

A Quick ratio of 1:1 is considered satisfactory. Any deviation from this norm indicates either insufficient liquidity of the firm to utilize the resources.

## II. SOLVENCY RATIOS (LONG-TERM)

Solvency ratios assess the long-term financial condition of the firm. Bankers and creditors are most interested in liquidity. But share holders, debenture holders, and financial institutions are concerned with the long-term financial prospects.

The following are the widely used solvency ratios:

### 1. Debt-Equity ratio:-

The debt-equity ratio establishes the relationship between share holder's funds and outsiders funds. Share holder's funds consist of preference share capital, equity share capital and reserves and surplus. Outsider's fund include all long-term and short-term debts.

$$\text{Debt – Equity Ratio} = \frac{\text{Debt}}{\text{Equity}} \quad (\text{OR}) \quad \frac{\text{Outsider's Fund}}{\text{share holder's funds}}$$

A Debt equity ratio of 1:1 is considered desirable. It gives an idea of the relative proportions of debt and equity in financing the assets of the firm.

Debt equity can also be calculated by the following formula:

$$\text{Debt – Equity Ratio} = \frac{\text{Long-term debt}}{\text{share holder's funds}}$$

The above ratio is useful to analyse the capital structure of a company. It in

The above ratio is useful to analyse the capital structure of a company. It indicates the proportion of share holder's funds and long-term debt in the capital structure. The standard debt-equity ratio is 2:1

### 2. Proprietary Ratio / Equity Ratio:-

It is a variant of debt to equity ratio. It establishes relationship between proprietor's fund and the total tangible assets. It may be calculated as :

$$\text{Proprietary ratio} = \frac{\text{Share holder's fund}}{\text{Total tangible assets}}$$

Proprietary ratio indicates the proportion of share holder's funds in the total assets. A high proprietary ratio indicates less danger and risk to creditors in the event of winding up.

### III ACTIVITY (OR) TURNOVER RATIOS:-

Activity ratios measure the efficiency of asset management. The efficiency in the use of assets would be reflected by the speed with which they are converted into sales. Activity ratios indicate the relationship between sales and various assets of the firm.

In order to find out which part of capital is efficiently employed and which part not, different turnover ratios are calculated. These ratios are as follows: \

#### 1. Stock (or inventory) Turnover Ratio:-

This ratio indicates the number of times stock is turned over during a year. A high ratio indicates quick movement of stock and vice-versa.

$$\begin{aligned} \text{Stock turnover ratio} &= \frac{\text{Cost of goods sold}}{\text{Average stock}} \\ \text{Cost of goods sold} &= \text{Opening stock} + \text{Purchases} + \\ &\quad \text{Manufacturing cost} - \text{Closing stock of inventory} \\ \text{Average stock} &= \frac{\text{Opening stock} + \text{Closing stock}}{2} \end{aligned}$$

#### 2. Debtor's Turnover Ratio:- / Accounts Receivable Turnover Ratio:-

This ratio shows, on an average, the number of times debtors are turned over during a year. A higher ratio indicates efficiency in assets management and vice-versa.

$$\begin{aligned} \text{Debtor's turnover ratio} &= \frac{\text{Net Credit Sales}}{\text{Average Debtors}} \\ \text{Average debtors} &= \frac{\text{Opening balance} + \text{Closing balance}}{2} \\ \text{Net credit sales} &= \text{Credit Sales} - \text{Sales returns} \\ \text{Debtors} &= \text{Debtors} + \text{Bills receivable} \end{aligned}$$

#### Average Collection Period:-

This ratio indicates the speed with which debtors / accounts receivable are collected. It shows the number of days taken to collect money from debtors.

$$\text{Average Collection Period} = \frac{\text{Debtors + Bills receivable}}{\text{Credit Sales}} \times \text{No. of Working days}$$

A lower ratio implies quick recovery of money from debtors, when information regarding credit credit sales is not available total sales are taken for calculation of the ratio.

### 3. Creditor's Turnover Ratio:-

This ratio shows the number of days of credit enjoyed by the unit for purchase of its raw materials. It is calculated by the follwing formula.

$$\text{Creditors Turnover Ratio} = \frac{\text{Credit Purchase}}{\text{Creditors}}$$

A hgher ratio indicates quick settlement of dues and a lower ratio reflects liberal credit terms granted by suppliers.

Average Payment Period:- It refers to the number of days taken by the form to pay its creditors.

$$\text{Average Payment Period} = \frac{\text{Creditors + Bills Payable}}{\text{Credit Purchase}} \times \text{No. of Working days}$$

Generally, lower the ratio, the better is the liquidity position of the firm.

### 4. Fixed Assets Turnover Ratio:-

Fixed assets turnover ratio explains the relationship between sales and fixed assets.

$$\text{Fixed assets turnover Ratio} = \frac{\text{Sales}}{\text{Net fixed assets}}$$

This ratio indicates the sales generated by every rupee invested in fixed assets. A higher ratio is an indicator of greater efficiency in the utilisation of fixed assets.

#### IV CAPITAL STRUCTURE RATIO

This ratio explain how the caapital structure of a firm is mde up or the debt mix adopted by the firm. The following ratio fall under this category:-

Capital Gearing Ratio:- This ratio explains the relationship between equity share holder's fund on the one hand and preference share capital and fixed interest bearing loan on the other.

$$\text{Capital Gearing Ratio} = \frac{\text{Preference share capital} + \text{Fixed interest securities}}{\text{Equity share holder's funds}}$$

If the prference share capital and fixed interest bearing securities exceed equity shareholder's funds, the company is said to be highly geared. The company is said to be low geared, if preference share capital and other fixed-interest bearing securities are less than the equity share holder's funds.

In other words, if the retio is more than one, the capital structure is high geared. If it is less than one, the capital structure is low geared. If the ratiio is equal to one, the capital structure is even geared.

#### Illustration:

From the following particulars pertaining to assets and liabilities of a Company, calculate:

1. Current ratio      2) Liquitidity ratio      3) Proprietary ratio
- 4) Debt-equity ratio      5) Capital gearing ratio

#### Balance sheet as on .....

Liabilities	Rs.	Assets	Rs.
5,000 Equity Shares of Rs.100 each	5,00,000	Land and Building	6,00,000
2000 8% Preference shares of Rs. 100 each	2,00,000	Plant and Machinery	5,00,000
4,000 9% Debentures of	4,00,000	Stock	2,40,000

Rs.100 each			
Reserves	3,00,000	Debtors	2,00,000
Creditors	1,50,000	Cash at Bank	55,000
Bank overdraft	50,000	Prepaid Expenses	5,000
	<u>16,00,000</u>		<u>16,00,000</u>

**Solution:**

Current assets

1. Current Ratio =

Current Liabilities

Current assets = Stock + Debtors + Cash + Bank + Prepaid expenses

Rs. = 2,40,000 + 2,00,000 + 55,000 + 5,000

Rs. = 5,00,000

Current Liabilities

= Creditors + Bank Overdraft

= Rs. 1,50,000 + 50,000 = 2,00,000

5,00,000

Current Ratio =  $\frac{5,00,000}{2,00,000}$  = 2.5 : 1

2,00,000

= 5,00,000 - (2,40,000 + 5,000)

Rs. = 2,55,000

Liquid Liabilities = Current Liabilities – overdraft

= 2,00,000 – 50,000

Rs. = 1,50,000

2,55,000

Liquid ratio =  $\frac{1,50,000}{2,55,000}$  = 1.7 : 1

1,50,000

Proprietor's funds



3. Proprietary Ratio =

$$\text{Proprietors funds} = \frac{\text{Total tangible assets}}{\text{Equity Share Capital + Preference share Capital + Reserves and Surpluses}}$$

$$\text{Rs.} = 5,00,000 + 2,00,000 + 3,00,000$$

$$\text{Rs.} = 10,00,000$$

Liquid assets

2. Liquid Ratio =

Liquid liabilities

$$\begin{aligned} \text{Liquid assets} &= \text{Current Assets} - (\text{Stock} + \text{Prepaid expenses}) \\ &= 5,00,000 - (2,40,000 + 5,000) \\ \text{Rs.} &= 2,55,000 \end{aligned}$$

$$\begin{aligned} \text{Liquid Liabilities} &= \text{Current Liabilities} - \text{overdraft} \\ &= 2,00,000 - 50,000 \\ \text{Rs.} &= 1,50,000 \end{aligned}$$

$$\text{Liquid ratio} = \frac{2,55,000}{1,50,000} = 1.7 : 1$$

Proprietor's funds

3. Proprietary Ratio =

$$\text{Proprietors funds} = \frac{\text{Total tangible assets}}{\text{Equity Share Capital + Preference share Capital + Reserves and Surpluses}}$$

$$\text{Rs.} = 5,00,000 + 2,00,000 + 3,00,000$$

$$\text{Rs.} = 10,00,000$$

		External equities		Debt
4. Debt - Equity Ratio	=		=	
		Internal equities		Equity
Debt	=	Debentures + Current Liabilities		
	=	Rs. 4,00,000 + 2,00,000 = 6,00,000		
Equity	=	Proprietor's funds = Rs. 10,00,000		
		6,00,000		
Debt - Equity Ratio	=		=	0.6 : 1
		10,00,000		
		Preference share capital + Long-term debt bearing fixed interest		
5. Capital Gearing Ratio	=			
		Equity share capital + Reserves and Surplus		
		2,00,000 + 4,00,000		6,00,000
	=		=	
		5,00,000 + 3,00,000		8,00,000
	=	0.75 : 1		
Total asset	Rs.	= 16,00,000		
		10,00,000		
	=		=	0.625 : 1
		16,00,000		

From the following, you are required to calculate

- a) Debtors turn over
- b) Average of debtors

2007	2006
Rs	Rs

**Illustration 2:** From the following, you are required to calculate

- a) Debtors turn over
- b) Average of debtors

	2007	2006
	Rs	Rs
Net sales	18,00,000	15,00,000
Debtors (Beginning of the year)	1,72,000	1,60,000
Debtors (End of the year)	2,34,000	1,72,000

**Solution:**

$$\text{Debtors} = \frac{\text{Net Credit Sales}}{\text{Average Debtos}}$$

$$\text{Average Debtors} = \frac{\text{Opening Balance} + \text{Closing Balance}}{2}$$

$$\begin{aligned} 2006 &= \frac{\text{Rs } 1,60,000 + 1,72,000}{2} \\ &= \frac{3,32,000}{2} = \text{Rs. } 1,66,000 \end{aligned}$$

$$\begin{aligned} 2007 &= \frac{\text{Rs } 1,72,000 + 2,34,000}{2} \\ &= \frac{4,06,000}{2} = \text{Rs } 2,03,000 \end{aligned}$$

$$\text{Debtors turn over for 2006} = \frac{15,00,000}{1,66,000} = 9.04$$

$$\text{Debtors turn over for 2007} = \frac{18,00,000}{2,03,000} = 8.87$$

Average of debtors Or Average collection period

$$= \frac{\text{Debtors}}{\text{Credit Sales}} \times \text{No of working days in a year}$$

$$2006 = \frac{1,66,000}{15,00,000} \times 365 = 40 \text{ days}$$

$$2007 = \frac{2,03,000}{18,00,000} \times 365 = 41 \text{ days}$$

**Illustration 3:** A trader purchase goods both on cash as well as on credit terms. The following particulars are obtained from the books.

	Rs
Total purchases	5,81,000
Cash purchases	30,000
Purchase returns	51,000
Creditors of the end	1,05,000
Bills payable at the end	60,000
Reserve for discount on creditors	8,000

Calculate average payment period

**Solution :**

Average payment period =  $\frac{\text{Creditors+Bills payable}}{\text{Net credit purchases}} \times \text{No of working days in a year}$

$$= \frac{1,05,000+60,000}{5,00,000} \times 365 = 120 \text{ days}$$

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## UNIT - IV

### FUNDS FLOW ANALYSIS

Every company prepares its balance sheet at the end of its accounting year. It is a statement of assets and liabilities of the company as on a particular date. It reveals the financial position of the company. It does not present a detailed analysis. The balance sheet fails to account for the periodic increase or decrease in the working capital of an enterprise. Hence, another statement has become necessary to show the changes in working capital during a period and explain them. The statement is called fund flow statement.

**Meaning:** The funds flow statement is a report on the movement of funds or working capital. It explains how working capital is raised and used during the accounting period.

**Definition:** “A statement of sources and application of funds is a technical device designed to analyse the changes in the financial condition of a business enterprise between two dates” – Foulke.

It will be appropriate to explain the meaning of the term ‘Funds’ and the term ‘Flow of Funds’ before explain the meaning of the term ‘Funds Flow Statement’.

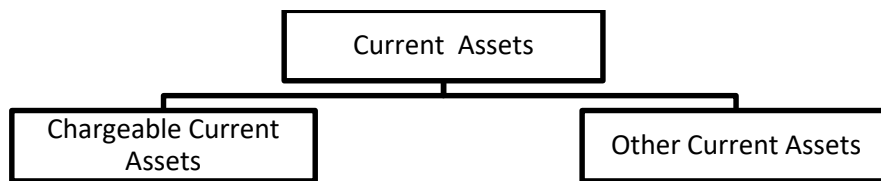
#### **Meaning of Funds:**

The term ‘Funds’ has a variety of meanings. There are people who take it synonymous to cash and to them there is no difference between a Funds Flow Statement and Cash Flow Statement. While others include marketable securities besides cash in the definition of the term ‘Funds’. The International Accounting Standard No.7 on “Statement of Changes in Financial Position” also recognises the absence of single generally accepted, definition of the term. According to the standard, the term “Fund” generally refers to cash, and cash equivalents, or to working capital of these, the most definition of the term is by far the most common definition of “Fund”.

There are also two concepts of working capital-gross concept and net concept. Gross working capital refers to the firm’s investment in current assets while the term net working capital means excess of current assets over current liabilities. It is in the latter sense in which the term “Funds” is generally used.

The terms ‘Current Assets’, ‘Current liability’, non-Current assets and non-current liability are explained below for better clarity.

**Current Assets:** - Current assets are those assets which can be converted in to cash within a short period of time, normally not exceeding one year. These current assets can be of two types:



Chargeable current assets are those which are appearing as security against bank fiancé, such as inventory, spares and receivables etc. The word inventory includes stocks of raw-materials, and consumable stores, stock in-process and finished goods.

Other current assets will include the following:-

- Cash and bank balances.
- Investment by way of government and trustee securities other than for long term purposes.
- Inventory of raw materials, semi-finished and finished goods.
- Sundry debtors, provision for bad and doubtful debts
- Bills receivable
- Prepaid expenses.
- Advance payment for tax.
- Advance for purchase of raw materials, components and spare parts etc.

#### **Current Liabilities:**

The current liabilities defined as liabilities which are short-term maturing obligations to be met within a year. These include:

- Trade creditors for raw materials and consumable stores and spares
- Bills payable
- Bank credit
- Provision for taxation, sales tax, excise etc.
- Dividends payable
- Outstanding expenses
- Unsecured loans
- Public deposits maturing within one year
- Interest and other charges accrued but not due for payment

#### **Non – Current Assets:**

All assets other than current assets come within the category of non-current assets. Such assets include good will, land and building, machinery, furniture, long-term investment, patent rights, trade marks, debit balance of profit and loss account, discount on issue of shares and debentures, preliminary expenses.

### **Non-Current Liabilities:**

All liabilities other than current liabilities come within the category of non current liabilities. They include share capital, long-term loans, debentures, share premium, credit balance in the profit and loss account, revenue and capital reserves (e.g. general reserve, dividend equalisation fund, debentures sinking fund, capital redemption reserve) etc.

### **Concept of Flow of Funds:**

The term 'flow means change and therefore the term 'flow of funds' means 'change in funds' or 'change in working capital'. In other words, 'flow of funds' means any increase or decrease in working capital. If the transaction results in the increase of funds, it is called a source of funds, if it results in the decrease of funds, it is known as an application of funds. If the transaction does not affect the working capital there is no flow of funds.

The flow of fund occurs only when a transaction involves are current account and another non-current account. When a transaction involves non-current accounts only, no flow of fund occurs since working capital is not altered. Example, issue of shares in consideration for machinery. Similarly if a transaction affects current accounts only, no flow of fund occurs. Example collection of cash from debtors or payment of cash to creditors. Thus, to facilitate a flow of fund (change in working capital) the transaction must affect one current account and another non-current account. Example, issue of shares in consideration for stock acquired, cash payment for building etc.

### **Objectives:**

The main objectives of fund flow statement are:

1. To show how resources have been obtained and used
2. To indicate the results of current financial management
3. To throw light up on the most important changes that have taken place during a specified period
4. To show how the general expansion of the business has been financed
5. To indicate the relationship between profits from operations, distribution of dividend and raising of new capital or term loans
6. To have an assessment of the working capital position of the concern

### **MANAGERIAL USES OF FUNDS FLOW ANALYSIS**

The funds flow statement is of primary importance to the financial management. It is an essential tool for financial analysis. The uses of funds flow statement are:

1. Analysis of financial operation:



The main purpose of funds flow statement is to analyse the financial operations of the business. The statement explains the causes for changes in the assets and liabilities during a period. It also indicates the effect of these changes on the liquidity of the firm.

2. Evaluation of the firm's financing:

The analysis of sources of funds reveals how the firm has financed its development projects in the past. It also reveals the rate of growth of the firm.

3. Allocation of scarce Resources:

A projected funds flow statement is an instrument for allocation of resources. It lays down the plan for efficient use of scarce resources in future. It enables the management to discharge its financial obligations promptly.

4. Helps in working capital management:

Funds flow statement indicates the adequacy or inadequacy of working capital. The management can take steps for effective use of surplus working capital. In case of inadequacy, arrangement can be made for improving the working capital position.

5. Acts as a Guide to future:

With the aid of projected funds flow statement, the management can plan for meeting future financial requirements.

6. Helps financial Institutions:

The funds flow statement is also useful to lending institutions like banks IDBI, ICICI, IFCI and others. It helps them to assess the credit worthiness and repaying capacity of the borrowing company.

7. Answers to intricate questions:

The funds flow statement provides answers to questions such as:

1. Why were the net current assets of the firm down, though the net income was up or vice versa?
2. How was it possible to distribute dividends in absence of or in excess of current income to the period?
3. How was expansion in plans and equipment financed?
4. How was the sale proceeds of plant and machinery used?
5. How the loans were repaid?
6. What become to the proceeds of share issue or debentures issue?
7. How was the increase the working capital financed?
8. Where did the profits go?

### **LIMITATIONS OF FUNDS FLOW STATEMENT:**

The limitations of funds flow statement are listed below:

1. Funds flow statement is not a substitute for an income statement or balance sheet. It provides only some additional information regarding changes in working capital.
2. Changes in cash are more important and relevant for financial management than the working capital.
3. It is not an original statement. It is only a rearrangement of data given in financial statement.
4. Funds flow statement is essentially historic in nature. A projected funds flow statement, on the basis of it can not be prepared with much accuracy.
5. It can not reveal continuous changes.

### **PREPARATION OF FUNDS FLOW STATEMENT:**

In order to prepare a funds flow statement, It is necessary to fixed out the “Sources” and “Applications” of funds. The term ‘Funds’ refers to working capital. Transactions that increase working capital are sources of funds. Transactions that decrease working capital are applications of funds. The following are the main sources and applications of funds.

#### **Sources of Funds**

Funds from operations  
Issue of shares and debentures  
Raising of long term loans  
Income from investment  
Sale of fixed assets and long term investments

#### **Applications of Funds**

Funds lost in operations  
Redemption of preference shares and debentures  
Repayment of loans  
Purchase of long term investments  
Purchase of fixed assets  
Payment of taxes and dividend  
Drawings (In the case of sole trading concern or partnership firm)  
Loss of cash by embezzlement

1. Funds from operation:

Profit of a period is an important source of funds. The profit and loss account reveals the net profit or loss of business. The net profit is arrived at after taking into account all terms of income and expenditure (both operating

and non-operating, both funds items and non-funds items). To arrive at funds from operating, adjustments are made in net profit for non-found and non-operating items. It will be clear from the following:

Calculation of funds from operations:

	Net profit earned during the year	XXXX
Add:	Non-fund and non-operating items	
	Which are already debited to P & L a/c:	
	Depreciation on fixed assets	XXXX
	Good will written off	XXXX
	Discount on issue of shares, written off	XXXX
	Preliminary expenses written off	XXXX
	Patents written off	XXXX
	Transfer to reserves	XXXX
	Loss on sale of fixed assets	XXXX
Less:	Non – fund or Non – operating items	
	Which are already credited to P & L a/c:	
	on sale of fixed assets	XXXX
	Profit on revaluation of assets	XXXX
	Rent received	XXXX
	Discount received	XXXX
	Refund of income tax	XXXX
	Funds from operation	<u>XXXX</u>

If the profit and loss account shows a net loss, the above procedure will be reversed.

## 2. Issue of shares and debentures:

Either in term of issuing debentures, or preference shares or equity shares constitutes major source of working capital. For example, a company issues Rs2,00,000 equity shares at a premium of 10% Rs 2,20,000 constitutes a source

of working capital as it increases cash (CA) and increases NCL. It is important to remember that the face value of the security is immaterial; it is net amount received from the transaction that constitutes the source.

3. Sale of non-current assets:

It is not unusual for a business firm to sell one or more of its non-current assets particularly in the case of plants and equipment either because they have become useless or more efficient plant and machinery equipment have appeared in the market. If the sale is made for cash or a receivable current assets increase. So, the sale proceeds from the disposition of non-current assets is the source of funds. Whether the non-current asset is sold at a profit or at a loss, is irrelevant for the purpose. The amount is received or receivable in the near future constitute the source. For example, a plant and machinery having a net book value of Rs30,000 has been sold for Rs 20,000; Rs 20,000 would constitute the source of funds; the cost (loss) of Rs10,000 would be transferred to profit and loss account. If it is sold for Rs40,000; Rs40,000 would constitute the source of funds and Rs10,000, being profit, transferred to profit and loss account.

4. Funds from increase in share capital:

Issue of shares for cash or for any other current assets results in increase in working capital and hence there will be a flow of funds

**Application of funds:**

The uses to which funds are put one called 'applications of funds'. Following are some of the purposes for which funds may be used:

1. Redemption of preference shares and debentures:

The retirement of long term liabilities such as payment to preference shareholders and debenture holders involves the use of cash. There is corresponding decrease in long- term liabilities. It should be borne in mind that it is not the face value of the security redeemed that is important; the important thing is to know the actual payment made to retire such securities.

2. Purchase of fixed assets:

Purchase of fixed assets such as land, building, plant, machinery, long-term investment etc results in decrease of current assets without any decrease in current liabilities. Hence, there will be a flow of funds. But incase shares on debentures are issued for acquisition of fixed assets, there will be no flow of funds.

3. Payment of tax liability:

Provision for taxation is generally taken as an appropriation of profits and not as an application of funds. But if the tax has been paid, it will be taken as an application of funds.

4. Recurring payment to investors:

Dividends and interest constitute the recurring payments to investors. It represent another use of funds.

**PROCEDURE FOR THE PREPARATION OF FUNDS FLOW STATEMENT:**

Fund flow statement is usually prepared for one year on the basis of balance sheets and additional information. Preparation of funds flow statement involves the following steps:-

1. Schedule of changes in working capital:

Working capital is the difference between current assets and current liabilities. The schedule of changes in working capital is prepared to fixed out the increase or decrease in working capital during the year.

Current assets and current liabilities are taken to the schedule. Working capital at the end of the current year is compared with that of the previous year. The difference is either increase or decrease in working capital.

Increase in current assets will lead to increase in working capital and vice-versa on the other hand, increase in current liabilities will lead to decrease in working capital and vice-versa.

Increase in working capital will appear on the application side of fund flow statement. Decrease in working capital win appear on the 'sources' side of fund flow statement.

**Proforma of statement of changes in working capital**

			Effects on working capital	
	Previous Year	Current Year	Increase	Decrease
	Rs	Rs	Rs	Rs
Current Assets:				
Stock				
Debtors				
Cash				

Bank

B/R

Prepaid  
expenses

---

Total (a) Rs

---

Current  
liabilities:

Creditors

B/P

Outstanding  
expenses

---

Total (b) Rs

---

Working  
capital:

(Difference  
between  
Decrease in  
working  
capital)

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Total Rs

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2. Opening of Accounts of Non – Current items:

Accounts are prepared for non – current items to ascertain the source or application of funds. In the preparation of accounts for non – current items, additional information is to be considered. For example, the value of machinery on 31<sup>st</sup> March 2006 and 31<sup>st</sup> March 2007 are Rs 20,000 and Rs 25,000 respectively and depreciation charged during the year is Rs 5,000. The account will appear as below:

Machinery A/c			
	Rs	By Adjusted P/L A/c	Rs
To Balance b/d	20,000	(Depreciation)	5,000

To Cash A/c (B/F)	10,000	
		By Balance c/d
		25,000
	30,000	30,000

The balancing figure represents purchase of machinery. It is an application of funds.

### 3. Preparation of Adjusted profit and loss Account:

The adjusted profit and loss account is prepared to ascertain funds from operation or funds lost in operation. The regular profit and loss account shows only the net profit or loss. To ascertain the funds generated by operations the adjusted profit and loss account is prepared by taking into account only the non – fund and non – operating items. Non – fund items refer to expenses and income which do not involve any changes in working capital. Example, depreciation transfer to general reserve, writing back of provision for tax etc. Non – operating items refers to expense and income which not directly related to business operations of the company. Example, dividend received refund of tax, profit/loss on sale of assets etc. the balancing figure in the adjusted profit and loss account is either funds from operations or funds lost in operations.

### 4. Preparation of funds flow statement

The above three steps are incorporated in the preparation of funds flow statement.

### Statement of sources and Applications of Funds

Sources	Rs	Applications	Rs
1. Issue of share capital	xxxx	1. Redemption of preferences shares	xxxx
2. Issue of debentures	xxxx	2. Redemption of debentures	xxxx
3. Raising of long term loans	xxxx	3. Repayment of loans	xxxx
4. Income from investments	xxxx	4. Purchase of long term investments	xxxx
5. Sale of fixed assets and long term	xxxx	5. Purchase of fixed assets	xxxx

investment

6. Funds from operations	xxxx	6. Payment of taxes and dividends	xxxx
7. Non-trading income	xxxx	7. Drawings (in case of sole trading concern or partnership firm)	xxxx
		8. Funds lost in operation	xxxx
		9. Non-trading expenses	xxxx
	Total		Total
	xxxx		xxxx
Decrease in working capital as per statement of changes in working capital	xxxx	Increase in working capital as per statement of changes in working capital	xxxx
	Total		Total
	xxxx		xxxx

**Illustration:**

From the following balance sheets of Mr Rajesh prepare a funds flow statement.

	30 <sup>th</sup> June 2006	30 <sup>th</sup> June 2007		30 <sup>th</sup> June 2006	30 <sup>th</sup> June 2007
Liabilities	Rs	Rs	Assets	Rs	Rs
Creditors	18,000	20,500	Cash	5,000	2,300
Bank loan	15,000	19,500	Debtors	17,500	19,200
Capital	77,000	78,000	Stock	12,500	11,000
			Land	10,000	15,000
			Building	25,000	27,500
			Machinery	40,000	43,000
Total	1,10,000	1,18,000		1,10,000	1,18,000

Drawings of Mr Rajesh during the year was Rs20,000. Depreciation charges on machinery was RS 4,000.



**Solution:**

## Schedule of changes in working capital

Particulars	30 <sup>th</sup> June	30 <sup>th</sup> June	Increase	Decrease
	2006	2007		
	Rs	Rs		
<b>Current Assets:</b>				
Cash	5,000	2,300	---	2,700
Debtors	17,500	19,200	1,700	---
Stock	12,500	11,000	---	1,500
<b>Total (A)</b>	<b>35,000</b>	<b>32,500</b>		
<b>Less: Current Liabilities</b>				
Creditors	18,000	20,500	---	2,500
<b>Total (B)</b>	<b>18,000</b>	<b>20,500</b>		
<b>Working capital (A-B)</b>	<b>17,000</b>	<b>12,000</b>		
<b>Decrease In working capital</b>	<b>---</b>	<b>5,000</b>	<b>5,000</b>	<b>---</b>
	<b>17,000</b>	<b>17,000</b>	<b>6,700</b>	<b>6,700</b>

**Sources and applications of funds during the year ended 30<sup>th</sup> 2007**

Sources	Rs	Applications	Rs
Bank loan	4,500	Purchase of land	5,000
		Purchase of building	2,500
Funds from operation	25,000	Purchase of machinery	7,000
Decrease in working capital	5,000	Drawings	20,000
	<b>34,500</b>		<b>34,500</b>

Working:

Machinery account

	Rs		Rs
To Balance b/d	40,000	By adjusted P/L A/c (depreciation)	4,000
To cash (purchase)	7,000	By Balance C/d	43,000
	47,000		47,000

#### Capital Account

	Rs		Rs
To Drawings	20,000	By Balance b/d	77,000
To Balance C/d	78,000	By adjusted P/L A/c ( Net profit)	21,000
	98,000		98,000

#### Adjusted Profit and Loss account

	Rs		Rs
To Machinery	4,000	By funds form operators	25,000
To Net profit	21,000		
	25,000		25,000

### **Distinction between funds flow statement and income statement:**

The main difference between funds flow statement and income statement are given below;

1. Funds flow statement is prepared to know the sources and uses of working capital. But an income statement is prepared to know the results of the business activities ie profit or loss.
2. Funds flow statement matches the funds raised with funds applied. No distinction is made between capital and revenue items. But the income statement matches cost of goods sold with sales to ascertain profit or loss. It deals with revenue items only.

## **CASH FLOW STATEMENT**

Cash flow analysis is another important technique of financial analysis. It involves preparation of cash flow statement for identifying sources and application of cash. Cash flow statement may be prepared on the basis of actual or estimated date.

Cash flow statements summarize sources of cash inflows and uses of cash outflows of the firm during a particular period of time. It can be prepared for a year, half year, quarter or for any other duration.

**Objectives:** The objectives of cash flow analysis are:

1. To show the causes of changes in cash balance between two balance sheet dates.
2. To indicate the factors contributing to the reduction of cash balance in spite of increase in profits and vice-versa.

### **Significance and uses of cash flow statement:**

Cash flow statement is vital significance to the financial management. Its chief advantages are:

1. The cash flow statement explains the reasons for low cash balance in spite of huge profits or large cash balance in spite of low profits.
2. It helps in short – term financial decisions relating to liquidity.
3. It shows the major sources and uses of cash. The management with the aid of projected cash flow statement can know
  - a. How much cash will be needed
  - b. From which sources it can be obtained
  - c. How much can be generated internally
  - d. How much could be obtained from outside
4. It helps the management in planning the replacement of loans, replacement of assets, credit arrangement etc. It is also significant for capital budgeting decisions.
5. On the basis of past year's cash flow statements projections can be made for the future. The projected cash flow statement helps in planning for the investment of surplus or meeting the deficit.
6. A comparison of actual cash flow statement with the projected cashflow statement helps in understanding the variations and control of cash expenditure.

### **Preparation of cash flow statement:**

Cash flow statements is usually prepared for one year on the basis of balance sheet and additional information. Preparation of cash flow statements involves the following steps:

1. Opening of accounts for Non-Current items:

Accounts are prepared for non-current items to ascertain the inflow and outflow of cash. In the preparation of accounts for non-current items, additional information is to be considered. For example, the value of plant (as per balance sheet) on 31<sup>st</sup> March 2005 and 31<sup>st</sup> March 2006 is Rs40,000 and Rs 50,000 respectively and depreciation charged during the year is Rs 10,000. The account will appear as below:

Plant Account			
	Rs		Rs
To Balance b/d	40,000	By Adjusted P/L A/c (Depreciation)	10,000
To cash ( Balancing figure)	20,000	By Balance c/d	50,000
	60,000		60,000

The balancing figure represents purchase of plant. It is an out flow of cash. Thus by opening of accounts or by comparing non-current items, inflow and out flow of cash are found out.

2. Preparation of adjusted profit and loss Account:-

The adjusted profit and loss account is prepared to ascertain cash trading profit or cash trading loss. The regular profit and loss account shows only the net profit or loss. It does not show the cash profit realised by trading. Suppose, the net profit shown by profit and loss account is Rs 10,000. It depreciation of Rs 5,000 had been changed and preliminary expenses written off were Rs5,000, the cash trading profit would be Rs20,000 (10,000+5,000+5,000). In the preparation of adjusted profit and loss account, the non-cash and non – operating items are alone taken into account. Non- cash items refer to expenses or income which do not cause any change in cash. Example, depreciation, preliminary expenses written off etc. Non-operating items refer to expenses and income which are not directly related to operations of the company. Examples, dividend or interest received, refund of tax, profit or loss on sale of assets etc. The balancing figure in the adjusted profit and loss account is either cash trading profit or cash trading loss.

3. Comparison of current items to determine inflow or outflow of cash:

Individual current assets like stock, debtors, prepaid expenses are compared. Increase in current assets is taken as an out flow of cash and vice-versa. For

example, if stock shows an increase of Rs5,000 over the balance of the previous year, out flow of cash is Rs 5,000.

Increase in current liabilities is taken as in flow of cash and vice-versa.

4. Preparation of cash flow statement:-

The above three steps are incorporated in the preparation from of cash flow statement. A cash flow statement can be prepared in the following form:

**Cash flow statement for the year ending on.....**

Balance as on.....

Cash Balance	xxxx	
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Bank Balance	xxxx	
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Add: Sources of cash:

Issue of shares		xxxx
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Raising of long term loans		xxxx
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Sale of fixed assets		xxxx
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Short term borrowings		xxxx
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Cash from operations :

Profit as per P/L account	xxxx	
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Add/Less Adjustment for non-cash items:-

Add : Increase in current liabilities	xxxx	
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Decrease in current assets	xxxx	
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Less : Increase in current assets	xxxx	
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Decrease in current liabilities	xxxx	Xxxx
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Total Cash available (1)		xxxx
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Less : Applications of cash:-

Redemption of redeemable

Preference shares		xxxx
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Redemption of long-term loans		xxxx
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Purchase of fixed assets		xxxx
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Decrease in deferred payment liabilities	XXXX
Cash out flow on account of operations	XXXX
Tax paid	XXXX
Dividend paid	XXXX
Decrease in unsecured loans, deposits etc	XXXX
	XXXX
Total cash available (2)	XXXX
• Closing Balance:	
Cash Balance	XXXX
Bank Balance	XXXX
	XXXX

- This total should tally with the balance as shown by (1) – (2)

#### **Difference between cash flow statement and funds flow statement:**

Following are the points of difference between a cash flow statement and funds flow statement:

1. In a cash flow statement, only cash receipts and payments are recorded. But in a funds flow statement increase or decrease in working capital is recorded.
2. The cash flow statement indicates the causes for changes in cash position. The other hand, a funds flow statement shows the causes of changes in working capital.
3. Cash flow statement is appropriate for short range planning. While funds flow statement is appropriate for long range planning.
4. Whenever there is inflow of cash there will definitely be inflow of funds. But it is not vice-versa. Inflow of funds does not necessarily mean inflow of cash.
5. Cash flow statement starts with opening cash balance and closes with the closing cash balance. But there is no opening and closing balances in funds flow statement.

**Illustration:-** Statement of financial position of Mr.Kumar is given below:

	30.06.2006	30.06.2007		30.06.2006	30.06.2007
Liabilities:	Rs	Rs	Assets	Rs	Rs
Accounts payable	29,000	25,000	Cash	40,000	30,000
Capital	7,39,000	6,15,000	Debtors	20,000	17,000
			Stock	8,000	13,000
			Building	1,00,000	80,000
			Other fixed assets	6,00,000	5,00,000
Total	7,68,000	6,40,000		7,68,000	6,40,000

**Additional information:-**

- There were no drawings
  - There were no purchases or sale of either building or other fixed assets.
- Prepare a statement of cash flow.

**Solution:-**

Cash flow statement of Mr Kumar

Sources	Rs	Uses	Rs
Opening cash balance	40,000	Decrease in accounts payable	4,000
Decrease in debtors	3,000	Increase in stock	5,000
		Cash trading loss	4,000
		Closing cash balance	30,000
	<u>43,000</u>		<u>43,000</u>

Working:

Building account

	Rs		Rs
To Balance b/d	1,00,000	By adjusted P/L A/c (depreciation)	20,000

	By Balance C/d	80,000
	1,00,000	1,00,000
Other fixed assets account		
	Rs	Rs
To Balance b/d	6,00,000	By adjusted P/LA/c (depreciation) 1,00,000
	By Balance C/d	5,00,000
	6,00,000	6,00,000
Capital Account		
	Rs	Rs
To Net loss	1,24,000	By Balance b/d 7,39,000
To Balance c/d	6,15,000	
	7,39,000	7,39,000
Adjusted P/L Account		
	Rs	Rs
		By Balance b/d ---
To Building A/c (Depreciation)	20,000	By Net loss (Transfer to Capital A/c) 1,24,000
To other fixed assets a/c (Depreciation)	1,00,000	
To Cash trading loss	4,000	
	1,24,000	1,24,000

**Illustration 2:** After taking into account the under mentioned items, Jain Ltd made a net profit of Rs.1,00,000 for the year ended 31<sup>st</sup> Dec 2006.



	Rs
Loss on sale of machinery	10,000
Depreciation on building	4,000
Depreciation on machinery	5,000
Preliminary expenses written off	5,000
Provision for Taxation	10,000
Good will written off	5,000
Gain on sale of buildings	8,000

**Find out Cash from operations**

**Solution:**

Calculation of cash from operations

	Rs
Net profit earned during one year	1,00,000
Add: Non – cash and non- operating expenses:	
Loss on sale of machinery	10,000
Depreciation on building	4,000
Depreciation on machinery	5,000
Preliminary expenses written off	5,000
Provision for Tax	10,000
Good will written off	5,000
	1,39,000
Less: Non – Cash and non – operating income:	
Gain on sale of buildings	8,000
	1,31,000
 Add: <i>Decrease in current assets and increase in Current liability</i>	--- ---

Less: Increase in current assets and decrease in	---
Current liability	
Cash from operations	<u>1,31,000</u>



## UNIT – V

### MARGINAL COSTING

Materials, labour and other expenses constitute the different elements of cost. These elements of cost can broadly be put into two categories: Fixed costs and variable costs. Fixed cost are those costs which do not vary but remaining constant within a given period of time and range of activity in spite of fluctuations in production. Variable costs are those costs which may increase or decrease in proportion to increase or decrease in output. The cost of product or process can be ascertained using different elements of costs according to any of the following two techniques:

1. Absorption costing and
2. Marginal costing

Absorption costing technique is also termed as Traditional or Full cost method. According to this method, the cost of a product is determined after considering both fixed and variable cost. The variable costs, such as those of direct materials direct labour etc, are directly charged to the products while the fixed costs are apportioned on a suitable basis over different products manufactured during a period. Thus in case of absorption costing all costs are identified with the manufactured products.

Under marginal costing technique, only variable costs are taken into account for purposes of product costing, inventory valuation and other important management decisions and no attempt is made to find suitable bases of apportionment of fixed costs. Marginal costing is also known as Direct costing or variable costing. It is the most useful technique which guides the management in pricing, decision making and assessment of profitability.

#### **Concept of Marginal costing:**

Marginal costing is a technique where only the variable costs are considered while computing the cost of a product. The fixed cost are met against the total fund arising out of the excess of selling price over total variable cost. This fund is known as contribution in marginal costing.

According to the institute of cost and work Accountants, London, “Marginal Costing is the ascertainment by differentiating between fixed costs and variable costs, of marginal cost and of the effect on profit or changes in the volume and type of output”.

According to the chartered Institute of management Accountants, London, “Marginal costing is a technique where only the variable costs are charged to cost unit, the fixed cost attributable being written off in full against

the contribution for that period". This will be clear with the help of the following illustration.

Illustration:

A company is manufacturing three products A,B and C. The costs of their manufacture are as follows:-

Particulars	Products		
	A	B	C
	Rs	Rs	Rs
Direct materials per unit	3	4	5
Direct labour per unit	2	3	4
Selling price per unit	10	15	20
Out put (units)	1,000	1,000	1,000

The total over heads are Rs 6,000 output of which Rs3,000 are fixed and rest are variable. Prepare a statement of cost and profit according to the marginal costing technique.

**Solution:-**

Statement of Cost and Profit (Under Marginal Costing technique)						
Particulars	Product A		Product B		Product C	
	Per unit	Total	Per unit	Total	Per unit	Total
	Rs	Rs	Rs	Rs	Rs	Rs
Direct materials	3	3,000	4	4,000	5	5,000
Direct labour	2	2,000	3	3,000	4	4,000
Variable over heads	1	1,000	1	1,000	1	1,000
Total Marginal cost	6	6,000	8	8,000	10	10,000
Contribution (sales – variable cost)	4	4,000	7	7,000	10	10,000
Selling price	10	10,000	15	15,000	20	20,000

Thus the total contribution from the three products A,B and C amounts to Rs 21,000 (4000+7000+10,000). The profit will be computed as follows:

	Rs
Total contribution	21,000
Fixed costs	3,000
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	18,000
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Hence it is clear that marginal costing is not a system of cost finding such as job, process or operating costing, but it is a special technique concerned, particularly with the effect of fixed overheads on running the business.

The concept of marginal costing is a formal recognition of ideas understanding flexible budgets, break - even analysis and cost volume profit relationship. It is an application of these relationship which involves a change in the conventional treatment of fixed overheads in relation to income determination.

**Features of Marginal Costing:-**

1. All costs are classified into two-fixed and variable
2. Only the variable costs (Marginal Costs) are treated as the cost of the product.
3. The stock of finished goods and work in progress are valued at marginal cost only.
4. Fixed costs are charged against the contribution earned during the period.
5. Prices are based on marginal cost plus contribution. Contribution is the difference between selling price and variable cost.

**Marginal Costing Vs Absorption Costing:**

Since marginal costing is an alternative to absorption costing, it is necessary to compare the two and suggest if possible, the technique is more appropriate in routine costing. Following are the important points of distinction between absorption costing and marginal costing:-

1. Absorption costing is a total cost technique. That is, both variable and fixed costs are charged to projects. In marginal costing only variable costs are charged to products.
2. Absorption costing values stock at cost which includes fixed cost also. On the other hand, marginal costing values stock at variable costs only. This results in higher value of stock under absorption costing than under marginal costing.

3. In absorption costing, managerial decisions are guided by net profit which is the excess of sales over total cost. In marginal costing, decisions are guided by 'Contribution' which is excess of sales over overhead costs.

4. In total cost technique, there is the problem of apportionment of fixed costs since fixed costs are also treated as product costs. Marginal costing excludes fixed costs. Therefore there is no question of arbitrary apportionment.

The above points of difference between absorption costing and marginal costing will be clear with the help of the following illustration:

A Company has a production capacity of 2,00,000 units per year. Normal capacity utilisation is reckoned as 90% standard variable production costs are Rs11 per unit. The fixed costs are Rs3,60,000 per year. Variable selling costs are Rs 3 per unit and fixed selling costs are Rs 2,70,000 per year. The selling price per unit is Rs20. In the year end on 30<sup>th</sup> June 2003, the production was 1,60,000 units and sales were 1,50,000 units. The closing inventory on 30<sup>th</sup> June 2003 was 20,000 units.

The actual valuable production costs for the year were Rs 35,000 higher than the standard

Calculate the profit for the year:

- a) by the absorption costing method and
- b) by the marginal costing method

Also explain the difference in the profit.

**Solution:**

In absorption Costing method

Profit statement for the year ended 30<sup>th</sup> June 2003

		Amount (Rs.)	Amount (Rs)
Sales:	1,50,000 units at Rs.20 per unit		30,00,000
Less:	Cost of Production:		
	Variable production cost for 1,60,000 units at Rs.11 per unit	17,60,000	
	Increase in fixed cost	35,000	
	Fixed Cost	3,60,000	
		21,55,000	
Add:	Opening stock = 10,000 units (i.e. Sales 1,50,000 units +		

	Closing stock 20,000 units – production 1,60,000 units) at Rs. 13 (i.e. variable normal capacity utilisation)	1,30,000	
		<hr/>	
		22,85,000	
Less:	Closing stock: 20,000 values 21,55,000 current cost $\frac{\text{—————}}{1,60,000} \times 20,000$		
		2,69,375	20,15,625
		Gross Profit	9,84,375
		Gross Profit	9,84,375
			<hr/>
Less:	Selling expenses:		
	Variable	4,50,000	
	Fixed	2,70,000	7,20,000
			<hr/>
		Net Profit	2,64,375
			<hr/>

### In Marginal costing method

Profit statement for the year ended 30<sup>th</sup> June, 2003

	Amount (Rs.)	Amount (Rs)
Sales:	1,50,000 units at Rs.20 per unit	30,00,000
	Margin Cost:	
Less:	Variable production cost for 1,60,000 units at Rs.11 per unit	17,60,000
	Additional variable production cost	35,000
	variable cost of opening stock of finished costs	1,10,000
		<hr/>
		19,05,000



	Closing stock of finished goods:		
	20,000 units valued at current variable production cost		
Less:	17,95,000		
	————— x 20,000	2,24,375	
	1,60,000		
	Variable production cost of 1,50,000 Units	16,80,625	
Add:	Variable selling cost of 1,50,000 units (1,50,000 x 3)	4,50,000	21,30,625
	Contribution		8,69,375
	Fixed cost:		
Less:	Fixed production cost	3,60,000	6,30,000
	Fixed selling cost	2,70,000	
	Net Profit		2,39,375

The difference in profits Rs. 25,000 (i.e. Rs. 2,64,375 – 2,39,375) as arrived at under absorption and marginal costing methods is due to the element of fixed cost included in the valuation of opening and closing stock under the absorption costing method.

Which technique is preferable?

Since absorption costing and marginal costing are alternative techniques in the routine cost accounting, it is necessary to say about their appropriateness for product costing. Absorption costing may be preferred on the following grounds.

1. In modern times fixed costs constitute a substantial portion of total cost production is impossible without incurring fixed costs. As such they are a part of cost of production.
2. Inclusion of fixed costs in inventory valuation become absolutely necessary if building up of stocks is a necessary part of business operations. For example, in the case of timbers and fire works stocks have to be build-up.

If fixed costs are excluded from inventory valuation fictitious losses have to be shown in earlier years and excessive profits when goods are actually sold.

3. Profit fluctuations are less when production is constant but sales fluctuate.
4. This technique enables matching of costs and revenue, in the period in which revenue arises and not when costs are incurred.
5. The inclusion of fixed costs does not give room for fixation of price below total cost although some contribution is generated.

Marginal costs may be preferred as on the following grounds:-

1. This technique is simple to understand and easy to operate.
2. Individual fixed costs need not be apportioned on an arbitrary basis.
3. It avoids the contingency of over / under absorption of overheads.
4. Fixed costs accrue on time basis. Hence they should be written off in the period of accrual
5. Accounts prepared under this technique more nearly approach the actual cash flow position.

In the light of above arguments in favour of each of techniques, it is not possible to lay down any general rule regarding the use of a particular technique. It is the cost accountant who is the right person to decide in favour of either of the two having regard to its appropriateness to a particular organization. While absorption costing is the basis of financial accounting, it is equally so in the routine cost ascertainment procedure; Since the use of full marginal costing system for product costing is very rare in modern times. However for purposes of planning and decision making marginal costing is the only technique which is universally recognized.

#### **Marginal costing – Role of contribution:-**

Contribution is of vital importance for the system of marginal Costing Contribution is the difference between sales and variable costs and it contributes towards fixed costs and profit. It helps in sales and pricing policies and measuring the profitability of different proposals. Contribution is a sure test to decide whether a product is worthwhile to be continued among different products.

$$\text{Contribution} = \text{Sales} - \text{Variable cost}$$

$$\text{Contribution} = \text{Fixed cost} + \text{profit}$$

#### **Fixed Costs and Variable costs: -**

In marginal costing, a point from 'Contribution' the concepts of 'fixed costs' and 'variable costs' are also important. Expenses that do not vary with

the volume of productions are known as fixed expenses. Eg. are Manager's salary, rent and taxes, insurance etc. It should be noted that fixed charges are fixed only within a certain range of plant capacity. The concept of fixed overhead is most useful in formulating a price, fixing policy. Fixed Cost per unit is not fixed. Expenses that vary almost in direct proportion to the volume of production or sales are called variable expenses. Eg. Electric power and fuel, packing materials, consumable stores. It should be noted that variable cost per unit is fixed.

However to say that fixed costs that do not vary is wrong. Accordingly, even fixed costs become variable beyond a particular point. If production increases, substantially additional accommodation and additional executive staff cause an increase in rent, insurance, salaries etc. There are also other factors such as inflation, Government's policies, and management decisions which bring about a change in the level of fixed costs. Since, fixed costs do not, in total, respond to changes in the level of activity, an increase in volume will result in a decrease in the fixed cost per unit.

According to the ICMA Terminology, semi variable costs is "A Cost containing both fixed and variable elements which are partly affected by fluctuations in the volume of output or turnover.

In other words, semi variable expenses possess both fixed and variable characteristics. Salaries of foremen and supervisors, electricity charges, telephone charges etc. fall under this category. Semi variable cost is also known as semi fixed costs since it contains both fixed and variable elements i.e. semivariable costs are costs which are mainly variable with a significant fixed element or mainly fixed with a significant variable element.

**Illustration:**

Prepare marginal cost statement from the following particulars:-

<b>Variable cost :</b>		Rs.
Direct material		4,500
Direct Wages	2,500	
Factory over heads		1,500
		-----
<b>Fixed costs</b>		8,500
Administrative expenses		1,250
		-----
Total cost		9,750
Profit		5,250

	-----
Sales	15,000
	-----

**Solution:**

**Marginal Cost Statement**

	Rs.	Rs.
Sales		15,000
Less: <b>Variable cost :</b>		
Direct materials	4,500	
Direct wages	2,500	
Factory over heads	1,500	8,500
Contribution		6,500
Less <b>Fixed cost:</b>		
Administrative expenses		1,250
Profit		5,250

**Illustration:** Determine the amount of fixed expenses from the following particulars:-

Sales	2,50,000
Direct Material	80,000
Direct Labour	50,000
Variable overhead	20,000
Profit	60,000

**Solution:**

Calculation of mixed expenses:-

**Marginal Cost Statement**

	Rs.	Rs.
Sales		2,50,000
Less: <b>Variable cost :</b>		

	Direct material	80,000	
	Direct Labour	50,000	
	Variable overhead	20,000	1.50,000
	Contribution		1,00,000
Less:	Fixed Expenses B/F.		40,000
	Profit		60,000

### **Merits of Marginal Costing:-**

1. Marginal costing helps in taking decisions such as pricing, accepting foreign orders at low price, to make or buy, selection of suitable product mix etc.
2. It yields better results when combined with standard costing.
3. It enables effective cost control by dividing costs into fixed and variable costs.
4. It enables the proper apportionment of fixed costs.
5. It avoids the complication of over-recovery or under recovery of overheads.
6. It facilitates the study of relative, profitability of different products when a number of products are being manufacturing.
7. Inventory valuation becomes more realistic when it is based on marginal cost.
8. Since fixed costs are not absorbed in unsalable stock, there is no question of fictitious or false profits.

### **Demerits:-**

1. It is difficult to separate fixed and variable costs clearly
2. There are semi-variable costs. They are not considered in the analysis.
3. It ignores time element. In the long run, all costs including fixed costs change. Therefore, comparison of performance between two periods on the basis of contribution is not possible.
4. Since valuable overheads are apportioned on estimated basis, problem of under or over recovery cannot be totally eliminated.
5. Price fixation and comparison between two jobs can be done without considering fixed costs.
6. The stock is valued at marginal cost. Hence, in the case of loss due to fire, full loss cannot be recovered from the insurance company.

7. Valuation of inventories and profit estimations based on marginal costing are objected to by tax authorities.
8. In controlling costs, marginal costing is not useful in concerns where fixed costs are huge in relation to variable costs.
9. It is found unsuitable in industries like ship building, contract etc., where the value of work-in-progress is high in relation to turnover. If fixed expenses are ignored in the valuation of work-in-progress, losses may occur every year till the contract is completed. On completion there may be huge profit. It may create income tax problems.
10. The systems of budgetary control and standing costing serve the purpose better than marginal costing. Hence, this technique is no required.

### **BREAK EVEN ANALYSIS**

There may be change in the level of production due to many reasons, such as competition, introduction of new product trade depression or boom, increased demand for the product, scarce resources, change in the selling prices of products, etc. In such cases management must study the effect on profit on account of the changing level of production. The management uses Break Even Analysis, which is the technique to do such study.

The term Break Even Analysis is interpreted in the narrower as well as broader sense in narrower sense it is concerned with finding out the break even point i.e. level of activity where the total cost equals total selling price used in the broader sense It means that the system of analysis which determines the probable profit at any level of production. The break even analysis establishes the relationship of costs, volume and profits. So this analysis is known as Cost Volume Profit Analysis. It is an important technique used in profit planning and managerial decision – making.

#### **Break-even Chart:-**

Break even analysis is made through graphical charts. Break-even chart indicates approximate profit or loss at different levels of sales volume within a limited range. The break-even charts show fixed and variable costs and sales revenue so that profit of loss at any given level of production or sales can be ascertained.

Steps involved in construction of a Break-even Chart :-

- |           |   |
|-----------|---|
| Step - 1: | Select a scale for sales (units) on horizontal axis.      |
| Step – 2: | Select a scale for costs and revenues on vertical axis    |
| Step – 3: | Draw the fixed cost-line parallel to the horizontal axis. |

Step – 4: Draw the total cost line, starting from the point on the vertical axis which represents fixed costs.

Step – 5: Draw the sales line, starting from the point of origin (Zero) and finishing at point of maximum sales.

Step – 6: The sales line will cut the total cost line at the point where the total cost equal to total revenues.

Step – 7: The point of intersection of two lines is called 'break-even point'. i.e. the point of no profit no loss.

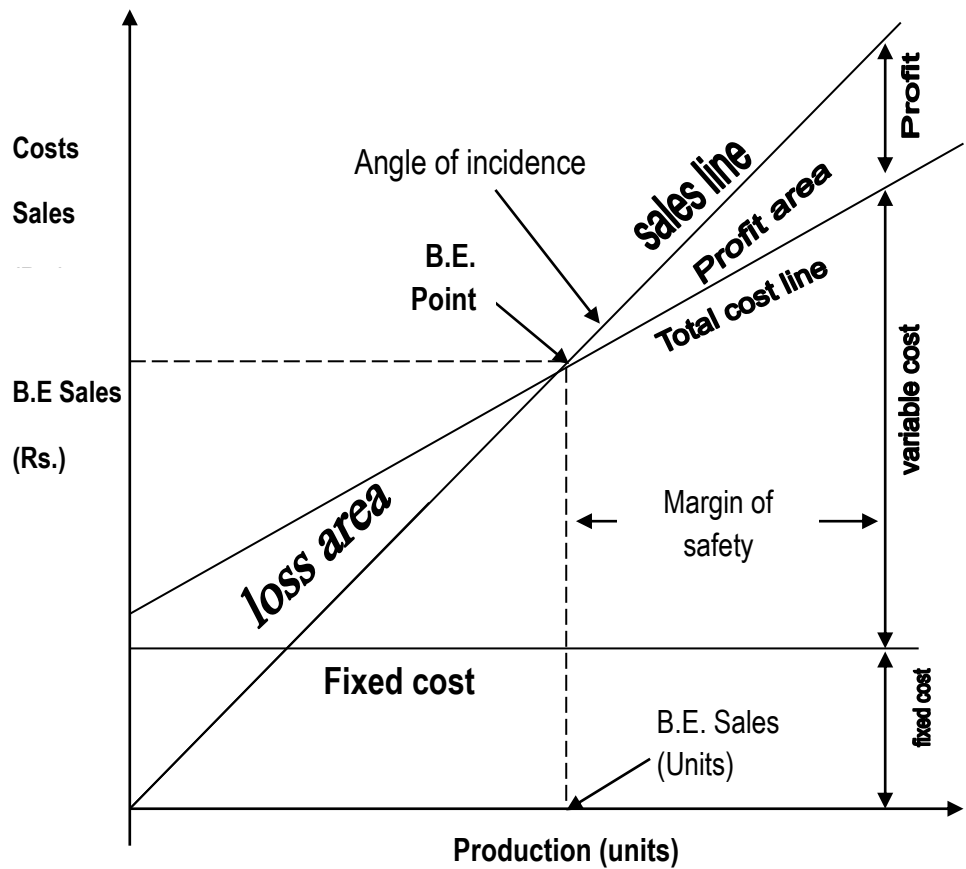
Step – 8: The lines drawn from intersection to horizontal axis and vertical axis give the sales value and number of units produced at break-even point.

Step – 9: The loss is shown if the production is less than the break-even point and profit is shown if the production is more than the break-even point.

Step – 10: The total sales minus break-even sales represent the margin of safety.

Step – 11: The angle which the sales line makes with total cost line, while intersecting it at break-even point is called 'angle of incidence'

**Break – even Chart**



**Production Units**

**Importance of break-even point:-**

1. Break-even point helps assessing the viability of the organization and to take decisions in profit planning and cost control. Break-even point is the point of zero net income where the level of sales is just equal to its costs.
2. Costs include both fixed and variable costs. It is used as a useful tool in financial planning to recover cost and to maximize profits.
3. The changes in operating condition such as, selling price, variable cost and fixed cost will change the break-even point.
4. For calculation of break-even point, the costs need to be segregated into fixed cost and variable costs.



5. Break even point indicates the level of operating capacity and sales to be achieved to recover all costs. Any further activity or sales beyond break-even point will lead to earn profit for the concern.

Formulae for Break-even Analysis:

$$\text{Break-even Point (units)} = \frac{\text{Fixed Cost}}{\text{Contribution per unit}}$$

$$\text{Break-even Point (Rs.)} = \frac{\text{Fixed Cost}}{\text{P/V Ratio}}$$

(or) Break-even units x Selling price per unit

$$\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100$$

$$\text{Desired Sales} = \frac{\text{Fixed Cost} + \text{Desired profit}}{\text{P/V Ratio}}$$

At Break-even point

$$\text{Contribution} = \text{Fixed Cost}$$

$$\text{Contribution} - \text{Fixed Cost} = 0$$

### **ASSUMPTIONS OF BREAK-EVEN ANALYSIS**

The following assumptions are important considerations in break-even analysis.

1. The break-even analysis requires that all costs should be classified into fixed and variable components.
2. It is assumed that all fixed costs remain constant at various levels of activity. But in practice, it may not be fixed in the long run.

3. Another assumption is that variable costs are really variable and changes in direct proportion to the volume of output. In practice variable costs are not necessarily strictly variable with output.
4. It is assumed that production units and sales units are equal and no inventory exists in the beginning or at the end of the period for which analysis is made. In practice, there will always be existence of inventory.
5. There will be no change in selling price and it remains constant at all levels of output and further assumed that there is no change in the sales mix.
6. It is assumed that productivity, operating efficiency, product specifications and methods of manufacture and sales will not undergo any change
7. A break-even chart can depict the position of only one product and fails to present various products in the sales mix in one chart and different charts are required to be drawn for different products.
8. Break-even analysis ignores the capital employed in business, which is one of the important facts in determination of profitability of the company and its products.

#### **ADVANTAGES OF BRAKE-EVEN CHART**

1. Visualises the information very clearly:- The chart visualizes the information very clearly and a glance at the chart gives a vivid picture of the whole affair. The different elements of cost-direct materials, direct labour, overheads (factory, office and selling etc.) can be presented through an analytical break-even chart.
2. Profitability of different products can be known:- The profitability of different products can be known with the help of break-even charts, besides the level of no profit no loss. The problem of managerial decision regarding temporary or permanent shutdown of business or contribution at a loss can be solved by break-even analysis.
3. Demonstration of effect of changes in fixed and variable cost:- The effect of changes in fixed and variables costs at different levels of production or profits can be demonstrated by the graph legibly. The relationship of cost, volume and profit at different levels of activity and varying selling prices is shown through the chart. Thus, it indices the requisites for survival of the company.
4. Exercising Cost Control :- The break-even chart shows the relative importance of the fixed cost in the total cost of a product. If the costs are high, it induces management to take measures to control such costs. Thus, it is a

managerial tool for control and reduction of costs, elimination of wastage and achieving better efficiency.

5. Effect of economy and efficiency:- The Capacity can be utilized to the fullest possible extent and the economies of scale and capacity utilization can be effected. Comparative plant efficiencies can be studied through the break-even chart. The operational efficiency of a plant is indicated by the angle of incidence formed at the intersection of the total cost line and the sales line.

6. Helps in forecasting and long term planning:- Break-even analysis is very helpful for forecasting, long – term planning, growth and stability.

### **LIMITATION OF BREAK-EVEN CHARTS**

There are certain limitations of break-even charts – They are:-

#### **1. Stock changes affect income:-**

The break-even chart depicts the volume of production or sales along the X-axis and thus ignores the effect of changes in stock volume. As a matter of fact, it is assumed that stock changes will not affect the income. This is not true, since the absorption of fixed costs depends on production and not on sales.

#### **2. Condition of growth not assured:-**

Condition of growth or expansion in an organization are assumed under break-even analysis. In actual life of any business organization, the operations undergo a continuous process of growth and expansion.

#### **3. Fixed costs do not always remain constant:-**

The assumption underlying break-even chart do not normally hold good in every business concern. Fixed costs vary and do not remain constant at all levels of production. They have a tendency to raise to some extent after the production is increased beyond a certain level.

#### **4. Variable Costs do not always Vary Proportionately:-**

The variable costs also do not always change in the same proportion in which the volume of production or sales changes. Usually the production cost increases if the law of diminishing return is applicable. This presents difficulty in the drawing of the total cost line and the fixed cost line.

#### **5. Sales revenue does not always changes proportionately:-**

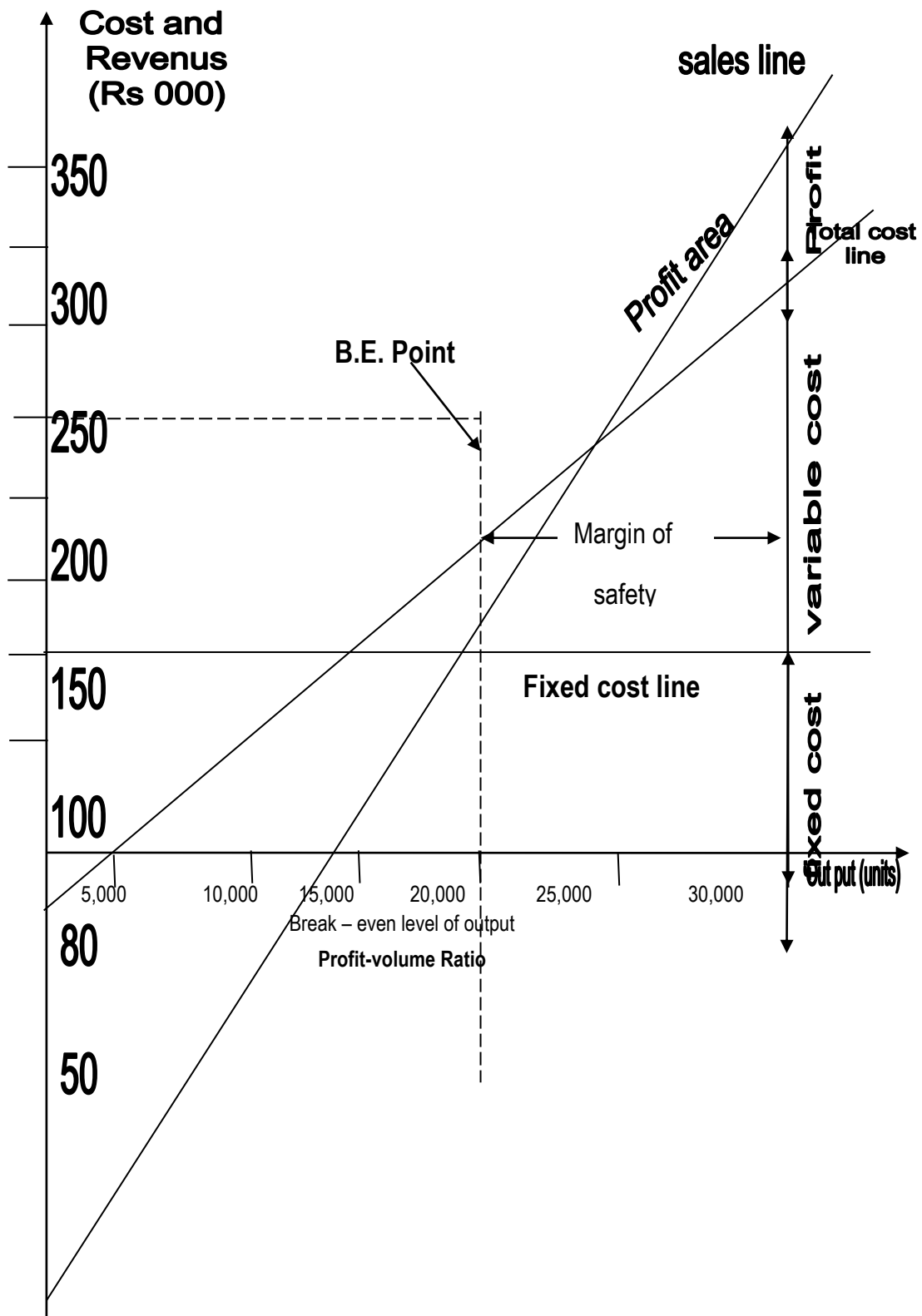
Sales revenue do not vary proportionately with changes in volume of sales due to reduction in selling price as a result of competition or increased production.

**Illustration:-** Balaji Ltd provides the following data of its operations:-

Selling price per unit Rs:10 variable cost per unit Rs6, fixed cost per annum Rs 80,000 construct break –even chart and ascertain the break-even point.

Output units	Sales Rs	Variable Cost Rs	Fixed cost Rs	Total cost Rs	Profit/loss Rs	Contribution Rs
0	-	-	80,000	80,000	80,000	-
5,000	50,000	30,000	80,000	1,10,000	60,000	20,000
10,000	1,00,000	60,000	80,000	1,40,000	40,000	40,000
15,000	1,50,000	90,000	80,000	1,70,000	20,000	60,000
20,000	2,00,000	1,20,000	80,000	2,00,000	0	80,000
25,000	2,50,000	1,50,000	80,000	2,30,000	20,000	1,00,000
30,000	3,00,000	1,80,000	80,000	2,60,000	40,000	1,20,000

From the above data we can observe that at 20,000 units of production the total revenue is equal to total costs and we can say 20,000 units is break-even level of production from the above data we can prepare break-even chart as shown belows:



Profit-volume Ratio (p/v) reveals the rate of contribution per product as a percentage of turnover

It indicates the relationship of the contribution to sales. It helps in knowing the profitability of the business.

This ratio calculated with the following formula:

$$\text{P/v Ratio} = \frac{\text{contribution}}{\text{sales}} \times 100$$

illustration: Sekar Ltd has provided the following information sales(@ Rs5 per unit) -20,000 units, variable cost per unit Rs3, fixed cost Rs8,000 per annum- calculate the P.V Ratio and the break-even sales of the company.

Solution:

$$\begin{aligned} \text{P/v Ratio} &= \frac{\text{contribution per unit}}{\text{selling price per unit}} \times 100 \\ &= \frac{\text{Rs } 5 - \text{Rs } 3}{\text{Rs } 5} \times 100 \\ &= 40\% \text{ (or) } 0.40 \end{aligned}$$

$$\begin{aligned} \text{Break - even sales} &= \frac{\text{fixed cost}}{\text{P.V Ratio}} \\ &= \frac{\text{Rs } 8,000}{0.40} = \text{Rs } 2,00,000/- \end{aligned}$$

#### **Margin of safety:**

The margin of safety refers to sales in excess of the break-even volume. It represents the difference between sales at a given activity level and sales at break-even point.

It is important that there should be a reasonable margin of safety to run the operations of the company in profitable position. A low margin of safety usually indicates high fixed over heads so that profits are not made until there is a high level of activity to absorb the fixed costs. Margin of safety provides strength and stability to a concern.

#### **MARGIN OF SAFETY IS CALCULATED BY USING THE FOLLOWING FORMULAE**

Margin of safety = Actual sales – Break-even sales

$$\text{or} = \frac{\text{Profit}}{\text{P/V Ratio}}$$

$$\text{or} = \frac{\text{Profit} \times \text{Selling price per unit}}{\text{Selling price per unit} \times \text{variable cost per unit}}$$

$$\text{Margin of safety as \% Total sales} = \frac{\text{Margin of safety}}{\text{Total sales}} \times 100$$

Illustration:

You are given the data of Bharathi Ltd, for the year ended 31<sup>st</sup> March 2007, Sales (@Rs10)-1,00,000 units variable cost per units. Rs6, fixed cost per annum Rs.3,00,000

Calculate the margin of safety.

**Solution:**

$$\begin{aligned} \text{Break – even sales} &= \frac{\text{Fixed cost}}{\text{Contribution per unit}} \\ &= \frac{\text{Rs } 3,00,000}{\text{Rs } 4} = 75,000 \text{ units} \end{aligned}$$

$$\begin{aligned} \text{Margin of safety} &= \text{Actual sales – Break – even sales} \\ &= 1,00,000 \text{ units} – 75,000 \text{ units} = 25,000 \text{ units} \\ &= 25,000 \text{ units} \times \text{Rs } 10 = \text{Rs } 2,50,000/- \end{aligned}$$

Illustration:

You are required to calculate a) P.V Ratio b) Margin of safety c) Sales d) Variable cost from the following figures.

Fixed cost Rs12,000; profit Rs1,000, Break even sales Rs 69,000

Solution:

$$\begin{aligned} \text{a) Break – even sales} &= \frac{\text{Fixed cost}}{\text{P.V Ratio}} \\ \text{Rs } 60,000 &= \frac{\text{Rs } 12,000}{\text{P.V Ratio}} \end{aligned}$$

By cross multiplication

$$\text{Rs } 60,000 \times \text{P.V Ratio} = \text{Rs } 12,000$$

$$\sim \text{P.V Ratio} = \frac{\text{Rs } 12,000}{60,000} \times 100 = 20\%$$

$$\begin{aligned} \text{b) Margin of safety:} &= \frac{\text{Profit}}{\text{P.V Ratio}} \\ &= \frac{1,000}{20} \times 100 = \text{Rs } 5000/- \end{aligned}$$

$$\begin{aligned} \text{c) Sales} &= \text{B.E Sales} + \text{margin of safety} \\ &= \text{Rs } 60,000 + \text{Rs } 5,000 = \text{Rs } 65,000/= \end{aligned}$$

d) variable cost:

$$\text{Sales} = \text{Rs } 65,000$$

$$\begin{aligned} \text{Contribution} &= \text{Fixed cost} + \text{profit} \\ &= \text{Rs } 12,000 + \text{Rs } 1000 = \text{Rs } 13000 \end{aligned}$$

$$\begin{aligned} \text{Variable cost} &= \text{sale} - \text{contribution} \\ &= \text{Rs } 65,000 - \text{Rs } 13,000 = \text{Rs } 52,000/- \end{aligned}$$

## CAPITAL BUDGETING

Capital budgeting is the process of making investment decisions regarding capital expenditures. A capital expenditure is an expenditure incurred for acquiring or improving the fixed assets the benefits of which are expected to be received over a number of years in future. Capital expenditure involves non-flexible long-term commitment of funds. Capital budgeting is also known as long-term planning for investment decisions.

Charles T. Horngren has defined capital budgeting as, “a long term planning for making and financial proposed Capital outlays”.

### **Need and importance of capital Budgeting:-**

Capital Budgeting decisions are among the most crucial and critical business decisions special care should be taken in making these decisions on account of the following reasons:-

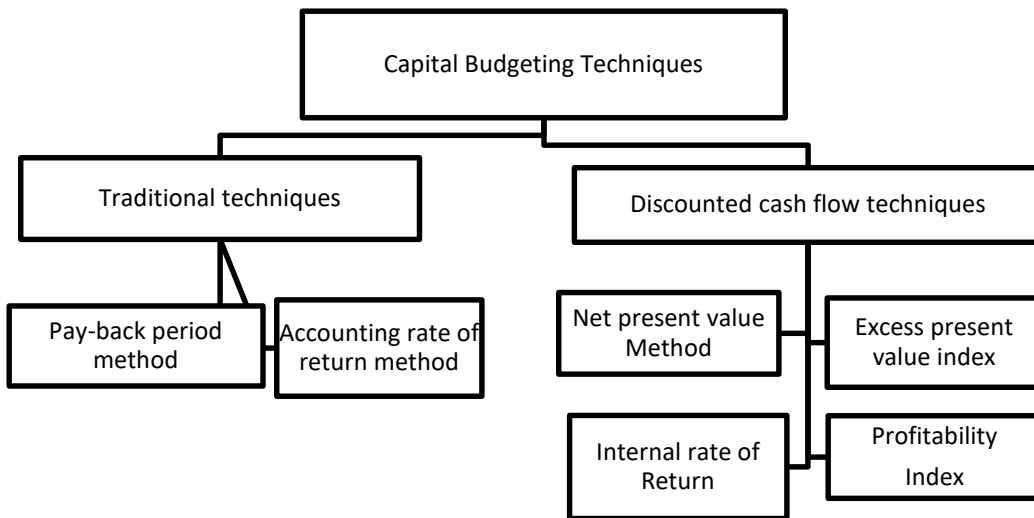
- 1. Heavy investment:** All capital expenditure projects involve heavy investments of funds. These funds are raised by the firm from various external and internal sources. Hence it is important for a firm to plan its capital expenditure.
- 2. Permanent commitment of funds:-** The funds involved in capital expenditures are not only large but also more or less permanently blocked. Therefore, these are long term investment decisions. The longer, the time the greater is the risk involved. Hence careful planning is essential
- 3. Long term effect on profitability:-** Capital budgeting decisions have a long term and significant effect on the profitability of the concern. If properly planned, they can increase the size scale and volume of sales as well as growth potential of the concern.
- 4. Irreversible in nature:** In most case, capital budgeting decisions are irreversible. Once the decisions for acquiring a permanent assets is taken, it is very difficult to reverse that decision. This is because, it is difficult to dispose of these assets without incurring heavy losses.

### **LIMITATION OF CAPITAL BUDGETING**

1. All the techniques of capital budgeting presume that various investment proposals under consideration are mutually exclusive which may not practically be true in same particular circumstances.
2. The technique of capital budgeting require estimation of future cash inflow and out flows. The future is always uncertain and the data collected for future may not be exact. Obviously the results based upon wrong data cannot be good.



3. There are certain factors like morale of the employees, goodwill of the firm etc which cannot be correctly quantified but these otherwise substantially influence the capital decision.



## I - TRADITIONAL TECHNIQUES

### 1. PAY-BACK PERIOD METHOD:-

Pay-back method is popularly known as pay-off, or pay out method. It is defined as the number of years required to recover the initial outlay invested in a project.

Computation of pay Back period:-

It can be calculated as follows:

$$\text{Pay back period} = \frac{\text{Initial Investment}}{\text{Annual cash inflow}}$$

The method can be understood as follows:

If the annual cash inflows are uniform, the pay-back period can be computed by dividing cash outlay (initial investment) by annual cash inflows.

If cash inflows of each year are not uniform, the calculation of payback period takes a cumulative form. In such a case, the pay-back period can be found out by adding up the figures of net cash inflows until the total is equal to the initial investment.

The annual cash inflow is calculated by taking into account net income before depreciation but after taxation.

If there are two projects the project which has a shorter pay-back period will be chosen.

First, Net inflow shall be calculated as follows:-

Cash in flow from sales revenue	-
Less: Operating expenses including depreciation	-
	<hr/>
Net income (before Tax)	-
Less : Income Tax	-
	<hr/>
Net income (after Tax)	-
Add: depreciation	-
	<hr/>
Net cash inflows	-
	<hr/>

**Note:** As because depreciation does not affect the cash inflow. It shall not be taken into consideration in calculating net cash inflow but it is admissible deduction under Income tax Act, it has been deducted from the gross sales revenue and added in the net income (after tax).

**Mertis:**

- 1 It is easy to calculate and simple to understand
- 2.It is preferred by executives who like quick answers for selection of the proposal.
- 3.It is useful where the business is suffering from shortage of funds as quick recovery is essential for repayment.
4. It is useful for industries subject to uncertainty, instability or rapaid technological changes
- 5.It is useful where profitability is not important,

**Demerits:**

- 1.This method is delicate and rigid. A slight change in the operation cost will affect the cash inflows and the pay-back period
- 2.It does not take into account the life of the project, depreciation, scrap value, interest factor etc.
- 3.It completely ignores cash inflows after the pay-back period.
4. The profitability of the project is completely ignored
- 5.It gives more importance to liquidity as a goal of capital expenditure decisions which is not justifiable
6. It ignores time value of money, cash flows received in different year are treated equally.

**Suitability:**

Inspire of the above demerits, the pay-back method can profitably be used in each of the following cases:

1. This method is suitable where political or other conditions are seemed to be hazy.
2. It is suitable when a firm suffers from liquidity crisis
3. It is also suitable for a firm which focus on short –term earning performance of the firm rather its long – term growth.
4. It is a suitable method where production is subject to change in technology.

**Illustration:**

A company is considering two mutually exclusive projects.

Projects. Both require an initial as outlay of Rs10,000 each and have a life of 5 years. The companies required rate of return is 10% and pays tax at 50% rate. The projects will be depreciated on a straight line basis. The net cash flow (before tax) expected to be generated by the projects as follows:

Cash inflows			
year	Project I	Project II	
1.	Rs 4,000	Rs	6,000
1.	“ 4,000	“	3,000
1.	“ 4,000	“	2,000
1.	“ 4,000	“	5,000
1.	“ 4,000	“	5,000

Calculate payback of each project

**Solution:**

Calculation of Net Income and cash flow after taxes:

**Project I** - cash inflow is uniform:-

year	Cash flow before Taxes	Depreciation	Income Before Tax	taxes	Net income	Net Cash flow after Taxes
	Rs	Rs	Rs	Rs	Rs	Rs
1	4,000	2,000	2,000	1,000	1,000	3,000
2	4,000	2,000	2,000	1,000	1,000	3,000
3	4,000	2,000	2,000	1,000	1,000	3,000
4	4,000	2,000	2,000	1,000	1,000	3,000
5	4,000	2,000	2,000	1,000	1,000	3,000

$$\text{Pay back period} = \frac{\text{Initial Investment}}{\text{Annual net cash inflow}}$$

$$= \frac{10,000}{3,000} = 3 \frac{1}{3} \text{ years}$$

**Project – II** cash inflow is not uniform:-

year	Cash flow before taxes	Depreciation	Income Before Taxes	Taxes	Net income	Net cash flow After taxes
	Rs	Rs	Rs	Rs	Rs	Rs
1	6,000	2,000	4,000	2,000	2,000	4,000
2	3,000	2,000	1,000	500	500	2,500
3	2,000	2,000	0	0	0	2,000
4	5,000	2,000	3,000	1,500	1,500	3,500
5	5,000	2,000	3,000	1,500	1,500	3,500

The above table shows that in three years Rs8,500/- (4000+2500+2000) has been recovered. Rs1500 is left out of initial investment. In the 4<sup>th</sup> year the cash inflow is Rs.3500/-. It means payback period is between 3<sup>rd</sup> and 4<sup>th</sup> years ascertained as follows:

$$\text{Payback period} = 3 \text{ years} + \frac{1,500}{3,500} = 3 \frac{3}{7} \text{ years}$$

## 2. AVERAGE ACCOUNTING RATE OF RETURN METHOD

It is also known as Accounting rate of return because it takes into account the Accounting concept of profit (i.e profit after depreciation and tax) and not the cash in flows. The project which yields the highest rate of return is selected. The accounting rate of return may be calculated by any of the following methods:

$$ARR = \frac{\text{Average annual profit}}{\text{Original Investment}} \times 100 \text{ or}$$

$$ARR = \frac{\text{Average annual profit}}{\text{Average Investment}} \times 100$$

The term average annual profit refers to average profit after depreciation and tax over the life of the project;-

The average investments can be calculated by any of the following methods

$$= \frac{\text{Original Investment}}{2} \text{ or}$$
$$= \frac{\text{Original Investment} - \text{scrap value}}{2}$$

### **Merits-**

- 1.It is simple to understand and easy to calculate
2. This method gives due weightage to the profitability of the project
3. It takes into consideration the total earnings from the project during its life time
4. Rate of return may be readily calculated with the help of the accounting data.

### **Demerits:**

1. It uses accounting profits and not the cash inflows in appraising the project
2. It ignores the time value of money profits earned in different prides are valued equally.
3. It considers only the rate of return and not the life of project
4. It ignores the fact that profit can be reinvested
5. This method does not determine the fair rate of return on investment

### **Illustration:**

A project requires an investment of Rs5,00,000 and has a scrap of Rs20,000 after 5 years. It is expected to yield profits depreciation and taxes during the five years accounting to Rs 40,000, Rs 60,000, Rs 70,000, Rs 50,000 Rs 20,000. Calculate the average rate of return on the investment.

**Solution:**

Total profit = Rs 40,000 + Rs 60,000 + Rs 70,000 + Rs 50,000 + Rs 20,000 = 2,40,000

$$\text{Average profit} = \frac{2,40,000}{5} = \text{Rs } 48,000$$

$$\begin{aligned} \text{ARR} &= \frac{\text{Average annual profit}}{\text{Average Investment}} \times 100 \\ &= \frac{48,000}{2,40,000} \times 100 = 20\% \end{aligned}$$

**II- DISCOUNTED CASH FLOW METHOD**

This method is also known as “Time adjusted rate of return” (or) Internal rate of return method. It takes in to account both the profitability and the time value of money. This method is based on the fact that future value of money will not be equal to the present value of money. For example, assume of Rs 100 received after one year because by receiving the amount now and investing it some where a fame can get Rs110 (say including 10% interest) after one year. Discounted cash flow methods for evaluating capital investment proposals are or are of three types :

1. Net present value method
2. Excess present value method
3. Internal Rate of return

## 1. Net present value method:-

Under this method present value and compare with the original investemend if the present of cash inflows is calculated at the required rate of return (an arbitrary rate of return) and compare with original investment. If the present value is higher than the original investment, the project can be selected otherwise rejected.

Formulae to know the present volume of Rs.1 to be received after a specified period at given rate of discount

$$PV = P \left[ 1 - \frac{r}{100+r} \right]$$

P =Principal

r =Rate of discount

## 2.EXECSS PRESENT VALUE INDEX:

This is a refinement of the net present value method. Instead of working out the net present value, a present value index is found out by comparing the total present value of cash inflows and the total present value of cash out flows. This can be calculated as follows:

$$\text{Excess present value index} = \frac{\text{Total present value of cash inflows}}{\text{Total present value of out flows}} \times 100$$

The higher the profitability index the more desirable is the investment.

### 3. INTERNAL RATE OF RETURN:

Internal rate of return is the rate of return at which total present value of future cash inflows is equal to initial investment. This method is used when the amount of investment and cash inflows are known but the rate of return is not known. The rate of return is generally found by trial and error method.

For example, if a sum of Rs800/- invested in a project becomes Rs1000/- at the end of the year the rate of return comes to 25% calculated as follows:

$$I = \frac{R}{1+R}$$

Where, I=cash out flow ie initial investment

R=cash inflow

r=Rate of return yield by the investment (or) IRR

$$\text{Thus, } = \frac{1000}{1+R}$$

$$\text{(or) } 800 + 800r = 1000$$

$$800r = 1000 - 800 = 200$$

$$R = \frac{200}{800} = 0.25 \text{ (or) } 25\%$$

#### **Merits of discounted cash flow method:**

This method considers the entire economic life of the project.

It gives due weightage to time factor. That is time value of money is considered

It facilitates comparison between projects

This approach by recognising time factor, makes sufficient provision for uncertainty and risk.

It is the best method where cash in flows are uneven

#### **Demerits:-**

It involves a great deal of calculations. Hence it is very difficult forecast and complicated.

It is very difficult to forecast the economic life of any investment exactly.

The selection of an appropriate rate of interest is also difficult.

### **4.Profitability Index**

It is also known as benefit / cost ratio. It is the ratio of present value of the future net cash flows to the initial cash outlay of the project. The index provides a relative measure for judging desirability and evaluating the worth of an investment proposal. It can be calculated as follows:

$$\text{Debtors} = \frac{\text{NPV of Cash inflows}}{\text{Initial investment in the project}}$$

It is used as accept or reject criteria for the project. If  $PI > I$  then accept the project and  $PI < I$ , reject the project.

Illustration: The gamma Co., Ltd., is considering the purchase of a new machine. Two alternative machines A and B have been suggested each costing Rs4,00,000. Earnings after taxation are expected are as follows

Year	Machine A	Machine B
	Rs	Rs
1	40,000	1,20,000
2	1,20,000	1,60,000
3	1,60,000	2,00,000
4	2,40,000	1,20,000
5	1,60,000	80,000

The company has a target of return on capital of 10% and on this basis, you are required to compare the profitability of the machines and share which alternative you consider finally preferable.

Note: The present value of Rs1, 10% due in :

1. Year = 0.91
2. Year = 0.83
3. Year = 0.75
4. Year = 0.68
5. Year = 0.62

**Solution:**

Year	Discount factor @ 10%	Machine A		Machine B	
		Cash inflow Rs	Present value Rs	Cash inflow Rs	Present value Rs
1.	.91	49,000	36,400	1,20,000	1,09,000
2.	.83	1,20,000	99,000	1,60,000	1,32,000
3.	.75	1,60,000	1,20,000	2,00,000	1,50,000
4.	.68	2,40,000	1,63,000	1,20,000	81,600
5.	.62	1,60,000	99,200	80,000	49,600



Present value of cash inflows =		5,18,400		5,23,200
		Machine A		Machine B
Net present value	=	5,18,400 - 4,00,000		5,23,200 - 4,00,000
	=	1,18,000		= 1,23,200

$$\text{Profitability Index} = \frac{\text{Present value of Cash inflows}}{\text{Initial investment}}$$

$$= \frac{5,18,400}{4,00,000} = \frac{5,23,200}{4,00,000} = 1.29$$

The net present values as well as the profitability index are higher in case of machine 'B' and hence machine 'B' will be preferred.





