



Institute of Open and Distance Education

Faculty of Commerce

Management Accounting

Management Accounting



4BCOM3



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Chhattisgarh, Bilaspur

A STATUTORY UNIVERSITY UNDER SECTION 2(F) OF THE UGC ACT

4BCOM3, Management Accounting

Edition: March 2024

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Published by:

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UNIT I

LESSON

1

AN INTRODUCTION TO MANAGEMENT ACCOUNTING

CONTENTS

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1.0 AIMS AND OBJECTIVES

After studying this lesson, you should be able to:

- Explain the concept of management accounting, its scope and importance
- Understand the nature and characteristics of management control system
- Discuss the role of management accountant
- Explain various objectives of Management Accounting

- Describe the real time applications in taking decisions over the intricacies of the various accounting viz financial accounting and cost accounting

1.1 INTRODUCTION

Management accounting as a new branch of accounting is of recent origin. Financial accounting recorded business transactions on double-entry basis and helped ascertainment of profit or loss for the given period and valuation of stock of assets and liabilities on a given date. Financial accounting enabled the concern with the liabilities and safeguard the assets entrusted and therefore was also known as custodial or stewardship accounting. Basically meant for consumption of owners, creditors, statutory authorities, the reporting was for a concern as a whole. Management accounting is the accounting system for making decisions of the business enterprise. Management accounting furnishes the necessary information to assist the business enterprise to make rational decisions through the development of policies and procedures in order to meet the day to day commitments of the enterprise.

1.2 DEFINITION 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 i.e., planning, organisation, staffing, direction and control efficiently with the help of accounting information.

The following are some definitions of management accounting:

"Management accounting is concerned with accounting information that is useful to management."

—R.N. Antony

"Management accounting is the presentation 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."

—Anglo American Council of Productivity

"Any form of accounting which enables a business to be conducted more efficiently."

—Institute of Chartered Accountants, England

"Management accounting is the identification, measurement, accumulation, analysis, preparation, interpretation and communication of information that assists the executive in fulfilling organisational objectives."

—C.T. Horngren

"The application of accounting and statistical techniques to the specific purpose of producing and interpreting information designed to assist management in its function of promoting maximum efficiency and in envisaging, formulating and co-ordinating future plans and subsequently in measuring their execution."

—Association of Certified Accountants

"Management accounting is concerned with accounting information which is useful to management."

—Robert Anthony

"Management accounting is the presentation of accounting information in such a way as to assist management in creation of policy and in the day-to-day operation of the undertaking."

—Anglo American Productivity Report

"More intimate merger of the two older professions of management and accounting means for their satisfaction."

—Smith

"These are information generated by accountants for managers."

—Anonymous

In sum, we can say by going through these definitions, that management accounting by the use of various techniques provides information useful for planning and controlling the progress of an organisation towards its goals efficiently. The accountants generate the information for the use of management.

1.3 OBJECTIVES OF MANAGEMENT ACCOUNTING

The objectives of management accounting are given as following:

- To assist the management in promoting efficiency. Efficiency includes best possible services to the customers, investors and employees.
- To prepare budgets covering all functions of a business, i.e., production, sales, research and finance.
- To analyze monetary and non-monetary transactions.
- To compare the actual performance with plan for identifying deviations and their causes.
- To interpret financial statements to enable the management to formulate future policies.
- To submit to the management at frequent intervals, operating statements and short-term financial statements.
- To arrange for the systematic allocation of responsibilities.
- To provide a suitable organisation for discharging the responsibilities.

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

The above information can be stated more clearly by the following diagrammatic representation.

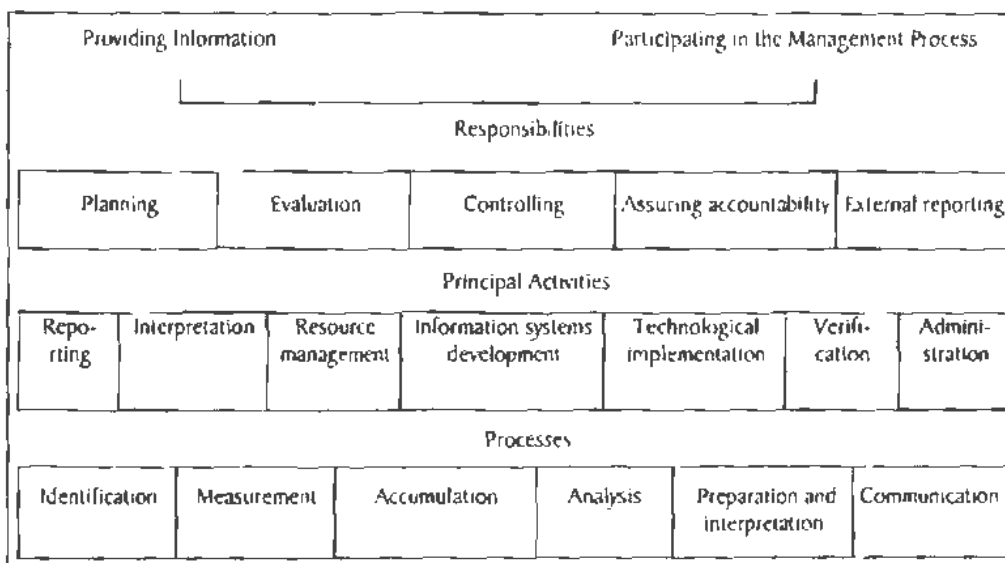


Figure 1.1: Objectives of Management Accounting

1.4 NATURE AND SCOPE OF MANAGEMENT ACCOUNTING

The scope of management accounting is very wide. It includes within its fold all aspects of business operations. The following areas indicate the scope of management accounting:

- **Financial Accounting:** Financial accounting provides historical information. It forms the basis for future planning and financial forecasting. A properly designed financial accounting system is a must for securing full control and co-ordination of business operations.
- **Cost Accounting:** Cost accounting provides various techniques of costing like marginal costing, standard costing, operation costing, etc. These techniques play an important role in assisting the management in the formulation of policy and the operations of the undertaking.
- **Budgetary Control:** This includes framing of budgets, comparison of actual performance with budgeted performances, computation of variance, finding out their causes and suggesting remedial measures.
- **Inventory Control:** It is concerned with control over inventory from the time it is received till its disposal.
- **Reporting:** Reporting includes the preparation of monthly, quarterly, half-yearly income statements, and other related reports such as cash flow and funds flow statements. These reports are submitted to the management for evaluation of performance and decision-making.
- **Statistical Methods:** Statistical tools like graphs, charts, index numbers etc., are used for presentation of information to various departments.
- **Taxation:** It includes preparation of income statement, assessing the effect of tax on capital expenditure proposals and pricing.
- **Methods and Procedures:** They deal with organisational methods for cost reduction, procedures for improving the efficiency of accounting and office operations.
- **Internal Audit:** This refers to the establishment of a suitable internal audit system for internal control.
- **Office Services:** They cover a wide range of activities like data processing, filing, copying, printing, communication, etc.

Apart from the above, further scope of the management accounting is as under:

The scope and ambit of management accounting is wide. It encompasses financial accounting, cost accounting, operations research, economics, statistics, behavioural science, management techniques and computer science.

- Financial accounting has provided methods of recording transactions and working out the total profit for the concern.
- Cost accounting has enabled cost finding, cost control, special studies, fixing standards, variance analysis and operational leverage.
- Operation research techniques like linear programming, economic quantities to order have found a place for decision-making.
- Price fixing, dumping and treatment of sunk costs are economics.
- Regression analysis is from statistics.

- Wages, bonus, rewards and punishment, learning curve belong to behavioural science.
- Reporting to suit various levels and reporting by exception are management methods.
- Computer software has enabled preparation, processing and analysis of data and compilation of reports and decision-making easier.

Planning, controlling and decision-making have considerably improved by the use of above techniques. Management accounting is future-oriented and any science, which can help future processing of events to make rationale decisions, will certainly find a place in management accounting.

Of recent development, it is the inclusion of finance under the umbrella of management accounting for resource mobilization and money management. Techniques of cash flow discounting, financial leverage are some of the more important aids.

1.5 CHARACTERISTICS OF MANAGEMENT CONTROL SYSTEM

Financial accounting has a history of five centuries, and has developed its principles long back and is totally standardised now. But management accounting has a history of only four to five decades and is evolving its principles gradually. The author has outlined the conventions which are essential from the standpoint of study of the management accounting.

- **Collection of Accounting Information:** Financial accounting provides basic data about the past and present performance of the organisation in the form of profit statements, balance sheet, schedules and reports. To solve a business problem or to take a decision, the data may be interpreted with an appropriate tool or technique or the management accountant may deviate from the factual data, modify them suiting to the needs of the situation to solve a problem. However, these operations should not be expensive, and hence, scientific methods are used to collect and interpret the financial data.
- **Revaluation Accounting:** This concept has been explained as a technique. But this is also a convention or principle adopted in management accounting. This implies the presentation of capital in 'real' form or at its present worth. This is linked to the fluctuation in value of money. Although this principle is still under controversy, accountants are adopting this on a greater scale.
- **Control-at-source Accounting:** Another convention practiced in management accounting is that adopting a system to control the cost at the points at which they are incurred. To adopt this control technique, the systems are devised to be adopted at the points of material handling, labour management, etc. Cost consciousness among the employees is also inculcated, with this, cost of production is minimised and results in effective cost control. This is another principle of management accounting. Distinction should also be made between controllable and uncontrollable costs and they should be bifurcated to fix responsibility.
- **Appropriation of Overheads:** This involves the allocation of overheads to different products on the basis of benefit received from each product. This allocation of overheads to different cost centres is made with the object of justifying the distribution in an equitable manner.

- **Management by Exception:** This is a principle of management according to which the information given to top management is minimised by transmitting only such information which needs decision by the management. The information relating to the 'variance' (difference between set standards and actual performance) is also transmitted to the top management for their perusal. This type of giving only processed information to the top management helps them in taking sound managerial decisions.
- **Business Efficiency:** To assess the business efficiency, a practice is followed. Rate of return on capital employed will be taken as the indicator to measure the business standard. Capital employed for this purpose will be viewed from the 'present replacement value'. This is another convention or principle followed in management accounting.
- **Systems Efficiency:** The systems adopted and various policies, procedure and forms used in management accounting should suit to the needs of the organisation. As long as they are useful, they have to be adopted and are to be discarded as they are found to be useless or less effective.
- **Information Blending:** Another convention followed or to be followed is that as far as possible information obtained from functional areas are to be integrated or blended to make available the comprehensive and inter-related information to the top management, in order to take sound managerial decisions.
- **Application of Information of Selective Basis:** Although large quantity of accounting and other information was collected, while adopting the data for interpretation, it should be made on a selective basis. For this, data should be processed and only relevant information should be supplied to the management. Hence, data processing is another practice or principle of management accounting.
- **Forecasting Ability:** Another principle or convention to be followed by the management accounting is that it should be capable of foreseeing the problems and avoid them as far as possible. This needs creativity and vision on the part of management accountant. Tools like budgetary control and standard costing are given importance in this context. They are used as cost effective tools and with their help, the management can develop forward looking approach.

Management accounting is still in its infant stage and has grown out of traditional accounting, some more conventions and principles may emerge in future, or some of the existing conventions may be given up.

- **Data Feeding:** It is the objective of management accounting to feed the accounting data, required for decision-making purposes. The information to be supplied to the top management should be processed by the management accountant. Only relevant data are to be supplied.
- **Efficiency:** Another objective of management accounting is to increase the operational efficiency of the enterprise. The management accountant by processing the data makes it more meaningful and supplies the same to the top, which opens up new vistas to take sound managerial decisions. This increases the overall efficiency of the organisation.
- **Control:** One vital function of management is to control the activities in the organisation, to see that performance of each functional area is achieved up to the set standard. The objective or task of the management accounting is to direct all accounting efforts towards the control of the destiny of the enterprise. This means, every operation of the business enterprise will be controlled through certain techniques like budgets or by adopting "internal check" system (automatic

checking of operation without the knowledge of one another) to run the organisation smoothly.

- **Avoid Guesswork:** Efficient and sound working of an organisation cannot proceed on guesswork. Precise and exact accounting information should be made available to the top management to formulate policies. Hence, the objective of management accountant is to eliminate the element of intuition and guesswork from business decisions and provide exact accounting information to the management. Valid information is provided with the increased use of tools of management accounting. It provides techniques for useful interpretation of accounting data and avoids guesswork and develops realistic information in respect of future transactions.
- **Motivation:** The management accountant in the process of obtaining relevant accounting and other data deals with the concerned personnel. These personnel engaged in different operations of the organisation should be made to work effectively. The objective of management accounting in this context is to provide methods to generate and sustain appropriate motivation amongst the workers. Leadership qualities too have to be developed at different levels of management. Managers should develop diagnostic techniques to improve the economic performance of the organisation. All this has to be assisted by management accountant.
- **Maximum Utilisation of Resources:** Every enterprise always aims at profit maximisation. To achieve this objective, the scarce resources of the organisation are to be profitably employed. The allocation and use of resources require skill. The employment of funds in different functional areas of the organisation also requires the identification and assessment of exact fund requirement of each department. The allocation of resources is a complicated task. The management accountant obtains the information, assesses the fund requirement of each department and helps the top management in scientific allocation of scarce resource and follows the track for maximum utilisation of these scarce resources. Thus, another objective of management's accounting is to utilise the scarce resources in an optimal way.

From the above, it is crystal clear that the objectives of management accounting with tremendous growth of industrial activity, increasing severity of competition and complexity of technical process, management accounting has gained momentum and is helping in solving the complicated production and business problems. It encompasses all operations of an enterprise right from planning, organising, directing, communicating, to controlling, aims at processing and interpreting financial data, provides true processed data to the top management to take sound managerial decisions. Its main object is to broaden the services of accounting to management, and eliminate guesswork. It also has the objective of opening new lines of thought on work measurement. It provides meaningful accounting data to all levels of management and equips them to analyse accounting data. The limitations of financial accounting have been overcome by management accounting. However, the subject is still in its infancy and has certain limitations.

1.6 IMPORTANCE OF MANAGEMENT ACCOUNTING

The importance of management accounting is summarized below:

- **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 taken with the help of marginal costing technique.

- **Helps in Planning:** Planning includes profit planning, preparation of budgets, programmes of capital investment and financing. Management accounting assists in planning through budgetary control, capital budgeting and cost-volume-profit analysis.
- **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.
- **Facilitates Communication:** Management is provided with up-to-date information through periodical reports. These reports assist the management in the evaluation of performance and control.
- **Helps in Co-ordinating:** 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.
- **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.
- **Interpretation of Financial Information:** Management accounting presents information in a simple and purposeful manner. This facilitates quick decision-making.
- **Economic Appraisal:** Management accounting includes appraisal of social and economic forces and government policies. This appraisal helps the management in assessing their impact in the business.

1.7 ROLE OF MANAGEMENT ACCOUNTANT

A management accountant is a very important key person in the organisation. His main job in the organisation is planning and control.

Planning is of two types. One is a short-term plan known as a budget. A budget is a quantitative expression of management's short-term intentions. Budget serves also as a tool for coordinating the various activities and to the extent the actuals compared to budget works as a tool of control.

The other type of planning is called long-term plan or corporate plan or strategic plan. This type of plan is usually prepared for three to five years. Long-term plans indicate the management's intent where the organisation should reach in that time span. By a series of budgets, long-term plans are reached.

It is the responsibility of the management accountant to prepare both the type of plans and watch their actual performance. For this purpose, he has to re-classify the accounting data and assemble them to suit the user department's need. He also has to scan the environment for external information. He has to be particularly careful of the performance of his competitors and try and obtain information about their long-term strategy.

The management accountant should arrange for various reviews of the budget and corporate plan in order to take action on deviations. If the deviation or variances are seasonal he may not take steps to correct the plans; otherwise he should modify the plan in consultation with the top management.

The management accountant will undertake a number of special studies for capital expenditure; make or buy decisions. Lease or buy decisions.

It will be the responsibility of the management accountant to establish a good system for the use of management, devise all paper work and prescribe the periodicity of reports and manner of submission.

We have already seen the management accountant's role as a purely staff function, in relation to other departments. In view of the great use of management accounting, the controller now attends all important policy meetings and participates. As one foreign publication has stated, "the management accountant participates as the part of management in assuring that the organisation operates as a unified whole in its long-run, intermediate and short-run best interests."

We may sum up saying, 'the management accountant's role is that of purveyor, processor and presenter of information and also a planner for the achievement of corporate goals both short and long-run.

1.7.1 Future of Management Accounting

Management accounting is still in its infancy and is playing a secondary role. Many concerns in India are content with financial accounting due to the ignorance of the benefits of management accounting. They spend lot of time and money in gathering information each time classifying and re-classifying the past data. By the time they could decide, many changes take place making the data gathered obsolete.

The world over, information technology has undergone an explosive growth. The advent of computers, concords and containerization, globalization of demand has taken place. The cross-barrier tenders have to be competitive in pricing and speedy in performance with an assurance on quality. Internet becomes an ongoing means for demand generation. Response has to be prompt and pricing competitive and terms acceptable. Only management accounting can meet these requirements.

Quantitative tools are frequently used in management decision making now. Management accounting, which has already adopted many techniques, can further permit grafting. Concerns that have made use of management accounting have benefited in large measure in the US like Du Pont, General Motors, and United Steel.

The quality of service to be provided by management accounting to a large extent depends on the capability of the controller and his staff. These persons will have to continuously update their knowledge with the subject and happenings the world over.

Realizing the importance of management accounting to the business, many accounting bodies have included the subject of management accounting in their course curriculum. Special seminars and conferences are held for continuous education. With the coming of Foreign Institutional Investors (FII's) and Overseas Commercial Bodies (OCBs) to India, their knowledge in this area will be available to us. The future of management accounting seems to be promising and rewarding.

1.8 FUNCTIONS OF MANAGEMENT ACCOUNTING

Functions of management accounting include all activities connected with collecting, processing, interpreting and presenting information to the management. The main functions of management accounting are given as follows:

- **Forecasting:** Making short-term and long-term forecasts and planning the future operations of the business.
- **Organising:** Organising the human and physical resources of the business. This is done by assigning specific responsibilities to different people.

- **Co-ordinating:** Providing different tools of co-ordination. Examples of such tools are budgeting, financial reporting, financial analysis, interpretation, etc.
- **Controlling:** Controlling performance by using standard costing, variance analysis and budgetary control.
- **Analysis and Interpretation:** Analyzing and interpreting financial data in a simple and purposeful manner.
- **Communicating:** Communicating the results of business activities through prompt and accurate reporting system.
- **Economic Appraisal:** Appraising of social and economic forces and government policies and interpreting their effect on business.

1.9 ADVANTAGES OF MANAGEMENT ACCOUNTING

Advantages of management accounting are given below:

- It facilitates the planning of functions of the business enterprise.
- It helps in organizing.
- It facilitates reporting.
- It guides through proper co-ordination.
- It extends the tool of an analysis of comparison in between the actual and standard performance.

1.10 LIMITATIONS OF MANAGEMENT ACCOUNTING

Limitations of management accounting are given below:

- It facilitates the planning of functions of the business enterprise.
- It helps in organizing.
- It facilitates reporting.
- It guides through proper co-ordination.
- It extends the tool of an analysis of comparison in between the actual and standard performance.

1.11 MANAGEMENT ACCOUNTING, FINANCIAL ACCOUNTING AND COST ACCOUNTING

Managers need financial information in order to plan for the activities of the business. Accounting is sometimes called the language of business as it communicates timely information about an enterprise for decision-making to various users. Users of accounting information can be broadly divided into two types, namely, external users and internal users. Internal users of accounting information are those persons who directly manage the business. Internal users include management at the top, middle and lower levels. Information required at different levels of management is different since each group has a different set of informational needs keeping in view the different types of decisions they are taking. For example, the top level may be more concerned with strategic planning. Internal users are concerned with management accounting. External users of accounting information include lenders, shareholders, investors, external auditors, creditors, government. The main source of information for external users are annual, half yearly and quarterly financial statements of the organisation. Only the annual financial statements are audited reports. These reports

are prepared to show the performance and position of the business at the end of the accounting period. External users are interested in financial accounting.

1.11.1 Management Accounting

Management accounting is primarily concerned with the use of accounting information to assist managers in decision-making and provides information meant for internal use. Unlike financial accounting, management accounting information is usually confidential and is used within an organisation. Managers gather the data and analyse, process, interpret and communicate the results so that this information can be used for making sound internal decisions, e.g. financial decisions, marketing decisions, production decisions, and resource allocation decisions. Management accounting draws information from financial accounting. The external users have to rely on financial statements (balance sheet, profit and loss account) as their principal source of information about an organisation. In addition, it develops information to enable management to take decisions which is futuristic in nature and helps to get a clear picture of the whole organisation.

Management accounting helps the different systems in an organisation to work in a successful coordinated manner by acting as a communication link between various systems. Accounting integrates the information from other systems such as marketing, production, research and development in a manner that it is expressed in financial terms so as to enable corporate decision making. Management accounting reports are usually designed for making a specific decision and provide information for relatively short periods of time. They are not governed by any set of principles and are not required by law. Since management accounting is not required by law, the reports prepared by management accountants are subject to a cost benefit analysis, i.e. the perceived benefits of the report should exceed the costs. Also, as no external standards are imposed on information provided to internal users, management accounting reports run the risk of being subjective. Management accounting information may be monetary or non-monetary.

1.11.2 Financial Accounting

Financial accounting information is designed primarily for use by persons outside the firm, such as creditors, stockholders, owners, governmental agencies, and the general public. Most companies publish financial accounting data through a set of general purpose statements known as the company's annual report. These statements provide most of the information needed by external users. Specialised needs of specific users are satisfied through supplementary reports which are published at various intervals. Financial accounting provides information that covers relatively long periods of times like one year. In addition, financial accounting information is historical in nature and the financial accounting reports concentrate more on the results of past decisions. Financial accounting is governed by the GAAP that are a common set of accounting principles, standards and procedures that companies use to prepare their financial statements. The GAAP are followed by companies so that when the investors are analysing the financial statements for investment purposes, they have a minimum level of consistency, for example in revenue recognition, Balance Sheet item classification and so on. However, a key aspect of the GAAP is that it also accommodates variation in applied accounting methods. Accountants can use either the Last in First-out (LIFO) or First-in First-out (FIFO) method of inventory valuation that could lead to different net profit figures for the company. Financial accounting reports are developed from the basic accounting system, which is designed to highlight the data about completed transactions. Financial accounting concentrates on the organisation as a whole. To summarize both management and financial accounting deal with economic events. Both are concerned with revenues and expenses, assets,

liabilities and cash flows. Also, both require quantifying the results of economic activity. In actual practice, it is difficult to classify information as being either exclusively financial or managerial. The two accounting systems are part of the total business system and hence they normally overlap. For example, much of the future planning data associated with management accounting is based on the historical information which is retained for financial accounting purposes.

1.11.3 Cost Accounting

According to the Chartered Institute of Management Accountants, London, Cost Accounting is the process of accounting for costs from the point at which its expenditure is incurred or committed to the establishment of the ultimate relationship with cost units. It embraces the preparation of statistical data, the application of cost control methods and the ascertainment of the profitability of the activities carried out or planned.

1.11.4 Distinction between Management Accounting and Financial Accounting

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

- **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 shareholders, creditors, government etc. But the objective of management accounting is to provide information for the internal use of management.
- **Performance Analysis:** Financial accounting is concerned with the overall performance of the business. On the other hand, management accounting is concerned with the departments or divisions. It reports about the performance and profitability of each of them.
- **Data Used:** Financial accounting is mainly concerned with the recording of past events whereas management accounting is concerned with future plans and policies.
- **Nature:** Financial accounting is based on measurement while management accounting is based on judgment. Because of this, financial accounting is more objective and management accounting is more subjective.
- **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 intended for internal use.
- **Legal Compulsion:** Financial accounting is compulsory for all joint companies but management accounting is only optional.
- **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 policies, etc.
- **Control:** Financial accounting will not reveal whether plans are properly implemented. Management accounting will reveal the deviations of actual performance from plans. It will also indicate the causes for such deviations.

1.11.5 Distinction between Cost Accounting and Management Accounting

- **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.

- **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.
- **Data Used:** In cost accounting, only those transactions that can be expressed in figures are included. Only quantitative aspect is recorded in cost accounting. But management accounting uses both quantitative and qualitative information.
- **Nature:** Cost accounting uses both past and present figures. But management accounting is concerned with the projection of figures for the 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 analyses and presents the data in a more meaningful and informative manner. It helps the management to use the cost data effectively.

1.12 TOOLS AND TECHNIQUES USED IN MANAGEMENT ACCOUNTING

Management accounting is mainly a discipline concerned with the analysis and interpretation of financial and non-financial data to take decisions relating to business problems. Certain tools are used to analyze the accounting data. Some of the management tools are used for decisions-making by the management experts are: Ratio analysis, Comparative financial and income statement, Common size income and balance sheet, Trend analysis, Funds flow statement, Cash flow statement, Break even analysis, Budgetary control, Standard costing and Marginal costing, Activity-based costing, Objective costing, Economic value added. These tools and techniques are discussed in the following paragraphs:

1. **Financial Analysis:** This is one major technique adopted by every management accountant to know the financial position, financial status of the business concern or organisation. This technique involves the following two operations:
 - ❖ **Financial Planning:** Financial planning is deciding in advance, the course or line of action for the future in respect of the financial management of a concern. It includes estimating the amount of finance or capital to be raised, determining the forms and the proportionate amount of the securities to be issued for raising the capital and laying down the policies as to the administration of the financial plan, laying down the policies as to the administration of the financial plan.
 - ❖ **Other Steps:**
 - ◆ Projection of financial statements
 - ◆ Determinations of funds needed
 - ◆ Forecast the availability of funds
 - ◆ Establish and maintain systems of controls
 - ◆ Develop procedures
 - ◆ Establish performance-based management compensation system

2. **Budgetary Control:** A budget is basically a cost plan relating to a period of time. Time is a fundamental factor in any budget. It is also important to appreciate the implication of the word 'cost'. A cost is the value of economic resources used. Actually, a cost plan is a resource plan in terms of value. It is to be appreciated that a plan alone is usually quite inadequate and there must be a means of monitoring and keeping it on the required course. We have alluded to this being achieved by budgetary control, which specifically is concerned with:
 - ❖ The comparison of actual results against budget.
 - ❖ The identification, recording and communication of controllable differences.
 - ❖ The taking of corrective action either to maintain budget levels or to re-plan to meet recent developments. The comparison of actual against budget performance requires that the budget is divided into twelve monthly periods or four weekly periods against which data collected about actual results for each period may be compared. Thus, the budgetary control directs business operation in desired direction.
3. **Funds Flow Statement:** 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 an accounting period. This tool gives the insight in to statement of sources and application of funds. This technical device designed to analyze the changes in the financial condition of a business enterprise between two dates. Comparative analysis of the financial data can be made easily with the help of funds flow statement.
4. **Cost Accounting:** This helps management to conduct performance appraisal and also facilitates in formulating price policies. Standard cost is compared with actual and historical cost. On the basis of this, management can take a decision to plug the loopholes in spending and sound expenditure norms can be formulated. Especially, in the realm of cost accounting, standard costing and marginal costing techniques are adopted in management accounting.
 - ❖ **Standard cost:** Standard cost means the predetermined costs based on scientific analysis of various expenses. The actual expenditure incurred in producing a product or in any job or process or contract should attain the level of standard cost. Standard costs are only estimates and they tell as to what should be the cost under ideal conditions. Actual cost is compared with the standard cost and the 'variance' (difference between actual cost and standard cost which is positive or negative) will tell the management to control the cost on sound lines.
 - ❖ **Marginal cost:** Additional expenditure incurred to produce additional unit of goods is called marginal cost. This is comparatively a new area in the field of accounting. This is adopted in 'cost-volume-profit' analysis and also in break-even analysis. This is basically connected with variable cost (expenditure incurred on variable item, like raw material) and the management can control the variable cost with the help of this and sound decisions regarding production and distribution.
5. **Inflation Accounting:** This is also called revaluation accounting. Many management accountants are using this technique to maintain the capital in real terms. Management accountants, in order to meet the needs of the changing business environment and economy, revalue the assets of the enterprise at current prices and show the increase or decrease in the value of capital. So inflation accounting has become another technique of management accounting.

6. **Statistical Tools:** Statistical and graphical techniques are employed in decision-making process. Today, management accountants continuously use these techniques to solve management and business problems. Sales chart, investment chart, master charts, current assets chart are the some of the graphical techniques, and break-even point, linear programming, regression equations are some of the statistical techniques are used for finding out solutions for business problems.
7. **Reports:** The management accountant collects information from different sources and compiles them and transmits them to the top management through an effective communication system called 'Reports'. He cannot all the time speak orally to the top management on various decision-making activities. The information is to be recorded and made available to all levels of management to facilitate them to carry out their work effectively. This job will be made in the form of preparing reports relating to actual facts and submit them to appropriate authorities. Thus, reports help in proper planning, controlling and in decision-making. They translate the activities involving people issues and even abstract relationship into monetary terms.

1.13 THE DECISION-MAKING PROCESS

Since information produced by management accountants must be judged in the light of its ultimate effect on the outcome of decisions, it is necessary to understand the decision making process.

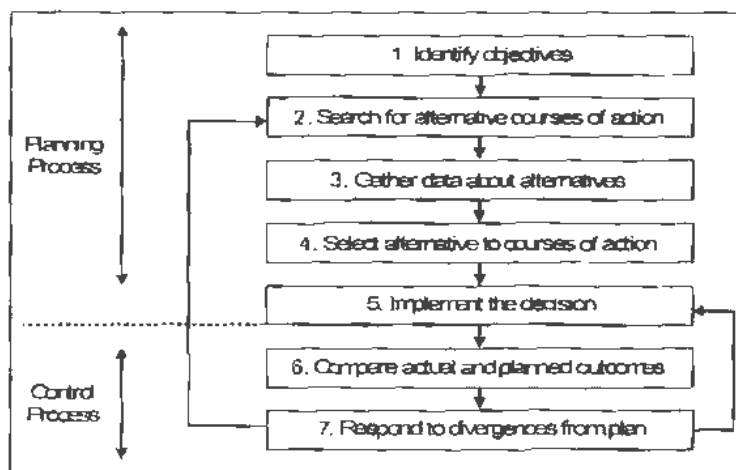


Figure 1.2: The Decision-making Process

Figure 1.2 presents a diagram of a decision-making model. The first five stages represent the decision-making or the planning process. Planning involves identify the objectives, search for alternative courses of action, gather data about alternatives, select alternative courses of action and implement the decision. The final two stages represent the control process which is the process of measuring and correcting actual performance to ensure that the alternatives that are chosen and the plans for implementing them are carried out.

1. **Identifying Objects:** The first stage of decision-making process is to specify the goals or objectives of the organisation. The objectives of the firm are to maximise profits for owners of the firm or more precisely the maximization of shareholders wealth. Some experts suggest that the firms seek to maximize the value of future net cash inflows (that is, future cash receipts less cash payments) or to be more precise the present value of future net cash inflows. The reasons for choosing these objectives are as follows:

- ❖ It is unlikely that any other objective is as widely applicable in measuring the ability of the organisation to survive in the future.
 - ❖ It is unlikely that maximizing the present value of future cash flows can be realized in practice but by establishing the principles necessary to achieve this objective one can learn how to increase the present value of future cash flows.
 - ❖ It enables shareholders as a group to know how much the pursuit of other goals is costing them by indicating the amount of cash distributed among the members of different groups.
2. **The Search for Alternative Courses of Action:** The second stage is a search for a range of possible courses of action (or strategies) that might enable the objectives to be achieved. In particular, the company should consider one or more of the following courses of action:
- ❖ Developing new products for sale in existing markets
 - ❖ Developing new products for new markets
 - ❖ Developing new markets for existing products
3. **Collect Data about Alternatives:** When potential areas of activity are identified, management should assess the potential growth rate of the activities, the ability of the company to establish market share and the cash flows for each alternative activity for various states of nature (*i.e.*, uncontrollable factors like economic boom, high inflation, recession, the strength of the competition and so on).
- The course of action selected by the firm will commit its resources for a lengthy period of time and how the overall place of the firm will be affected within its environment – that is, the products it makes, the markets it operates in and its activity to meet future changes. These decisions are referred as long run or strategic decisions. Some decisions do not commit the firms' resources for a lengthy period of time. Such decisions are short-term or operating decisions and are normally the concern of operating level managers. Examples of short-term decisions include the following:
- ❖ What selling price should be set for the firm's products?
 - ❖ How much units to be produced of each product?
 - ❖ What media should be used for advertising the firm's products?
 - ❖ What level of service shall we offer customers in terms of the number of days required to deliver an order and the after-sales service?
4. **Select Appropriate Alternative Courses of Action:** In practice, decision-makers choose between competing alternative courses of action and selecting the alternatives that satisfies the objectives of an organisation. If our objective is to maximise future net cash inflows, we can rank the alternatives in terms of net cash benefits and those showing the greatest benefits subject to any qualitative factors.
5. **Implementation of the Decisions:** This stage refers to the implementation as part of the budgeting process. The budget is a financial plan for implementing the various decisions that management has made. The budgets are expressed in terms of cash outflows and cash inflows and sales revenues and expenses.
6. **Comparing Actual and Planned Outcome and Responding to Variations from Plan:** The management process of control consists of the measurement, reporting and subsequent correction of performance to ensure that the firm's objectives and plans are achieved.

To monitor performance, the accountant produces performance reports and presents them to the appropriate managers who are responsible for implementing the various decisions. Performance reports provide feedback information by comparing planned and actual outcomes. Such reports highlight those activities that do not conform to plans, so that managers can focus on those items. This process is known as "Management by Exception".

The process of taking corrective action so that actual outcomes conform to planning outcomes or the modification of the plans if the comparisons indicate that actual outcomes do not conform to plan outflows is indicated by the arrowed lines in Fig 1.2 linking stages 7 & 5 and 7 & 2. These arrowed lines represent "feedback loops".

Check Your Progress

Fill in the blanks of the following:

1. _____ is concerned with control over inventory from the time, it is received till its disposal.
2. _____ has enabled preparation, processing and analysis of data and compilation of reports and decision-making easier.
3. _____ is a principle of management according to which the information given to top management is minimised by transmitting only such information which needs decision by the management.
4. A _____ is a quantitative expression of management's short-term intentions.
5. Accounting is sometimes called the _____ as it communicates timely information about an enterprise for decision-making to various users.
6. A _____ is the value of economic resources used.

1.14 LET US SUM UP

- Management accounting today is a branch of accounting. Financial accounting was found efficient for management decision-making because it reported the state of affairs of the company as a whole posthumously. This was all right for the owners and other outsiders.
- Management accounting is the accounting system for making decisions of the business enterprise. Management accounting furnishes the necessary information to assist the business enterprise to make rational decisions through the development of policies and procedures in order to meet the day to day commitments of the enterprise.
- 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.
- The scope of management accounting is broader which draws concept and applications from various disciplines.
- Functions of management accounting include all activities connected with collecting, processing, interpreting and presenting information to the management.

- Managers need financial information in order to plan for the activities of the business. Accounting is sometimes called the language of business as it communicates timely information about an enterprise for decision-making to various users.
- Users of accounting information can be broadly divided into two types, namely, external users and internal users. Unlike financial accounting, management accounting information is usually confidential and is used within an organisation.
- Managers gather the data and analyse, process, interpret and communicate the results so that this information can be used for making sound internal decisions, e.g. financial decisions, marketing decisions, production decisions, and resource allocation decisions.
- Financial accounting information is designed primarily for use by persons outside the firm, such as creditors, stockholders, owners, governmental agencies, and the general public. Most companies publish financial accounting data through a set of general purpose statements known as the company's annual report.

1.15 LESSON END ACTIVITY

“The main objective of management accounting is to appropriate policy and to formulate plans in order to achieve desired objectives of the company.” Do you agree with the statement? Illustrate your answer.

1.16 KEYWORDS

Management Accounting: Management accounting is the presentation 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.

Cost Accounting: Cost Accounting is the process of accounting for costs from the point at which its expenditure is incurred or committed to the establishment of the ultimate relationship with cost units.

Funds Flow Statement: The funds flow statement is a report on the movement of funds or working capital.

Inflation Accounting: In inflation accounting, one records price changes that affect the purchasing power of current assets and the value of the company's long-term assets and liabilities.

1.17 QUESTIONS FOR DISCUSSION

1. Write briefly of the evaluation of management accounting.
2. Explain the scope of management accounting.
3. State the functions of management accounting.
4. “Management accounting serves as a tool to management.” Analyze this statement.
5. Write on the objectives of management accounting.
6. Explain the importance of management accounting.
7. Write briefly the scope of management accounting.
8. Briefly explain the characteristics of management accounting.
9. Write briefly on the role of the management accountant.

10. Distinguish between the management accounting and cost accounting.
11. List out the contradictory areas of interest in between management accounting and financial accounting.
12. Write about the advantages and limitations of management accounting.

Check Your Progress: Model Answer

1. Inventory Control
2. Computer software
3. Management by Exception
4. Budget
5. Language of business
6. Cost

1.18 SUGGESTED READINGS

Charles T. Horngren, *Introduction to Management Accounting*, Prentice Hall, Englewood Cliff, New Jersey 07632.

Ray H. Garrison, *Managerial Accounting*, Homewood, Illinois 60435.

Robert S. Kaplan and Anthony A. Atkinson, *Advanced Management Accounting*, (Prentice Hall, Englewood Cliff, New Jersey 07632).

Dr. S. N. Maheshwari, *Management Accounting for Bankers*, Sultan Chand & Sons, New Delhi: 110002.

N. K. Kulshrestha, *Management Accounting Concepts & Cases*, Tata McGraw Hill Publishing Co. Ltd., New Delhi.

UNIT II

LESSON

2

FINANCIAL STATEMENT ANALYSIS

CONTENTS

- 2.0 Aims and Objectives
- 2.1 Introduction
- 2.2 Meaning of Analysis of Financial Statements
- 2.3 Meaning of Financial Statement Interpretation
 - 2.3.1 Procedure for Analysis and Interpretation
- 2.4 Characteristics of Financial Statements
- 2.5 Objective and Importance of Financial Statements
- 2.6 Nature of Financial Statements
- 2.7 Limitations of Financial Statements
- 2.8 Methods of Financial Statement Analysis
 - 2.8.1 Comparative Financial Statement Analysis
 - 2.8.2 Common size Statements Analysis
 - 2.8.3 Trend Analysis
 - 2.8.4 Fund Flow Analysis
 - 2.8.5 Cash Flow Analysis
 - 2.8.6 Ratio Analysis
 - 2.8.7 Break-even Analysis
- 2.9 Analysis and Interpretation of Financial Statements
- 2.10 Types of Financial Analysis
 - 2.10.1 On the Basis of Material Used
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- 2.11 Let Us Sum Up
- 2.12 Lesson End Activity
- 2.13 Keywords
- 2.14 Questions for Discussion
- 2.15 Suggested Readings

2.0 AIMS AND OBJECTIVES

After studying this lesson, you should be able to:

- Explain the meaning of analysis and interpretation of financial statements
- Understand the procedure for analysis and interpretation of financial statements

- Discuss the types of analysis of financial statements
- Explain various methods of financial statement analysis and interpretation

2.1 INTRODUCTION

The financial statements are affording many facts though they are absolute and concrete in terms; but not in a position to interpret and analyse the stature of the enterprise. To analyse and interpret, the financial statement analysis is being applied across the financial statements. Under the financial statement analysis, the information available are grouped together in order to pull out the meaningful relationship which is already available among them; for interpretation and analysis. We know that the financial statements include – Trading and Profit & Loss Account, Profit and Loss Appropriation Account and the Balance Sheet. These statements give only the information to the management regarding the financial conditions, and profits which help the management to control the business. Therefore, for the better understanding of the financial statements, the self-appraisal of the business and for the better judgement of outsiders regarding the performance of the company, the analysis of the financial statements is done.

2.2 MEANING OF ANALYSIS OF FINANCIAL STATEMENTS

Analysis of financial statement is the process of critically examining of the data of the financial accounts. The main function of this analysis is to find the strengths and weakness of the business by using different tools. Financial analysis serves the interests of the shareholders, debentures, long-term and short-term investors, bankers, creditors, politicians, journalists, legislators, economists and researchers by classifying, re-arranging and re-grouping the financial statements. Thus it helps the interested parties to reach on significant conclusion.

In the words of John M. Myer – *“Financial statement analysis is largely a study of relationship among the various financial factors in a business as disclosed by a single set of statements and a study of the trends of these factors as shown in a series of statements”*.

As per Kennedy and McMuller, *“Financial statement analysis attempts to unveil the meaning and significance of the items composed in profit and loss account and balance sheet so as to assist the management in the formation of sound operating policies”*.

Thus, the financial statement analysis refers to the classification, diagnosis and comparison of the data of financial statements so that the profitability, financial position managerial efficiency and weakness of the business may be disclosed. Financial statement analysis is the process of examining relationships among financial statement elements and making comparisons with relevant information. It is a valuable tool used by investors and creditors, financial analysts, and others in their decision-making processes related to stocks, bonds, and other financial instruments. The goal in analyzing financial statements is to assess past performance and current financial position and to make predictions about the future performance of a company. Investors who buy stock are primarily interested in a company's profitability and their prospects for earning a return on their investment by receiving dividends and/or increasing the market value of their stock holdings. Creditors and investors who buy debt securities, such as bonds, are more interested in liquidity and solvency: the company's short-and long-run ability to pay its debts. Financial analysts, who frequently specialize in following certain industries, routinely assess the profitability,

liquidity, and solvency of companies in order to make recommendations about the purchase or sale of securities, such as stocks and bonds.

Analysts can obtain useful information by comparing a company's most recent financial statements with its results in previous years and with the results of other companies in the same industry. Three primary types of financial statement analysis are commonly known as horizontal analysis, vertical analysis, and ratio analysis which are explained in below given sections.

2.3 MEANING OF FINANCIAL STATEMENT INTERPRETATION

Interpretation is relating to the drawing of conclusion, inference and criticism of the analysed financial data. Interpretation comes next to the analysis of financial statements. Interpretation of financial statement is not possible without analysis of financial data.

In the words of Spiecer and Peglar, *"Interpretation of accounts may be defined as the art and science of translating the figures, in such a way, as to reveal the financial strength and weakness of the business and the causes which have contributed therein"*.

From this definition it is clear that the interpretation of financial data includes the reporting on the analysed financial figures regarding the weakness and strength of the business. It also gives the reasons and responsible factors of such weakness and the strength of these figures.

Analysis and interpretation of financial statements are two different terms but are closely associated because without interpretation analysis is useless and without analysis interpretation is impossible. Analysis not only classifies the financial data into simple form but also helps in creating a relationship of one accounting figure with another so that the meaningful conclusion of the financial data may be drawn by the interpreter. For this purpose the interpreter must be well experienced and quite intelligent to read and understand the analysed data.

As per Kennedy and McMullar, *"The analysis and interpretation of financial statements are an attempt to determine the significance and meaning of financial statements data so that a forecast may be made of the prospects for future earnings, ability to pay interest and debt maturities (both current and long-term) and probability of a sound dividend policy"*.

2.3.1 Procedure for Analysis and Interpretation

Generally the following procedure is adopted for the analysis and interpretation of financial statements:

1. Before the analysis, the objective and extent of analysis and interpretation should be determined. Extent of analysis is based on the objectives of analysis. Suppose the objective of the analysis and interpretation is to check the profitability, profit and loss account will be analysed.
2. All the required financial data should be collected and studied from financial statements. If required, the financial statements should be rearranged or reorganized to find the same nature items.
3. To reduce the complexity of the financial statements, the figures of the financial statements should be approximated to the thousand or hundred.

4. To create a relationship among the income statement and financial position statement, different analysis techniques as ratio analysis, trend and common size should be used.
5. If there are given some additional information relating to interpretation except financial statement those must also be collected.
6. If it is required for the comparison, the financial data should be rearranged in the tables in a logical way.
7. To interpret the financial data and to draw a conclusion, the proper tool (technique) as average comparative statement should be used.
8. The analysed trend of the data should be interpreted keeping in mind the economic fact of the business.
9. The interpreted data and conclusion drawn should be presented to the management in a brief and clear report.

2.4 CHARACTERISTICS OF FINANCIAL STATEMENTS

Financial statements have certain characteristics so that they can serve the purpose and objectives for which they are made. Following are the characteristics of the financial statements:

- **Relevance:** The financial statements must be relevant for the purpose they are supposed to serve. Financial statements contain accurate and relevant information according to their uses.
- **Accuracy and Freedom from Bias:** Well prepared financial statements convey a full and correct idea about the progress, position and prospects of an enterprise. Inaccuracy besides invoking legal consequences may also defeat the objectives for which the statements are meant.
- **Comparability:** Comparability increases the utility of financial statements. Financial statements contain information so that they can be comparable for assessing the progress and position of the business enterprise. Comparisons with other similar concerns or the industry reveal the strength of the enterprise vis-à-vis other firms and industry.
- **Consistency:** The financial statements for a firm should be consistent over a time span. Here, consistency means rules and procedural choice exercised by the accountants.
- **Authenticity of the Financial Statements:** Generally the financial statements of the companies are reviewed and authenticated by an independent auditor. Statements duly audited and certified by recognised and established auditors are accepted at their face value and are deemed to be more reliable.
- **Compliance with Law:** Financial statements meet the requirements of law, if any, in the matter of form, contents and disclosures, procedures and methods. In India, companies are required to present their financial statements according to the provisions of Section 211 of the Companies Act, 1956.
- **Analytical Presentation:** The financial statements are prepared in a classified form so that a better and meaningful analysis can be made. Proper classification helps in tracing and understanding in causes of the results as shown in these statements.
- **Generally Accepted Principles:** Since the financial statements are meant for the use of a wider clientele, they have general acceptability and understandability.

This acceptability and understandability come as these statements are prepared in accordance with the "generally accepted accounting principles". This increases the reliability of these statements and also adds to the confidence of the users.

2.5 OBJECTIVE AND IMPORTANCE OF FINANCIAL STATEMENTS

Objectives of financial statement analysis are as follows:

- (i) **Knowing Profitability of Business:** Financial statements are required to ascertain whether the enterprise is earning adequate profit and to know whether the profits have increased or decreased as compared to the previous year(s), so that corrective steps can be taken well in advance.
- (ii) **Knowing the Solvency of the Business:** Financial statements help to analyse the position of the business as regards to the capacity of the entity to repay its short as well as long term liabilities.
- (iii) **Judging the Growth of the Business:** Through comparison of data of two or more years of business entity, we can draw a meaningful conclusion as regard to growth of the business. For example, increase in sales with simultaneous increase in the profits of the business, indicates a healthy sign for the growth of the business.
- (iv) **Judging Financial Strength of Business:** Financial statements help the entity in determining solvency of the business and help to answer various aspects viz., whether it is capable to purchase assets from its own resources and/or whether the entity can repay its outside liabilities as and when they become due.
- (v) **Making Comparison and Selection of Appropriate Policy:** To make a comparative study of the profitability of the entity with other entities engaged in the same trade, financial statements help the management to adopt sound business policy by making intra firm comparison.
- (vi) **Forecasting and Preparing Budgets:** Financial statement provides information regarding the weak-spots of the business so that the management can take corrective measures to remove these shortcomings. Financial statements help the management to make forecast and prepare budgets.
- (vii) **Communicating with Different Parties:** Financial statements are prepared by the entities to communicate with different parties about their financial position. Hence, it can be concluded that understanding the basic financial statements is a necessary step towards the successful management of a commercial enterprise.

2.6 NATURE OF FINANCIAL STATEMENTS

According to the American Institute of Certified Public Accountants, financial statements reflect "a combination of recorded facts, accounting conventions are personal judgements and the judgements and conventions applied affect them materially". This implies that data exhibited in the financial statements are affected by recorded facts, accounting conventions and personal judgements.

- **Recorded Facts:** The term recorded facts which have been recorded in the accounting books. Facts which have not been recorded in the financial books are not depicted in the financial statements, however material they might be. For example, fixed assets are shown at cost irrespective of their market or replacement price since such price is not recorded in the books.

- **Accounting Conventions:** Accounting conventions imply certain fundamental accounting principles which have been sanctified by long usage. For example, on account of the convention of 'Conservation', provision is made for expected losses but expected profits are ignored. This means that the real financial position of the business may be much better than what has been shown by the financial statements.
- **Personal Judgement:** Personal judgements have also an important bearing on the financial statement. For example, the choice of selecting a method of depreciation lies on the accountant. Similarly, the mode of amortisation of fictitious assets depends on the personal judgment of the accountant.

2.7 LIMITATIONS OF FINANCIAL STATEMENTS

Financial statements are prepared with the object of presenting a periodical review or report on the progress by the management and deal with the (i) status of the investments in the business, and (ii) results achieved during the period under review. However, these objectives are subject to certain limitations as given below:

- **Financial Statements are Essentially Interim Reports:** The profit shown by Profit and Loss Account and the financial position as depicted by the Balance Sheet is not exact. The exact position can be known only when the business is closed down. Again, the existence of contingent liabilities, deferred revenue expenditure makes them more imprecise.
- **Accounting Concepts and Conventions:** Financial statements are prepared on the basis of certain accounting concepts and conventions. On account of this reason the financial position as disclosed by these statements may not be realistic. For example, fixed assets in the balance sheet are shown on the 'going concern concept'. This means that value placed on fixed assets may not be same which may be realised on their sale. On account of convention of conservation the income statement may not disclose true income of the business since probable losses are considered while probable incomes are ignored.
- **Influence of Personal Judgment:** Many items are left to the personal judgment of the accountant. For example, the method of depreciation, mode of amortisation of fixed assets, treatment of deferred revenue expenditure-all depends on the personal judgment of the accountant. The soundness of such judgment will necessarily depend upon his competence and integrity. However, the convention of consistency acts as a controlling factor on making indiscreet personal judgments.
- **Disclose only Monetary Facts:** Financial statements do not depict those facts which cannot be expressed in terms of money. For example, development of team of loyal and efficient workers, enlightened management, the reputation and prestige of management with the public, are matters which are of considerable importance for the business, but they are nowhere depicted by financial statements.

In the next few pages, we are discussing about the various techniques of analyzing and interpreting the financial statements. However, while analyzing and interpreting one must keep in view the above limitations of financial statements.

2.8 METHODS OF FINANCIAL STATEMENT ANALYSIS

The entire financial statement analysis can be classified into various categories:

- Comparative financial statements
- Common size financial statements

- Trend percentages
- Fund flow statements
- Cash flow statements
- Ratio analysis
- Break-even Analysis

2.8.1 Comparative Financial Statement Analysis

These statements are very important for the analysis and interpretation. Inter-firm financial statements can be prepared for the comparison of the results and financial position of two firms. Similarly, the inter-period financial statements can be prepared. Inter-period comparison is done very easily by inter-period financial statements. For the preparation of inter-period comparison the accounting data of the different periods are shown in the different columns along with the absolute and relative changes. Relative changes are calculated in the percentage based on the previous year. Among the comparative financial statements the following statements are included:

- Comparative Balance Sheet
- Comparative Profit and Loss Account
- Comparative Statement of Changes in Working Capital
- Comparative Statement of Cost of Production

Comparative Balance Sheet

As per Prof. Fulke, "*Comparative Balance Sheet is the study of the trend of the same business enterprise on the different dates*". In the comparative balance sheet the changes in the amount of various items of the balance sheets of the same business as liabilities, assets and owner's equity in the two periods are presented in such a way so that the users of the financial statements may observe the changes easily. In the single balance sheet only the closing balances of different accounts are shown while in the comparative balance sheet the closing balances of the different items are showed along with their absolute changes and relative changes.

Comparative balance sheet is very useful to study the trends in the changes of items. The comparative balance sheet is more concerned with the changes in assets, liabilities and owner's equity and their trends while in the single balance sheet is concerned with the book values of the items and the financial position of the business. However, the comparative balance sheet does not show the relationship of one item with the other items.

To prepare the comparative balance sheet, the four columns are drawn. In the first two columns of amount the absolute data of the two balance sheets are showed and in the third column increase or decrease in the assets and liabilities as well as owner's equity are showed and in the fourth and last column the percentage of increase or decrease is showed. After preparing the comparative balance sheet the analyst gives his interpretation regarding the financial position (short term and long term) and profitability of the business. Comparative balance sheet may be understood easily in the following example.

Example: The Balance Sheets of Kavita Ltd. for the year ending 31st Dec. 2006 and 2007 are as follows:

Liabilities	31 st Dec. 2006	31 st Dec. 2007	Assets	31 st Dec. 2006	31 st Dec. 2007
	₹	₹		₹	₹
Equity Share Capital	8,000	10,000	Land & Building	4,000	6,000
Capital Reserve	300	1,800	Plant & Machinery	2,000	3,000
10% Debentures	1,200	1,600	Investment	1,200	1,600
Creditors	500	600	Debtors	800	1,000
			Stock	1,600	1,800
			Cash	400	600
Total	10,000	14,000	Total	10,000	14,000

Draw a comparative Balance Sheet showing increase and decrease both in absolute figures and in percentage and then interpret the changes.

Solution:

Comparative Balance Sheet of Kavita Ltd.
(as on 31st Dec. 2007 and 2007)

	31 st Dec. 2006	31 st Dec. 2007	Increase or Decrease	Increase or Decrease in %
	₹ (000)	₹ (000)	₹ (000)	
Assets				
Fixed Assets:				
Land and Building	4,000	6,000	+2,000	$\frac{2000}{4000} \times 100 = 50$
Plant & Machinery	2,000	3,000	+1,000	$\frac{1000}{2000} \times 100 = 50$
Total Fixed Assets	6,000	9,000	3,000	$\frac{3000}{6000} \times 100 = 50$
Current Assets:				
Investment	1,200	1,600	400	$\frac{200}{600} \times 100 = 33.33$
Debtors	800	1,000	200	$\frac{200}{800} \times 100 = 25$
Stock	1,600	1,800	200	$\frac{200}{1600} \times 100 = 12.5$
Cash	400	600	200	$\frac{200}{400} \times 100 = 50$
Total of Current Assets	2,800	3,400	600	$\frac{600}{2800} \times 100 = 21.43$
Total Assets	10,000	14,000	4,000	$\frac{4000}{10000} \times 100 = 40$
Liabilities				
Equity Share Capital	8,000	10,000	2,000	$\frac{2000}{8000} \times 100 = 25$
Reserve and Surplus	300	1,800	1,500	$\frac{1500}{300} \times 100 = 500$
10% Debentures (Secured Loan)	1,200	1,600	400	$\frac{400}{1200} \times 100 = 33.33$

Contd .

Total of Fixed Liabilities	9,500	13,400	3,900	$\frac{3900}{9500} \times 100 = 41.05$
Creditors	500	600	100	$\frac{100}{500} \times 100 = 20$
Total Liabilities	10,000	14,000	4,000	$\frac{4000}{10000} \times 100 = 40$

Interpretation:

1. During the current year the company has increased its fixed assets by 50% by issuing shares and debenture i.e. 58.33%.
2. There is an increase of 33.33% in investment, 21.43% in current assets, and 20% in current liabilities and 500% in reserve and surplus.
3. The financial position of the company is well.

Comparative Profit and Loss Account or Comparative Income Statement

The profit and loss account gives the summary of the results of the business activities, but it does not convey the changes in the earning of the business. The comparative income statement serves this purpose. It shows the operating results for a number of accounting periods along with the absolute and relative changes.

To prepare the comparative income statement, the same columns are drawn as in the case of comparative balance sheet. First two columns are kept for the original figures and next two for the changes and percentage changes. Comparative income statements are given in the following example.

Example: The income statement of Rohit Ltd. is given for the year ending on 31st Dec. 2006 and 2007. Rearrange the figures in comparative form and study the profitability position of the concern:

	Year	
	2006	2007
	₹ (000)	₹ (000)
Net Sales	1,700	2,200
Cost of Goods Sold	1,000	1,200
Operating Expenses:		
General and Administrative Expenses	200	220
Selling Expenses	180	200
Non-operating Expenses:		
Interest paid	60	80
Income tax	160	180

Solution:

Comparative Income Statement
(for the year ended 31st Dec. 2006 and 2007)

	31 st Dec. 2006 (₹ 000)	31 st Dec. 2007 (₹ 000)	Increase (+) Decrease (-)	Increase (+) Decrease (-) Percentage (%)
Net Sale	1,700	2,200	+500	$\frac{500}{1700} \times 100 = 29.41$
Less: Cost of Goods Sold	1,000	1,200	+200	$\frac{200}{1000} \times 100 = 20.00$
Gross Profit (a)	700	1,600	+300	$\frac{300}{700} \times 100 = 42.88$
<i>Operating Expenses:</i>				
General and Administrative Expenses	200	220	+20	$\frac{20}{200} \times 100 = 10$
Selling Expenses	180	200	+20	$\frac{20}{180} \times 100 = 11.11$
Total Operating Exp. (b)	380	420	+40	$\frac{40}{380} \times 100 = 10.53$
Operating Profit (a-b)	320	580	+260	$\frac{260}{320} \times 100 = 81.25$
Less: Interest paid	60	80	+20	$\frac{20}{60} \times 100 = 33.33$
Net Profit before tax	260	500	+240	$\frac{240}{260} \times 100 = 92.31$
Less: Income tax	160	180	+20	$\frac{20}{160} \times 100 = 12.5$
Net Profit after Tax	100	320	+220	$\frac{220}{100} \times 100 = 220$

Interpretation:

There is an increase in the sales of 29.41% while the cost of goods sold has increased only 20%. As a result there is an increase of 42.88% in gross profit.

In spite of increasing the total operating expenses by 10.53%, the operating profit has increased by 81.25%.

In spite of increasing the non-operating expenses by 33.33% and tax liability by 12.5%, PAT has increased by 220%.

In overall the profitability of the company is satisfactory.

Comparative Statement of Cost of Production

Comparative statement of cost of production is prepared to analyse and interpret the cost and its components. It is the part of comparative income statement. This statement is prepared to show the absolute change in the different elements of cost and the relationship of the different elements of cost with total cost of production. On the basis of this statement, the cost of production is controlled.

The first two columns of this statement are kept for the actual figures of cost of two periods and the next two columns show the percentage of each element of cost with total cost of production. Last two columns show the increase and decrease with their percentages. This is explained in the following examples:

Example: Following is the statement of cost of goods manufactured by Raj Co. Ltd. present the data in suitable form for analysis:

	2007 (₹)	2008 (₹)
Raw materials.		
Opening Stock	46,000.00	42,000.00
Purchases	4,74,000.00	4,30,000.00
Closing Stock	5,20,000.00	4,72,000.00
	52,000.00	46,000.00
Material Consumed	4,68,000.00	4,26,000.00
Direct Labour	6,32,000.00	5,06,000.00
Manufacturing Expenses	2,84,000.00	2,42,000.00
	13,84,000.00	11,74,000.00
Valuation of Goods in Process of Stock:		
Opening of year	28,000.00	26,000.00
Closing of year	32,000.00	28,000.00
Increase	4,000.00	2,000.00
Cost of Goods Manufactured	13,80,000.00	11,72,000.00

Solution:

Raj Company Limited
Comparative Statement of Cost of Goods Manufactured

Particulars	Amount		% of cost of Goods Manufactured		Increase (+) Decrease (-)	
	2007 ₹ in 000	2006 ₹ in 000	2007	2006	Absolute ₹ in 000	Relative in %
Raw Materials Used	468	426	33.91	36.35	+42	+9.86
Direct Labour	632	506	45.80	43.17	+126	+24.90
Manufacturing Expenses	284	242	20.58	20.65	+42	+17.36
Total	1,384	1,174	100.29	100.17	+210	+17.89
Less Increase in Work-in-Progress	4	2	0.29	0.17	+2	
Cost of Goods Manufactured	1,380	1,172	100.00	100.00	+208	+17.75

Comparative Statement of Working Capital

When two periods' statement of working capital is compared, comparative statement of working capital is prepared. This statement depicts the absolute changes in the each element of working capital and the changes in total working capital also. This statement is described elaborately in the chapter of fund flow statement. The example of the comparative statement of working capital is given below:

Example: From the following balance sheets, prepare a schedule of changes in working capital:

Particulars	31 st March	
	2006	2007
Assets	₹	₹
Cash in Hand	10,000	14,000
Cash at Bank	14,000	18,000
Book Debts	24,000	22,000
Inventory	8,000	6,000
Bills Receivable	4,000	3,000
Prepaid Expenses	400	600
Short-term Investment	10,000	16,000
Accrued Interest	2,000	1,200
Building	40,000	44,000
Plant and Machinery	18,000	12,000
	1,30,400	1,36,800
Liabilities	16,000	12,000
Accounts Payable	6,000	4,000
Notes Payable	8,000	6,000
Bank Overdraft	600	400
Outstanding Expenses	1,000	1,400
Provision for Bad Debts	40,000	40,000
Share Capital	40,000	60,000
Debentures	18,800	13,000
Mortgage Loan	1,30,400	1,36,800

Solution:

Schedule of Changes in Working Capital

Particulars	31 st March 2006	31 st March 2007	Charges in Working Capital	
			Increase (Debit)	Decrease (Credit)
Current Assets	₹	₹	₹	₹
Cash in Hand	10,000	14,000	4,000	-
Book Debts	24,000	22,000	-	2,000
Cash at Bank	14,000	18,000	4,000	-
Inventory	8,000	6,000	-	2,000
B/R	4,000	3,000	-	1,000
Prepaid Expenses	400	600	200	-
Short-term Investments	10,000	16,000	6,000	-
Accrued Interest	2,000	1,200	-	800
Total Current Assets	72,400	80,800		
Current Liabilities				
Account Payable	16,000	12,000	4,000	-
Notes Payable	6,000	4,000	2,000	-
Bank Overdraft	8,000	6,000	2,000	-
Outstanding Expenses	600	400	200	-
Provision for Bad Debts	1,000	1,400	-	400
Total of Current Liabilities	31,600	23,800		
Working Capital				
(Current Assets – Current Liabilities)	40,800	57,000	-	16,200
Net Increase in Working Capital	16,200	-	-	-
	57,000	57,000	22,400	22,400

2.8.2 Common size Statements Analysis

The comparative financial statements are only concerned with the changes but they do not show the relationship of the different items of balance sheet with total assets or total liabilities. In the common size statements the relation of individual items of the balance sheet to the total assets is shown in the form of percentage. In the case of common size balance sheet, in assets side the total of assets is treated as a common base. On the basis of it the percentage of other assets are calculated. The total of all percentage of individual assets becomes hundred which represent the total of assets. In the liability side of the balance sheet the total of liabilities is taken a common base (100). Then the percentage for other liabilities is computed on the basis of this common base. The total of all percentages of individual liabilities becomes 100. In the case of common size profit and loss account total sales are assumed to be equal to 100, and then percentages of all other items of P&L A/c. are calculated on the common base of sales. This type of analysis is called vertical analysis. The common size statements are two: (a) common size balance sheet and (b) common size profit and loss account. The illustrations of these two statements are given below:

Example: The accompanying balance sheet and profit and loss account relate to Rajeev Ltd., convert them into common-size statements.

Balance Sheet as at 31st March, 2008

	2007 (₹)	2008 (₹)
Liabilities:		
Equity Share Capital (of ₹ 10 each)	480	480
General Reserves	192	364
Long-term Loans	364	339
Creditors	134	104
Outstanding Expenses	12	-
Other Current Liabilities	18	13
	1,200	1,300
Assets:		
Plant	804	780
Cash	108	156
Debtors	120	130
Inventories	168	234
	1,200	1,300

Income statement for the year ended March 31, 2008
(₹ in lakh)

Particulars	Previous year (2007)	Current year (2008)
Gross Sales	740	960
Less: Returns	40	60
Net Sales	700	900
Less: Cost of Goods Sold	380	430
Gross Profit	320	470
Less: Selling General and Administrative Cost	100	144
Operating Profit	220	326
Less: Interest Expenses	40	34
Earnings Before Taxes	180	292
Less: Taxes	63	103
Earning After Taxes	117	189

Solution:

**Income statement (Common size) for the year ended March 31, 2008.
(Percentage)**

Particulars	Previous year (2007)	Current year (2008)
Net Sale	100.0	100.0
Less Cost of Goods Sold	54.3	47.8
Gross Profit	45.7	52.2
Selling, General and Administrative Expenses	14.3	16.0
Operating Profit	31.4	36.2
Interest	5.7	3.8
Earning Before Taxes	25.7	32.4
Taxes	9.0	11.4
Earning After Taxes (EAT)	16.7	21.0

**Balance Sheet (Common size as at March 31, 2008)
(Percentage)**

Particulars	Previous year (2007)	Current year (2008)
Owner's Equity	40.0	36.9
Equity Share Capital	16.0	28.0
General Reserves	56.0	64.9
Long-term Borrowings:		
Loan	30.3	26.1
Current Liabilities:		
Creditors	11.2	8.0
Outstanding Expenses	1.0	-
Other Liabilities	1.5	1.0
	13.7	9.0
Total Liabilities	100.0	100.0
Fixed Assets:		
Plant Assets Net of Accumulated Depreciation	67.0	60.0
Current Assets:		
Cash	9.0	12.0
Debtors	10.0	10.0
Inventories	14.0	18.0
	33.0	40.0
Total Assets	100.0	100.0

2.8.3 Trend Analysis

Trend analysis is an important technique for the analysis and interpretation of financial statements. Generally the trend means tendency. To know the tendency of the data of the financial statement, the data of four to five years are required. Data may be taken from the balance sheet and profit and loss account. It depends on the objective of analysis. To compute the tendency one year's figures are taken as base year. On the basis of this base year the other year's relative figures are computed. On the basis of these relative figures the tendency of a particular item is determined. The trend analysis of the business activities and financial position may be done in the following ways:

- Trend Percentage/Ratio
- Graphic or Diagrammatic Presentation

Trend Percentage/Ratio

The next important tools of analysis are trend percentage which plays significant role in analyzing the financial stature of the enterprise through base years' performance ratio computation. This not only reveals the trend movement of the financial performance of the enterprise but also highlights the strengths and weaknesses of the enterprise.

To calculate the trend percentage the following procedure is adopted:

- First of all the original figures of the financial statement are set in a statement.
- One year's figure (the earliest year) is assumed as base year's figure *i.e.* 100.
- In order to compute the trend percentage the each and every item of the other years is divided by the corresponding item of the base year and multiplied by 100.

The following ratio is being used to compute the trend percentage:

$$= \frac{\text{Current Year}}{\text{Base Year}} \times 100$$

This trend ratio is being computed for every component for many numbers of years which not only facilitates comparison but also guides the firm to understand the trend path of the firm.

Example: From the following items of the asset side of the balance sheet of Alka Ltd. for the period 31.3.2004 to 31.3.2007, calculate trend percentage taking 2004 as the base year:

	(₹) in '000'			
	2004 (₹)	2005 (₹)	2006 (₹)	2007 (₹)
Cash	80	120	160	140
Debtors	40	80	60	30
Stock	100	150	120	140
Other Current Assets	40	20	50	60
Land and Building	800	1,000	1,200	1,200
Furniture	160	200	120	200
Plant	200	250	260	300
Total Assets	1,420	1,820	1,970	2,070

Solution:

**Comparative Balance Sheet from 31st March 2004 to 31st March 2007
(Showing Trend Percentage)**

Assets	31 st March				Trend Percentage Base 2004			
	2004	2005	2006	2007	2004	2005	2006	2007
Current Assets :								
Cash	80	120	160	140	100	150	200	175
Debtors	40	80	60	30	100	200	150	75
Stock	100	150	120	140	100	150	120	140
Other Current Assets	40	20	50	60	100	50	125	150
Total Current Assets	260	370	390	370	100	142	150	142

Contd...

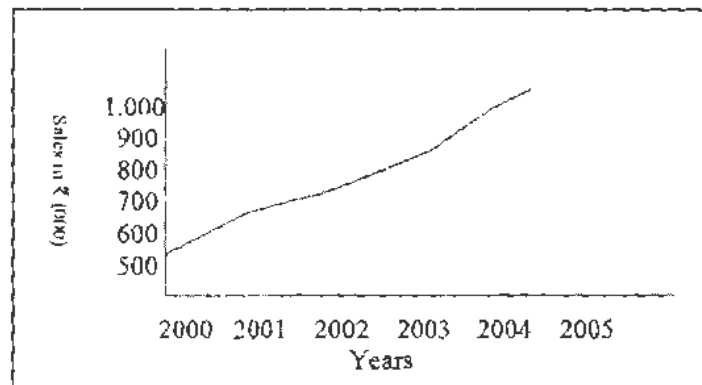
Fixed Assets								
Land and Building	800	1,000	1,200	1,200	100	125	150	150
Furniture	160	200	120	200	100	125	75	125
Plant	200	250	260	300	100	125	130	150
Total Fixed Assets	1,160	1,450	1,500	1,700	100	125	136	146
Total	1,420	1,820	1,970	2,070	100	128	138	145

Graphic or Diagrammatic Presentation

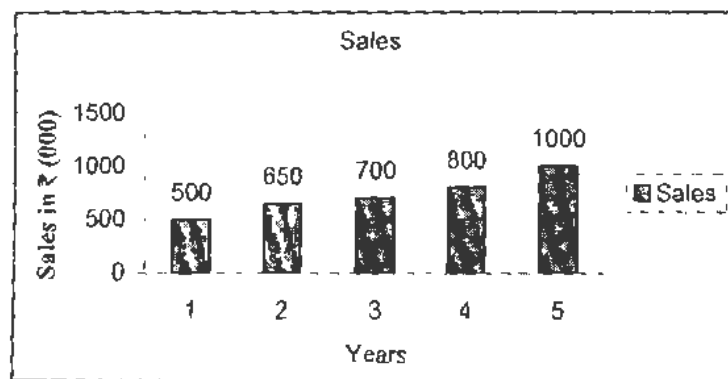
The trend percentage/ratio discussed in the previous method may be represented by graphs and diagrams. Two or three variables can be represented on graphs very easily. If different variables of the financial statements are represented by graphs and diagrams, those quickly draw the human attraction. Now-a-days there is a trend to show the important variable on the graphs. These diagrams are also being published with the financial statements. For example, the sales of XY Co. Ltd. for the last five years are as follows:

Years	2000	2001	2002	2003	2004
Sales (000) ₹	500	650	700	800	1,000

This figure may be represented graphically as follows:



The sales of the company are represented on the diagram as follows:



2.8.4 Fund Flow Analysis

Fund flow analysis has become very popular technique to analyse the financial statements. Fund flow statement does not reveal the financial position of the business like the financial statement but it reveals the changes in the working capital in two periods. Working capital is the life blood of the business. This statement also gives the information regarding the sources and application of fund (working capital). Sources

of fund are profit from operation, issue of capital loans, sale of fixed assets, etc., while the applications of fund are the purchase of fixed assets, redemption of capital, payment of dividend purchase of investment etc. (Technique and procedure to prepare the fund flow statement is discussed in the separate chapter 'Fund Flow Statement' of this book.)

2.8.5 Cash Flow Analysis

Cash flow analysis is also similar to fund flow analysis. Now it is being prepared by the companies along with the balance sheet and profit and loss account. It is prepared as per Accounting Standard-3 of the Institute of Chartered Accountant of India. The fund flow statement reveals the changes in the fund/working capital while the cash flow statement reveals the changes in the cash during two periods. It also gives the information regarding the sources of cash and uses of cash during a period. (Its entire technique and procedure is given in the separate chapter 'Cash Flow Statement' of this book.)

2.8.6 Ratio Analysis

This technique is based on the ratios. The ratios are the relationship among the different accounting figures. Ratio analysis helps the management and different users of financial statements in determining the profitability of business and the financial position of the business. Profitability, solvency, liquidity and efficiency of the business can be easily determined by this analysis.

2.8.7 Break-even Analysis

This is an important technique of the management to take some decision. Under this analysis the costs of production are divided into fixed and variable cost. From sales the fixed cost is subtracted to find the contribution. On the basis of contribution, the break-even point (BEP) is determined. It is that point of sales or production at which the company gains no-profit, and suffers no loss. Several managerial decisions as make or buy, shut down point, price determination, etc. are taken with the help of break-even analysis.

2.9 ANALYSIS AND INTERPRETATION OF FINANCIAL STATEMENTS

Financial statement is an indicator of the two significant factors:

1. Profitability, and
2. Financial soundness.

Analysis and Interpretation of financial statements, therefore, refers to such a treatment of the information contained in the Income Statement and the Balance Sheet so as to afford full diagnosis of the profitability and financial soundness of the business.

A distinction here can be made between the two terms -- 'Analysis' and 'Interpretation'. The term, analysis, means methodical classification of the data given in the financial statements. The figures given in the financial statements will not help one unless they are put in a simplified form. For example, all items relating to 'Current Assets' are put at one place while all items relating to "Current Liabilities" are put at another place. The term 'Interpretation' means 'explaining the meaning and significance of the data su simplified.

However both 'Analysis' and 'Interpretation' are complementary to each other. Interpretation requires Analysis, while Analysis is useless without Interpretation. Most

of the authors have used the term 'Analysis' only to cover the meanings of both analysis and interpretation, since analysis involves interpretation. According to Myres, 'Financial statement analysis is largely a study of the relationship among the various financial factors in a business as disclosed by a single set of statements and a study of the trend of these factors as shown in a series of statements'. For the sake of convenience, we have also used the term 'Financial Statement Analysis' throughout the chapter to cover both analysis and interpretation.

2.10 TYPES OF FINANCIAL ANALYSIS

Financial Analysis can be classified into different categories depending upon (i) the material used, and (ii) the modus operandi of analysis.

2.10.1 On the Basis of Material Used

According to this basis financial analysis can be of two types:

- **External Analysis:** This analysis is done by those who are outsiders for the business. The term, outsiders, includes investors, credit agencies, government agencies and other creditors who have no access to the internal records of the company. These persons mainly depend upon the published financial statements. Their analysis serves only a limited purpose. The position of these analysts has improved in recent times on account of increased government control over companies and government regulations requiring more detailed disclosure of information by the companies in their financial statements.
- **Internal Analysis:** This analysis is done by persons who have access to the books of account and other information related to the business. Such an analysis can, therefore, be done by executive and employees of the organisation or by officers appointed for this purpose by the Government or the Court under powers vested in them. The analysis is done depending upon the objective to be achieved through this analysis.

2.10.2 On the Basis of Modus Operandi

According to this, financial analysis can also be of two types:

- **Horizontal Analysis:** In case of this type of analysis, financial statements for a number of years are reviewed and analysed. The current year's figures are compared with the standard or base year. The analysis statement usually contains figures for two or more years and the changes are shown regarding each item from the base year usually in the form of percentage. Such an analysis gives the management considerable insight into levels and areas of strength and weakness. Since this type of analysis is based on the data from year to year rather on one date, it is also termed as 'Dynamic Analysis'.
- **Vertical Analysis:** In case of this type of analysis a study is made of the quantitative relationship of the various items in the financial statements on a particular date. For example, the ratios of different items of costs for a particular period may be calculated with the sales for the period. Such an analysis is useful in comparing the performance of several companies in the same group, or divisions or departments in the same company. Since this analysis depends on the data for one period, this is not very conducive to a proper analysis of the company's financial position. It is also called 'Static Analysis' as it is frequently used for referring to ratios developed on one date or for one accounting period.

It is to be noted that both analysis-vertical and horizontal—can be done simultaneously also. For example, the Income Statement of a company for several

years may be given. Horizontally it may show the change in different elements of cost and sales over a number of years. On the other hand, vertically it may show the percentage of each element of cost to sales.

Check Your Progress

Fill in the blanks of the following:

1. _____ is relating to the drawing of conclusion, inference and criticism of the analysed financial data.
2. _____ besides invoking legal consequences may also defeat the objectives for which the statements are meant.
3. _____ is very useful to study the trends in the changes of items.
4. _____ is an important technique for the analysis and interpretation of financial statements.
5. _____ is the life blood of the business.
6. _____ analysis is done by persons who have access to the books of account and other information related to the business.

2.11 LET US SUM UP

- Analysis of financial statements is the process of critically examining the data of financial accounts. The main work of this process is to find the strengths and weakness of the business.
- Financial statement analysis can be explained as a method used by interested parties such as investors, creditors, and management to evaluate the past, current, and projected conditions and performance of the firm.
- Interpretation is relating to the drawing of conclusion, inference and criticism of the analysed financial data.
- Analysis and interpretation of the financial statements are closely associated. Without interpretation the analysis is useless and without analysis, interpretation is impossible.
- Analysis of financial statements is of two types – analysis according to materials used and analysis according to modus operandi.
- Analysis according to materials used is of two types, *i.e.* internal analysis and external analysis.
- Similarly, the analysis according to modus operandi is also divided into two – horizontal analysis and vertical analysis.
- For the interpretation and analysis of the financial statement the following technologies are used:
 - ❖ Comparative Financial Statement Analysis
 - ❖ Common Size Statement Analysis
 - ❖ Trend Analysis
 - ❖ Fund Flow Analysis
 - ❖ Cash Flow Analysis

- ❖ Ratio Analysis
- ❖ Break-Even Analysis
- To reveal qualitative information about the firm in terms of solvency, liquidity, profitability, etc., are extracted from the analysis of financial statements.
- Comparative (Income) financial statement analysis is being carried out in between the income statements of the various accounting durations of the firm, with other firms in the industry and with the industrial average.
- After having been procured the financial data pertaining to various time periods are ready for comparison; to determine or identify the level of increase or decrease taken place in the operating financial performance of the firms.
- Trend analysis involves calculating each year's financial statement balances as percentages of the first year, also known as the base year. When expressed as percentages, the base year figures are always 100 percent, and percentage changes from the base year can be determined.

2.12 LESSON END ACTIVITY

Is the trend of total liabilities of significance in analyzing the financial condition of a business? If so, what other trends should be used in connection therewith?

2.13 KEYWORDS

Financial Statements: Profit and Loss Account, Profit and Loss Appropriation Account and Balance Sheet are included in the term financial statements.

Analysis of Financial Statement: Classifying, re-arranging and re-grouping of financial statements to find the weakness and strength of the business are analysis of financial statements.

Ratio: It is the relationship of two or more financial items.

Fund: Fund means the working capital.

Assets: Assets are economic resources owned by business or company.

Balance Sheet: A balance sheet or statement of financial position is a summary of a person's or organisation's balances.

Financial Statement: A written report which quantitatively describes the financial health of a company.

Firm: A business organisation or the members of a business organisation that owns or operates one or more establishments.

2.14 QUESTIONS FOR DISCUSSION

1. What do you mean by financial analysis? Explain its procedure.
2. Distinguish clearly between the internal and external financial analysis.
3. Differentiate between horizontal and vertical analysis and explain which one is better?
4. What do you understand by the analysis and interpretation of financial statements? Explain in brief its various techniques.

5. Write short notes on the following:
- (i) Break-even Analysis
 - (ii) Trend Ratio
 - (iii) Common-Size Statements
 - (iv) Analysis of Financial Statements
 - (v) Procedure of analysis and interpretation of financial statements
6. What are the limitations of Financial Statements and explain how would you overcome them?
7. From the following information, prepare a comparative income statement:

Particulars	2001 (₹)	2002 (₹)
Sales	10,00,000	8,00,000
Cost of goods sold	6,00,000	4,00,000
Administration expenses	2,00,000	1,40,000
Other Income	40,000	20,000
Income tax	1,20,000	1,40,000

8. From the following table, prepare the common size statement analysis:

	2000 (₹)	2001 (₹)
Sales	20,00,000	24,00,000
Miscellaneous Income	20,000	16,000
	20,20,000	24,16,000
Materials consumed	11,00,000	12,96,000
Wages	3,00,000	4,08,000
Factory expenses	2,00,000	2,16,000
Office expenses	90,000	1,00,000
Interest	1,00,000	1,20,000
Depreciation	1,40,000	1,50,000
Profit	90,000	1,26,000
	20,20,000	24,16,000

9. What are the different categories of items appearing in a Balance Sheet?
10. What are the three basic financial statements? Explain their importance to the various users.

Check Your Progress: Model Answer

1. Interpretation
2. Inaccuracy
3. Comparative balance sheet
4. Trend analysis
5. Working capital
6. Internal

2.15 SUGGESTED READINGS

Charles T. Horngren, *Introduction to Management Accounting*, Prentice Hall, Englewood Cliff, New Jersey 07632.

Ray H. Garrison, *Managerial Accounting*, Homewood, Illinois 60435.

Robert S. Kaplan and Anthony A. Atkinson, *Advanced Management Accounting*, (Prentice Hall, Englewood Cliff, New Jersey 07632).

Dr. S. N. Maheshwari, *Management Accounting for Bankers*, Sultan Chand & Sons, New Delhi: 110002.

N. K. Kulshrestha, *Management Accounting Concepts & Cases*, Tata McGraw Hill Publishing Co. Ltd., New Delhi.

LESSON

3

RATIO ANALYSIS

CONTENTS

- 3.0 Aims and Objectives
- 3.1 Introduction
- 3.2 Meaning of Ratio
- 3.3 Importance of Ratio Analysis
- 3.4 Utility of the Ratio Analysis
- 3.5 Limitations of Ratio Analysis
- 3.6 Classification of Ratio Analysis
 - 3.6.1 Profitability Ratios
 - 3.6.2 Du Pont Control Chart
 - 3.6.3 Liquidity Ratios
 - 3.6.4 Solvency Ratios
 - 3.6.5 Leverage Ratios
- 3.7 Let Us Sum Up
- 3.8 Lesson End Activity
- 3.9 Keywords
- 3.10 Questions for Discussion
- 3.11 Suggested Readings

3.0 AIMS AND OBJECTIVES

After studying this lesson, you should be able to:

- Understand the meaning of ratio analysis
- Describe the advantages and limitations of ratio analysis
- Make the classification of ratios
- Calculate the different ratios on the basis of profitability, Du Pont Chart, liquidity, leverage, solvency and activity

3.1 INTRODUCTION

There are various methods or techniques used in analyzing financial statements such as comparative statements trend analysis funds flow, cash flow, common size statements and ratio analysis. Ratio analysis is one of the most powerful tools of financial analysis. The ratio analysis is one of the important tools of financial statement analysis to study the financial stature of the business fleeces, corporate houses and so on. The ratio illustrates the relationship in between the two related

variables. The accounting ratios are computed on the basis available accounting information extracted from the financial statements which are not in a position to reveal the status of the enterprise. The accounting ratios are applied to study the relationship in between the quantitative information available and to take decision on the financial performance of the firm.

3.2 MEANING OF RATIO

Ratio is a mathematical relationship between two items and group of items of the financial statements. Under ratio analysis several ratios are calculated and then studied to draw inference. Ratio is defined by experts as follows:

According to R. N. Anthony "A ratio is simply one number expressed in terms of another".

According to the Accountants' Hand Book by Wixon, Kell and Bedford, "A ratio is an expression of the quantitative relationship between two numbers".

According to J. Betty, "The term accounting is used to describe relationships significantly which exists in between figures shown in a balance sheet, Profit & Loss A/c, Trading A/c, Budgetary control system or in any part of the accounting organization "

According to Myers "It is the study of relationship among the various financial factors of the enterprise"

To understand the methodology of expressing the ratios, various expressions of ratios are highlighted in the following figure:

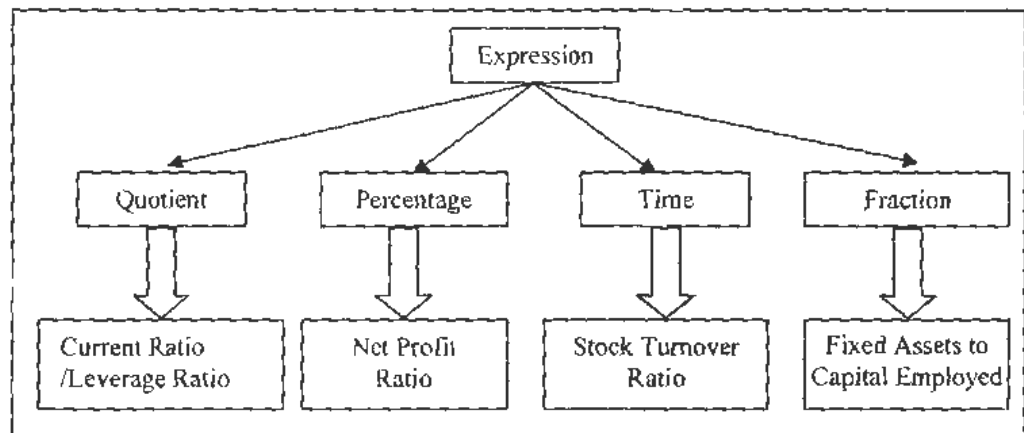


Figure 3.1: Various Expressions of Ratios

From these definitions it is clear that ratio is a numerical relationship between two numbers, in which one number being the numerator and the latter the denominator. This numerical relationship (ratio) may be expressed in the following forms, such as:

1. **Pure Ratio (Proportion):** When the amount of two figures is arrived by the simple division of one amount by another, it is said pure ratio or proportion. For example, if current assets of a company are ₹ 20,000 and current liabilities ₹ 10,000, ratio between current assets and current liabilities will be 2:1.
2. **Percentage Ratio:** In this form, the relationship of one item with other item may be expressed in percentage. To get percentage relationship the one item is divided by other item and the quotient is multiplied by 100. For example, the relationship of profit and sales may be expressed as 25%.

3. **Rate Ratio or Times or Turnover:** In this method, rate is determined by dividing the one item by other item. The obtained quotient is expressed in unit. For example, if sales is ₹ 1,00,000 and stock is ₹ 20,000, 5 times will be the ratio between sales and stock.

3.3 IMPORTANCE OF RATIO ANALYSIS

Ratio analysis is one of the most important tools for the analysis and interpretation of financial statement not only for the management but also for other persons like investors, shareholders, creditors, etc. It is a technique to check the strength and weakness of the business in the hands of analyst. The importance of ratio analysis is discussed in the following points:

- (i) **Helpful to understand the financial statements:** Ratios make the financial statements easy, simple and understandable to the users. With the help of various ratios, the users can understand the solvency, profitability, activity and financial position of the business without having the knowledge of accounting.
- (ii) **Supportive in inter-firm and intra-firm comparison of the business:** Through ratio analysis, the performance of a firm can be compared with that of other firm. Similarly, it also helps the management in determining the efficiency and deficiency of the different units of the same company by comparing their performances.
- (iii) **Helpful in inter-period comparison:** Ratio analysis makes comparison possible of a period's performance with that of the other period.
- (iv) **Cooperative in different management tasks:** If the different ratios are systematically presented before management, these help the management to understand the activities and efficiency of the business. Then the management can perform its functions – as forecasting, planning, organizing, controlling, decision making, communicating and coordinating, etc. more efficiently.
- (v) **Helpful in calculating the efficiency and profitability of the business:** Ratio analysis highlights the operational efficiency and the profitability of the business. It also helps in determining the liquidity, long-term and short-term solvency position of the business.
- (vi) **Supportive in deciding the managerial efficiency:** Ratio may be called the surveyor of the efficiency of the business. It decides the managerial efficiency that how efficiently the management is utilizing the sources and assets of the business.
- (vii) **Helpful in determining the short-term and long-term solvency:** The users can predict the bankruptcy and failure of business by evaluating short-term and long-term solvency. The liquidity ratio determines the short-term solvency while, the leverage ratio determines the long term solvency of the business.

3.4 UTILITY OF THE RATIO ANALYSIS

Ratio analysis has a lot of utility which may be understood by the following discussion:

- **Easy to understand the financial position of the firm:** The ratio analysis facilitates the parties to read the changes taken place in the financial performance of the firm from one time period to another.
- **Measure of expressing the financial performance and position:** It acts as a measure of financial position through Liquidity ratios and Leverage ratios and

also a measure of financial performance through Profitability ratios and Turnover Ratios.

- ***Intra-firm analysis on the financial information over number of years:*** The financial performance and position of the firm can be analysed and interpreted within the firm in between the available financial information of number of years; which portrays either increase or decrease in the financial performance.
- ***Inter-firm analysis on the financial information within the industry:*** The financial performance of the firm is studied and interpreted along with the similar firms in the industry to identify the presence and status of the respective firm among others.
- ***Possibility for Financial planning and control:*** It not only guides the firm to earn in accordance with the financial forecasting but also facilitates the firm to identify the major source of expense which drastically has greater influence on the earnings.

3.5 LIMITATIONS OF RATIO ANALYSIS

In spite of being so much utilities of the ratio analysis, it is not free from snags. It suffers a number of limitations which occur due to financial statements. Therefore, the analyst must be aware of its limitations. These limitations are enlisted below:

- ***Qualitative aspect is ignored:*** Ratios are expressed numerically. During the process of calculation of ratios, the qualitative aspect has been ignored while that also has importance in the success of business.
- ***Difference in accounting policies and procedures:*** A comparison between two firms proves its worth if accounting policies and procedures of the firms are identical such as valuation of inventory, valuation of goodwill, etc.
- ***Price level changes and ratios:*** The price level changes also affect the comparability of the ratios of two periods, for instance, assets turnover (which is computed on the basis of sales and assets) of 1998 and 2008 cannot be correctly compared due to the changes of price level.
- ***Problem in ascertaining the standard ratio:*** There cannot be a single standard ratio which can be used to measure the performance of the business in all situations. A single standard ratio cannot be used for all firms as there are different situations as strike, lockout, etc. in the different firms.
- ***Single ratio is insufficient:*** Generally, a single ratio is found of limited use. It does not convey the complete picture of the business. It may mislead. Therefore, it is necessary that other related ratios should also be studied before coming on a conclusion. For instance, for the test of liquidity, all the liquidity ratios should be tested.
- ***Window dressing of accounts:*** Sometimes, the financial statements are window dressed to show a better picture of the financial position of the company. In the window dressing the assets are overvalued and better profitability is showed. Therefore, the ratios computed on the basis of these statements are affected which give the wrong interpretation of the ratios.
- ***Based on past performance:*** Ratio analysis does not help in forecasting and predicting the items to prepare the budgets as ratios are calculated on the basis of past performance of the business.
- ***Trend ratios are more useful than actual ratios:*** The single ratios calculated on the basis of financial statements of a particular year are of limited use. If ratios are

computed for a number of years and trend is found out, it will be more useful and meaningful. But in practical life it happens rarely.

- **Effect of personal ability and bias of analyst:** As the ratio analysis is a tool in the hands of the analyst, ratios may be affected by the ability and biasness of the analyst.
- **Ratios are only means not ends:** Ratios are only the guidelines and not the deciding evidence for the analysts. Thorough investigation and interpretation should be done by the analysts before deriving a conclusion.

3.6 CLASSIFICATION OF RATIO ANALYSIS

There is no standard classification of the accounting ratios. Some authors classify the ratios as per the financial statements, some authors as per the importance of ratio and specific purpose of ratios and some on the basis of users. There is one more classification of ratio that is functional classification. Thus we find that there is no uniformity among the authors regarding the classification of ratios.

3.6.1 Profitability Ratios

The main objective of the business is to earn the profit. Profitability of a business means the profit earning capacity of the business while profit means the actual amount of profit. In the words of Lord Keynes, "*Profit is the engine that drives the business enterprise*". The profitability of a business depends upon the quantity of sales, production and financial resources. Profitability checks the managerial efficiency in utilization of the resources of the business. Profitability ratios are computed on the basis of the following factors:

1. **Profitability Ratios based on Sales:** Here all the profitability ratios are calculated on the basis of total sales. These ratios are as follows:
 - (a) **Gross Profit Ratio** is the relationship of gross profit and net sales. This ratio is also called gross profit margin. It is calculated in percentage. It is computed with the help of following formula:

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

Where,

$$\text{Gross Profit} = \text{Sales} - \text{Cost of Goods Sold}$$

$$\text{Cost of Goods Sold} = \text{Opening Stock} + \text{Purchases} + \text{Direct Expenses} - \text{Closing Stock}$$

$$\text{Net Sales} = \text{Total of Sales} - \text{Sales Return}$$

Interpretation of Gross Profit Ratio: Normally the higher gross profit ratio reveals the higher profitability of the business. But true profitability of the business cannot be measured by the amount of gross profit. For the comparison of the profitability of the two firms or two periods, this ratio is calculated. The high gross profit ratio always favours the business and implies the better profitability. The following factors may be responsible for the higher gross profit in a particular period:

- (i) Selling price may increase without change in cost price.
- (ii) Cost price may decrease without change in selling price.

- (iii) Closing stock may be overvalued and opening stock may be under-valued.
- (iv) There may be change in selling price and cost price but the combined effect of these two changes may increase the gross profit ratio.

If the gross profit ratio is declining, that may put the management of the business in difficulty. For such decline of gross profit ratio, the following factors may be responsible:

- (i) The purchase price of the materials may increase without increase in selling price.
 - (ii) There may be theft, pilferage and spoilage of the material.
 - (iii) Selling price may reduce without changing in the cost price.
 - (iv) There may be under-valuation of closing stock and over-valuation of opening stock.
 - (v) There may be excessive investment in fixed assets which increases the cost of sales.
- (b) *Net Profit Ratio* is the relationship between net profit and the net sales and is expressed in percentage. Net profit is determined by adjusting the operating and non-operating incomes and expenses and loss in the gross profit. If net profit ratio is being computed to find out the operational efficiency of the business, net profit before tax should be used to compute this ratio. If the purpose of calculating of this ratio is to declare the rate of dividend, net profit after tax must be considered. It is useful to do inter-firm comparison of profitability. This ratio is calculated with the help of following formula:

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

Where,

Net Profit is computed as follows:

Gross Profit		****
Less: Selling Overheads	***	
Distribution Overheads	***	
Financial Overheads	***	
Other Operating Expenses	***	*****
Add: Non-operating Incomes	***	
Other Operating Incomes	***	****
Less: Non-Operating Losses		****
Net Profit		****

Interpretation of Net Profit Ratio: The net profit ratio reveals the operational efficiency and inefficiency of the management of the business. The higher net profit ratio is considered better and shows efficiency of the management while the lower net profit ratio is not considered good and shows inefficiency of the management of the business. If this ratio of a business is continuously falling during some years, investigations should be made to find its causes then necessary actions should be taken to remove these causes.

- (c) *Net Operating Profit Ratio* reveals the relationship between net operating profit and net sales. Net operating profit is different from the net profit. Net profit is determined after adjusting the non-operating profits and losses while net operating profits are determined without adjusting the non-operating profit or loss. In other words the net operating profits are calculated as below:

$$\text{Net Operating Profits} = \text{Gross Profit} + \text{Operating Income} - \text{Operating Expenses}$$

Or

$$\text{Net Operating Profits} = \text{Net Profit} + \text{Non-operating Expenses/Losses} - \text{Non-operating Incomes}$$

Herewith, the non-operating incomes are those incomes which do not occur during the normal course of business as interest and dividends earned from the investment outside the business, profit from the sale of fixed assets, etc. The non-operating expenses or losses which are extraordinary in nature as loss due to theft or fire, donation to political party, charities to a charitable trust, etc.

After computing the net operating profits, the following formula will be used to find out the net operating profit ratio:

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

Interpretation This ratio is better to test the operational efficiency of a business than the net profit ratio. Its reason is clear that in the net operating profits the non-operating incomes/expenses are not considered while in the net profit, the non-operating incomes and losses/expenses are also adjusted. Thus this ratio is a better indicator of operational efficiency of the management of the business. Higher net operating profit ratio indicates the better profitability of the business.

- (d) *Expenses Ratio* is the relationship of each component of cost to sales which is expressed in percentage. In order to analyse the operational efficiency of the management of the business, every expense to sales ratio is calculated. Various expenses ratios are calculated as follows:

- (i) Cost of Material Consumed to Sales Ratio

$$= \frac{\text{Cost of Materials Consumed}}{\text{Sales}} \times 100$$

Where:

Cost of Materials Consumed

$$= (\text{Opening Stock of Materials} + \text{Purchase of Materials} + \text{Purchasing Expenses}) - \text{Closing Stock of Materials}$$

- (ii) Direct Wages to Sales Ratio = $\frac{\text{Direct Wages}}{\text{Sales}} \times 100$

- (iii) Factory Expenses to Sales Ratio = $\frac{\text{Factory Expenses}}{\text{Sales}} \times 100$

- (iv) Office and Administrative Expenses to Sales Ratio

$$= \frac{\text{Office and Administrative Expenses}}{\text{Sales}} \times 100$$

(v) Selling & Distribution Expenses to Sales Ratio

$$= \frac{\text{Selling \& Distribution Exps.}}{\text{Sales}} \times 100$$

(vi) Financial Expenses to Sales Ratio = $\frac{\text{Financial Expenses}}{\text{Sales}} \times 100$

Interpretation: If the expenses ratios are increasing, the net profit ratio will decline and that will indicate the inefficiency of the business. On the other hand if these ratios are declining, the net profit ratio will increase, that will show the efficiency of the business and the better profitability of the business.

(e) *Operating Ratio* establishes the relationship between the total operating cost and net sales. Herewith, the total operating cost means the cost of goods sold + operating expenses. Operating expenses include office and administration expenses, selling and distribution expenses, financial expenses. This ratio is computed as follows:

$$\text{Operating Expenses Ratio} = \frac{\text{Operating Cost}}{\text{Sales}} \times 100$$

Or

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

Or

$$\text{Operating Expenses Ratio} = 100 - \text{Net Profit Ratio}$$

Interpretation: The higher ratio reveals the lower efficiency of the management, means a great portion of sales is being absorbed in operating cost. If this ratio is lower, it shows the efficiency of the management and net profit ratio will be higher.

Example: The following is the Trading and Profit and Loss Account of Raj Brothers Ltd. for the year ended 31st Dec. 2007:

Particulars	₹	Particulars	₹
To Opening Stock	22,875	By Sales	1,50,000
To Purchases	94,575	By Closing Stock	29,550
To Carriage	600		
To Wages	1,500		
To Gross Profit c/d	60,000		
	<u>1,79,550</u>		<u>1,79,550</u>
To Administration Expenses	30,300	By Gross Profit b/d	60,000
To Selling Expenses	1,800	By Non-operating incomes:	
To Distribution Expenses	1,800	InL on Security	450
To Finance Expenses	2,100	Dividend on Shares	1,125
To Non-operating Expenses:		Profit on Sale of Machinery	225
Loss on sale of building	105		<u>1,800</u>
Provision for legal suit	345		
Furniture Written-off	150		
To Net Profits	25,200		
	<u>61,800</u>		<u>61,800</u>

You are required to calculate (i) Expenses Ratios, (ii) Gross Profit Ratio, (iii) Net Profit Ratio, (iv) Net Operating Profit Ratio and (v) Operating Ratio.

Solution

(i) Expenses Ratios:

$$(a) \quad \text{Cost of Sales Ratio} = \frac{\text{Cost of Sales}}{\text{Sales}} \times 100$$

$$\begin{aligned} \text{Cost of Sales} &= \text{Sales} - \text{Gross Profit} \\ &= 1,50,000 - 60,000 = ₹ 90,000 \end{aligned}$$

$$\text{Cost of Sales Ratio} = \frac{90,000}{1,50,000} \times 100 = 60\%$$

$$(b) \quad \text{Administration Expenses Ratio} = \frac{\text{Administration Expenses}}{\text{Sales}} \times 100$$

$$= \frac{30,000}{1,50,000} \times 100 = 20\%$$

$$(c) \quad \text{Selling Expenses Ratio} = \frac{\text{Selling Expenses}}{\text{Sales}} \times 100$$

$$= \frac{1800}{1,50,000} \times 100 = 1.2\%$$

$$(d) \quad \text{Distribution Expenses Ratio} = \frac{\text{Distribution Expenses}}{\text{Sales}} \times 100$$

$$= \frac{1800}{1,50,000} \times 100 = 1.2\%$$

$$(e) \quad \text{Finance Expenses Ratio} = \frac{\text{Finance Expenses}}{\text{Sales}} \times 100$$

$$= \frac{2100}{1,50,000} \times 100 = 1.4\%$$

$$(f) \quad \text{Non-operating Expenses Ratio} = \frac{\text{Non-operating Expenses}}{\text{Sales}} \times 100$$

$$= \frac{600}{1,50,000} \times 100 = 0.4\%$$

$$(ii) \quad \text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100$$

$$= \frac{60,000}{1,50,000} \times 100 = 40\%$$

$$(iii) \quad \text{Net Profit Ratio} = \frac{\text{Net Profit}}{\text{Sales}} \times 100$$

$$(iv) \quad \text{Net Operating Profit Ratio} = \frac{\text{Net Operating Profit}}{\text{Sales}} \times 100$$

Net Operating Profit = Net Profit + Non-operating Exps. – Non-operating Incomes

$$= ₹ 25,200 + ₹ 600 - ₹ 1,800 = ₹ 24,000$$

$$\text{Net Operating Profit Ratio} = \frac{₹ 24,000}{₹ 1,50,000} \times 100$$

$$(v) \text{ Operating Ratio} = \frac{\text{Operating Cost}}{\text{Sales}} \times 100$$

Operating Cost = Cost of Sales + Administration Expenses + Selling Expenses + Distribution Expenses + Finance Expenses

$$= ₹ 90,000 + ₹ 30,300 + ₹ 1,800 + ₹ 1,800 + ₹ 2,100$$

$$= \frac{1,26,000}{1,50,000} \times 100 = 84\%$$

(f) *Cash Profit Ratio*: It is the relationship of cash profit and sales. Cash profit means cash from operation, which is calculated as

Cash Profit = Net Profit + Non-cash Expenses

Where, Non-cash Expenses mean those expenses which are not paid in cash as depreciation, goodwill, preliminary written off, etc.

Then this ratio is computed as below:

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

2. *Profitability Ratio Based on Capital*: To check the overall profitability and efficiency of the business, profitability ratios based on capital or assets are more useful than the ratios based on sales. The theory behind this thought is that the amount of profit is earned on the total assets/capital. Therefore, the profitability ratios must be calculated on the basis of capital, assets or investments. Under this group the following ratios are calculated:

(a) *Return on Total Assets Ratio*: The ratio is used by the analyst to measure the efficiency of the management of the business. It is computed with the help of net profit after tax and interest and total assets. The formula of this ratio is as:

$$\text{Return on Total Assets} = \frac{\text{Net Profit after Tax and Interest}}{\text{Total Assets}} \times 100$$

This ratio is based on total assets. Total assets mean those assets which are productively being used in the business and those assets which are not being used in the business are not included in the total assets as investment outside the business. If intangible assets, like goodwill, patents, trademarks and fictitious assets, like preliminary expenses, discount on issue of shares and debentures have no market values, those are ignored at the time of taking the total assets. There is a general rule which is adopted at the time of aggregating the value of total assets that all the fixed assets (having the nature of performance) and current assets are taken at their respective book values.

For the calculation of this ratio the net profit should be after tax and interest on investment in order to match the total assets (discussed above).

At the time of interpretation of the ratio, we have to keep in our mind that this ratio expresses the efficiency of the management in using the total assets in generating the income. The higher side of the ratio shows the better efficiency

of the management. Some analysts compute the return on tangible assets or return on fixed assets in the place of return on total assets.

- (b) *Return on Proprietors' Fund Ratio*: This ratio expresses the relationship between proprietors' fund and the net profit after tax. The proprietors' fund means total of equity share capital, preference share capital and reserve and surplus. This ratio reflects the profitability on the shareholders' or owners' equity. It is computed as follows:

$$\text{Return on Shareholders' Fund} = \frac{\text{Net Profit after Tax}}{\text{Shareholders' Fund}} \times 100$$

This ratio is computed for the shareholders to check the return on their funds in relation to others. For the comparative study of two or more companies this ratio is very important. If this ratio is adequate it would be easy for the company to raise the addition funds from the market in future.

- (c) *Return on Equity Capital*. This ratio is the relationship between the net profits available for the equity shareholders and the equity share capital. The net profit available for equity shareholders means that amount of net profit which comes after deducting interest, tax and the dividend to preference shareholders. Equity share capital means the paid up value of ordinary share capital and reserve and surplus. This ratio is also computed into percentage. The formula of this ratio is as given below:

Return on Equity Capital (ROEC)

$$= \frac{\text{Net Profit after Dividend on Preference Shares}}{\text{Equity Share Capital}} \times 100$$

This ratio is used by the analyst to test the profitability for the equity shareholders. The higher ratio is better to provide a satisfactory return to the equity shareholders. This ratio is very useful for the potential investors to take the decision regarding the investment in a particular company. It also helps in the determination of profit earning capacity on the equity capital.

- (d) *Return on Capital Employed*: It is also known as Return on Investment (ROI). This ratio is computed to judge the overall efficiency of the business. This ratio reveals the relationship between the income and the capital employed. In other words, it reveals whether the amount of capital employed has been properly used or not in the business to generate the incomes. Higher ratio shows the more efficient use of the capital employed in the business. The following are the formulae to compute the return on capital employed or investments.

$$(i) \text{ Return on Capital Employed (ROCE)} = \frac{\text{Profit after Tax}}{\text{Capital Employed}} \times 100$$

(ii) Return on Capital Employed (ROCE)

$$= \frac{\text{Profit after Tax and Interest and Dividend}}{\text{Capital Employed}} \times 100$$

(iii) ROCE = Turnover × Net Margin

Where,

$$\text{Turnover} = \frac{\text{Sales}}{\text{Capital Employed}} \times \frac{\text{Net Profit}}{\text{Sales}} \times 100$$

$$\text{Net Margin} = \frac{\text{Net Profit}}{\text{Capital Employed}} \times 100$$

Or

$$\text{ROCE} = \frac{\text{Sales}}{\text{Capital Employed}} \times \frac{\text{Net Profit}}{\text{Sales}} \times 100$$

$$\text{ROCE} = \frac{\text{Net Profit}}{\text{Capital Employed}} \times 100$$

Here the term capital employed is used in the sense of net capital employed which means the total of all the fixed assets and current assets minus current liabilities. It can also be determined by addition of total fixed assets and working capital which is the difference of current assets and current liabilities. Thus, the net capital employed may be computed by the following formula:

Calculation of Capital Employed from Assets side of B/S

	₹	₹
Fixed Assets at replacement cost:		
Plant and machinery	xxx	
Land and building	xxx	
Furniture	xxx	
Others	xxx	xxx
<i>Add</i> Investments (inside)		xxx
<i>Add</i> Current Assets –		
Inventory	xxx	
Debtors	xxx	
Cash & Bank balance	xxx	xxxx
Gross Capital Employed		xxxx
<i>Less</i> Current Liabilities		
Sundry creditors	xxx	
Bank overdraft	xxx	
Outstanding expenses	xxx	
Others	xxx	xxxx
Net Capital Employed		xxxx

At the time of computation of capital employed, the following points must be kept in mind:

- (a) All the productive fixed assets should be taken at replacement cost.
- (b) If the intangible assets like goodwill, patents, trademarks, etc. do not have the market value, they should not be considered for the computation of capital employed.
- (c) If the investments are made outside the business, they must be ignored.
- (d) All the fictitious assets such as preliminary expenses, discount on issue of shares or debentures must be excluded.
- (e) All types of stock as – raw materials, work-in-progress, finished goods should be included in capital employed.
- (f) Obsolete assets should not be included in capital employed.
- (g) Reserve for bad and doubtful debts should be subtracted from the sundry debtors.

For the purpose of computation of return on capital employed, the income should be matched with the capital employed. If any asset is not considered in capital employed, income from such asset should not be included in the net profit for the purpose of return on capital employed. Similarly, if the fixed assets are taken at the replacement cost, depreciation on the addition of the assets due to replacement cost should be adjusted in the income for this purpose. As per accounting convention, all the possible losses should be adjusted in the profits and all possible incomes should be ignored and abnormal losses or gains should be excluded from the profit.

The capital employed may be determined from the liability side of the balance sheet also. Thus,

Calculation of Capital Employed from Liabilities Side of B/S

Preference Share Capital		
Equity Share Capital	XXXX	
Add: Reserve & Surpluses	XXXX	
Debentures	XXXX	
Long-term Loans	XXXX	
		XXXX
Less: Fictitious Assets	XXXX	
Accumulated Losses	XXXX	
Intangible Assets	XXXX	XXXX
Net Capital Employed		XXXX

3.6.2 Du Pont Control Chart

As discussed earlier ROI or ROCE is the product of two ratios i.e. Net Profit Ratio and Sales to Capital Employed Ratio (Turnover). Return on capital employed is affected by a number of factors. If net profit ratio changes, ROCE (ROI) will also change as it is based on it. If cost of sales increases without other changes, net profit will decrease as a result ROCE (ROI) would also decrease. In the same way, if the working capital decreases, total capital employed will also decrease and in the absence of any decrease the ROI will increase. There are so many factors which may affect the ROI. These factors are inter-related with each other. These factors can be represented in a chart which is known as Du Pont Chart. This chart was first used by the Du Pont Company of U.S.A. in their annual report. Therefore, it is called Du Pont Chart.

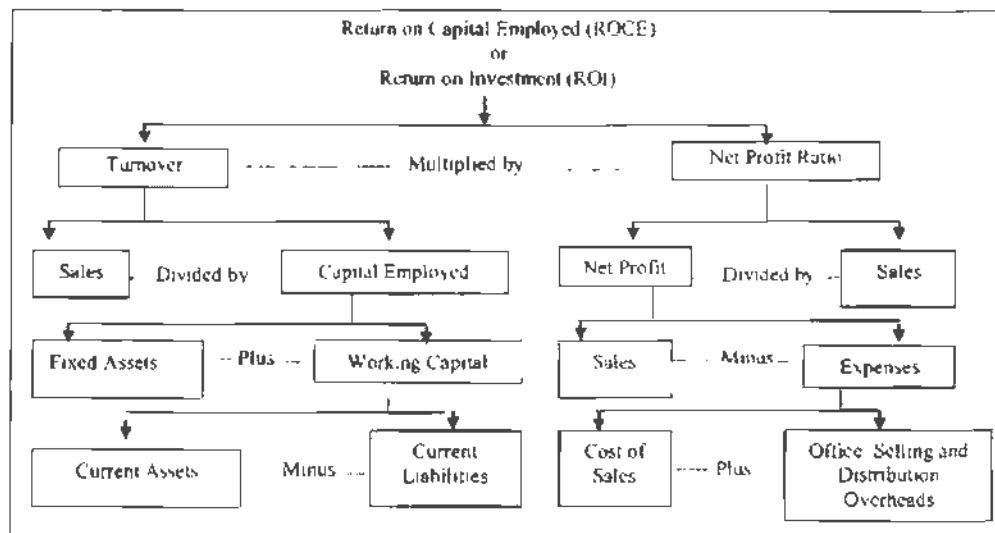


Figure 3.2: Du Pont Chart of Profitability

Example (Return on Investment)

Compute Return on Capital Employed on the basis of (i) Net Capital Employed, (ii) Gross Capital Employed, (iii) Average Capital Employed, with the help of the following figures.

Liabilities	₹	Assets	₹
Preference Share Capital	9,00,000	Fixed Assets Less Depreciation	24,00,000
Equity Share Capital	15,00,000	Current Assets	12,00,000
9% Debentures	12,00,000	Investments:	
Reserves and Surplus	6,00,000	Quoted	4,50,000
Current Liabilities	6,00,000	Unquoted	3,00,000
		Preliminary Expenses	2,25,000
		Patents & Trade-marks	2,25,000
	48,00,000		48,00,000

1. Reserve and Surplus include current year's profit of ₹ 1,20,000 after interest on debentures for one year and after tax provision @25%.
2. Income from quoted investment @10% is included in current year's profit, such investment being non-trade investments.
3. Net capital employed in the beginning of the year was ₹ 33,75,000.

Solution

Calculation of Capital Employed

	₹
Fixed Assets less Depreciation	24,00,000
Current Assets	12,00,000
Unquoted Investment	3,00,000
Quoted investment will not be considered as these are non-trade	—
Patents and Trademarks	2,25,000
Gross Capital Employed	41,25,000
Less: Current Liabilities	6,00,000
Net Capital Employed	35,25,000

Average Capital Employed

$$= \frac{\text{Beginning Capital Employed} + \text{Capital Employed at the end}}{2}$$

$$= \frac{33,75,000 + 35,25,000}{2} = ₹ 34,50,000$$

Calculation of Net Profit

Profit after Tax	₹ 1,20,000
Add Tax $\frac{1,20,000 \times 25}{75}$	₹ 40,000
Profit before Tax	₹ 1,60,000
Add: Interests on Debentures 9% on ₹ 12,00,000	₹ 1,08,000
Profit before Interest and Tax	₹ 2,68,000
Less Income from quoted investment (10% of ₹ 4,50,000)	₹ 45,000
Operating Income before Interest and Tax	₹ 3,13,000

(i) Return on Net Capital Employed

$$= \frac{\text{Operating Income before Interest \& Tax}}{\text{Net Capital Employed}} \times 100$$

$$= \frac{3,13,000}{32,25,000} \times 100 = 9.70\%$$

(ii) Return on Gross Capital = $\frac{\text{Operating Income before Interest and Tax}}{\text{Gross Capital Employed}} \times 100$

$$= \frac{3,13,000}{41,25,000} \times 100 = 7.587\%$$

(iii) Return on Average Capital = $\frac{\text{Operating Income before Interest and Tax}}{\text{Average Capital Employed}} \times 100$

$$= \frac{3,13,000}{34,50,000} \times 100 = 9.07\%$$

1. **Profitability Ratios from the Point of View of Prospective Investors:** The analysts compute some other profitability ratios also for the prospective investors of the company. These ratios are as follows:

(a) **Earning Per Share (EPS):** Earning per share represents the earning of the company derived from each equity share of the company. If there are both equity and preference shares, first the dividend on preference shares is subtracted from the net profit. The remaining net profit is for equity shareholders. To find out the earning per share the net profit is divided by the total number of equity shares as below:

Earning per Share (EPS)

$$= \frac{\text{Net Profit After Tax, Interest and Preference Dividend}}{\text{No. of Equity Shares}}$$

The more of EPS represents the better performance and prospect of the company. If the EPS of a company increases, rate of dividend and bonus may increase. EPS directly affects the market value of the equity share. Generally, 10 to 20 times of the EPS is considered a justified market value of the share.

If the company is converting its preference shares into equity shares, at the time of calculating the EPS such a conversion should also be kept in mind. If EPS is being calculated on the basis of existing shares only, such EPS is called primary EPS. And if EPS is computed on the basis of existing and new converted shares, such EPS is called diluted EPS.

(b) **Price Earning Ratio (PER):** This ratio reveals the relationship between the market price of the equity share and the earning per share. It is calculated by the following formula:

$$\text{Price Earning Ratio (PER)} = \frac{\text{Market Price Per Equity Share}}{\text{Earning Per Equity Share}}$$

Price earning ratio is the best measurement for the value of share. A high PER creates confidence among the investor. It helps the prospective investor in taking the decision regarding the buying of shares of a company at a particular

market price. On the basis of this ratio the price of an equity share of a company may be forecasted. On the basis of this price the value of the company may also be computed.

- (c) *Pay-out Ratio*: This ratio reveals as to what portion of the EPS has been paid as dividend and what has been retained for ploughing back. It is calculated as follows:

$$\text{Pay-out Ratio} = \frac{\text{E.P.S.}}{\text{D.P.S.}} \times 100$$

From investor's point of view this is a very important ratio. An investor, who is interested in the capital appreciation, likes the low pay-out ratio and who prefers the regular cash return on the investment prefers the high pay-out ratio. Retained earning ratio may also be computed with the help of retained earning and EPS as under:

$$\text{Retained Earning Ratio} = \frac{\text{Retained Earning Per Share}}{\text{EPS}} \times 100$$

The total of retained earning ratio and pay-out ratio will be always 100.

- (d) *Dividend Per Share (DPS)*: Generally, the equity shareholders do not take the interest in the EPS, but they take more interest in the dividend per share which has been declared by the company. It is computed as follows:

$$\text{Dividend Per Share (DPS)} = \frac{\text{Dividend for Equity Shares}}{\text{No. of Equity Shares}}$$

The higher DPS is liked by the equity shareholders. Alternately, it can be calculated as

$$\text{Rate of Dividend} = \frac{\text{Dividends Declared}}{\text{Paid up Equity Capital}} \times 100$$

- (e) *Dividend Yield Ratio (DYR)*: This ratio shows the real worth of the company before the shareholders. This ratio calculates the relationship between the dividend paid per share and the market price per share in percentage which may be as:

$$\text{Dividend Yield Ratio (DYR)} = \frac{\text{Dividend Per Share}}{\text{Market Price Per Share}} \times 100$$

This ratio is calculated for those investors who are interested in the dividend income.

- (f) *Interest Coverage Ratio*: This ratio is computed to check the company's ability to pay the interest on the long-term loans. This ratio is very important from the point of view of the debenture holders and money lenders. It is computed as follows:

$$\text{Interest Coverage Ratio} = \frac{\text{Profit before Interest and Tax}}{\text{Interest on Long-term Liabilities}} \times 100$$

- (g) *Dividend Coverage Ratio*: It is the reciprocal of the pay-out ratio. It indicates the company's ability to maintain the dividends rate in future. It is calculated as follows:

$$\text{Dividend Coverage Ratio} = \frac{\text{Profit before Interest and Tax}}{\text{Dividend}}$$

Or

$$\text{Dividend Coverage Ratio} = \frac{\text{E.P.S.}}{\text{D.P.S.}}$$

(h) *Book Value Per Share Ratio*: Book value or intrinsic value of a share is determined by dividing the net assets of the company by the total number of shares. It is determined as follows:

$$\text{Book Value of One Equity Share} = \frac{\text{Net Assets}}{\text{No. of Equity Shares}}$$

Or

$$\frac{\text{Net Assets}}{\text{No. of Equity Shares} + \text{No. of Pref. Shares}}$$

(i) *Revenue Reserve to Paid up Capital Ratio*: This ratio is the relationship between the revenue reserve and paid up capital. It is determined in percentage as follows:

$$\text{Revenue Reserve to Paid up Capital Ratio} = \frac{\text{Revenue Resource}}{\text{Paid up Capital}} \times 100$$

Example (Profitability Ratio)

The Balance Sheet of Shila Manufacturing Company Limited as on 1st January, 2008 was as follows:

Balance Sheet of Shila Manufacturing Company Ltd.
(As on 1st January, 2008)

Liabilities	Amount (₹)	Assets	Amount (₹)
Share Capital (₹ 10 per share)	20,00,000	Fixed Assets	25,00,000
Reserves	5,00,000	Current Assets	9,00,000
Debentures 14%	5,00,000		
Current Liabilities	4,00,000		
	34,00,000		34,00,000

Tax rate for the Company is 30%. The Earning Before Interest & Tax (E.B.I.T.) of the company are ₹ 7,50,000. The dividend Pay-out Ratio of the company is 40%. The market price of company's shares is ₹ 16 per share.

On the basis of the information, compute the following ratios for the company:

- (i) Rate of Return on Gross Capital;
- (ii) Rate of Return on Net Capital;
- (iii) Rate of Return on Net Worth or Owned Capital;
- (iv) Rate of Return on Paid-up Equity Capital;
- (v) Earning per Share;
- (vi) Dividend
- (vii) Earnings yield;

(viii) Dividend Yield; and

(ix) Dividend Cover.

Solution

$$(i) \text{ Rate of Return on Gross Capital} = \frac{\text{Earning before Interest \& Tax}}{\text{Gross Capital Employed}} \times 100$$

$$\text{Gross Capital} = \text{Fixed Assets} + \text{Current Assets}$$

$$= ₹ 25,00,000 + ₹ 9,00,000 = ₹ 34,00,000$$

$$\text{Rate of Return on Gross Capital} = \frac{7,50,000}{34,00,000} \times 100 = 22.058\%$$

$$(ii) \text{ Rate of Return on Net Capital} = \frac{\text{Earning before Interest and Tax}}{\text{Net Capital employed}} \times 100$$

$$\text{Net Capital Employed} = \text{Gross Capital Employed} - \text{Current Liabilities}$$

$$= ₹ 34,00,000 - ₹ 4,00,000 = ₹ 30,00,000$$

$$\text{Rate of Return on Net Capital Employed} = \frac{7,50,000}{30,00,000} \times 100 = 25\%$$

$$(iii) \text{ Rate of Return on Net Worth} = \frac{\text{Earning After Interest and Tax}}{\text{Net Worth}} \times 100$$

$$\text{Earning after Interest and Tax} = \text{EBIT} - \text{Interest on Debentures} - \text{Tax}$$

$$= 7,50,000 - 14\% \text{ on } ₹ 5,00,000 - \text{Tax}$$

$$= ₹ 7,50,000 - ₹ 70,000 - \text{Tax}$$

$$= ₹ 6,80,000 - 30\% \text{ of } 6,80,000$$

$$= ₹ 4,76,000$$

$$\text{Net Worth} = \text{Share Capital} + \text{Reserve}$$

$$= ₹ 20,00,000 + ₹ 5,00,000 = ₹ 25,00,000$$

$$\text{Rate of Return on Net Worth} = \frac{4,76,000}{25,00,000} \times 100 = 19.04\%$$

$$(iv) \text{ Rate of Return on Paid-up Equity Capital} = \frac{\text{Earning after Interest and Tax}}{\text{Paid-up Equity Capital}} \times 100$$

$$= \frac{₹ 4,76,000}{₹ 20,00,000} \times 100 = 23.8\%$$

$$(v) \text{ Earning Per Share} = \frac{\text{Earning after Interest and Tax}}{\text{No. of Equity Shares}}$$

$$= \frac{₹ 4,76,000}{₹ 2,00,000} = 2.38$$

$$(vi) \text{ Dividend Per Share} = \frac{\text{Total Dividends}}{\text{No. of Shares}}$$

$$\text{Total Dividend} = 40\% \text{ of Earning after interest and tax}$$

$$= 40\% \text{ of } ₹ 4,76,000 = ₹ 1,90,400$$

$$\text{Dividend per Share} = \frac{1,90,400}{2,00,000} = ₹ 0.952$$

$$\begin{aligned} \text{(vii) Earning Yield} &= \frac{\text{Earning per Share}}{\text{Market Price per Share}} \times 100 \\ &= \frac{₹ 2.38}{₹ 16.00} \times 100 = 14.87\% \end{aligned}$$

$$\begin{aligned} \text{(viii) Dividend Yield} &= \frac{\text{Dividend per Share}}{\text{Market Price per Share}} \times 100 \\ &= \frac{₹ 0.952}{₹ 16.00} \times 100 = 5.95\% \end{aligned}$$

$$\begin{aligned} \text{(ix) Dividend Coverage Ratio} &= \frac{\text{Earning per Share}}{\text{Dividend per Share}} \\ &= \frac{₹ 2.38}{₹ 0.952} = 2.5 \text{ times} \end{aligned}$$

3.6.3 Liquidity Ratios

Liquidity ratios are also known by the name of short-term solvency ratios. These ratios are relating with the short-term financial position of the company. Liquidity ratios are used to find out the ability of the company to pay its short-term obligations from its short-term resources. Short-term obligations include - creditors, banks, money lenders, suppliers, employees, etc. Following ratios are calculated to check the liquidity of the company:

1. **Current Ratio:** This ratio is also known by the name of Banker's Ratio or Working Capital Ratio. This ratio reveals the relationship between current assets and current liabilities. Current ratio is used to measure the short-term liquidity position of a company means short-term solvency. This ratio is calculated by matching the current liability with current assets as below:

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

Where,

Current Assets are those assets which are expected to be converted into cash within a year or consumed in the production of goods or rendering of services. These assets are Cash-in-Hand, Cash-in-Bank, Bills Receivables, Debtors, Stock, Loans and Advances, Short-term Marketable Investments as Government Securities, Prepaid Expenses, Accrued Interest, Money at Call and Short Notice, etc.

Current Liabilities are those which are expected to be paid within one year. These liabilities are – Sundry Creditors, Bills Payable, Outstanding Expenses, Short-term Loans, Provision of Taxation, Long-term Loans Payable in Current Year, Income Received in Advance, Dividends Payable, Bank Overdraft (if it is not mentioned as long-term arrangement), etc.

Interpretation of Current Ratio: Current ratio is the test of short-term solvency of a company. In other words it is the indicator of the short-term solvency of the company. The ideal current ratio is 2:1. If a company has this ideal current ratio, it is assumed that its current assets are sufficient to meet its current liabilities or

its working capital is adequate. If the current ratio of a company is higher than the ideal ratio, it shows that company has higher capacity to pay off its short-term liabilities. If the current ratio of a company is less than the ideal ratio, it is assumed that its working capital is not sufficient.

This ratio is also used to check the adequacy of the working capital of the business. Working capital is that amount of current assets which is left after the payment of current liabilities. Working capital of a business represents the margin of safety for short-term obligations. At the time of using the current ratio, the analyst should adopt the following precautions:

- (i) Current ratio is affected by the window dressing of the balance sheet.
- (ii) The analyst must look that adequate provision for bad and doubtful debts has been made or not.
- (iii) Adequate provision for the contingent liabilities should be made as per the nature of liabilities.
- (iv) Inventory should be properly valued.

2. **Liquid Ratio:** This ratio is also called by the name of Quick Ratio or Acid Test Ratio. Current ratio is used to measure the short-term solvency. If the amount of stock is heavy in the current assets, current ratio may mislead. Therefore, liquid ratio is also calculated along with the current ratio. Liquid ratio is the relationship of liquid assets and current liabilities. This ratio is computed as under:

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

Or

$$\text{Liquid Ratio} = \frac{\text{Current Assets} - (\text{Stock} + \text{Prepaid Expenses})}{\text{Current Liabilities}}$$

Liquid assets comprise all those assets which are included in current assets except stock and prepaid expenses. It is assumed that stock takes time to be converted into cash and prepaid expenses cannot be taken back easily.

There is one more concept that liquid ratio should be computed on the basis of liquid assets and liquid liabilities. Liquid liabilities may be obtained by subtracting the bank overdraft from the current liabilities. As per the concept the liquid ratio will be as below:

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

Interpretation: The higher of the ratio shows the better ability of the company to discharge its short-term liabilities as and when required. Liquid ratio provides more stringent test of short-term solvency because liquid assets are more liquid than the current liabilities. The ideal liquid ratio is assumed 1:1. But it is not accepted in all types of business. Results on the basis of it may be illusory. If the liquid ratio of a company is less than the ideal ratio of 1:1, short-term financial position of the company is considered unsound. The company does not have the sufficient cash to meet its short-term liabilities. Continuous declining of the ratio indicates the overtrading which may lead the company into financial difficulty in future.

3. **Super Quick Ratio:** This ratio is also known as absolute liquid ratio. It reveals the relationship between super quick assets and current liabilities. Super quick assets include cash, bank balance and marketable securities. Super quick assets may be computed by subtracting the debtors and bills receivable from the liquid assets. This is computed as follows:

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

It is the most conservative test to check the liquidity of a company. The acceptable norm for this ratio is 0.5 : 1 or 1:2.

3.6.4 Solvency Ratios

Solvency ratios indicate company's ability to meet its long-term liabilities. Therefore, these ratios are also called long-term solvency ratios. The long-term liability of a company comprises of debentures, long-term loans, unpaid installment on hire-purchase, and long-term creditors. The long-term creditors take interest in those ratios which highlight the long-term financial position of the company so that they may ensure regarding the repayment of their principal amount on maturity as well as regular interest on their dues. For this purpose the following solvency ratios are calculated:

1. **Debt-equity Ratio:** This ratio reveals the relationship between external equities and internal equities. Therefore, it is also called the external-internal equity ratio. It is computed on the basis of following formula:

$$\text{Debt-equity Ratio} = \frac{\text{External Equities or Debts}}{\text{Internal Equities or Equities}}$$

Or

$$\text{Debt-equity Ratio} = \frac{\text{Outsiders Liabilities}}{\text{Shareholders' Fund}}$$

External equities or debts include debentures, long-term loans, mortgage loans, short-term loans and current liabilities. On the other hand the internal equities (shareholders' fund) include the equity share capital, capital reserve, revenue reserve, retained earnings, sinking funds and preference share capital but fictitious assets and accumulated losses should be subtracted from the shareholders fund.

Interpretation: Debt-equity ratio is taken as an indicator of the degree of protection enjoyed by the outsider creditors. Generally, a ratio of 1:1 is considered satisfactory. The lower debt equity ratio expresses that there is greater claim of the shareholders over the assets of the company which is considered good from the point of view of the management. It provides a good margin of safety at the time of liquidation of the company. Analysis and interpretation of this ratio depends upon the purpose of analyst.

2. **Proprietary Ratio:** This ratio is also known by the name of net worth to total assets or equity ratio. Proprietary ratio indicates a relationship between net worth and total assets. This ratio expresses the extent to which the shareholders own business. Proprietary ratio is computed as follows:

$$\text{Proprietary Ratio} = \frac{\text{Shareholders' Fund or Net Worth}}{\text{Total Assets}}$$

Shareholders' fund includes the equity capital, preference share capital, total accumulated reserve and surplus. But accumulated losses are subtracted to find the shareholder's fund.

For the purpose the total assets include the fixed assets and current assets. If the intangible assets have some marketable value, those are also included. But the fictitious assets are never included in the total assets.

Interpretation: The proprietary ratio is calculated to determine the long-term solvency of the company. The higher proprietary ratio reveals the stability of the business in the long run. The lesser ratio indicates the failure of the business in long run. The ideal proprietary ratio of 1:2 is considered satisfactory.

This ratio can also be calculated on the basis of current assets and fixed assets separately. Its formulae are given below:

$$(a) \text{ Ratio of Fixed Assets to Proprietary Fund} = \frac{\text{Fixed Assets}}{\text{Proprietors' Fund}}$$

$$(b) \text{ Ratio of Current Assets to Proprietary Fund} = \frac{\text{Current Assets}}{\text{Proprietor's Fund}}$$

3. **Solvency Ratio:** This ratio reveals the relationship between the total assets and total liabilities of the business. It expresses the company's capability and soundness to meet its liabilities out of its assets. Among total liabilities, long-term and current liabilities are included. Its calculation is done with the help of following formulae:

$$\text{Solvency Ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

Where,

$$\text{Total Assets} = \text{Fixed Assets} + \text{Current Assets} + \text{Intangible Assets (Market Value)}$$

Interpretation: If solvency ratio is less than one (1), company is assumed solvent to pay all its liabilities. If this ratio is more than one (1), it is assumed that financial position of the company is not sound. It cannot pay all its liabilities. Company is going in the state of insolvency.

4. **Fixed Assets Ratio:** This ratio reveals the relationship between fixed assets and long-term fund and capital. It is calculated as under:

$$\text{Fixed Assets Ratio} = \frac{\text{Long-term Fund} + \text{Capital}}{\text{Fixed Assets}}$$

Where,

$$\text{Long-term Fund} = \text{Equity Share Capital} + \text{Pref. Share Capital} + \text{Reserve and Surplus} + \text{Long-term Loans}$$

$$\text{Fixed Assets} = \text{Fixed Assets Less Depreciation} + \text{Long-term Investments} + \text{Shares in subsidiaries}$$

Interpretation: This ratio reveals whether the long-term funds are being used to acquire the fixed assets or not. In other words fixed assets should be purchased from the long-term funds. 1.5 of the fixed assets ratio may be considered satisfactory. It means that the long-term funds are more than the fixed assets. Some funds are used in the working capital also, which is good in long-run.

5. **Capital Gearing Ratio:** Capital gearing ratio reveals the relationship between equity share capital plus reserve and surplus and preference share capital + fixed interest bearing finance. It is calculated on the basis of following formula:

$$\text{Capital Gearing Ratio} = \frac{\text{Equity Share Capital + Reserve \& Surplus}}{\text{Pref. Share Capital + Interest Bearing Loans}}$$

Here, the interest bearing loans mean those loans or finance on which the company has to pay the interest at a fixed rate like debenture, bonds and bank loan, etc.

Interpretation: If capital gearing ratio is less than 1, it is said to be highly geared. In this case the amount of preference share capital fixed interest bearing loans exceeds the amount of equity share capital and reserve and surplus. But if the amount of equity share capital including reserve and surplus exceeds the amount of preference share capital including fixed interest bearing loans, company is said to be low geared. And if the capital gearing ratio is 1:1, it is said to be neutral. But if there is only equity capital, no preference share capital, no loans, there will be no capital gearing/leverage. Capital gearing is very much useful in making the dividend policy. In the case of low geared capital, the management may not avail the advantage of low cost of loans, preference capital.

6. **Coverage Ratio:** This ratio indicates how many times the net profit covers the financial expenses. Coverage ratios are of two types:

- (i) **Interest Coverage Ratio.** This ratio is also known as debt-service ratio. It expresses the relationship between the interest on long-term loans and other obligations and the net profit before interest on tax. It is computed by the following formula:

$$\text{Interest Coverage Ratio} = \frac{\text{Net Profit before Interest and Tax}}{\text{Interest on Long-term Loans}}$$

Interpretation This ratio indicates the number of times interest covers the net profit. 6-7 times of the ratio is considered good. The high ratio shows the more safety to the long term creditor. If it is too much high, it indicates that the company is not using the loans from outsiders.

- (ii) **Preference Dividend Coverage Ratio:** This ratio is computed to find out the relationship between preference dividend and net profit after interest and tax. It expresses the company's ability to pay preference dividend. It is expressed in times. This ratio indicates the number of times preference dividend covers the net profit after interest and tax. It is calculated as under:

$$\text{Preference Dividend Coverage Ratio} = \frac{\text{Net Profit after Interest and Tax}}{\text{Preference Dividend}}$$

3-4 times this ratio is considered satisfactory.

Example (Liquidity and Solvency Ratio)

The following is the Balance Sheet of M/s Charan & Co. Ltd., as on 31st Dec., 2007

Liabilities and Capital	Amount (₹)	Assets	Amount (₹)
Equity Share Capital	3,00,000	Fixed Assets Less	6,59,430
Preference Share Capital	3,00,000	Depreciation	
Reserves and Surplus	2,53,500	Stock	1,48,380
Bills Payable	19,500	Debtors	35,130
Creditors	48,000	Cash and Bank Balances	78,060
	<u>9,21,000</u>		<u>9,21,000</u>

Ascertain the following Ratio:

- (a) Current Ratio
- (b) Liquid Ratio
- (c) Debt Equity Ratio
- (d) Proprietary Ratio
- (e) Solvency Ratio
- (f) Capital Gearing Ratio

Solution

(a) Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$

Current Assets = Stock + Debtors + Cash and Bank Balance
= 1,48,380 + 35,130 + 78,060
= ₹ 2,61,570

Current Liabilities = Bills Payable + Creditors
= ₹ 19,500 + 48,000
= ₹ 67,500

Current Ratio = $\frac{2,61,570}{67,500} = 3.87:1$

(b) Liquid Ratio = $\frac{\text{Liquid Assets}}{\text{Current Liabilities}}$

Liquid Assets = Current Assets - Stock
= 2,61,570 - 1,48,370
= ₹ 1,13,200

Liquid Ratio = $\frac{1,13,200}{67,500} = 1.67 : 1$

(c) Debt-equity Ratio = $\frac{\text{External Equities}}{\text{Internal Equities}}$

External Equities = Bills Payable + Creditors
= ₹ 19,500 + 48,000
= ₹ 67,500

Internal Equities = Equity Share Capital + Preference Share Capital +
Reserve & Surplus
= 3,00,000 + 3,00,000 + 2,53,500
= ₹ 8,53,500

Debt-equity Ratio = $\frac{67,500}{8,53,500} = 0.076 : 1$

$$(d) \text{ Proprietary Ratio} = \frac{\text{Proprietors' Fund}}{\text{Total Assets}}$$

$$\text{Proprietors' Fund} = \text{Internal Equities} = ₹ 8,53,500$$

$$\begin{aligned} \text{Total Assets} &= \text{Fixed Assets} + \text{Current Assets} \\ &= 6,59,430 + 2,61,570 \\ &= ₹ 9,21,000 \end{aligned}$$

$$(e) \text{ Solvency Ratio} = \frac{\text{External Liabilities}}{\text{Total Assets}}$$

$$\text{External Liabilities} = \text{External Equities} = ₹ 67,500$$

$$\text{Solvency Ratio} = \frac{67,500}{9,21,000} = 0.07:1$$

$$(f) \text{ Capital Gearing Ratio} = \frac{\text{Equity Share Capital} + \text{Reserve \& Surplus}}{\text{Preference Share Capital} + \text{Long-term Loans}}$$

$$= \frac{3,00,000 + 2,53,500}{3,00,000} = \frac{5,53,500}{3,00,000} = 1.845 : 1$$

3.6.5 Leverage Ratios

In the financial management, the leverage is used as a tool to accelerate the return for shareholders by using the debts financing. When rate of earning becomes more than the fixed cost of debts in the market, such a leverage becomes favourable otherwise unfavourable. In other words, to do more work by a little effort is called lever. Similarly, slight increase or decrease in the selling price or financing will change the rate of return to shareholders. It is said leverage work.

Following three types of leverage are used in the business:

1. **Operating Leverage:** Operating leverage ratio is used to measure the changes in operating profit due to slight change in sales. In the words of J. Hampton, "Operating leverage exists when changes in revenues produce greater changes in the earning before interest and tax". This leverage is computed as:

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{Operating Profit}}$$

Or

$$\text{Operating Leverage} = \frac{\text{Sales} - \text{Variable Costs}}{\text{Earning before Interest and Tax}}$$

Or

$$\text{Operating Leverage} = \frac{\text{Percentage Change in Operating Profit}}{\text{Percentage Change in Sales}}$$

Where,

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

2. **Financial Leverage:** It is the indicator which reveals the impact of using the debt capital in capital structure on the profit before tax of the company. As per L.J. Gitman, "Financial leverage may be defined as the ability of a firm to use

fixed financial changes to magnify the effects of changes in EBIT on the firm's EPS". Degree of the financial leverage can be measured by the following formula:

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{PBT}}$$

Where,

EBIT = Earning Before Interest & Tax

PBT = Profit before Tax

Or

$$\text{Financial Leverage} = \frac{\text{Percentage Change in EPS}}{\text{Percentage Change in EBIT}}$$

3. **Combined Leverage:** It is the multiplication of operational leverage and financial leverage. It is computed as follows:

$$\text{Combined Leverage} = \text{Operating Leverage} \times \text{Financial Leverage}$$

Or

$$\text{Combined Leverage} = \frac{C}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{PBT}}$$

Or

$$= \frac{C}{\text{PBT}}$$

Where,

C = Contribution

EBIT = Earning before Interest & Tax

PBT = Profit before Tax

Example (Leverage Ratios)

From the following information calculate:

- (a) Operating Leverage
- (b) Financial Leverage
- (c) Composite Leverage

	Original (₹)	(₹ in Lakhs) After an Increase of 10% on Sales
Sales (4500 units at ₹ 1 p.u)	4,500	4,950
Less: Variable Cost (₹ 0.60 p.u)	2,700	2,970
Contribution	1,800	198
Less: Fixed Costs	1,350	1,350
Profit before Interest & Tax (EBIT)	450	630
Less: Interest	150	150
Profit before Tax	300	480
Less: Tax at 55%	165	264
Profit after Tax (PAT)	135	216

Solution

Particulars	Degree of Operations	
	Original	After 10% Increase on Sales
(a) Operating Leverage = $\frac{\text{Contribution}}{\text{EBIT}}$	$\frac{1800}{450} = 4$	$\frac{1980}{630} = 3.142$
(b) Financial Leverage = $\frac{\text{EBIT}}{\text{Profit before Tax}}$	$\frac{450}{300} = 1.50$	$\frac{630}{480} = 1.333$
(c) Composite Leverage = Operating Leverage \times Financial Leverage	$4 \times 1.50 = 6.0$	$3.142 \times 1.313 = 4.188$

Check Your Progress

Fill in the blanks of the following:

- _____ is the engine that drives the business enterprise.
- _____ Ratio is the relationship of each component of cost to sales which is expressed in percentage.
- Return on Capital Employed is also known as _____.
- _____ represents the earning of the company derived from each equity share of the company.
- _____ ratios are used to find out the ability of the company to pay its short-term obligations from its short-term resources.
- _____ ratio is used to measure the changes in operating profit due to slight change in sales.

3.7 LET US SUM UP

- Ratio is a numerical relationship between two items or groups of the same nature of the financial statements. It can be expressed in the proportion, percentage or turnover.
- Ratio analysis makes the financial statement simple or rearranged so that those may be understood easily, comparison between two firms, two periods. It also helps in calculating the efficiency, profitability and solvency (Long-term as well as short-term).
- In spite of being so many advantages of ratio analysis, it is not free from limitations. These are in ratio analysis the qualitative aspect has been ignored, price level changes affect the ratio, standard ratio cannot be determined easily, financial statements are window dressed, ratio are based on past performance and so many.
- Different authors have classified the ratio in their own ways. Some classify the ratios on the basis of financial statements, some on the relative importance of the ratios, some on specific purpose, and some on the basis of users. But in this book for the purpose of the study, the functional classification is taken.
- As per functional classification of ratios, the accounting ratios are classified into:
 - ❖ Profitability Ratio
 - ❖ Liquidity Ratio

- ❖ Solvency Ratio
 - ❖ Leverage Ratio
 - ❖ Activity Ratios
 - ❖ Inter-firm Comparison Ratio
- The profitability of a firm is tested on the basis of different ratios which can be based on the capital, sales and the value of a share.
 - Liquidity means the short-term solvency of a company. To test the liquidity of a company the current ratio, liquidity ratio and super-liquid ratio are computed and interpreted.
 - Solvency is used to determine the long-term solvency of the company. Under this head Debt Equity Ratio, Proprietary Ratio, Solvency Ratio, Fixed Assets Ratio, Capital Gearing Ratio and different coverage ratios are calculated and analysed.
 - Three leverage ratios are: Operating leverage, Financial leverage and Combined and these leverage are also calculated.
 - To test the performance and managerial efficiency in using the assets and in earning the profit, the activity ratios are calculated.

3.8 LESSON END ACTIVITY

“Ratio Analysis plays an important role in the process of decision making in business”. Examine this statement and discuss some important ratios for measuring the financial soundness and profitability of an enterprise.

3.9 KEYWORDS

Ratio: It is a numerical expression of relationship between two items, which is calculated to obtain a meaning.

Financial Statements: These include the profit and loss account and the balance sheet of a concern.

Profitability: The profit earning capacity of a business is called profitability.

Liquidity: The short-term debts paying position of a company from its short-term resources is called liquidity.

Solvency: It is company's ability to meet its long-term liability or obligations.

Leverage: It is a tool to accelerate the rate of return by using the fixed interest bearing debt finance.

3.10 QUESTIONS FOR DISCUSSION

1. Explain the role of ratio analysis in the interpretation of financial statements. Examine the limitations of ratio analysis.
2. What are financial ratios? Explain and illustrate the ratios used for testing the short-term and long-term financial position of the firm.
3. Discuss the meaning and significance of current ratio and acid test ratio in analyzing the balance sheet.
4. What is the importance of ratio analysis to management? Explain briefly any two ratios each for measuring (i) profitability and (ii) liquidity.

5. How is the liquidity of a firm tested? Explain its different ratios with examples.
6. The following is the Trading and Profit & Loss Account of M/s. Balaji Ltd. for the year ended 31st March, 2008.

Trading and Profit & Loss Account

	₹		₹
To Stock	3,81,250	By Sales ₹ 25,25,000	
To Purchases	15,76,250	Less Sales Return 25,000	25,00,000
To Carriage	10,000	By Stock	4,92,500
To Wages	25,000		
To Gross Profit	10,00,000		
	29,92,500		29,92,500
To Administrative Exp.	5,05,000		
To Finance Expenses			
Interest ₹ 6000		By Gross Profit	10,00,000
Discount ₹ 12000		By Non-Operating Income:	
Bad Debt ₹ 17000	35,000	Int. on Securities	7,500
To Selling and Dist. Exp.	60,000	Dividend on Shares	18,750
To Non-Operating Exp.:		(Profit on sale of Assets)	3,750
Loss on Sale of Assets	10,000		
To Net Profit	4,20,000		
	10,30,000		10,30,000

Calculate: (a) Expenses Ratio (b) Gross Profit Ratio (c) Net Profit Ratio (d) Net Operation Profit Ratio (e) Operating Ratio and (f) Stock Turnover Ratio

7. The Balance Sheet of Lalit Mohan Company as 31st March, 2008 is as follows:

Liabilities	₹	Assets	₹
Equity Share Capital	4,00,000	Goodwill	2,40,000
Preference Share Capital	2,00,000	Fixed Assets	5,60,000
Capital Reserve	8,00,000	Stock	1,20,000
Loan on Mortgage	3,20,000	Debtors	1,20,000
Bank Overdraft	40,000	Investment	40,000
Trade Creditors	1,60,000	Cash	3,20,000
Provision for Taxation	80,000		
P & L A/c	12,000		
	14,00,000		14,00,000

The profit for the financial year 2007-08 after taxation and interest on fixed deposit amounted to ₹ 2,40,000 out of which ₹ 80,000 transferred to reserve and ₹ 40,000 were paid as dividend. Sales amounted to ₹ 24,00,000. Calculate the Ratios for: (a) Testing Liquidity; (b) Testing Solvency; (c) Testing Profitability.

8. From the following Balance Sheet calculate (i) Working Capital Ratio (ii) Liquidity Ratio.

Liabilities	₹	Assets	₹
Paid up Capital	3,00,000	Cash in hand	250
Bank Overdraft	38,000	Stock	1,28,250
Sundry Creditors	26,000	Trade Debtors	1,25,000
Provision for Dept.	55,750	Land and Building	92,150
Provision for Taxation	9,250	Machinery & Equipment	1,28,600
Proposed Dividends	15,000	Prepaid Expenses	1,500
General Reserve	55,000	Goodwill	30,000
Profit and Loss A/c	6,750		
	5,05,750		5,05,750

9. The following data are being taken from the records of Birla Limited as on 30th June 2002:

Cash	25,000	Bills payable	3,000
Debtors (net)	12,000	Sales	53,000
Inventory	8,000	Purchases	34,000
Prepaid expenses	2,000	Purchase Returns	750
Creditors	12,000		

On the basis of above information, compute the following:

- (i) Working Capital Ratio
 - (ii) Acid-Test Ratio
 - (iii) Inventory Turnover
 - (iv) Receivables Turnover
 - (v) Average Payment Period
10. From the following information calculate the following ratios:
- (i) Total Assets Turnover
 - (ii) Fixed Assets Turnover
 - (iii) Current Assets Turnover
 - (iv) Working Capital Turnover
 - (v) Net Worth Turnover

Balance Sheet as on 31st December 2001

Liabilities	₹	Assets	₹
Share Capital	32,000	Land and Building	24,000
Reserves and Funds	4,000	Plant and Machinery	15,000
Profit and Loss A/c	12,000	Furniture	9,000
Debentures	16,000	Long-term Investment	12,000
Long-term Loan	12,000	Stock	9,000
Sundry Creditors	6,800	Debtors	12,600

11. The following is the income statement of M/s Kanti Babu Brothers for the year ended 31st March 2002:

	₹	₹
<i>Net Sales</i>		30,00,000
<i>Less: Cost of Goods Sold:</i>		
<i>Opening Stock</i>	5,00,000	
<i>Add. Purchases</i>	<u>20,00,000</u>	
	25,00,000	
<i>Less. Closing Stock</i>	<u>7,00,000</u>	<u>18,00,000</u>
<i>Gross profit</i>		12,00,000
<i>Less: Operating Expenses</i>		<u>4,80,000</u>
<i>Operating Profit</i>		7,20,000
<i>Less Interest Charges</i>		<u>1,80,000</u>
Profit before taxation		5,40,000

Additional information as on 31.3.2002:

Current Assets ₹ 9,75,000

Current Liabilities ₹ 6,00,000

Fixed Assets ₹ 5,25,000

From the above information, calculate any four ratios out of the following:

- (i) Operating Ratio
- (ii) Operating Profit Ratio
- (iii) Stock Turnover Ratio
- (iv) Assets Turnover Ratio
- (v) Return on Capital Employed

12. Calculate the following ratios from the Balance Sheet given below:

- (i) Debt Equity Ratio
- (ii) Liquidity Ratio
- (iii) Total Assets Turnover Ratio
- (iv) Fixed Assets Turnover Ratio

Liabilities	₹	Assets	₹
5000 Equity Shares of ₹ 10 each	50,000	Goodwill	30,000
Reserves	10,000	Fixed Assets	70,000
Profit	15,000	Stock	15,000
Debentures	40,000	Debtors	15,000
Creditors	25,000	Advances	5,000
Provision for Taxation	10,000	Cash	15,000
	1,50,000		1,50,000

Sales during the year ₹ 2,80,000

13. Information regarding ABC Company for the year 2001 is as follows:

Profit before tax – ₹ 28.80 lakhs

Tax Rate – 50%

Proposed Dividend – 25%

Capital of the Company – 10%

Preference Shares of ₹ 10,00,000

Equity Shares of ₹ 35,00,000 (Shares of ₹ 100 each)

Reserve at beginning of the year – ₹ 28 lakhs

Current Market Price of the Equity Share – ₹ 250

Compute for the equity shares:

- (i) Earnings per share
- (ii) Price-Earning Ratio
- (iii) Dividend per share
- (iv) Dividend Payout Ratio
- (v) Dividend Yield Ratio

14. Following are the statements of Surya Limited for the year ended 31st December 2001:

Balance Sheet as on 31st December 2001

Liabilities	₹	Assets	₹
50,000 Equity Shares of ₹ 10 each	5,00,000	Land and Building	3,50,000
General Reserve	3,00,000	Plant and Machinery	2,50,000
Profit and Loss A/c	2,00,000	Stock	2,00,000
Sundry Creditors	2,00,000	Sundry Debtors	3,00,000
		Cash at Bank	1,00,000
	12,00,000		12,00,000

**Trading and Profit & Loss Account
For the year ending 31st Dec. 2001**

Liabilities	₹	Assets	₹
To Opening Stock	1,00,000	By Sales (Credit)	16,00,000
To purchases (credit)	8,00,000	By Closing Stock	2,00,000
To Gross Profit c/d	9,00,000		
	18,00,000		18,00,000
To Administration Exp	2,00,000	By Gross Profit b/d	9,00,000
To Selling Expenses	1,00,000	By Profit on sale of	25,000
To Other Expenses	25,000	Fixed Assets	
To Net Profit	6,00,000		
	9,25,000		9,25,000

Calculate the following Ratio:

- (i) Current Ratio
- (ii) Liquid Ratio
- (iii) Operating Ratio
- (iv) Stock Turnover Ratio
- (v) Return on Total Assets
- (vi) Return on Owners Equity
- (vii) Debtors Velocity or Collection Period
- (viii) Creditors Velocity or Payment Period

15. Comparative statement of income and financial position are given below:

Income Statement

	2000 ₹	2001 ₹
Net Sales	1,00,000	1,50,000
Less: Cost of sales	70,000	1,10,000
Gross profit	30,000	40,000
Less: Operating Expenses	20,000	25,000
Net Profit	10,000	15,000

	2000 ₹	2001 ₹
Assets		
Cash in hand	5,000	8,000
Cash at Bank	4,000	2,000
Debtors	40,000	25,000
Stock at cost	15,000	10,000
Fixed Assets (Net)	56,000	65,000
	1,20,000	1,10,000
Liabilities		
Creditors	36,000	12,000
Bills Payable	2,000	1,000
Mortgage Loan	10,000	20,000
Equity Share Capital	60,000	70,000
Reserves and Surplus	12,000	7,000
	1,20,000	1,10,000

You are required to calculate the following ratios for both the years:

- (i) Current Ratio
- (ii) Acid-Test Ratio
- (iii) Debtors Turnover Ratio
- (iv) Average Collection Period
- (v) Stock Turnover Ratio

16. Following are the Balance Sheets of Ramsay Brothers Limited for two years ending on 30th June of each year.

	₹	₹
Equity Shares of ₹ 100 each	2,00,000	2,00,000
General Reserve	20,000	40,000
Profit and Loss A/c	28,000	4,000
Loan on Mortgage	2,20,000	1,60,000
Bank Overdraft	—	40,000
Creditors	60,000	1,80,000
Provision for Tax	68,000	26,000
Proposed Dividend	20,000	30,000
	6,16,000	6,80,000
Fixed Assets (Net)	4,16,000	3,96,000
Stock-in-trade	60,000	1,20,000
Debtors	80,000	1,60,000
Cash-in-hand	60,000	4,000
	6,16,000	6,80,000

Total sales for 2000 are given as ₹ 12,00,000 and that for 2001 ₹ 10,00,000.

Check Your Progress: Model Answer

1. Profit
2. Expenses
3. Return on Investment (ROI)
4. Earning per share
5. Liquidity
6. Operating leverage

3.11 SUGGESTED READINGS

Charles T. Horngren, *Introduction to Management Accounting*, Prentice Hall, Englewood Cliff, New Jersey 07632.

Ray H. Garrison, *Managerial Accounting*, Homewood, Illinois 60435.

Robert S. Kaplan and Anthony A. Atkinson, *Advanced Management Accounting*, Prentice Hall, Englewood Cliff, New Jersey 07632.

Dr. S. N. Maheshwari, *Management Accounting for Bankers*, Sultan Chand & Sons, New Delhi.

N. K. Kulshrestha, *Management Accounting Concepts & Cases*, Tata McGraw Hill Publishing Co. Ltd., New Delhi.

UNIT III

LESSON

4

FUND FLOW STATEMENT (ACCOUNTING STANDARD – 3)

CONTENTS

- 4.0 Aims and Objectives
- 4.1 **Introduction**
- 4.2 Meaning and Concept of Fund
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 - 4.8.7 **Provision for Current Assets**
- 4.9 Let Us Sum Up
- 4.10 Lesson End Activity
- 4.11 Keywords
- 4.12 Questions for Discussion
- 4.13 **Suggested Readings**

4.0 AIMS AND OBJECTIVES

After studying this lesson, you should be able to:

- Understand the meaning of Fund Flow
- Discuss the meaning, objectives and limitations of Fund Flow Statement
- Describe various techniques of constructing fund flow statement
- Explain statement of changes of working capital changes and statement of source and users of fund
- Explain how to calculate Fund from Operation

4.1 INTRODUCTION

Balance sheet and profit and loss account of a company are two basic financial statements which are prepared at the end of an accounting period. The balance sheet portrays the overall financial position of the business while the income statement (profit and loss account) discloses the revenues earned and or realized and the cost incurred to generate the revenues during a particular period. But these statements do not provide the information regarding the changes in the capital, liabilities and assets during the period. For the better understanding of the financing and investing activities of the business which have taken place during an accounting period, one more statement is also prepared and published which is called the "Statement of Changes in Financial Position" (SCFP). This statement provides useful information to the creditors and owners regarding funds. It has now become an integral part of the statements. Through this statement an analysis can easily understand as from where the funds are coming into business during a period and where it is being applied. In other words, this statement discloses the sources of funds and the uses where procured funds were put during a particular period. Sources and uses of the fund during a particular period provide very useful information regarding the formation of a financial policy. Accounting Principle Board of American Institute of Certified Public Accountants (AICPA) has encouraged in its opinion No. 3 that "When financial statements, purporting to present both financial position and results of operation, are issued, a statement summarizing changes in financial positions should also be presented as a basic financial statement for each period for which an income statement is prepared.

IAS-7 has also recommended to prepare this statement in its para 20 as, "A statement of changes in financial position should be included as an integral part of financial statements. The statement of changes of financial position should be presented for each period for which the income statement is presented".

In India AS-3 of ICAI states regarding the statement of changes of financial position as, "In many countries it is quite common to provide a statement of changes in financial position as a part of audited accounts. In India, under the existing legal requirements, companies are under no legal obligation to publish a statement of changes in financial position along with their financial statements. However, there is a growing practice to publish such a statement along with financial statements especially in the case of companies listed on the Stock Exchanges and other large commercial, industrial and business enterprises in the public and private sectors. The objective of this Standard is to encourage and strengthen this practice (Para 2)".

The statement of changes of Financial Position is a statement which gives the information regarding the sources of the financial activities of the business and the use

of such sources in a period. Data used to prepare SCFP are taken from the financial statements.

4.2 MEANING AND CONCEPT OF FUND

SCFP is prepared on the basis of sources and uses of fund. Therefore, it is necessary to understand the meaning of fund. The term 'fund' has different meanings. **Thomas M. Hill & Mayson J. Coprdon** opine, "Business funds are those assets which can be moved freely to acquire other assets and/or to discharge obligations... money in a bank and marketable securities represent fund so one may take as corporation fund, the sum of its cash and the marketable securities". In some definitions given by the professors, fund is taken as cash or quick assets while some has taken as net working capital. However, for the purpose of preparation of SCFP, there are two concept of funds on the basis of which this statement is made. These are cash and working capital. When SCFP is prepared on the basis of cash, it is called Cash Flow Statement (discussed in the next lesson). The SCFP prepared on the basis of working capital is called fund flow statement. Working capital is the difference of current assets and current liabilities.

The fund flow statement shows the different sources and uses of funds. Sources of fund are those transactions of the business which increases the amount of working capital and the uses of fund are those transactions of the business which decrease the amount of working capital. In brief, the fund flow statement is prepared with the help of those transactions which directly affects the working capital (current assets or current liabilities).

Working capital is determined by subtracting the current assets from the current liabilities. This information can be taken from the balance sheet of the business. The current assets are those assets which may be transformed into cash within a year as cash balance, bank balance, sundry debtors, marketable securities, bills receivables, short-term deposits, stock, prepaid expenses, book debts, advance tax. And the current liabilities are those obligations which arc to be paid within a year as sundry creditors, bill payables, cash credit, bank overdraft, provision for taxation, income tax payables, short-term loans, outstanding expenses, incomes received in advance; provision for bad and doubtful debts, unclaimed dividend and proposed dividend.

There are some items investments and proposed dividend and taxation provisions which confuse regarding the inclusion of current assets and current liabilities. If investments are for short-term those are included in current assets. If no information is given regarding the period of investment in the examination questions, these are treated as long-term investment. Proposed dividends should not be treated as current liability because it is payable in the next year and it is also not accumulative. Provision for transaction should be treated as current liability because it is made for current year's profit.

4.2.1 Meaning of Flow of Fund

Flow means the change or movement that may be inflow or outflow. 'Fund flow' refers the change in the amount of working capital in a given period of time or the transfer of the economic value from one asset to another asset from one equity to another from and one asset to any liability. When the amount of working capital increases due to the transfer of economic value, it is termed as the source of fund or inflow of fund. Due to any transfer of economic value, when the amount of working capital decreases, it is said the application or use or outflow of fund. And if any transaction does not affect the amount of working capital (neither increase nor

decrease of fund), it is not considered in the statement of changes of fund and is said non-fund transaction.

4.3 EFFECTS OF BUSINESS TRANSACTIONS ON FLOW OF FUND

For the purpose of preparation of fund flow statement, the fund is taken in the broader sense means net working capital. Net working capital is required in the business for day to day operations. Only those business transactions are considered in the business which affects the net working capital or fund. The effect on the flow of fund means the increase or decrease in the size of fund or working capital. There are many business transactions which affect the working capital. Similarly, there are so many items which neither increase nor decrease the size of working capital. For the preparation of fund flow statement, all the business transactions are divided into following two categories:

- The transactions which do not change the size of working capital or fund
- The transactions which change the size of working capital or fund

4.3.1 The Transactions which do not Change the Size of Working Capital or Fund

There are so many business transactions which do not involve with the changes of the fund. These may be either non-current assets or liabilities and current assets and liabilities. These are as follows:

- Transactions relating the conversion of one current asset into another current asset:** Due to these transactions, the internal items of the current assets change but total amount of current assets does not change. As a result the net working capital does not change such as cash received from sundry debtors and bills receivables.
- Transactions which convert one current liability into another current liability:** This is similar to the above case of current assets. The items of the current liability change but the total amount of current liability does not change. As a result the net working capital does not change by these transactions such as conversion of overdraft into short-term bank loan.
- Transactions which take place between the non-current items only:** Working capital is not affected by these transactions. The amount of non-current items as fixed assets, capital and owner's equity are affected by these items. These transactions may be between fixed assets as plant is converted into furniture, between long-term liabilities as debentures are converted in long-term loan, between owner's equity and long-term liabilities as debentures are converted into equity shares, between fixed assets and long-term liability as building is acquired by the issue of shares.
- The transactions which take place between current assets and current liabilities:** Due to these transactions, on one side the amount of current assets increases or decreases and on another side, the amount of current liabilities increases or decreases correspondingly. As a result the working capital does not affect. For instance, payment of sundry creditors by cash and credit purchase of materials. Such types of transactions change only the structure of current assets or liabilities but not affect the net working capital.

4.3.2 The Transactions Which Change the Size of Working Capital or Fund

Any transaction which occurred between the current assets or current liabilities and fixed assets or long-term liabilities, will affect the working capital or fund. Such transactions are considered at the time of preparation of fund flow statement. For instance, repayment of debentures by cash; this transaction is between current assets (cash) and long-term liabilities (debentures). Thus this transaction will affect the working capital. For convenience, these transactions are classified as follows:

- (i) Any transaction which takes place between current liabilities and long-term liabilities or capital – such as sundry creditors or bank loan cleared by the issue of shares or bonds or debentures.
- (ii) Any transaction which takes place between current assets and long term liabilities or capital – such as repayment of debentures/bonds, preference shares by cash or sale of debentures in the open market for cash.
- (iii) Any transaction which takes place between current assets and fixed assets – such as sale of fixed assets for cash, purchase of plant for cash, etc.
- (iv) Any transaction between current liabilities and fixed assets – that will affect the net working capital as purchase of plant through short-term bank loan.

All the above transactions which affect the flow of fund or net working capital and those transactions which do not affect the flow of fund are clearly disclosed in the following chart:

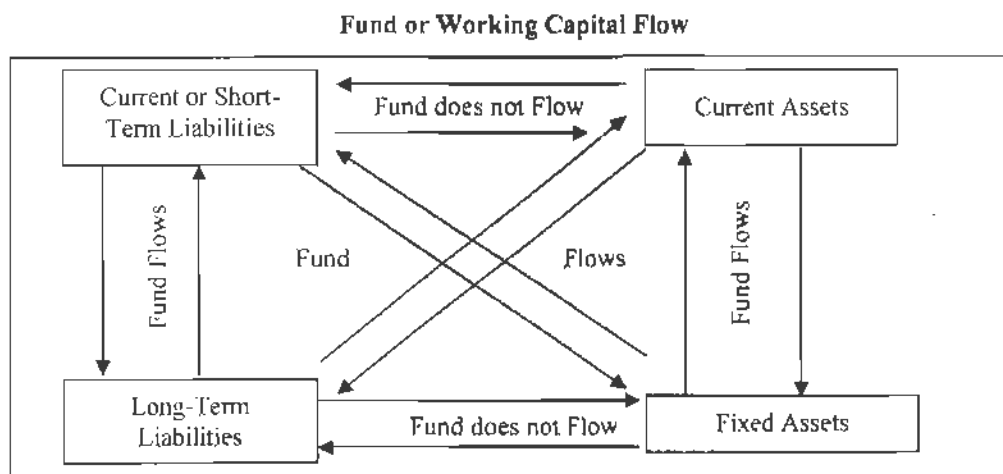


Figure 4.1: Effect of Transactions on Flow of Fund Chart

List of Non-Current Account of Assets and Liabilities

Non-Current Liabilities

1. Equity Share Capital
2. Preference Share Capital
3. Reserve & Surplus
4. Debentures
5. Premium A/c
6. P & L A/c (Credit)
7. Capital Reserve
8. Capital Redemption Reserve A/c and
9. Provision for Depreciation

Non-Current Assets

1. Goodwill
2. Land & Building
3. Plant & Machinery
4. Furniture & Fitting
5. Long-term Investments
6. Trademarks
7. Patents
8. Discount on Issue of Shares
Debentures
9. Preliminary Expenses

- | | |
|--------------------------------------------------|------------------------------|
| 10. Long-Term Loan | 10. Under Writing Commission |
| 11. Bonds | 11. P & L A/c. (Debit) |
| 12. Proposed Dividend | 12. Development Expenses |
| 13. Provision for Taxation | |
| 14. General Reserve | |
| 15. Dividend Equalization Fund | |
| 16. Insurance Fund | |
| 17. Debentures/Preference Shares Redemption Fund | |
| 18. Investment Fluctuation Fund | |

Non-Current Liabilities: These are also called fixed liabilities or long-term liabilities. These are payable by the company after a long period (which is more than one year) or at the liquidation of the company.

Non-Current Assets: These are also called fixed assets. These assets are owned by the company and are kept for the running of the business and these are not for sale. These assets can be tangible, intangible, and fictitious.

4.4 FUND FLOW STATEMENT (FFS)

Fund Flow Statement means a statement which depicts the changes of financial position (working capital) during two periods. Thus this statement shows the sources from which the funds have been collected and those uses on which these are applied during an account period. Fund Flow Statement is defined by various authors. Some of them are as follows:

"Fund Flow Statement is a statement prepared to indicate the increase in the cash resources and the utilization of such resources of business during the accounting period".

—Robert N. Anthony

"The Funds Flow Statement is a method by which we study the net funds flow between two points in time".

—James C. Van Home

"A statement of sources and application of fund is a technical device designed to analyse the changes in the financial condition of business enterprise between two dates".

—Robert Foulke

After studying the above definitions we conclude that fund flow statement is a statement which is designed to analyse the changes in the working capital/fund of a business during an accounting period. The fund flow statement is also known by different names as:

- Sources and Uses of Fund
- Where Got and Where Gone Statement
- Fund Statement
- Application and Sources of Fund Statement
- Statement of Changes in Financial Position
- Statement of Resources Provided and Applied
- Inflow and Outflow of Fund Statement

4.4.1 Objectives of Fund Flow Statement

Following are the main objectives for which the fund flow statement of any concern is prepared:

- To provide information regarding financing and investing activities of the business.
- To disclose the changes in the working capital between two periods.
- To disclose the sources of fund which have been procured during a time.
- To disclose the uses/applications of fund on which the sources of fund have been put.

4.4.2 Uses or Importance of Fund Flow Statement

Fund flow statement is a very important instrument in the kit of financial analysts. It helps in managing the working capital. The information given in the FFS is very useful for the shareholders, bankers, creditors, managers and investors. It helps the management in taking the different managerial decisions and answer to various intricate or complicated queries of general interest. The importance of this statement is discussed in the following points:

1. **Analysis of Financial Position:** FFS is used as an effective instrument for the analysis of financial position of a concern. It analyses the causes of changes of the working capital and the effect of such changes on the liquidity of the business. This statement also indicates the sources from where the funds were obtained during a period and where these funds were applied. Thus, it replies the several queries as (i) Where is profit being used? (ii) What are the sources of purchasing the fixed assets? (iii) Where are the sales proceeds of fixed assets being used? (iv) Why are the current assets less than the profits? (v) What are the causes of increase or decrease of working capital? etc.
2. **Determination of Financial Consequences of Business Activities:** There are different occasions in which the management finds itself in awkward situation and seized with a financial dilemma. For example, the P & L A/c reveals the sufficient surplus and the balance sheet indicates the sound financial position but sufficient cash is not available to pay and declare the annual dividend to its shareholders. The management has to face the problem of liquidity because it does not know as what has happened of the funds generated from operations. The answer of this question is given by the FFS. The FFS converts the consequences of the business operations into financial information.
3. **Comparative Study of Financial Statements:** Fund flow statements make comparative study of Balance Sheets and Profit and Loss Accounts of two periods easy. Changes in the working capital during the period of two balance sheets are expressed in the FFS. This statement gives more precise and accurate picture regarding profits. In this statement profit from operation is taken in which non-operating profits or losses are excluded. On account of presenting the information regarding the financial position, profits and changes in working capital in this statement and simultaneously, in the comparative study become possible and easy.
4. **Helpful in Securing Bank Loans:** When a request for a loan is submitted with a bank, the bank want to know the credit worthiness of the company, its capacity to return the loan, sources of repayment and the amount of loan. For the assessment of these the bank asks the company to submit its balance sheet, profit and loss account along with its fund flow statement. A careful analysis of these statements helps the bank in sanctioning the loan to the company.

5. **Helpful in Allocation of Resources:** A business has a limited source of funds therefore it always needs more money than its availability. A developing enterprise has different programmes for the expansion. But due to scarcity of money all the programmes cannot be started simultaneously. Some programmes are started while some are postponed. Thus a problem of allocation of available resources among the different projects/programmes arises. The financial manager takes the decision regarding the postponement and starting the projects which is taken through the projected fund flow statement.
6. **FFS Answer Many Intricate Questions:** The answers of many intricate questions of the financial analyst can be obtained by the fund flow statement such as:
 - ❖ What is the credit worthiness of the business?
 - ❖ What are the sources through which loan will be repaid?
 - ❖ How much fund is generated from normal activities of the business?
 - ❖ Whether the uses of funds in a nature are matching with the source of fund in a nature.
7. **Planning for Working Capital:** FFS reveals the complete picture of working capital regarding its uses and sources. It tells whether the firm has adequate working capital to meet its requirement in future. If there is inadequacy of working capital due to deleting of any source, planning for the temporary investment of idle funds may be framed. It may also suggest regarding the improvement of working capital.
8. **Helpful in Managerial Decisions:** This statement provides the complete knowledge to the management regarding the sources and uses of fund in the past. On the basis of the analysis of this statement, management may decide its dividend policy, frame other policies and prepare the budgets.

4.4.3 Limitations of Fund Flow Statement

In spite of being a very useful instrument in the hands of financial analysts for the analysis of financial statements and helpful in resolving the managerial problems, it has some limitations which must be kept in mind at the time of using FFS. These are as given below:

- (a) Fund flow statement is prepared on the basis of current assets and current liabilities. It does not include non-current accounts. Thus it does not show the complete picture of financial and operation position of the company. To have this view we have to use the balance sheet and profit and loss account.
- (b) This statement is prepared on the basis of the changes in working capital and changes in cash are not considered while those are more important than that of working capital. On the basis of this point, it is argued that Cash Flow Statement is more important than FFS.
- (c) FFS is historic in nature and is based on past transactions. It provides information about what has happened and not about the future events. While projected fund flow statement can be prepared for future but it gives only an idea.
- (d) Structural changes in the working capital components are not disclosed in this statement. It deals only the changes in total amount of working capital such as cash paid by debtors or inventory purchased on credit (short-term creditors).
- (e) FFS is prepared on the basis of information contained in the financial statements which are not original in nature. It only rearranges the data of financial statements. It does not include any new information/data. Thus it cannot be the substitute of

financial statements. It just provides only some additional information. It is only a supplementary statement of financial statement.

4.5 SOURCES AND USES OF FUNDS

The Fund Flow Statement depicts the changes in the fund. Change in fund means the increase or decrease in fund. Those transactions of the business which increase the amount of fund are called sources of fund and those business transactions which decrease the amount of fund are called uses or applications of fund.

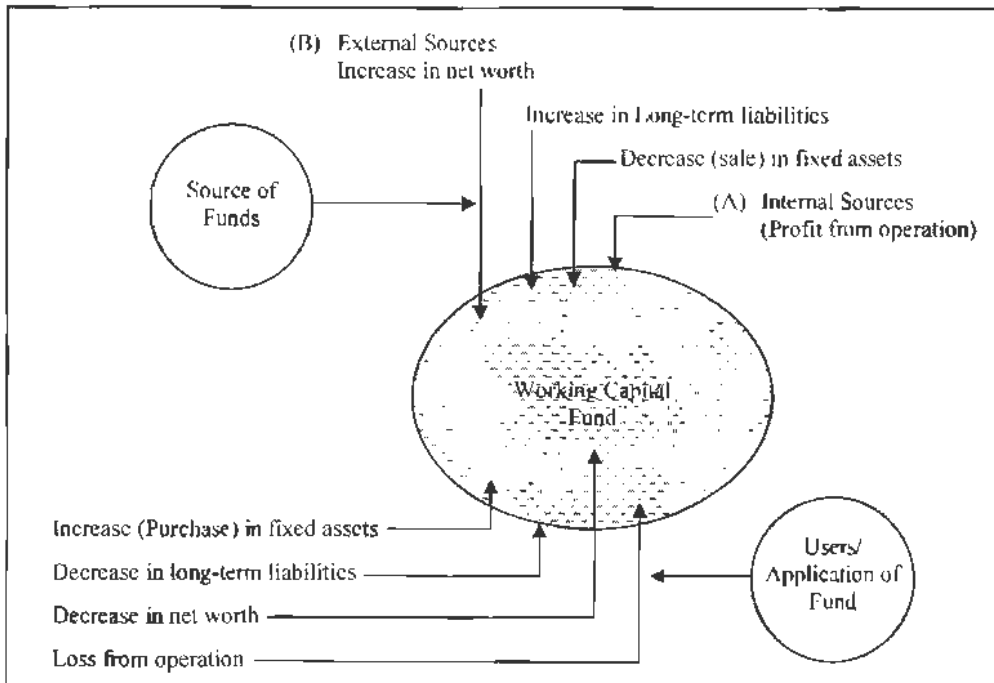


Figure 4.2: Sources and Uses/Application of Fund

These sources and uses of funds are discussed as below:

4.5.1 Sources of Fund

Those business transactions which increase the size of working capital are called sources of fund. The sources of fund are divided into two as following:

- **Internal Sources:** Fund from operation is the only internal source of fund. Fund from operation means the profit from operation. The net profit shown by the P&L A/c is adjusted to find the profit from operation. These adjustments are done relating to non-operating items and non-cash items. Profit from operation is discussed later in this chapter.
- **External Sources:** These sources of fund are as follows:
 - ❖ **Decrease in fixed assets:** Decrease in the amount of fixed assets is treated as source of fund. Decrease in fixed assets should be due to sale of fixed assets not by depreciation on fixed assets. If sale of fixed assets is done for cash, cash increases the fund and if fixed assets are sold on credit, debtors increase the fund. Thus decrease in fixed assets is a source of fund.
 - ❖ **Increase in long-term liabilities:** The increase in long-term liabilities is treated as the source of fund. Increase in long-term liabilities means the issue of debentures, bonds or fostering of long-term bank loan. The increase in long-term liabilities should be for cash and not for fixed assets. When

debentures or bonds are issued for cash, cash increases the amount of working capital/fund. Therefore, it is called source of fund. If debentures or bonds are being issued for the purchase of fixed assets, such an increase in long-term liability is not treated as source of fund because it does not affect the working capital or fund.

- ❖ **Increase in net worth:** Increase in the net worth or equity or capital is considered as source of fund. This increase should be due to the issue of capital for cash or other current assets. If capital is being issued for the purchase of fixed assets or for the payment of any long-term liability, such issue of capital will not change the amount of working capital, and it will not be a source of fund.

4.5.2 Uses of Fund

Those business transactions which reduce the working capital/funds are called uses or applications of fund. These are as follows:

- **Increase in Fixed Assets:** If the increase in fixed assets (Plant and Machinery, Land and Buildings, Furniture and Motor car) is due to the purchase by cash or on credit (increase in some short-term liability), such increase in assets becomes the use of fund. But this transaction decreases the current assets or increases current liabilities. As a result the working capital decreases. For examples, suppose the working capital in a business is ₹ 50,000 and a plant is purchased for ₹ 10,000, the purchase of plant will be treated as a use of fund because it will reduce the current assets by ₹ 10,000. Further suppose furniture worth ₹ 5,000 is acquired on credit, this will increase the current liabilities. As a result the working capital will be decreased by ₹ 5000 and there will be a use of fund. Thus an increase in the fixed assets should not be due to the appreciation in assets. Otherwise that will not be the use of fund.
- **Decrease in Long-term Liabilities:** Decrease in long-term liabilities means the payment of long-term liabilities (debentures, bonds or long-term loan). If long-term liabilities are paid by cash, such a payment will be treated as a use of fund. And if long-term liabilities are paid by the increase of equities or another long-term liability, that will not be the use of fund. Suppose, the debentures are redeemed on maturity by cash, this transaction will be the use of fund. If the debentures are converted into preference shares on maturity, this will not be treated as a use of fund because it does not affect the working capital.
- **Decrease in Net Worth:** If preference shares are redeemed by cash on maturity, such redemption will be the use of fund because it reduces the working capital. And if preference shares are redeemed by the issue of equity shares of new preference shares, it will not be the use of fund because it does not affect the amount of working capital/fund. Similarly, if bonus or dividend is paid to shareholders by cash, it will be use of fund and if it is paid by the issue of new shares, it will not affect the fund. Thus it will not be the application of fund. As a result the decrease in net worth or equity or shareholders' fund will be the application or use of fund.
- **Loss of Operation:** Net loss from operation is the assumed use of fund. Loss from operation decreases the working capital. It is also computed keeping in mind the non-cash items of P & L A/c and non-operating incomes or losses.

In addition to the above mentioned items of sources and uses of funds, there are some non-trading receipts as donations, gifts, dividends, etc. and non-trading payments as penalty, donations, etc. Some accountants adjust these receipts and payments with the

profit from operation while some show these separately as sources of fund and uses of fund. Both concepts are right.

4.6 TECHNIQUE OF PREPARING OF FUND FLOW STATEMENT

Fund Flow Statement is prepared on the basis of those information which are provided by the balance sheets of two period or dates (generally a comparative balance sheet is prepared), income statements and some additional information relating to the various accounts. FFS is based on the principal of equality of assets and liabilities including capital. Total of sources of fund should be equal to the total of uses of funds during a period. If funds are not adequate to meet the obligations, loan will be taken from bank or public or fixed assets will be sold. But total of sources of fund should be equal to the uses of funds. There are two techniques of the preparation of fund flow statement. These are (i) Traditional Technique and (ii) Modern Techniques. Under traditional technique, FFS is prepared on the basis of the concept of total resources. Under this technique no distinction is made between the current accounts and non-current accounts, operating and non-operating items and cash and non-cash items when the source and uses of the funds are determined. Due to this reason, this technique is not accepted by all.

Under modern technique of preparation of FFS for the analysis of fund/working capital, following two statements are prepared:

- Schedule or Statement of Changes of Working Capital
- Statement of Sources and Uses of Fund

4.6.1 Schedule of Changes of Working Capital

This schedule is also called by the name of Working Capital Account or 'Comparative Change in Working Capital Statement' or 'Net Current Assets Account'. This statement or schedule is constructed to disclose the changes in each component of the working capital and their effect on the net working capital. This schedule has four columns for amount. First two columns depict the absolute amount of each item of the components of the working capital of current year and previous year. The next two columns disclose the working capital changes – one for increase in working capital and other for decrease in working capital. The total of increase column and the total decrease column should be reconciled. If there is any difference between these two columns, that indicates the increase or decrease in net working capital. The following general rules are adopted for preparing this schedule:

1. If there is an increase in the items of current assets, working capital will also increase.
2. If there is a decrease in the items of current liabilities, working capital will decrease.
3. If there is an increase in the items of current liabilities, working capital will decrease.
4. If there is a decrease in the items of current liabilities, working capital will increase.

The proforma of the schedule of working capital changes is given below:

Schedule of Changes in Working Capital

Items of Components	Absolute Figures of		Working Capital Changes	
	Previous year (₹)	Current year (₹)	Increase (₹)	Decrease (₹)
a. Current Assets				
Cash in Hand				
Cash at Bank				
Inventories (Stock)				
Bills Receivables				
Notes Receivables				
Sundry Debtors				
Marketable Securities				
Short-term Investments				
Prepaid Expenses				
Accrued Income				
Total (A)				
b. Current Liabilities:				
Sundry Creditors				
Bills Payables				
Accounts Payables				
Bank Overdraft				
Short-term Loans				
Incomes Received in Advance				
Provision for Bad Debts				
Outstanding Expenses				
Unclaimed Dividend				
Proposed Dividend				
Provision for Taxation				
Total (B)				
Working Capital (A-B)				
Increase or Decrease in Working Capital				
TOTAL				

Important Points for Students

At the time of preparation of Schedule of Working Capital changes, the students should clear that a particular item of liability is current liability or not similarly a particular item of assets is current assets or not otherwise the schedule will not show the correct picture of working capital changes. For students, some important points are given below:

- **Bank overdraft** may be more or less permanent source of fund, but it should always be treated as current liability.
- If the **Provision for Bad and Doubtful Debts** is given in the assets side of the balance sheet, net debtors (debtors minus provision for bad and doubtful debts) should be shown under the heading of Current Assets in the Schedule of Working Capital Changes. And if provision for bad and doubtful debts is given in the liability side of the balance sheet, it should be shown under the heading of current liabilities of the schedule.
- **Provision for Taxation** should always be treated as current liabilities.
- **Proposed dividend** should not be assumed a current liability. Therefore, it should not be shown in the schedule of working capital changes.

- If investments are in marketable securities or for short-term, it will be current assets. If no information is given regarding the investment, one point should be kept in mind at the time of taking the decision. If during the year, some investments are being sold and some are being purchased, investment should be treated as current assets otherwise fixed assets.
- At the time of preparation of Schedule of Working Capital Changes, the items of the components of working capital (current assets and current liabilities) are taken from the balance sheet only. Additional information relating to current assets and current liabilities are ignored.

Example (Schedule of Working Capital Changes)

From the following balance sheet of Kusum Manufacturing Company Ltd. for the year ending on 31st Dec. 2006 and 2007, you are required to prepare the Schedule of Changes of Working Capital.

Comparative Balance Sheet

Liabilities	2006	2007	Assets	2006	2007
	₹	₹		₹	₹
Share Capital	72,000	1,08,000	Land & Buildings	49,860	1,01,880
P & L A/c	17,550	18,720	Plant	32,040	46,080
Share Premium	7,200	10,800	Furniture	2,160	1,440
General Reserve	5,400	8,100	Stock	19,890	23,400
Debtors	-	23,400	Debtors	32,850	35,190
Provision for Tax	8,820	9,810	Cash Balance	4,320	3,600
Creditors	30,150	32,760			
	1,41,120	2,11,590		1,41,120	2,11,590

Solution:

Schedule of Changes in Working Capital

Items of Components	2006 ₹	2007 ₹	Working Capital Changes	
			Increase (₹)	Decrease (₹)
(a) Current Assets:				
Stock	19,890	23,400	3,510	
Debtors	32,850	35,190	2,340	
Cash Balance	4,320	3,600		720
	57,060	62,190		
(b) Current Liabilities:				
Provision for Tax	8,820	9,810		990
Creditors	30,150	32,760		2,610
	38,970	42,570		
Working Capital	18,090	19,620		1,530
Increase in Working Capital	1,530			
	19,620	19,620	5,850	5,850

4.6.2 Statement of Sources and Uses of Fund

This statement is also called the Fund Flow Statement. It is prepared on the basis of long-term liabilities and fixed assets and additional information of the problem. In other words the items left in the balance sheet after preparation of the Schedule of Working Capital Changes are used in this statement but we have to keep in mind that only those items from balance sheet are taken in this statement which affect the working capital and which do not affect the working capital are not considered in this statement. Those non-current items of the balance sheet which increase the amount of working capital are called sources of fund and those items which decrease the amount of working capital are called uses of fund. Thus this statement is divided into two parts *i.e.*

sources of fund and uses of fund. The difference between the total of sources and the total of uses is called increase or decrease of working capital. If the total of sources of fund is greater than the total of uses of fund, then it is called increase in working capital otherwise it is called decrease in working capital. The students must know that the increase or decrease calculated by the statement of sources and uses of fund must be tallied with the increase or decrease shown by the Schedule of Working Capital changes.

No standard form of fund flow statement is developed so far. Usually it is prepared into following two forms:

- Statement Form or Report Form
- Account Form

Statement Form

This form of statement is most popular. To prepare the fund flow statement under this format, first of all the sources of fund and uses of fund are aggregated then the difference is calculated which is termed as increase or decrease in working capital. Its proforma is given below:

Fund Flow Statement

Sources of Fund	₹
1. Fund from Operation	
2. Issue of Share Capital and Debentures	
3. Raising of Bank Loan	
4. Sale of Fixed Assets	
5. Sale of Long-term Investment	
6. Receipt of Non-trading Incomes	
7. Decrease in Working Capital*	
Total	
Uses of Fund	₹
1. Loss from Operation	
2. Redemption of Pref. Shares and Debentures	
3. Repayment of Long-term Loans	
4. Purchase of Fixed Assets	
5. Payment of Non-trading Items	
6. Payment of Tax	
7. Increase in Working Capital*	
Total	

* There will be only one increase or decrease in Working Capital. If total of sources of fund exceeds, there will be increase in working capital otherwise decrease in working capital.

Account Form

This is also called T format or self-balancing form. The fund flow statement is prepared in the form of an account which has two sides. Left hand side is used for the Sources of Fund while right hand side is used for the Uses of Fund. The balance of these two sides is called increase or decrease in working capital. Its proforma is given below:

Fund Flow Statement

Sources of Fund	₹	Uses of Fund	₹
Fund from Operation		Loss from Operation	
Issue of Shares or Debentures		Redemption of Preference	
Raising of Long-term Loans		Shares and Debentures	
Sale of Fixed Assets		Purchase of Fixed Assets	
Sale of Long-term Investment		Payment of Non-trading Items	
Receipts of Non-trading Incomes		Payment of Tax	
Decrease in Working Capital		Increase in Working Capital	

4.7 PROCEDURE FOR THE PREPARATION OF FUND FLOW STATEMENT

For the preparation of fund flow statement, we have to take the following steps in the sequence in which they are given as follows:

1. Schedule of Working Capital Changes is prepared with items of current assets and current liabilities which are given in Balance Sheets of the two periods to determine the increase or decrease in the net working capital.
2. Fund or fund loss from the operation is calculated after adjusting the non-trading incomes or losses and non-cash items.
3. With the help of balance sheets and income statements and additional information the sources of fund and uses of funds are determined.
4. In the last, with the help of sources of fund and uses of fund, the fund flow statement is prepared to determine the increase or decrease of working capital which should be equal to the amount calculated by the Schedule of Working Capital Changes.

4.8 EXPLANATION OF SOME IMPORTANT ITEMS OF FUND FLOW STATEMENT

Some of the terms are given below:

4.8.1 Fund from Operation

It is also called profit from operation. This is a very important internal source of fund. The net profit shown by the profit and loss account or balance sheet cannot be assumed as the source of fund because non-cash items and non-operating incomes and expenses or losses have already been adjusted with the net profit. Therefore, the real amount of the profit from the operation for the fund flow statement is determined again. There are two methods for the determination of profit from operation. These are given as below:

Statement Form

If information regarding the net profit for the year as per Profit and Loss Account (this profit should be after tax but before appropriations of profit as transfer to reserves, debenture redemption fund, etc.) is clearly given in the question, non-cash and non-operating items will be adjusted to this amount as follows:

Calculation of Fund from Operation

	₹	₹
Net profit for the year		
Add: Non-Cash Expenses:		XXXX
Depreciation	XXXX	
Goodwill Written off	XXXX	
Patents Rights Written off	XXXX	
Preliminary Expenses Written off	XXXX	
Discount on Issue of Shares or Debentures Written off	XXXX	
Fixed Assets Written off	XXXX	XXXX
		XXXX
Add: Non-Operating Losses:		
Loss on Sales of Fixed Assets	XXXX	
Loss on Sale of Investment	XXXX	XXXX
Total		XXXX

Contd...

<i>Less: Non-Operating Incomes:</i>		
Profit on Sale of Fixed Assets	XXXX	
Profit on Sale of Investment	XXXX	
Dividends Received	XXXX	
Appreciation on Fixed Assets	XXXX	XXXX
Fund from Operation		XXXX

Note:

(i) If the information regarding the net profit for the year is not given in the question then it will be computed with the help of balance of P & L A/c given in the balance sheets of the two years as follows:

	₹
Balance of P & L a/c as per Balance Sheet of current year	XXXX
Less: Balance of P & L a/c as per Balance Sheet of last year	XXXX
Increase or Decrease in Profit	<u>XXXX</u>
Add: Appropriations made	
Transfer to general reserve	XXXX
Interim dividend	XXXX
Proposed dividend of current year	<u>XXXX</u>
Transfer to other reserves	XXXX
Net Profit for the year	<u><u>XXXX</u></u>

(ii) If fund from operation comes in negative, that will be called fund loss from operation.

(iii) Net profit for the year will be taken after tax.

Account Form

Under this form, Adjusted Profit and Loss Account is prepared. The opening balance of profits (balance of P & L a/c as per Balance Sheet of the previous year) is put in the credit side of this account and closing balance of profit (balance of P & L a/c as per the Balance Sheet of current year) is put at the end of the debit side of this account. All the non-cash expenses, non-operating losses and appropriations are kept in the debit side and non-operating incomes in the credit side of this account. The proforma of this account is given below:

Adjusted P & L Account

	₹		₹
To Non-cash Expenses:			
Depreciation on Fixed Assets	XXXX	By Opening Balance of P. & L A/c as per B/S (Cr.)	XXXX
Preliminary Expenses Written off	XXXX	By Non-Operating Income:	XXXX
Goodwill written off	XXXX	Profit on Sale of Fixed Assets	XXXX
Discount on Issue of Shares/ Debentures	XXXX	Profit on Sale of Investments	XXXX
Trademark Written off	XXXX	Dividend Received	XXXX
Patents Written off	XXXX	Appreciation on Assets	
Under Writing Comm. Written off	XXXX		
To Non-Operating Losses:			
Loss on Sale of Fixed Assets			
Loss on Sale of Investment			
To Appropriations	XXXX		
Proposed Dividend	XXXX		
Interim Dividend			
Provision for Tax			
Transfer to Reserve			
Transfer to Contingency Reserve	XXXX		
Transfer to Other Reserve	XXXX		

Contd..

To Fund from Operation (Closing Balance)	XXXX		
To Closing Balance of P. & I. A/c as per B/S (Cr.)	XXXX		
	XXXX		
	XXXX		XXXX

Example (Fund from Operation)

Calculate fund from operation from the following P & I. account for the year ending 31 December, 2007.

Profit and Loss Account

	₹		₹
To Salary	35,000	By Gross Profit	1,30,000
To Rent	25,000	By Profit on Sale of Land	22,500
To Provision for Bad Debts	5,000	By Income Tax Refund	7,500
To Depreciation	7,500		
To Goodwill Written off	6,250		
To Loss on Sale of Plant	3,750		
To Provision for Tax	15,000		
To Proposed Dividend	17,500		
To Net Profit	45,000		
	1,60,000		1,60,000

Solution:**Calculation of Fund from Operation**

	₹	₹
Net Profit as per P & L A/c		45,000
<i>Add: Non-Cash & Non-Operating Items:</i>		
Depreciation	7,500	
Goodwill Written off	6,250	
Loss on Sale of Plant	3,750	
Provision for Tax	15,000	
Proposed Dividend	17,500	50,000
		95,000
<i>Less: Non-Operating Receipts</i>		
Profit on Sale of Land	22,500	
Income Tax Refund	7,500	30,000
Fund from Operation		65,000

Note: Provision for bad debts will be adjusted with sundry debtors therefore, it is not taken here.

Alternatively, Fund from Operation may be determined by preparing the adjusted P & L A/c but the students are advised to adopt the statement form to compute the fund from operation:

Adjusted P & L A/c

	₹		₹
To Depreciation	7,500	By Profit on Sale of Land	22,500
To Goodwill Written off	6,250	By Income Tax Refund	
To Loss on Sale of Plant	3,750	By Fund from Operation	7,500
To Provision for Tax	15,000	(Balancing figure)	
To Proposed Dividend	17,500		65,000
	95,000		95,000

	₹	₹
Closing balance of P&L A/c		
<i>Less:</i> Opening balance of P & L A/c		1,20,000
		60,000
<i>Add:</i> Appropriation made :		60,000
Proposed Dividend	60,000	
Interim Dividend	40,000	
Transfer to Sinking Fund	20,000	
Transfer to General Reserve	10,000	1,30,000
Net Profit for the year		1,90,000
<i>Add:</i> Non-Cash items and Non-Operating Losses:		
Depreciation	1,00,000	
Loss on Sale of Machinery	6,000	
Preliminary Expenses Written off	2,000	1,08,000
<i>Less:</i> Non-Operating Incomes		2,98,000
Profit on Sale of Car		8,000
Fund from Operation		2,90,000

4.8.2 Sale or Purchase of Fixed Assets

At the time of preparation of fund flow statement, the decrease or sale of fixed assets is treated as a source of fund and the purchase or increase of fixed assets is assumed use of fund. But there is a condition that decreases in the value of fixed asset should not be due to depreciation or writing off the assets. Sometimes the information regarding the sale or purchase of fixed assets is not given in the examination questions. Therefore, sale or purchase of fixed assets is computed by adjusting the relating transactions as sale or purchase of other assets, depreciation, writing off the assets, etc. Sale, Purchase and Depreciation on fixed assets are determined as follows:

(a) Calculation of Purchase of Fixed Assets when cost of fixed assets is given:

	₹
Cost of Fixed Assets (at the end of current year)	-----
Cost of Fixed Assets of Previous Year	-----
- Cost of Fixed Assets Sold	-----
- Writing off the Assets	-----

Purchase of Fixed Assets	-----

(b) Calculation of Purchase of Fixed Assets when written down value of fixed assets is given:

Written Down Value of Fixed Assets in Current Year	-----
W.D.V. of Fixed Assets in previous year	-----
(-) Depreciation of the year	-----

Purchase of Fixed Assets	-----

(c) If current year's depreciation on fixed assets is not given in the question that will be ascertained with the help of accumulated depreciations of current year and last year as follows:

Calculation of Depreciation

Accumulated Depreciation of the current year	-----			
Accumulated Depreciation of last year	-----			
(-) Accumulated Depreciation on Assets & Old	-----	-----	-----	
Depreciation of the year		-----	-----	
(d) Calculation of Sale of Fixed Assets				
Fixed Assets at the end of previous year		-----	-----	
Add: Purchase of Fixed Assets during the year		-----	-----	
Less: Fixed Assets at the end	-----			
(-) Depreciation of the year	-----	-----	-----	
Cost of Fixed Assets sold		-----	-----	
Add: Profit on Sale/less: Loss on Sale		-----	-----	
Sale of Fixed Assets		-----	-----	

Note: The calculation of the sale or purchase of fixed assets can be determined by preparing the fixed assets account and provision for depreciation account which is T account technique. But statement technique mentioned above is more popular and easy to understand. For the adoption of T technique, there should be the complete knowledge of accounting principle. Therefore, to compute the sources and uses from fixed assets or liabilities, the students are advised to use the statement technique.

4.8.3 Increase or Decrease in Long-Term Liabilities

Debenture, bonds and long-term loans are counted under the heading of long-term liabilities. Increase of long-term liabilities is assumed that debentures are issued for cash or other current assets (not for the purchase of fixed assets or repayment of any other long-term liability or redemption of capital because it has no flow of fund) and is treated as a source of fund. The decrease of the long-term liabilities is assumed that these have been discharged by cash or current assets (not by shares or other long-term loans because it has no flow of fund). Hence, it is treated as a use of fund. At the time of calculation of increase or decrease of long-term liability, the amount of premium or discount should also be kept in mind. Premium on debentures should be added to the amount of debentures and discount should be subtracted from this.

4.8.4 Increase or Decrease in Share Capital

Share capital includes the equity share capital and preference share capital. Increase in share capital means the issue of equity or preference shares to the public. Issue of shares is assumed the source of fund but shares must be issued for cash or current assets. If issue of shares is for other than cash, for the purchase of fixed assets or for the discharge of debentures/bonds etc., it will not be the source of fund because such an issue does not affect the working capital. At the time of calculating the source of fund from the issue of shares the amount of premium on issue (if any) should be added to the nominal value of shares issued and amount of discount on the issue of shares (if any) should be subtracted from the nominal value of shares. The decrease in share capital means the preference share capital is redeemed which is treated as a use of

fund. Redemption of preference shares means the repayment of preference shares. The amount of premium (if any) on redemption and the amount of discount (if any) on redemption must be adjusted to calculate the true value of application of fund by the decrease of share capital. If redemption of preference share capital is caused by any other source not by current assets, such redemption is not considered the application of fund because it has no flow of fund.

4.8.5 Provision for Taxation

At the time of preparation of fund flow statement, there are two approaches to treat this item. These are:

- (i) Treat it as a current liability
- (ii) Treat it as an appropriation of profit

As per first approach, the provision for taxation is assumed as a current liability. Therefore, it must be shown in the schedule of working capital changes. All the information relating taxation should be ignored as in the case of other current liabilities. In this approach, the provision for taxation is neither used in the fund from operation nor in the uses of fund in the Fund Flow Statement as payment of tax liability.

Under second approach, the provision for taxation is treated as an appropriation of profit. Provision for taxation is not shown in the Schedule of Working Capital Changes. As other appropriations it is added back in the net profits to calculate the Fund from Operation. To find the payment of tax of the year provision for taxation account is prepared. Payment of the tax of the year is disclosed in the Uses of Fund in the Fund Flow Statement. Provision for taxation a/c is prepared as below:

Provision for Taxation			
	₹		₹
To Cash (Payment of tax)	-	By balance b/d	-
(Balancing figure)	-	By P & L a/c (current year's provision)	-
To balance c/d	-		-
	-		-
	-		-

However, it is advised to the students to adopt the first approach. This approach is more convenient for the students. Provision for taxation is also disclosed under the heading of current liabilities and provisions in the Balance Sheet of the Company as per the Indian Companies Act. This approach is adopted in the book also.

4.8.6 Proposed Dividend and Dividend Paid

Dividend paid during the year should be treated as an application of fund; therefore, it must be shown in the fund flow statement. Proposed dividend is not accumulated therefore, it should not be treated as a current liability. It is assumed that the proposed dividend of the previous year is paid during the year whether it is said or not. Therefore, it will be a use of fund. Proposed dividend and interim dividend are the appropriations against profit. So to calculate the fund from operation it must be added back to net profits like other appropriations. It must be noted that the closing balance of the P & L account of a year should be equal to the opening balance of P & L A/c in the next year. If there is any difference between these two figures, difference should be treated as payment of dividend during the year.

4.8.7 Provision for Current Assets

There are two treatments for the provisions for current assets as Provision for Bad and doubtful Debts and Provision for Loss of Stock etc. As per first treatment such a provision is assumed as current liability and is shown in the Schedule of Working Capital Changes and concerned gross assets are shown in the schedule. As per second

treatment it is subtracted from the concerned current assets, then balance of current assets is shown in the Schedule of Working Capital Changes. If there is excess provision, such a provision is treated appropriation. Its treatment will be like other appropriations.

Example: The Balance Sheet of Kamlesh Trading Co. Ltd. at the end of 2006 and 2007 are given as below:

Particulars	31 st March 2006 (₹)	31 st March 2007 (₹)
Liabilities:		
Preference Share Capital	1,40,000	1,50,000
Equity Share Capital	2,60,000	3,50,000
Creditors	2,00,000	1,40,000
Pri a c	40,000	60,000
	6,40,000	7,00,000
Assets:		
Plant & Machinery	1,00,000	1,20,000
Furniture & Fixture	40,000	1,50,000
Stock	1,60,000	1,00,000
Debtors	1,40,000	1,70,000
Cash	2,00,000	1,60,000
	6,40,000	7,00,000

You are required to prepare a statement of changes in working capital and a Fund Flow statement from the above data.

Solution:

Statement of Working Capital Changes

Particulars	2006 ₹	2007 ₹	Working capital changes	
			Increase ₹	Decrease ₹
Current Assets:				
Cash	2,00,000	1,60,000	-	40,000
Debtors	1,40,000	1,70,000	30,000	-
Stock	1,60,000	1,00,000	-	60,000
	5,00,000	4,30,000		
Current Liabilities:				
Creditors	2,00,000	1,40,000	60,000	-
	2,00,000	1,40,000		
Working Capital	3,00,000	2,90,000		
Decrease in Working Capital	-	10,000	10,000	-
	3,00,000	3,00,000	1,00,000	1,00,000

Fund Flow Statement

Sources of Fund:		₹
1. Issue of Share Capital		
Equity	(3,50,000 - 2,60,000)	90,000
Preference	(1,50,000 - 1,40,000)	10,000
2. Fund from Operation		20,000
3. Decrease in Working Capital		10,000
		1,30,000
Uses of Fund:		
1. Purchase of Plant and Machinery	(1,20,000 - 1,00,000)	20,000
2. Purchase of Furniture & Fixtures	(1,50,000 - 40,000)	1,10,000
		1,30,000

Working Note:

Calculation of Fund from Operation

P & L A/c (2007)	₹
	60,000
Less: P & L A/c (2006)	40,000
Fund from Operation	<u>20,000</u>

Example: Following is the comparative balance sheet of Shobhit Ltd., for the year 2006 and 2007 from which you have to prepare the fund flow statement.

Liabilities	2006	2007	Assets	2006	2007
	₹	₹		₹	₹
Share Capital	1,00,000	2,00,000	Goodwill	30,000	50,000
Debentures	-	50,000	Plant	36,000	1,92,000
P/L A/c	30,000	50,000	Stock	80,000	70,000
Proposed Dividend	10,000	12,000	Debtors	30,000	65,000
Sundry Creditors	40,000	60,000	Cash	16,000	18,000
O/s Expenses	10,000	7,000	Preliminary Exp.	8,000	5,000
Overdraft	10,000	21,000			
	<u>2,00,000</u>	<u>4,00,000</u>		<u>2,00,000</u>	<u>4,00,000</u>

Additional Information:

1. During the current year a plant was sold for ₹ 40,000 (accumulated depreciation being ₹ 16,000) and it was purchased for ₹ 50,000.
2. Refund of Income Tax received ₹ 2,000.

Solution:

Schedule of Change in Working Capital

Particulars	2006	2007	Working Capital Changes	
	₹	₹	Increase	Decrease
			₹	₹
Current Assets				
Cash	16,000	18,000	2,000	-
Debtors	30,000	65,000	35,000	-
Stock	80,000	70,000	-	10,000
	<u>1,26,000</u>	<u>1,53,000</u>		
Current Liabilities				
Sundry Creditors	40,000	60,000	-	20,000
O/S Expenses	10,000	7,000	3,000	-
Overdraft	10,000	21,000	-	11,000
	<u>60,000</u>	<u>88,000</u>		
Working Capital	66,000	65,000		
Decrease in Working Capital	-	1,000	1,000	-
	<u>66,000</u>	<u>66,000</u>	<u>41,000</u>	<u>41,000</u>

Fund Flow Statement

Sources	₹	Uses	₹
Fund from Operation	43,000	Purchase of plant	2,06,000
Sale of Plant	40,000	Purchase of goodwill	20,000
Decrease in Working Capital	1,000	Payment of dividend	10,000
Refund of Income Tax	2,000		
Debenture Issued	50,000		
Issue of Capital	1,00,000		
	<u>2,36,000</u>		<u>2,36,000</u>

Working Note:1. *Calculation of Fund from Operation*

		₹
Balance of P & L A/c 2007		50,000
Less: Balance of P & L A/c 2006		30,000
		20,000
Profit of current year		
<i>Add: Non-Cash items & Appropriations:</i>		
Preliminary Expenses Written off	3,000	
Depreciation	16,000	
Proposed Dividends	12,000	31,000
		51,000
<i>Less: Non-Operating Incomes</i>		
Profit on Sale of Plant	6,000	
Refund of Tax	2,000	8,000
		43,000
Fund from Operation		

2. *Calculation of Profit on Sale of Plant*

Sale of Plant	40,000	
Cost of Plant	50,000	
(-) Depreciation	16,000	
		34,000
Profit on Sale of Plant	6,000	

3. *Calculation of Purchase of Plant***Plant A/c.**

		₹			₹
To Balance b/d	36,000	By Sale of Plant	40,000		
To Profit on Sale of Plant	6,000	By P & L a/c (Dep)	16,000		
To Cash (Purchase of Plant)	2,06,000	By Balance c/d	1,92,000		
	2,48,000			2,48,000	

Example: The Balance Sheets of Jai Prakash Industries on 31st December 2006 and 2007 as follows:

Liabilities	2007	2006	Assets	2007	2006
	₹	₹		₹	₹
Accounts Payable	58,000	62,000	Cash	12,000	18,000
Debentures	15,000	20,000	Accounts Receivable	39,200	44,100
Equity Capital	70,000	60,000	Reserve for bad Debts	1,200	1,400
Retained Earnings	21,420	11,120	Inventory	78,420	65,120
			Long-term Investments	22,000	16,000
			Furniture & Fixture	16,400	13,000
			Accumulated Depreciation	2,400	1,700

Dividend paid during the year ₹ 10,000.

Prepare (a) a schedule of working capital and (b) a fund flow statement.

Solution:

Schedule of Changes of Working Capital

Particulars	31 st December		Working Capital Changes	
	2006 ₹	2007 ₹	Increase ₹	Decrease ₹
Current Assets :				
Cash	18,000	12,000	-	6,000
Accounts Receivable	44,100	39,200	-	4,900
Inventory	65,120	78,420	13,300	-
	<u>1,27,220</u>	<u>1,29,620</u>		
Current Liabilities:				
Accounts Payable	62,000	58,000	4,000	-
Reserve for Bad Debts	1,400	1,200	200	-
	<u>63,400</u>	<u>59,200</u>		
Working Capital	63,820	70,420	-	-
Increase in Working Capital	6,600	-	-	6,600
	<u>70,420</u>	<u>70,420</u>	<u>17,500</u>	<u>17,500</u>

Fund Flow Statement

Sources	₹	Uses	₹
Issue of Shares	10,000	Redemption of Debentures	5,000
Fund from Operation	21,000	Purchase of Long-term Investments	6,000
		Purchase of Furniture & Fixtures	3,400
		Payment of Dividend	10,000
		Increase in Working Capital	6,600
	<u>31,000</u>		<u>31,000</u>

Working Note:

(1) **Fund from Operation:**

Retained Earnings (2007)	21,420
(-) Retained Earnings (2006)	<u>11,120</u>
	10,300
Add: Depreciation (2,400 - 1,700)	700
Dividends	<u>10,000</u>
Fund from Operation	<u><u>21,000</u></u>

(2) **Purchase of Furniture & Fittings:**

W.D.V. of Furniture & Fittings (2006)	
(13,000-1,700)	11,300
Less: Current year Depreciation	
(2,400-1,700)	<u>700</u>
	10,600
Less: W.D.V. of Furniture & Fittings (2007)	
(16,400-2,400)	<u>14,000</u>
Purchase of Furniture & Fittings	3,400

Example: The following are the Balance Sheets of Shankh Dhar Ltd., Dehradun, as on 31st December 2006 and 2007.

Liabilities	2006 ₹	2007 ₹	Assets	2006 ₹	2007 ₹
Equity Share Capital	4,00,000	4,80,000	Land & Buildings	4,00,000	3,80,000
General Reserve	1,00,000	1,40,000	Plant & Machinery	3,00,000	3,48,000
Profit and Loss a/c	61,000	61,200	Inventory	2,00,000	1,48,000
Short-term Bank Loan	1,40,000	–	Sundry Debtors	1,60,000	1,28,400
Sundry Creditors	3,00,000	2,70,400	Cash in Hand	1,000	3,000
Provision for Taxation	60,000	70,000	Cash at Bank	–	14,207
	10,61,000	10,21,600		10,61,000	10,21,600

Additional Information:

- (1) Depreciation Written-off on Plant and Machinery was ₹ 28,000 in 2007.
 - (2) Dividend of ₹ 40,000 was paid during 2007.
 - (3) Provision for Income Tax made during the year 2007 was ₹ 50,000.
 - (4) A part of Land and Building was sold during the year 2007 at cost.
- Prepare a statement showing sources and application of funds for the year 2007.

Solution:

Schedule of Changes of Working Capital

Particulars	31 st December		Working Capital Changes	
	2006 ₹	2007 ₹	Increase ₹	Decrease ₹
Current Assets :				
Cash at Bank	–	14,200	14,200	–
Cash in Hand	1,000	3,000	2,000	–
Sundry Debtors	1,60,000	1,28,400	–	31,600
Inventory	2,00,000	1,48,000	–	52,000
	3,61,000	2,93,600		
Current Liabilities :				
Bank Loan	1,40,000	–	1,40,000	–
Creditors	3,00,000	2,70,400	29,600	–
Provision for Taxation	60,000	70,000	–	10,000
	5,00,000	3,40,400		
Working Capital	–1,39,000	–46,800		
Increase in Working Capital		–92,200		92,200
	– 1,39,000	–1,39,000	1,85,800	1,85,800

Fund Flow Statement

Sources	₹	Uses	₹
Fund from Operation	1,08,200	Purchase of Plant	76,000
Sale of Land & Building	20,000	Payment of Dividends	40,000
Issue of Shares	80,000	Increase in W.C.	92,200
	2,08,200		2,08,200

Working Note

(1) Purchase of Plant

Balance of Plant (2007)		3,48,000
Less: Balance of Plant (2006)	3,00,000	
- Depreciation	28,000	2,72,000
		<u>76,000</u>

(2) Fund from Operation

Balance of P & L A/c (2007)		61,200
Balance of P & L A/c (2006)		61,000
Add: Depreciation	28,000	200
Dividend	40,000	
General Reserve	40,000	1,08,000
		<u>1,08,200</u>

Example: From the following Balance Sheet of Suraj Limited, make out (i) Statement of Changes in Working Capital and (ii) Fund Flow Statements.

Comparative Balance Sheet as on 30 June, 2008

Liabilities	2007 ₹	2008 ₹	Assets	2007 ₹	2008 ₹
Equity Share Capital	80,000	1,00,000	Goodwill	18,000	16,000
Preference Share Capital	40,000	30,000	Land and Buildings	56,000	40,000
Debentures	10,000	-	Plant & Machinery	20,000	36,000
Capital Reserve	-	6,000	Investments	6,000	12,000
General Reserve	2,000	6,000	Debtors	36,000	42,000
P/L A/c	6,000	9,000	Stock	16,000	20,000
Proposed Dividend	12,000	12,000	Cash at Bank	8,000	13,000
Creditors	6,000	10,000	Preliminary Exp.	4,000	2,000
Provision for Taxation	8,000	8,000			
	<u>1,64,000</u>	<u>1,81,000</u>		<u>1,64,000</u>	<u>1,81,000</u>

The following additional information is also available – (a) Payment of interim dividend ₹ 6,000; (b) Payment of income tax ₹ 10,000; (c) a piece of land had been sold out during the year and the profit on the sale has been credited to capital reserve; (d) Preference shares were redeemed at 5% premium; (e) Depreciation on plant ₹ 3,000; (f) Machine whose written down value was ₹ 7,200 was sold for ₹ 8,000.

Solution:

Schedule of Working Capital Changes

Details	30 June		Working Capital Changes	
	2007 ₹	2008 ₹	Increase ₹	Decrease ₹
Current Assets :				
Debtors	36,000	42,000	6,000	-
Stock	16,000	20,000	4,000	-
Cash at Bank	8,000	13,000	5,000	-
	<u>60,000</u>	<u>75,000</u>		
Current Liabilities :				
Creditors	6,000	10,000	-	4,000
Provision for Taxation	8,000	8,000	-	-
	<u>14,000</u>	<u>18,000</u>		
Working Capital	46,000	57,000	-	-
Increase in Working Capital	11,000	-		11,000
	<u>57,000</u>	<u>57,000</u>	15,000	15,000

Fund Flow Statement

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Fund Flow Statement
(Accounting Standard - 3)

Sources	₹	Uses	₹
Sale of Machine	8,000	Redemption of Preference Shares	10,500
Issue of Capital	20,000	Redemption of Debentures	10,000
Sale of Land	22,000	Payment of Interim Dividend	6,000
Fund from Operation	31,700	Payment of Dividend of Last year	12,000
		Purchase of Investment	6,000
		Purchase of Machine	26,200
		Increase in Working Capital	11,000
	81,700		81,700

Working Notes:

(1) Purchase of Machinery

Plant & Machinery (2007)		20,000
<i>Less:</i> Depreciation	3,000	
Cost of Sale of Plant	7,200	10,200
		9,800
<i>Less:</i> P & M (2008)		36,000
		26,200

(2) Sale of Land

Land & Building (2007)		56,000
<i>Less:</i> Land & Building (2008)		40,000
Cost of Sale of Land		16,000
+ Profit on Sale of Land		6,000
		22,000

(3) Fund from Operation

P & L A/c (2008)		9,000
<i>Less:</i> P & L a/c (2007)		6,000
<i>Add:</i> Appropriations:		3,000
Interim Dividend	6,000	
Proposed Dividend	12,000	
Transfer to G.R	4,000	22,000
Net Profit for the year		25,000
<i>Add:</i> Non-Cash Items		
Goodwill Written off	2,000	
Preliminary expenses Written off	2,000	
Premium on Redemption of Pref. Share		
Written off	500	
Depreciation	3,000	7,500
		32,500
<i>Less:</i> Profit on Sale of Machine		800
		31,700

Example: From the following details relating to the accounts of Akshay Raj & Co. Ltd., prepare a statement of sources and use of fund.

	31.12.2007 ₹	31.12.2006 ₹
Liabilities:		
Share Capital	8,00,000	6,00,000
Reserve	2,00,000	1,60,000
Profit and Loss Account	1,00,000	60,000
Debentures	2,00,000	3,00,000
Income Tax Provision	80,000	1,00,000
Trade Creditors	1,40,000	1,80,000
Proposed Dividend	80,000	60,000
	16,00,000	14,60,000
Assets :		
Goodwill	1,80,000	2,00,000
Plants & Machinery	8,58,500	5,96,000
Debenture Discount	10,000	16,000
Prepaid Expenses	11,500	8,000
Investments	1,20,000	2,00,000
Sundry Debtors	2,20,000	3,20,000
Stock	1,60,000	1,00,000
Cash and Bank	40,00,000	20,000
	16,00,000	14,60,000

- (1) 15% depreciation has been charged in the accounts on Plant and Machinery.
- (2) Old machines cost ₹ 1,00,000 (WDV ₹ 40,000) have been sold for ₹ 70,000).
- (3) A machine costing ₹ 20,000 (WDV ₹ 6,000) has been discarded.
- (4) ₹ 20,000 profit has been earned by sale of investments.
- (5) Debentures have been redeemed at 5% premium.
- (6) ₹ 90,000 income tax has been paid and adjusted against Income Tax Provision Account.

Solution:

Schedule of Working Capital Changes

Items	31 st December		Working Capital Changes	
	2006 ₹	2007 ₹	Increase ₹	Decrease ₹
Current Assets :				
Cash and Bank	20,000	40,000	20,000	--
Stock	1,00,000	1,60,000	60,000	-
Sundry Debtors	3,20,000	2,20,000	-	1,00,000
Prepaid Expenses	8,000	11,500	3,500	-
	4,48,000	4,31,500		
Current Liabilities :				
Provision for Tax	1,00,000	80,000	20,000	-
Trade Creditors	1,80,000	1,40,000	40,000	-
	2,80,000	2,20,000		
Working Capital	1,68,000	2,11,500		
Increase in Working Capital	43,500	-	-	43,500
	2,11,500	2,11,500	1,43,500	1,43,500

Statement of Sources & Uses of Fund

Sources	₹	Uses	₹
Issue of Capital	2,00,000	Redemption of Debenture with Premium	1,05,000
Sale of Machine	70,000	Payment of Dividend	60,000
Sale of Investment	1,00,000	Purchase of Plant	4,60,000
Fund from Operation	2,99,500	Increase in Working Capital	43,500
	<u>6,69,500</u>		<u>6,69,500</u>

Working Note:

(1) Depreciation on old Machines for current year

W.D.V. of Plant (2006)		5,96,000
Less: Plant Disposed	40,000	
Plant Written off	6,000	<u>46,000</u>
		5,50,000

W.D.V. of Old Machines

$$15\% \text{ Dep. on Old Machines} = \frac{5,50,000 \times 15}{100} = 82,500$$

(2) Purchase of Plant and Depreciation thereon

W.D.V. of Old Machines (calculated above)	5,50,000
Less: Current year's Depreciation	<u>82,500</u>
	4,67,500
Less: Closing Balance of Plant given	<u>8,58,500</u>
W.D.V. of Additional Plant	<u><u>3,91,000</u></u>

$$\text{Purchase Price of Additional Plant} = \frac{3,91,000 \times 100}{85} = 4,60,000$$

$$\text{Depreciation of Additional Plant} = \frac{4,60,000 \times 15}{100} = 69,000$$

(3) Fund from Operation

P & L Account (2007)		1,00,000
Less: P & L Account (2006)		<u>60,000</u>
		40,000
Add: Goodwill Written off		20,000
Deb. Discount Written off		6,000
Transfer to G.R.		40,000
Proposed Dividends		80,000
Depreciation (69,000 + 82,500)		1,51,500
Less on Machine Discarded		6,000
Premium on Redemption of Debentures		<u>5,000</u>
		3,48,500
Less: Profit on Sale of Investment	20,000	
Profit on Sale of Machine	<u>30,000</u>	<u>50,000</u>
Fund from Operation		<u><u>2,98,500</u></u>

Check Your Progress

Fill in the blanks of the following:

1. _____ are payable by the company after a long period (which is more than one year) or at the liquidation of the company.
2. _____ means the change or movement that may be inflow or outflow.
3. Fund from operation is the only _____ source of fund.
4. Loss from operation _____ the working capital.
5. Schedule of Changes of Working Capital has _____ columns for amount.
6. Provision for Taxation should always be treated as _____.

4.9 LET US SUM UP

- Fund flow statement is prepared to indicate the changes in the fund between two periods.
- For the purpose of fund flow statement, fund means the working capital which is the difference between current assets and current liabilities.
- Flow of fund means the movement in the working capital. It can be positive or negative. Positive movement means the increase in net working capital. Negative movement means decrease in working capital.
- If any transaction increases the net working capital, it is said the source of fund. Similarly, if any transaction decreases the net amount of working capital, it is said the uses of fund.
- The sources of fund are – fund from operation, decrease in fixed assets, increase in long-term liabilities and increase in net worth.
- Uses of fund are – increase in fixed assets, decrease in long-term liabilities. Decrease in net worth and loss from operation.
- The fund flow statement is used for (i) Analysis of financial statement (ii) Determination of financial consequences of business activities, (iii) Comparative study (iv) Providing information for securing loan, (v) Allocation of resources, (vi) To answer many intricate queries and (vii) Planning of working capital.
- Fund Flow Statement has also some limitations as (i) historical analysis, (ii) ignorance of non-fund items, (iii) structural changes in working capital are not disclosed.
- In the modern technique of preparing the fund flow statement, the following two statements are prepared: (i) Schedule of working capital changes (ii) Fund flow statement.
- To prepare the schedule of working capital changes the following rules are kept in mind: (i) an increase in current assets increases the working capital (ii) a decrease in current assets decreases the working capital (iii) an increase in current liability decreases the working capital (iv) a decrease in current liability increases the working capital.
- Fund Flow Statement is prepared on the basis of uses of fund and sources of fund.

- Fund from Operation is computed by adjusting the Non-Cash items and Non-Operating Items in Net Profits.

4.10 LESSON END ACTIVITY

“The analysis of flow of fund through an organisation can be very useful to the management”. Elucidate this statement and explain the limitations of fund flow statement.

4.11 KEYWORDS

Fund: Fund means the net working capital.

Flow: Flow means movement or change that may be inflow or outflow.

Working Capital: It is the difference between current assets and current liabilities.

Current Assets: Those assets which can be converted into cash within a year as – stock, debtors, B/R etc.

Current Liabilities: Those obligations of the business which are to be paid within a year as creditors, B/P, outstanding expenses, etc.

Sources of Fund: Those items which increase the net working capital are called sources of fund.

Uses of Fund: It includes those items which decrease the net working capital.

4.12 QUESTIONS FOR DISCUSSION

1. What do you mean by the term ‘Fund’ and ‘Flow’ in relation to Fund Flow Statement? How Fund Flow Statement is prepared. Explain.
2. Which transactions of the business affect the working capital and which not? Explain.
3. What do you understand by Fund Flow Statement? Explain its objectives.
4. Define Fund Flow Statement. Give its uses and importance.
5. What do you mean by the Schedule of Working Capital Changes? Explain how it is prepared?
6. What do you mean by Fund Flow Statement? Give its objectives and limitations.
7. Prepare a Schedule of Working Capital Changes with imaginary figures.
8. What are the reasons of Working Capital Changes? How are these detected? Explain.
9. Write short notes on the followings:
 - (i) Sources of Fund
 - (ii) Uses of Fund
 - (iii) Fund from Operation
 - (iv) Current and Non-Current Accounts
 - (v) Working Capital

10. From the following information extracted from the books of Vijay & Sons Ltd., prepare Statement of Changes in Financial Position in proper form:

Balance Sheet

	31.3.2007	31.3.2008
	₹	₹
Assets:		
Fixed Assets (Net)	1,02,000	1,24,000
Long-term Investments	6,000	16,000
Current Assets	48,000	75,000
Discount on Issue of Shares and Debentures	2,000	1,000
	1,58,000	2,16,000
Liabilities and Capital:		
Equity Share Capital	60,000	70,000
6% Pref. Share Capital	20,000	40,000
6% Debentures	40,000	20,000
Reserves and Surplus	22,000	54,000
Provision for Doubtful Debts	2,000	3,000
Current Liabilities	14,000	29,000
	1,58,000	2,16,000

Additional Information

- (i) A machine costing ₹ 14,000 with book value of ₹ 8,000 was sold for ₹ 5,000.
- (ii) A dividend of 15% was paid on equity shares during the current year.
- (iii) Provision for Depreciations ₹ 30,000 (2007) and ₹ 38,000 (2008)
- (iv) Debentures were redeemed at a premium of 5% stock which was valued at ₹ 18,000 on 2007, was written up to cost ₹ 20,000 for preparing the P & L A/c of 2008. Debtors are likely to realized in full.

11. The comparative balance sheets of Raja & Co. Ltd. as on 31st Dec. 2006 and 2007 are given below:

	2006	2007		2006	2007
	₹	₹		₹	₹
Share Capital (20,000 Shares of ₹ 10 each)	2,00,000	2,00,000	Plant at Cost	80,000	1,00,000
General Reserve	—	12,000	Less: Depreciation	32,000	48,000
6% Debentures	—	2,00,000		48,000	52,000
Bank Loan	—	80,000	Freehold Property	—	4,00,000
Creditors	72,000	88,000	Investments	60,000	—
Proposed Dividend	12,000	—	Stock	1,20,000	1,76,000
Provision for Tax	24,000	32,000	Debtors	80,000	1,20,000
P/L A/c	60,000	1,40,000	Cash at Bank	60,000	4,000
	3,68,000	7,52,000		3,68,000	7,52,000

Prepare for the year 2007 a statement of sources and applications of funds and a schedule of working capital changes after taking into account the following facts:

- (i) 8% dividend was declared in the year 2007.
- (ii) During the year 2007 plant was sold for ₹ 14,000 which was purchased for ₹ 20,000 and accumulated depreciation on which was ₹ 7,200.
- (iii) Total bank loan raised during the year 2007 was ₹ 1,12,000.

12. Following are the Trial Balances of Lakshi Co. Ltd. as on 31st March 2007 and 2008.

Items	31 st March, 2007		31 st March, 2008	
	Dr. (₹)	Cr. (₹)	Dr. (₹)	Cr. (₹)
Fixed Assets	11,68,480		12,30,250	–
Current Assets	4,80,270		3,95,900	–
Debenture Discount	15,000		12,500	–
Equity Share Capital	–	7,50,000	–	7,50,000
Preference Share Capital	–	1,50,000	–	2,00,000
Security Premium	–	15,000	–	20,000
Debentures	–	2,50,000	–	2,50,000
Current Liabilities	–	3,10,000	–	2,20,000
Provision for Depreciation	–	90,000	–	97,500
Provision for Debenture discount	–	3,000	–	2,500
Dividend for 2007-08	–	–	–	–
Balance of P/L A/c from previous year	–	–	75,000	–
Net Profit for the year	–	12,200	–	95,750
		83,550		77,900
	16,63,750	16,63,750	17,13,650	17,13,650

Additional Information

- (i) During the year 2007-08 machinery costing ₹ 1,00,000 (Accumulated depreciation ₹ 30,000) was sold for ₹ 75,000.
- (ii) 50,000 Preference Share Capital was issued during 2007-08 at a Premium of 10%.
- (iii) The Net Profit for 2007-08 has been arrived after taking credit for the profit on sale of machinery reducing the provision for doubtful debts and writing off the discount on issue of debentures.

You are required to prepare a Statement of Changes in Working Capital and a Fund Flow Statement.

13. A statement of retained earnings of Rashmi Ltd. is given below:

Balance of retained earnings on 1 st April, 2007		₹
Add : Net Profit after tax		3,25,600
		6,48,480
Add: Refund of Tax		9,74,080
		25,740
Less: Loss on sale of P & M		9,99,550
		14,460
Less: Goodwill written off		9,85,090
Dividend paid	95,370	
Balance of Retained earning, 31 March, 2008	4,70,350	5,65,720
		4,19,370

Additional Information

- (i) Plant & Machinery having a written down value of ₹ 54,360 was sold on 1st Jan. 2008 Depreciation of ₹ 68,250 has been deducted while arriving at net profit

(ii) Debentures of ₹ 72,800 have been redeemed during the year

(iii) Increase in working capital during the year in ₹ 2,38,950

Prepare Funds Flow Statement on the above information.

Check Your Progress: Model Answer

1. Non-Current Liabilities
2. Flow
3. Internal
4. Decreases
5. Four
6. Current liabilities

4.13 SUGGESTED READINGS

Charles T. Horngren, *Introduction to Management Accounting*, Prentice Hall, Englewood Cliff, New Jersey 07632.

Ray H. Garrison, *Managerial Accounting*, Homewood, Illinois 60435.

Robert S. Kaplan and Anthony A. Atkinson. *Advanced Management Accounting*, (Prentice Hall, Englewood Cliff, New Jersey 07632).

Dr. S. N. Maheshwari, *Management Accounting for Bankers*, Sultan Chand & Sons, New Delhi: 110002.

N. K. Kulshrestha, *Management Accounting Concepts & Cases*, Tata McGraw Hill Publishing Co. Ltd., New Delhi.

LESSON

5

CASH FLOW STATEMENT (ACCOUNTING STANDARD – 3)

CONTENTS

- 5.0 Aims and Objectives
- 5.1 Introduction
- 5.2 Meaning of Cash Flow Statement (CFS)
- 5.3 Objectives and Importance of Cash Flow Statement
- 5.4 Limitations of Cash Flow Statement
- 5.5 Difference between Cash Flow Statement and Fund Flow Statement
- 5.6 Classification of Cash Flow
 - 5.6.1 Cash Flow from Operating Activities
 - 5.6.2 Cash Flow from Investing Activities
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- 5.7 Treatment of Other Items
- 5.8 Format of Cash Flow Statement (CFS)
- 5.9 Procedure to Prepare Cash Flow Statement as per AS-3 (Revised)
- 5.10 Determination of Cash Flow from Operating Activities
 - 5.10.1 Direct Method
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- 5.11 Let Us Sum Up
- 5.12 Lesson End Activity
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- 5.14 Questions for Discussion
- 5.15 Suggested Readings

5.0 AIMS AND OBJECTIVES

After studying this lesson, you should be able to:

- Understand the meaning, significance and limitations of Cash Flow Analysis
- Discuss the classification of business activities
- Describe direct and indirect method to calculate the cash flow from operating activities
- Explain calculation of cash flows from investing and financing activities
- Explain how to prepare of cash flow statements

5.1 INTRODUCTION

In the fund flow statement, the changes in the fund (working capital) are summarized. This statement also gives a picture of the causes of changes in working capital. Working capital is the difference of current assets and current liabilities. In current assets, stock and prepaid expenses are also included in addition to cash. Hence, it does not solve the purpose of creditors who are interested in assessing the short-term ability of the company to pay their dues. Change in working capital does not mean the changes in cash. Change in working capital may be due to several factors including non-current items. Financial position (working capital) of a company may be sound but cash position may be adverse. Thus, fund flow statement does not reveal the changes in cash. To solve this object the cash flow statement is prepared. Seeing its importance, in 1995, the Securities and Exchange Board of India (SEBI) amended its clause 32 of listing agreement. As per this amendment every listed company has to prepare and publish its cash flow statement along with its balance sheet and profit and loss account. In 1997, the Institute of Chartered Accountant of India also revised its AS-3 relating the statement of changes of financial position. ICAI issued AS-3: Cash Flow Statement replacing its existing AS: Statement of Changes of Financial Position.

5.2 MEANING OF CASH FLOW STATEMENT (CFS)

Cash flow statement is like fund flow statement. The basis of fund flow statement is fund (working capital), while cash and cash equivalents are the basis of cash flow statement. Thus, it is a statement which indicates the changes of cash during an accounting period. CFS also shows the sources of inflow of cash and applications or uses of outflow of cash during a specified period (that may be a month or a year). To prepare CFS the information are used from the analysis of the balance sheet and the profit and loss account and the opening and closing balances of the cash during a period are also used in it. The Institute of Cost and Works Accountants of India (ICWAI) has defined the CFS as, "*Cash-flow Statement is a statement setting out the flow of cash under different heads of sources and their utilization to determine the requirements of cash during the given period and to prepare for its adequate provisions*".

Thus, cash flow statement is a statement in which the sources of inflow of cash and applications of outflow of cash of a business entity are indicated during an accounting period.

In the cash flow statement the flow of cash and cash equivalents are recorded. Therefore, the meaning of cash and cash equivalent should be cleared. Here cash includes cash in hand and demand deposits with banks. Demand deposits mean that deposits with banks which can be withdrawn by the company from bank any time. A cash equivalent refers to short-term highly liquid investments. These investments should be realizable within three months or less periods as government securities and treasury bills. Cash equivalents are held by the companies for the meeting of short-term cash commitment not for investment purpose. Now, the meaning of Flow of Cash can be understood easily. Cash flow includes inflow and outflow of cash and cash equivalents. Inflow of cash is that which increases the total of cash while cash outflow is that which decreases the total of cash. If total of inflow of cash exceeds the total of outflow of cash, it is called net cash inflow otherwise net cash outflow.

5.3 OBJECTIVES AND IMPORTANCE OF CASH FLOW STATEMENT

The objective of the cash flow statement is to provide the information about the cash flows of a business to the various users of the financial statements during an accounting period. Thus, it is very important tool for the financial analysis used for the followings purposes:

1. **Knowledge of Cash Position:** CFS is prepared on the basis of cash which indicates the changes in cash position of a concern during a specified period. It also discloses the causes of such a change of cash.
2. **Knowledge of Cash Inflow and Cash Requirements:** This statement is used to throw the light on the various sources of cash from where the cash is generated during an accounting period. The cash requirement in the coming time can also be forecasted by the preparation of project CFS.
3. **Knowledge of Short-term Solvency:** CFS helps in the analysis of short-term solvency of a company. Cash is more relevant to meet the immediate obligations of a company.
4. **Helps in Framing the Financial Policies:** CFS may also be used to get the help in framing the financial policies of a business regarding the sources and uses of cash during a period.
5. **Helpful in Dividend Policy:** CFS helps the management of a company regarding taking the decision of cash payment of dividend such as, how much cash would be available for the payment of dividend.
6. **Helpful in Cash Budget:** It provides the base to prepare the cash budget regarding the receipts and payment of cash during a particular period.
7. **Useful for External Investors:** CFS is very useful for the external investors of a company. They use it to know the ability of the company to repay the outsiders' obligations in short period. On the basis of that they take the decision whether they should give loan to the company or not.
8. **Study of Sources and Uses of Cash from Various Activities:** Under the CFS all the activities of the business are classified into three – operating, investing and financial activities. The sources and uses of cash from all these activities are mentioned in the CFS. Thus, we can study the trend of cash inflow and outflow from CFS.

5.4 LIMITATIONS OF CASH FLOW STATEMENT

Despite a number of uses of CFS, there are some noteworthy limitations, these are as follows:

1. **Accrual Concept of Accounting is ignored:** CFS is prepared on the basis of cash sources and uses during a period. Only cash transactions are recorded. Thus it ignores the accrual concept of accounting.
2. **It is not a Complete Substitute of Income Statement:** CFS cannot be a substitute of profit and loss account. The net cash flow depicted by CFS cannot equal to the net profit of profit and loss account.
3. **It is not a Substitute of Fund Flow Statement:** CFS cannot be replaced fund flow statement. It is prepared on the basis of cash only. Cash is a very narrow concept which does not indicate the correct financial position of a company.

4. **Non-Cash Transactions are ignored in CFS:** CFS is constructed on the basis of those transactions which are relating to cash only. Non-cash transactions are ignored in it as purchase of fixed assets by the issue of shares or debentures.
5. **CFS Presents the Misleading Comparison:** If inter-firm comparison is done on the basis of cash only, it may mislead in drawing the conclusion.

In spite of the above limitations of CFS, it provides very useful information to the users of financial statements. Therefore, it is being prepared and publishes along with the other financial statements. As per AS-3 (revised) it is mandatory for companies.

5.5 DIFFERENCE BETWEEN CASH FLOW STATEMENT AND FUND FLOW STATEMENT

In spite of having similarity in the cash flow statement and fund flow statement that both the statements are prepared to judge the financial position of a company, there are a number of differences between these two statements. These are as follows:

1. Cash flow statement is prepared on the basis of cash inflow and cash outflow during a period, while the fund flow statement is made on the basis of inflow of fund and outflow of fund during a period.
2. In cash flow statement the changes of financial position on the basis of cash only is disclosed while fund flow statement depicts the financial position of a company for a period on the basis of fund means working capital.
3. In the cash flow statement a very narrow concept *i.e.* cash only is adopted while a broad concept is adopted in fund flow statement *i.e.* fund or working capital (difference of current assets and current liabilities).
4. 'Cash basis accounting' is supported by the cash flow statement while 'Accrual Basis Accounting' is supported by the fund flow statement.
5. Cash flow statement is prepared to judge a very short-term planning while fund flow statement is prepared for long-term planning.
6. A Schedule of change of working capital is prepared in fund flow analysis but such a statement is not made in the case of cash flow statement.
7. Techniques of the preparation of both the statements are different. In the fund flow statement fund from operation is computed with adjusting the current assets and current liabilities while such an adjustment is not made in the cash from operation. The opening and closing balances of cash are taken to prepare the CFS.
8. As per AS-3 (revised) the cash flow statement is prepared by classifying the inflows and outflows of cash among operating, investing and financial activities. The difference of inflows and outflows shows the net increase or decrease of cash. But in fund flow statement the net difference of sources and uses of fund shows the increase or decrease of working capital.

5.6 CLASSIFICATION OF CASH FLOW

As per AS-3 (revised) the cash flow statement is prepared in a manner reporting the cash flows into following categories:

1. Cash flow from operating activities
2. Cash flow from investing activities
3. Cash flow from financing activities

5.6.1 Cash Flow from Operating Activities

Cash flows from operating activities are earned from the principal revenue – producing activities of an enterprise. Through these activities the net profit or loss of the business is also determined. Examples of such a flow from operating activities are given in AS-3 (revised) as follows:

- (a) Cash receipts from the sale of goods and rendering of services;
- (b) Cash receipts from royalties, fees, commissions and other revenue;
- (c) Cash payments to suppliers for goods and services;
- (d) Cash payments to and on behalf of employees;
- (e) Cash receipts and cash payments of an insurance enterprise for premiums and claims, annuities and other policy benefits;
- (f) Cash payments or refunds of income taxes unless they can be specifically identified with financing and investing activities, and
- (g) Cash receipts and payments relating to future contracts, forward contracts, option contracts and swap contracts when the contracts are held for dealing or trading purposes.

Some transactions, such as the sale of an item of plant, may give rise to a gain or loss which is included in the determination of net profit or loss. However, the cash flows relating to such transactions are cash flows from investing activities.

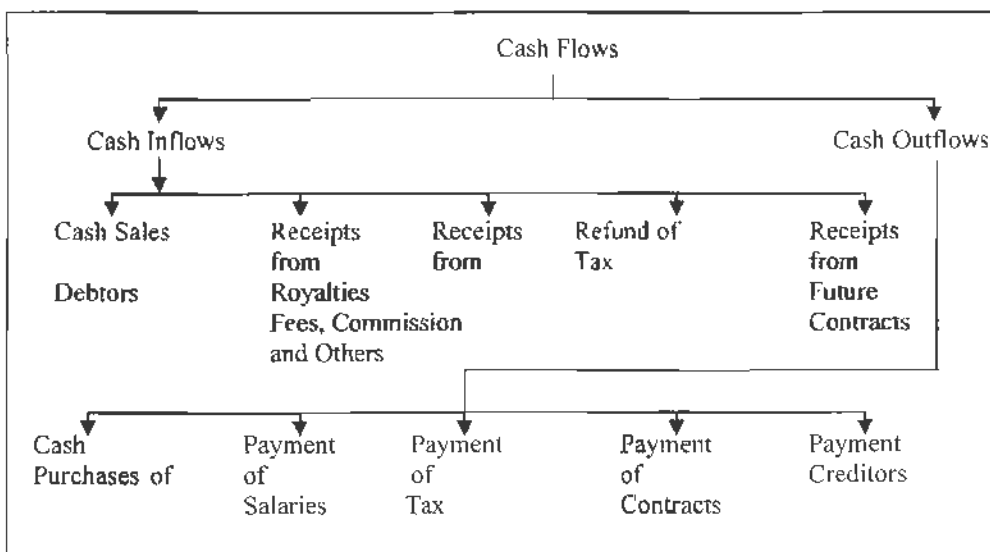


Figure 5.1: Presentation of Cash Flows from Operating Activities

5.6.2 Cash Flow from Investing Activities

Investing activities of an enterprise include the purchase of fixed assets (as plant and machinery, land and buildings, furniture and fixtures) with an intention to generate the future incomes. On account of being an important activity, a separate disclosure of the cash flows from these activities is made. Examples of cash flows arising from investing activities are in AS-3 (revised) as follows:

- (a) Cash payments of acquired fixed assets (including intangibles). These payments include those relating to capitalized research and development costs and self-constructed fixed assets;

- (b) Cash receipts from disposal of fixed assets (including intangibles);
- (c) Cash payments to acquired shares, warrants or debt instruments of other enterprises and interests in joint ventures (other than payments for those instruments considered to be cash equivalents and those held for dealing or trading purposes);
- (d) Cash receipts from disposal of shares, warrants or debt instruments of other enterprises and interests in joint ventures (other than receipts from those instruments considered to be cash equivalents and those held for dealing or trading purposes);
- (e) Cash advances and loans made to third parties (other than advances and loans made by a financial enterprise);
- (f) Cash receipts from the repayment of advances and loans made to third parties (other than advances and loans of a financial enterprise);
- (g) Cash payments for future contracts, forward contracts, option contracts and swap contracts except when the contracts are held for dealing or trading purposes, or the payments are classified as financing activities; and
- (h) Cash receipts from future contracts, forward contracts, option contracts and swap contracts except when the contracts are held for dealing or trading purposes, or the receipts are classified as financing activities.

When a contract is accounted for as a hedge of an identifiable position, the cash flows of the contract are classified in the same manner as the cash flows of the position being hedged.

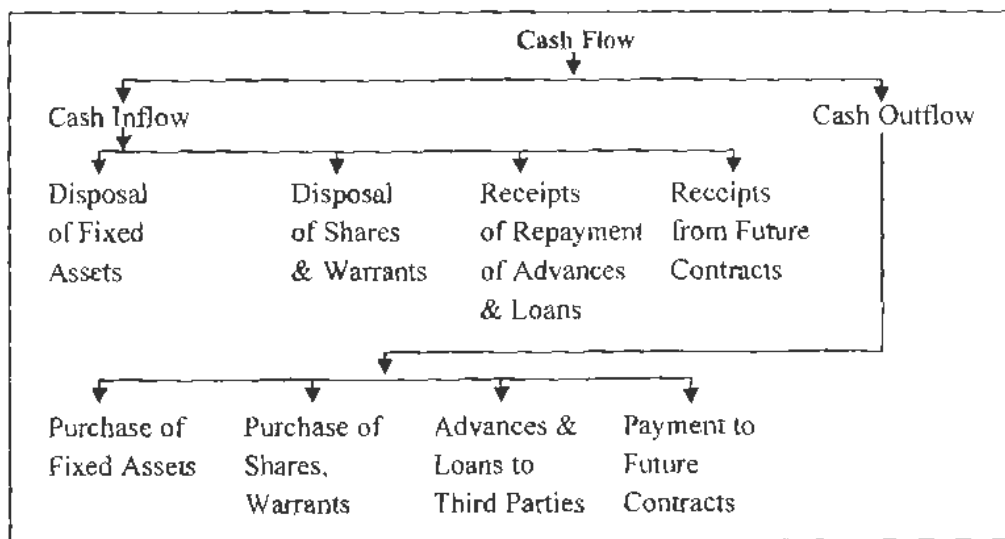


Figure 5.2: Presentation of Cash Flows from Investing Activities

5.6.3 Cash Flow from Financing Activities

Under financial activities those activities are included which are relating to the size and composition of capital (equity and preferences) and borrowing or loans. As per AS-3 (revised), the separate disclosure of cash flows arising from financing activities is important because it is useful in predicting claims on future cash flows by providers of funds (both capital and borrowings) to the enterprise. Examples of cash flows arising from financing activities are:

- (a) Cash proceeds from issuing shares or other similar instruments;

- (b) Cash proceeds from issuing debentures, loans, notes, bonds and other short or long-term borrowings; and
- (c) Cash repayments of amounts borrowed.

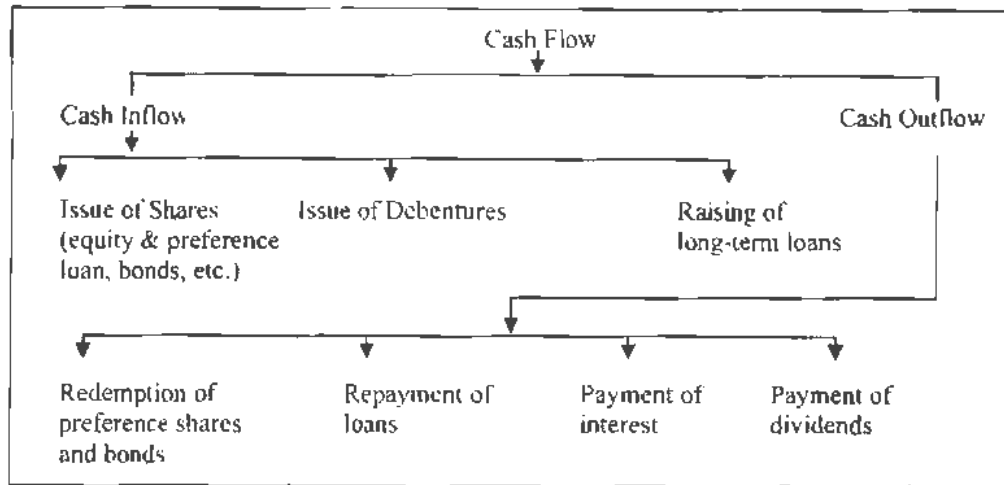


Figure 5.3: Presentation of Cash Flow from Financing Activities

5.7 TREATMENT OF OTHER ITEMS

Besides the above cash flow activities AS-3 (revised) also give the dealing of the some other items. These other items are as follows:

1. **Foreign Currency Cash Flow:** Unrealized gain or loss on account of change in the foreign exchange rate is not treated as cash flow. But the effect of change of foreign exchange on the cash and cash equivalents held in a foreign currency is recorded in the cash flow statement to reconcile the cash and cash equivalents at the beginning and at the end of the period. This amount is not adjusted with operating, investing and financing activities but it is shown separately.
2. **Extraordinary Items:** Cash flow arising from the extraordinary item is shown in the cash flow statement after classifying it into operating, investing and financing activities. This is done so that ordinary users may understand them easily. For example, loss by fire in store is compensated by insurance company. It will be treated as cash flow from operating activities.
3. **Interest and Dividends:** If a financial enterprise is receiving interest and dividend then such a cash flow arising from interest and dividend will be considered into operating activities. If interest and dividend are received by other enterprise, such a cash flow arising from interest and dividend will be considered into investing activities and if interest and dividend is paid, such a cash flow arising from interest and dividend is considered into financing activities. This cash flow arising from interest and dividend paid or received is disclosed separately.
4. **Taxes on Income:** If no adverse information is given relating to taxes paid on incomes, cash flow arising from the taxes paid as income is classified in operating activities. If taxes are paid on such income which is relating to finance, such a cash flow will be classified into financial activities.
5. **Non-Cash Transactions:** The non-cash transactions are not recorded in cash flow statement because they do not have a direct impact on the current cash flow while they affect the capital and assets as purchase of fixed assets by the issue of shares

or debentures. In AS-3 (revised) examples of non-cash transactions are mentioned as below:

- (a) the acquisition of assets by assuming directly related liabilities,
- (b) the acquisition of an enterprise by means of issue of shares, and
- (c) the conversion of debt to equity.

6. **Balances of Foreign Branches:** In some situations, the balance of cash and cash equivalent held with foreign branches are not available due to foreign exchange control or other legal restrictions. So the management should use that amount which can be measured in cash and cash equivalent.

5.8 FORMAT OF CASH FLOW STATEMENT (CFS)

AS-3 (revised) does not give any standard format of cash flow statement. In its paragraph 18 of AS-3 (revised) the two methods of the preparation of cash flow statement are mentioned. These are as follows:

- (i) Direct Method to prepare CFS
- (ii) Indirect Method to prepare CFS

Format of Cash Flow Statement By Direct Method
XYZ Company Limited
Cash Flow Statement
(For the year ended)

Particulars	₹	₹
(1) Cash Flow from Operating Activities:		
Cash Receipts from:		
Sale of Goods and Services	----	
Debtors or Bills Receivables	----	
Royalties	----	
Fees	----	
Commission	----	
Less: Cash Paid for:	----	
Purchases	----	
Creditors	----	
Operational Services	----	
Cash Generated from Operating Activities	----	
+ Cash Flow from Extra-Ordinary Items	----	
Net Cash from (used in) Operating Activities		----

Contd...

(2) Cash Flows from Investing Activities:		
Purchase of Fixed Assets	(-----)	
Purchase of Investments	(-----)	
Sale of Fixed Assets	-----	
Sale of Investments	-----	
Interest Received	-----	
Dividend Received	-----	
Net Cash From (Used In) Investing Activities		----
(3) Cash Flows from Financing Activities:		
Cash Receipts From		
Issue of Shares (Equity And Preferences)	-----	
Debentures and Bonds	-----	
Long-term Loans Or Borrowings	-----	
Repayment of Preference Shares	(-----)	
Repayment of Debentures	(-----)	
Repayment of Loan	(-----)	
Interest Paid	(-----)	
Dividend Paid	(-----)	
Net Cash from (Used In) Financing Activities		----
Net Increase (Decrease) In Cash And Cash Equivalents		----
<i>Add</i> Cash and Cash Equivalent At The Beginning Of Period		----
Cash and Cash Equivalents at the End of the Period		----

Note: Figures mentioned in the brackets indicate the outflow of cash and figures without brackets inflow of cash.

Format of Cash Flow Statement by Indirect Method
XYZ Company Limited
Cash Flow Statement
(For the year ended)

Particulars	₹	₹
(1) Cash Flow from Operating Activities:		
Net Profit Before Tax		----
<i>Add</i> Adjustments For Non-Cash and Non-Operating Items		
Depreciation	----	
Loss on Sale of Fixed Assets	----	
Goodwill Written Off	----	

Contd .

Preliminary Expenses Written Off	---	---
Underwriting Expenses Written Off	---	
Transfer to Reserves	---	
Loss on Revaluation of Fixed Assets	---	
Foreign Exchange Loss	---	---
<i>Less:</i> Adjustments for Non-Cash and Non-Operating Income		---
Profit on Sale of Fixed Assets	---	
Profit on Sale of Investments	---	
Profit on Revaluation of Fixed Assets		---
Foreign Exchange Gains		---
Operating Profit Before Working Capital Changes		---
<i>Add</i> Decrease in Current Assets	---	
Increase in Current Liabilities	---	---
<i>Less:</i> Increase in Current Assets	---	
Decrease in Current Liabilities	---	---
Cash Generated from Operation		---
<i>Less</i> Tax Paid		---
Cash Flows Before Extra Ordinary Items		---
+ Extraordinary Items		---
Net Cash from Operational Activities		---

(2) Cash Flows from Investing Activities:		
Purchase of Fixed Assets	(---)	
Purchase of Investments	(---)	
Sale of Fixed Assets	---	
Sale of Investments	---	
Interest Received	---	
Dividends Received	---	
Net Cash From (Used In) Investing Activities		---

Contd...

(3) Cash Flows from Financing Activities:		
Cash Receipts from:		
Issue of Shares (Equity or and Preference)	----	
Debentures and Bonds	----	
Long-term Loans or Borrowings	----	
Repayment of Preference Shares	(----)	
Repayment of Debentures	(----)	
Repayment of Loan	(----)	
Interest Paid	(----)	
Dividend Paid	(----)	

Net Cash from (Used In) Financing Activities		----
Net Increase (Decrease) in Cash And Cash Equivalents		----
Add: Cash and Cash Equivalents at the Beginning of Period		----
Cash and Cash Equivalents at the End of Period		----

Note: As per the amendment of Clause 32 of the Listing Agreement of SEBI, 1995, all the listed companies have to prepare and publish their Cash Flow Statement as per the above formats with their annual financial statements in the reports. SEBI recommends the indirect method to prepare the cash flow statement.

5.9 PROCEDURE TO PREPARE CASH FLOW STATEMENT AS PER AS-3 (REVISED)

After 2004, every listed company has to prepare a cash flow statement as per the recommendations given in the AS-3 (revised). As per these recommendations, the procedure to prepare the cash flow statement has changed drastically. Now to prepare the cash flow statement as per these recommendations, first of all, all the information relating to cash flow statement are collected in the balance sheets and income statements of two periods (information regarding sales of assets, payment of tax and dividends, non-operating incomes and non-operating losses and non-cash items). Then following steps are generally initiated to prepare the cash flow statement (CFS):

1. Opening and closing balances of cash and cash equivalents are determined. These balances are calculated by the addition of the followings:
 - (a) Cash in hand
 - (b) Cash at bank
 - (c) Marketable Securities
 - (d) Short-term investment (3 and less than 3 months)
2. Net Cash provided (or used) by Operating Activities of the business is calculated. This can be computed by direct or indirect method. (These methods will be discussed later in this chapter.)
3. Net Cash provided (or used) by the Investing Activities is determined.
4. Net Cash provided (or used) by the Financing Activities is calculated.
5. Net increase or decrease in Cash and Cash Equivalents is determined by the aggregation of net cash provided (or used) by the operating, investing and financing activities which are calculated above in 3rd, 4th and 5th steps.

6. In the last step, the net increase or decrease in cash and cash equivalents is reconciled with the opening and closing balance of cash and cash equivalent. The difference of opening and closing balance of cash and cash equivalents should be equal to the net increase or decrease in cash and cash equivalents.

After the preparation of CFS, a note should be given regarding the non-cash items and extraordinary items.

5.10 DETERMINATION OF CASH FLOW FROM OPERATING ACTIVITIES

Profit and Loss Account is prepared by the companies on the accrual basis. Accrual basis means the recording of revenues at the time of earning and expenses at the time of incurring. Therefore, Net Profit (Book Profit) shown by the Profit and Loss Account cannot be equal to the Cash Profit (cash generated from the operating activities).

Before, proceeding further, it would be better to understand the distinction between the net profit and cash profit.

Distinction between Net Profit (Book Profit) and Cash Profit (Cash generated by operational activities)

The net profits of a company cannot be equal to the cash profits due to following reasons:

- (a) **Non-operating Incomes and Losses:** At the time of preparation of Profit and Loss Account all the incomes and losses incurred in the business during a period from the operational and non-operational activities are recorded while in cash profit from operational activities only incomes and losses from operational activities are considered. Therefore, the net profit of a company cannot be equal to cash profit of it.
- (b) **Non-cash Items:** In the computation of net profit, all the expenses of the business, whether cash and non-cash expenses, are considered. Non-cash expenses may be as depreciation, amortization of goodwill and preliminary expenses writing off, discount on issue of shares and debentures, etc. Thus net profit of a company is found different from cash profit.
- (c) **Recording of Transactions:** In the Profit and Loss Account the expenses and revenues are recorded at the basis of accrual while cash profits are calculated on the basis of cash transactions (actual payment of expenses and actual receipts of income in cash). Thus outstanding expenses and accrued incomes are not considered in cash profit. Therefore, cash profits are found different from net profit.

From the above discussion it is clear that cash profits of a company cannot be equal to net profit as per Profit and Loss Account. The cash profit is also affected by the transactions of the working capital components (current assets and current liabilities). Thus, to calculate the cash generated by (used in) operating activities, the revenues and expenses of the business are replaced by the receipts and payments during a period. AS-3 (revised) recommends the following two methods to calculate the cash flow from the operational activities - Direct Method and Indirect Method.

5.10.1 Direct Method

Under this method of calculating the cash flows from operating activities, the cash receipts from the operating activities (as cash sales, collection from debtors) and the cash payments (as cash purchases, payment to creditors, payment to employees and labour) during a period are calculated. Then the balance of these two items is determined that is called cash provided by (used in) operating activities. Thus it is

calculated as profit is determined in P & L A/c. The format of this method is as follows:

FORMAT
Calculation of Cash Flow from Operating Activities
(By Direct Method)

Particulars	₹	₹
Cash Sales		----
Add Cash Receipts from Debtors		----
Total of Cash Receipt from Operating Activities		----
Less Cash Payments		----
Cash Purchases	----	
Cash Paid to Creditors	----	
Payment of Operating Expenses	----	
<u>Cash Generated From Operating Activities</u>		----
Less Tax Paid		----
<u>Cash Flow before Extraordinary Items</u>		----
Add/Less Extraordinary Items		----
<u>Net Cash Provided by (Used in) Operating Activities</u>		----

Note: At the time of calculating of cash flow from operating activities by direct method, cash receipts, cash payments and payment to employees for wages and salaries are determined first as follows:

- (a) **Cash Receipts from Debtors:** Cash receipts from debtors and bills receivables are calculated keeping in mind the opening and closing balance of Debtors and B/R. It is calculated as follows:

Calculation of Cash Receipts from Debtors

	₹
Credit Sales during the period	-----
Add: Opening balance of Debtors and B/ ₹	-----

Less: Closing balance of Debtors and B/ ₹	-----
Cash Receipts from Debtors	-----

- (b) **Cash Payment to Creditors:** Cash payment to creditors and B/ ₹ is made keeping in mind the opening and closing balances of creditors and bills payables.

Calculation of Cash Payment to Creditors

	₹
Total Purchases during the Period	-----
Less: Cash Purchases	-----
Credit Purchases	-----
Add: Opening Balance of Creditors & B.P	-----

Less: Closing Balance of Creditors & B/P	-----
Cash Payment to Creditors	-----

(c) **Cash Payment of Operating Activities:** It is calculated keeping in mind the outstanding and prepaid expenses. This figure is calculated as follows:

Cash Payment to Employees	₹
Total Operating Expenses due During the Period	-----
Add: Outstanding Expenses at the Beginning	-----
	<hr style="border-top: 1px solid black;"/>
Less: Outstanding Expenses at the End	-----
	<hr style="border-top: 1px solid black;"/>
Add: Prepaid Expenses at the End	-----
	<hr style="border-top: 1px solid black;"/>
Less: Prepaid Expenses at the Beginning	-----
Total Cash Payment to Employee	<hr style="border-top: 1px solid black;"/> <hr style="border-top: 1px solid black;"/>

Example: (Calculation of Cash Receipts and Payments)

From the following information calculate:

(i) Cash Receipts from Sales and Debtors and (ii) Total Cash Payment to Creditors for Purchases:

Trading Account
(For the year ending 31st December, 2007)

Particulars	₹	Particulars	₹
To Purchases:		By Sales:	
Cash Purchases	4,00,000	Cash Sales	5,00,000
Credit Purchases	2,00,000	Credit Sales	2,50,000
To Wages	50,000		
To Gross Profit	1,00,000		
	<hr style="border-top: 1px solid black;"/>		<hr style="border-top: 1px solid black;"/>
	7,50,000		7,50,000
	<hr style="border-top: 1px solid black;"/>		<hr style="border-top: 1px solid black;"/>

Additional Information:

- (i) Opening Debtors ₹ 50,000
- (ii) Closing Debtors ₹ 80,000
- (iii) Opening Creditors ₹ 40,000
- (iv) Closing Debtors ₹ 50,000

Solution:

(i) Calculation of Cash Receipts from Sales and Debtors

	₹	
Cash Sales	5,00,000	
+ Credit sales	2,50,000	
	<hr style="border-top: 1px solid black;"/>	
	7,50,000	
+ Opening Debtors	50,000	
	<hr style="border-top: 1px solid black;"/>	
	8,00,000	
- Closing Debtors	80,000	
	<hr style="border-top: 1px solid black;"/>	
Cash Generated from Sales & Debtors	7,20,000	
	<hr style="border-top: 1px solid black;"/>	

(ii) Calculation of Cash Payment to Creditors for Purchases

	₹
Cash Purchases	4,00,000
+ Credit Purchases	2,00,000
Total Purchases	6,00,000
+ Opening Creditors	40,000
	6,40,000
- Closing Creditors	50,000
Cash Payment to Creditors for Purchases	5,90,000

Example: (Direct Method to calculate cash from operating activities)

From the following information calculate cash from operational activities by direct method:

Income statement on 31st December, 2007

		₹
Total Sales		16,87,500
Less: Cost of Sales		12,31,875
Gross Profit		4,55,625
Less: Administration Expenses	1,55,625	
Depreciation	1,35,000	
Other Expenses (including Preliminary Expenses written off ₹ 15,000)	67,500	3,58,125
Profit before Tax		97,500
Less: Income Tax		30,000
Profit after Tax (PAT)		67,500

Other Balances

	31.12.2006	31.12.2007
	₹	₹
Debtors	3,15,000	4,35,000
B/R	87,000	75,000
Prepaid expenses	25,500	30,000
Inventories	2,53,125	3,37,500
Creditors	2,02,500	2,85,000
B/P	90,000	52,500
Outstanding Expenses	18,750	22,500

Solution:

Calculation of Cash from Operational Activities

		₹
Cash Flows from Operational Activities		
Cash Receipts from Sales & Debtors		15,79,500
Less: Cash Paid to Supplies	12,71,250	
Payment for Expenses	<u>2,08,875</u>	14,80,125
		<u>99,375</u>
Cash Generated from Operation Activities		
Less: Tax Paid		30,000
Cash Flows from Extraordinary Item		69,375
Add Extraordinary Items		-
Net Cash from Operating Activities		<u>69,375</u>

Working Notes:

(1) Calculation of Cash Paid to Suppliers:

		₹
Cost of Sales		12,31,875
Add: Inventory (31.12.2007)		<u>3,37,500</u>
		15,69,375
Less Inventory (31.12.2006)		<u>2,53,125</u>
		13,16,250
Add: Creditors (31.12.2006)		2,02,500
B/P on (31.12.2006)		<u>90,000</u>
		16,08,750
Less: Creditors (31.12.2007)		(2,85,000)
B/P on (31.12.2007)		<u>(52,000)</u>
		<u>12,71,750</u>

(2) Cash Payment for Expenses

Administration Expenses		1,55,625
Other expenses (67,500 – 15,000)		<u>52,500</u>
		2,08,125
Add: Outstanding expenses (31.12.2006)		18,750
Prepaid expenses (31.12.2007)		<u>30,000</u>
		2,56,875
Less: Outstanding Expenses on (31.12.2007)	22,500	
Prepaid Expenses (31.12.2006)	<u>25,500</u>	48,000
		<u>2,08,875</u>

(3) Cash Receipts from Sales and Debtors

Total Sales		16,87,500
Add: Debtors (31.12.2006)	3,15,000	
B/R on 31.12.2006	<u>87,000</u>	4,02,000
		20,89,500
Less: Debtors (31.12.2007)	4,35,000	
B/R on 31.12.2007	<u>75,000</u>	5,10,000
		<u>15,79,500</u>

5.10.2 Indirect Method

Under this method the net cash flow from operational activities is calculated by making the necessary adjustments to the net profit or loss shown by Profit and Loss

Account. The necessary adjustments are relating to the non-operating and non-cash items and the changes in the components of working capital. In the AS-3 (revised) both, the direct and indirect, methods are discussed but there is not any such instruction regarding the usage of methods. Results of both the methods are same. Here the students are advised to use indirect method to calculate the net cash flow from operational activities because it is easy to use and it also explains the causes of differences between the net cash flow from operating activities and net profit as per profit and loss account. Following is the format of indirect method:

FORMAT

Calculation of Net Cash Flow from Operating Activities by Indirect Method

	₹	₹
Net Profit Before Tax and Extraordinary Items		---
<i>Add:</i> Non-Cash & Non-Operating Items:		
Depreciation on Fixed Assets	----	
Goodwill Written Off	----	
Preliminary Expenses Written Off	----	
Discount on Issue of Shares or Debentures	----	
Trademark Written Off	----	
Under Writing Commission	----	
Loss on Sale of Fixed Assets	----	
Transfer to General Reserve	----	
Transfer to Sinking Fund	----	
Provision for Contingency Reserve	----	
Loss on Sale of Investment	----	----
<i>Less: Non-Operating Incomes</i>		
Profit on Sale of Fixed Assets	----	
Profit on Sale of Investments	----	
Dividend and Interest Received	----	
Refund of Income Tax	----	
Retransfer of Excess Reserve and Provision	----	-----
Net Profit Before Working Capital Changes		-----
<i>Add:</i> Decrease in Current Assets Except Cash:	---	
Increase in Current Liabilities Except Bank Overdraft	----	-----
<i>Less:</i> Increase in Current Assets Except Cash:	----	
Decrease in Current Liabilities Except Bank Overdraft	----	-----
Cash Generated from Operating Activities Before		-----
Tax And Extraordinary Items		-----
<i>Less:</i> Income Tax		-----
Net Cash Flow Before Extraordinary Items		-----
<i>Add/Less:</i> Extraordinary Items		-----
Net Cash Flow from Operating Activities		-----

Example: (Indirect method to calculate net cash flow from operational activities)

From the following information you are required to calculate cash flow from operational activities by indirect method.

Particulars	₹
Sales	10,00,000
Less: Operating Cost	7,00,000
Depreciation	1,00,000
Net Profit Before Tax (PBT)	2,00,000
Add: Gain on Specialisation	50,000
	2,50,000
Less: Provision for Tax 30%	75,000
Net Profit After Tax (PAT)	1,75,000

Additional Information

- (1) Included in operating cost is loss on sale of machinery ₹ 20,000
- (2) Actual taxes paid in respect of the year ₹ 70,000
- (3) Following are the balances of current items

	Current year ₹	Previous year ₹
Trade Debtors	80,000	60,000
Inventories	65,000	70,000
Sundry Creditors	90,000	85,000

Solution:

Calculation of Cash Flow from Operational Activities by Indirect Method

	₹
Net Profit Before Tax And Extraordinary Items	2,00,000
Add Non Cash & Non-Operating Items:	
Depreciation	1,00,000
Loss on Sale of Machinery	20,000
	1,20,000
	3,20,000
Add: Decrease in Inventory	5,000
Increase in Creditors	5,000
	10,000
	3,30,000
Less: Increase in Debtors	20,000
Cash Flow From Operating Activities	3,10,000
Add Extraordinary item	50,000
Net Cash Flow Before Tax	3,60,000
Less: Tax Paid	70,000
Net Cash Flow From Operational Activities	2,90,000

Cash Flow from Investing Activities

In the second part of cash flow statement, the net cash flow from investing activities is shown. Sales of fixed assets, sale of long-term investments and income from investments are the items which inflow the cash, while purchase of fixed assets, and purchase of investment outflow the cash in business. Purchase or sale of fixed assets may be computed by preparing the relative assets account or a statement. The

difference of cash inflow from investing activities and cash outflow from investing activities is called net cash provided by (used in) investing activities.

Cash Flow from Financing Activities

This is the third part of cash flow statement. In this part all those activities are included which changes the owners' equity and the size of long-term loans. Under this heading the cash inflows from issue of equity and preference shares, debentures with premium or discount and rising of long-term loans. And cash out-flow includes the redemption of preference share capital, and debentures (premium or discount on redemption of preferences shares and debentures is also adjusted with the amount of redemption). Payment of loan, interest and debentures are also considered as cash outflow:

Example: (Cash flow from Investing and Financing Activities)

A company has the following balances

Particulars	2007 ₹	2008 ₹
Plant at cost	4,00,000	5,60,000
Accumulated Depreciation on the above Assets	1,20,000	1,80,000
Capital	15,00,000	11,00,000
Bank Loan	3,00,000	1,50,000

Plant costing ₹ 80,000 was sold at a profit of ₹ 60,000. Depreciation on plant charged during the year amounted to ₹ 1,00,000.

You are required to calculate the cash flow from investing and financing activities.

Solution:

(1) Calculation of Cash Flow from Investing Activities

		₹
Cash Inflow from Sale of Plant		1,00,000
- Cash Outflow from Purchase of Plant		
Plant (2007)	4,00,000	
- Sold	80,000	
	<u>3,20,000</u>	
Plant (2008)	5,60,000	1,40,000
Cash Outflow from Investing Activities		<u>40,000</u>

(2) Calculation of Cash Flow from Financing Activities:

		₹
Cash Inflow from Issue of capital		4,00,000
(-) Cash Outflow in Repayment of Loan		<u>1,50,000</u>
Cash Inflow from Financing Activities		2,50,000

Example: (Cash Flow Statement)

From the following summarized cash book of Dehradun Ltd. for the year ended 31st March 2008, prepare cash flow statement in accordance with AS 3 (revised):

Cash Book

	₹		₹
To Balance B/D	7,500	By Payment to Creditors	3,90,000
To Receipts From Debtors	4,50,000	By Purchase of Assets	60,000
To Sale of Fixed Assets	67,500	By Wages & Salaries	30,000
To Issue of Shares	1,50,000	By Rent & Taxes	15,000
To Interest Received	2,500	By Commission	2,500
		By Redemption of Debentures	22,500
		By Tax	7,500
		By Dividend	15,000
		By Balance c/d	1,35,000
	6,77,500		6,77,500

Solution:

Cash Flow Statement (for the year ended 31st March, 2008)

	₹	₹
(1) Cash Flow from Operating Activities		
Receipts from Debtors		4,50,000
- Payment to Creditors	3,90,000	
Wages and Salaries	30,000	
Rent & Taxes	15,000	
Commission	2,500	
<u>Cash Generated from Operational Activities before Tax</u>		12,500
Less Income Tax		
<u>Net Cash Inflow from Operating Activities</u>		7,500
(2) Cash Flow From Investing Activities		5,000
Cash Payment for the Purchase of Assets		
Cash Receipts from the Sale of Assets	(60,000)	
Receipts of Interest	67,000	
<u>Net Cash Inflow from Investing Activities</u>	2,500	
(3) Cash Flow from Financing Activities		10,000
Receipt from the Issue of Share Capital	1,50,000	
Redemption of Debentures	(22,500)	
Payment of Dividend	(15,000)	
<u>Net Cash Inflow from Financing Activities</u>		
Net Increase in Cash		
+ Opening Balance of Cash		1,12,500
Closing Balance of Cash on 31 st March, 2008		1,27,500
		7,500
		1,35,000

Note: In this problem net cash flow from operational activities is computed by direct method because information regarding the net profits from Profit and Loss Account is not given.

Example: (Cash flow statement by indirect method)

Given below is the balance sheet of Kamal Manufacturing Ltd. as on 31.3.2008 and 31.3.2007. you are required to prepare the cash flow statement for the year 2007-08.

Balance Sheet
(₹ in thousand)

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Cash Flow Statement
(Accounting Standard – 3)

Particulars	March 31, 2008		March 31, 2007	
Equity Share Capital	2,750		2,000	
General Reserve	2,550		2,100	
P & L A/C	225		200	
Share Premium	750		-	
Shareholders' Fund		6,275		4,300
Secured Loans	900		1,700	
Unsecured Loans	1,150		600	
Loan Funds		2,050		2,300
Total Sources		8,325		6,600
Fixed Assets				
Gross Block	7,500		6,000	
Less: Accumulated Depreciation	900		650	
Net Block		6,600		5,350
Capital in Progress		600		350
Investments		850		700
Current Assets				
Inventories	1,255		1,300	
Debtors	545		600	
Cash & Bank Balance	120		170	
Loans	850		100	
Advance Tax	425		350	
	3,195		2,520	
Current Liabilities				
Creditors	525		600	
Outstanding Expenses	1,050		770	
Tax Provision	425		350	
Proposed Dividend	1,100		800	
	3,100		2,520	
Working Capital		95		Nil
Miscellaneous Expenses		180		300
Total Applications		8,325		6,600

Other Information

- Fixed assets costing ₹ 60,000, accumulated depreciation ₹ 30,000, were sold for ₹ 35,000.
- Actual tax liability for the year 2007-08 was ₹ 3,50,000.
- Loans represent long-term loans given to group companies.
- Interest on loan funds for 2007-08 was ₹ 2,97,250 and interest and dividend income were ₹ 2,21,00.
- Investment costing ₹ 3,00,000 was sold for ₹ 3,50,000.

Solution:

Kamal Manufacturing Co. Ltd.
Cash Flow Statement
(As on 31st March, 2008)

	₹ in '000
1. Cash Inflow from Operating Activities	2,201.25
2. Cash Outflow from Investing Activities	(2,404)
3. Cash Inflow from Financing Activities	<u>152.75</u>
Net Decrease in Cash	(50)
+ Opening Balance of Cash	<u>170</u>
Closing Balance of Cash	<u>120</u>

Working Note:

	₹ '000
(1) Calculation of Cash Flow from Operating Activities	25
Increase in Net Profit (225-200)	25
<i>Add:</i> Non-cash and Non-operating Items	
Transfer to General Reserve	450
Proposed Dividend	1,100
Provision for Tax	425
Depreciation	280
Miscellaneous Expenses	20
Interest Paid	<u>297.25</u>
	<u>2,572.25</u>
<i>Less:</i> Non-operating Incomes	
Profit on Sale of Assets	5
Profit on Sale of Investment	50
Interest and Dividend Received	<u>221</u>
Cash Flow from Operating Activities before	<u>2,597.25</u>
Adjusting Working Capital Changes	2,321.25
<i>Add:</i> Decrease in Current Assets and Increase in Current Liabilities	
Inventories	45
Debtors	55
Outstanding Expenses	<u>280</u>
	380
- Decrease in Creditors	<u>75</u>
Cash Flow from Operating Activities before Tax	<u>2,626.25</u>
<i>Less:</i> Income Tax	<u>425</u>
Cash Inflow from Operating Activities	<u><u>2,201.25</u></u>
(2) Calculation of Cash Flow from Investing Activities	
Cash Outflow:	
Purchase of Fixed Assets	(1,560)
Capital W.I.P.	(250)
Purchase of Investment	(450)
Payment of Loan	<u>(750)</u>
	<u>(3,010)</u>

Cash Inflow	
Sale of Fixed Assets	35
Sale of Investments	350
Interest & Dividend	221
Net Cash Outflow	<u>2,404</u>

(3) Calculation of cash flow from Financing Activities

Cash Inflow

Issue of Shares at Premium	1,500
Raising of Unsecured Loans	<u>550</u>
	2,050

Cash Outflow

Repayment of Secured Loan	800
Payment of Interest	297.25
Payment of Dividend (2007)	<u>800</u>
Net Cash Inflow	<u>1,897.25</u>
	<u>152.75</u>

Example: (Cash Flow Statement by Direct Method)

You are given below the balance sheet and P & L A/c of Uttarakhand Chemical Ltd.

Balance Sheet
(as on 31st December, 2006 and 2007)

	(₹ '000)	
	2006	2007
Assets:		
Cash on Hand	600	75
Short-term Investments	2,010	405
Sundry Debtors	5,100	3,600
Interest Receivables	300	-
Inventories	2,700	5,850
Long-term Investments	7,500	7,500
Fixed Assets at Cost	6,540	5,730
Accumulated Depreciation	(4,350)	(3,180)
	<u>20,400</u>	<u>19,980</u>
Liabilities:		
Sundry Creditors	450	5,670
Interest Payables	690	300
Income Tax Payables	1,200	3,000
Long-term Debts	3,330	3,120
Total Liabilities	5,670	12,090
Share Capital	4,500	3,750
Reserves	10,230	4,140
Shareholders' Fund	14,730	7,890
Total Liability Side	<u>20,400</u>	<u>19,980</u>

	₹ '000
Sales	91,950
Cost of Sales	(78,000)
Gross Profit	13,950
Depreciation	(1,350)
Administration & Selling Expenses	(2,730)
Interest (Expenses)	(1,200)
Interest (Income)	900
Dividend Income	600
Foreign Exchange Loss	(120)
Net Profit before Tax and Extraordinary Items	10,050
Extraordinary Items	
Issuance Proceeds for Earthquake Disaster Settlement	540
Net Profit before Tax	10,590
Income Tax	(900)
Net Profit After Tax (PAT)	9,690

Additional Information (Figures ₹ 000)

- (a) An amount of ₹ 750 was raised from the issue of share capital and a further ₹ 750 was raised from long-term borrowings.
- (b) Interest expenses were ₹ 1200 of which ₹ 525 were paid during the period. ₹ 300 relating to interest expense of the prior period were also paid during the period.
- (c) Dividend was paid ₹ 3,600.
- (d) Tax deducted at source on dividends received (included in the tax expense of ₹ 900 for the year) amounted to ₹ 120.
- (e) During the period, the company acquired fixed assets for ₹ 1,050. The payment was made in cash.
- (f) Plant with original cost of ₹ 240 and accumulated depreciation of ₹ 180 was sold for ₹ 60.
- (g) Foreign exchange loss of ₹ 120 represents reduction in carrying amount of a short-term investment in foreign currency designated bonds arising out of a change in exchange rate between the date of acquisition of the investments and the balance sheet date.
- (h) Sundry debtors and sundry creditors include amount relating to credit sales and credit purchase only.

You are required to prepare the cash flow statement by direct method of AS-3.

Solution:

Uttarakhand Chemicals Ltd.
Cash Flow Statement
(For the year ending on 31st Dec., 2007)

₹ in thousand

1 Cash Flow from Operating Activities			
	Cash Receipts from Sales & Debtors		90,450
	Cash Paid for Purchases	80,070	
	Cash Paid for Expenses	2,730	82,800
	Cash Generated from Operating Activities		7,650
	Income Tax Paid		2,580
	Cash Flow before Extraordinary Items		5,070
	Extraordinary Items (Earthquake Disaster Settlement)		540
	Net Cash Flow from Operating Activities		5,610
2. Cash Flow from Investing Activities			
	Purchase of Fixed Assets		(1,050)
	Sale of Plant		60
	Interest Received		600
	Dividend Received		480
	Net Cash Flow from Investing Activities		90
3 Cash Flow from Financing Activities			
	Issue of Capital		750
	Raising of Long-term Debts		750
	Repayment of Long-term Debts		(540)
	Payment of Interest		(810)
	Payment of Dividend		(3600)
	Net Cash used in Financial Activities		(3,450)
	Net Increase in Cash		2,250
	Add: Opening Balance of Cash & Equivalents		480
	Closing Balance of Cash & Equivalents		2,730

Working Notes:

1. Calculation of Opening & Closing Balance of Cash & Equivalents

(₹ in thousands)

Particulars	2006	2007
Cash on Hand	600	75
Short-term Investments	2,010	405
	2,610	480
Effect of Changes in Exchange Rate	120	
	2,730	480

2. Calculation of Cash Receipts from Sales and Debtors

Credit Sales (given)	91,950
+ Opening Debtors	<u>3,600</u>
	95,550
- Closing Debtors	<u>5,100</u>
	<u><u>90,450</u></u>

3. Cash Payment for purchases & creditors	
Cost of Sales (given)	78,000
+ Closing Inventories	<u>2,700</u>
	80,700
- Opening Inventories	<u>5,850</u>
Purchases during the Year	74,850
+ Opening Creditors	<u>5,610</u>
	80,520
- Closing Creditors	<u>450</u>
	<u><u>80,070</u></u>
4. Cash Payment for Income Tax	
Income Tax (given)	900
+ Income Tax Payable (Opening)	<u>3,000</u>
	3,900
- Income Tax Payable (Closing)	<u>1,200</u>
	2,700
- Tax Deducted at Source	<u>120</u>
	<u><u>2,580</u></u>

5. Cash Payment for Interest

$$= \text{Opening Balance} + \text{Accrued} - \text{Closing Balance} = 300 + 1,200 - 690 = 810$$

6. Payment of Long-term Debts

$$= \text{Opening Balance} + \text{Debts Raised} - \text{Closing Balance} = 3,120 + 1,000 - 3,330 = 540$$

Check Your Progress

Fill in the blanks of the following:

1. A _____ refers to short-term highly liquid investments.
2. The opening and closing balances of cash are taken to prepare the _____.
3. If no adverse information is given relating to taxes paid on incomes, cash flow arising from the taxes paid as income is classified in _____ activities.
4. Profit and Loss Account is prepared by the companies on the _____ basis.
5. Change in working capital may be due to several factors including _____ items.
6. If total of inflow of cash exceed the total of outflow of cash, it is called _____.

5.11 LET US SUM UP

- The cash flow statement is a statement which indicates the changes in cash during an accounting period. It also shows the sources and the uses of cash.
- Cash flow statement is prepared to know the position of cash of a business, cash inflow and cash requirements, short-term solvency, frame the financial policies, dividend policy and cash budget, etc.

- Cash flow statement has some limitations also as (i) accrual concept of accounting is ignored (ii) CFS is not complete substitute of income statement (iii) non-cash transactions are ignored in CFS (iv) CFS presents the misleading comparison.
- Fund flow statement is prepared on the basis of fund (working capital) while cash flow statement is prepared on the basis of cash and cash equivalent.
- Cash flow is classified into following three:
 - ❖ Cash Flow from Operational Activities
 - ❖ Cash Flow from Investing Activities
 - ❖ Cash Flow from Financing Activities
- Cash flow from operational activities can be calculated by Direct Method and Indirect Method.
- The addition of cash flow from operational activities, investing activities and financing activities is called net increase (decrease) in cash and cash equivalents.
- Changes in the components of the working capital are also adjusted in the cash flow statement.

5.12 LESSON END ACTIVITY

Cash flow statement shows negative from operating activities but shows positive on cash at the end of the period. Is that possible? If yes, give reasons to support your answer.

5.13 KEYWORDS

Cash: It includes cash in hand and demand deposits with bank.

Cash equivalents: It refers short-term risk free highly liquid investment.

Flow of cash: It means the change in cash. It also includes the inflow and outflow of cash.

Cash flow statement: The statement which indicates the flow (movement) of cash during a period.

5.14 QUESTIONS FOR DISCUSSION

1. What do you mean by cash flow statement? Explain its objectives and importance.
2. What is fund flow statement? How is it prepared as per AS-3?
3. What do you understand by cash flow statement? Explain its importance.
4. Write short notes on the followings:
 - (i) Fund Flow from Operational activities
 - (ii) Fund Flow from Investing Activities
 - (iii) Fund Flow from Financing Activities
5. Explain the direct and indirect method to compute the cash flow from operational activities.
6. Write the procedure of Cash Flow Statement as per AS-3.
7. Give the format of cash flow statement by indirect method.

8. Write notes on the followings in 50 words each.
- Non-cash items
 - Non-operating items
 - Direct method of presenting cash flow statement
9. Kajol Co. Ltd. earned a profit of ₹ 16,00,000 after charging the following items:

	₹
i. Dep. on Fixed Assets	28,000
ii. Amortization of Development Exp.	24,000
iii. Loss on sale of Furniture	2,000
iv. Provision for D/D	4,400
v. Provision for Taxation	2,40,000
vi. Transfer of General Reserve	28,000
vii. Profit on Sale of Machinery	12,000

The following additional information has been supplied to you:

	31 st March	
	2006	2007
B/R	40,000	34,000
B/P	32,000	24,000
O/s Exp.	20,000	16,000
Debtors	48,000	60,000
Creditors	40,000	60,000
Prepaid Exp.	800	1,200

You are required to calculate cash flows from operational activities.

10. From the following information prepare Cash Flow Statement by both direct and indirect method:

Balance Sheet

Liabilities	31.3.06	31.3.07	Assets	31.3.06	31.3.07
	₹	₹		₹	₹
Share capital	6,00,000	7,20,000	Fixed Assets	4,80,000	7,44,000
Profit & Loss a/c	1,44,000	3,60,000	Govt. Securities (SI)	24,000	40,800
10% Debentures	1,80,000	1,44,000	Stock	3,15,600	3,93,600
Provision for tax	36,000	52,800	Debtors	3,72,000	4,17,600
O/s Expenses	9,600	12,000	Cash in hand	20,400	14,400
Creditors	2,88,000	3,30,000	Cash at Bank	9,600	-
Bank Overdraft	-	15,600	Preliminary Exp.	36,000	24,000
	12,57,600	16,34,400		12,57,600	16,34,400

Income Statement
(for the year ended 31st March, 2007)

	₹	₹
Sales		43,20,000
Less Cost of Goods Sold		33,96,000
		9,24,000
Less Depreciation	96,000	
Operating Exp	5,34,000	
Interest Exp.	18,000	
Preliminary Exp. written off	12,000	
Provision for Tax	48,000	7,08,000
Net Income		2,16,000

11. From the following Balance Sheets of Srinagar Plywood Co. Ltd. and the additional information given, make out a Cash Flow Statement.

Liabilities	31.3.06	31.3.07	Assets	31.3.06	31.3.07
	₹	₹		₹	₹
Equity Share Capital	6,00,000	8,00,000	Goodwill	2,30,000	1,80,000
8% Redeemable Preference Shares	1,00,000	2,00,000	Land and Buildings	4,00,000	3,40,000
General Reserve	80,000	1,40,000	Plant	1,60,000	4,00,000
Profit and Loss A/c	60,000	96,000	Debtors	3,20,000	4,00,000
Proposed Dividend	84,000	1,00,000	Stock	1,54,000	2,18,000
Creditors	1,10,000	1,66,000	Bills Receivable	40,000	60,000
Bills Payable	40,000	32,000	Cash in Hand	30,000	20,000
Provision for the Tax	80,000	1,00,000	Cash at Bank	20,000	16,000
	13,54,000	16,34,000		13,54,000	16,34,000

Additional Information:

- (i) Depreciations of ₹ 20,000 and ₹ 40,000 have been charged on plant account and land and buildings account respectively in 2006-07
- (ii) An interim dividend of ₹ 40,000 has been paid in 2006-07.
Income tax ₹ 70,000 was paid during the year 2006-07.

Check Your Progress: Model Answer

1. Cash equivalent
2. CFS
3. Operating
4. Accrual
5. Non-current
6. Net cash inflow

5.15 SUGGESTED READINGS

Charles T. Horngren. *Introduction to Management Accounting*, Prentice Hall, Englewood Cliff, New Jersey 07632.

Ray H. Garrison, *Managerial Accounting*, Homewood, Illinois 60435.

Robert S. Kaplan and Anthony A. Atkinson, *Advanced Management Accounting*, (Prentice Hall, Englewood Cliff, New Jersey 07632).

Dr. S. N. Maheshwari, *Management Accounting for Bankers*, Sultan Chand & Sons, New Delhi: 110002.

N. K. Kulshrestha, *Management Accounting Concepts & Cases*, Tata McGraw Hill Publishing Co. Ltd., New Delhi.

UNIT IV

LESSON

6

MARGINAL AND DIFFERENTIAL COSTING

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- 6.0 Aims and Objectives
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- 6.22 Selecting the Suitable Product Mix
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- 6.24 Alternative Method of Production
- 6.25 Marginal Costing vs. Absorption Costing
 - 6.25.1 Profit Statements under Marginal and Absorption Costing
- 6.26 Let Us Sum Up
- 6.27 Lesson End Activity
- 6.28 Keywords
- 6.29 Questions for Discussion
- 6.30 Suggested Readings

6.0 AIMS AND OBJECTIVES

After studying this lesson, you should be able to:

- Understand marginal cost and marginal costing
- State the advantages and disadvantages of marginal costing
- Understand cost-volume-profit analysis
- Analyse break-even point analysis and prepare different types of break-even charts
- Apply marginal costing technique to various decision-making areas

- Understand the concept of Differential Cost and Revenues
- Explain various features of Differential Cost Analysis
- Describe the similarities and differences between marginal costing and differential costing
- Understand the applications of differential cost analysis in taking decisions
- Discuss applications of marginal costing and selecting the suitable product mix.

6.1 INTRODUCTION

Fixed expenses remain constant in aggregate amount and do not vary with the increase or decrease in production upto a particular level of output or production. Just contrary to this, variable expenses increase or decrease in proportion to increase or decrease in output or production and remain constant per unit of output. Fixed expenses per unit continue to vary with the increase or decrease in production because these expenses remain constant upto a certain level of production. Thus, fixed overheads lead to different costs per unit at different level of production. On account of this, a technique known as marginal costing has been developed which excludes fixed overheads entirely from cost of production and gives us the same cost per unit upto particular level of output. Thus, under marginal technique, fixed expenses are not allocated to cost units but are charged against 'fund' which arises out of excess of selling price over total variable costs. The technique of marginal costing is related to the concept of marginal cost. Marginal costing is one of the special techniques of costing used for analysis and interpreting cost data for the purpose of assessing the profitability of the products, departments and cost centres.

A management of any type of business organization is confronted with the problem of making appropriate decision. "Behaviour of cost" plays a vital and crucial role in decision-making areas. Although the historical costs serve as an effective tool for predicting future costs, they are not suitable to decision-making process. Elements of cost can broadly be put into two categories. Fixed Costs are those costs which do not vary but remain constant within a given period of time and range of activity in spite of fluctuations in production units for examples of rent, insurance charges, management salaries, etc. On the other hand, Variable Costs are costs which vary in direct proportion to any change in the volume of output. The costs of a direct materials, direct wages, etc. can be put into this category. The cost of a product or process can be ascertained using the different elements of cost according to any of the following two techniques: Absorption Costing and Marginal Costing.

6.2 MARGINAL COSTING

Marginal cost means the same thing as variable cost. The accountant's concept of marginal cost differs from economists' concept of marginal cost. Economists define marginal cost as the additional cost of producing one additional unit of product. This shall include an element of fixed cost also.

According to Certified Institute of Management Accountants, London, "*Marginal cost means the amount at any given volume of output by which aggregate costs are changed if the volume of output is increased or decreased by one unit.*" Marginal cost is also termed as variable cost because within the capacity of the industry or organisation, an increase of one unit in production will cause an increase in variable costs only.

Thus, marginal cost is the amount by which total cost changes when there is a change in output by one unit. To ascertain the marginal cost, we need the following elements of cost:

- (i) Direct materials,
- (ii) Direct labour or wages,
- (iii) Direct expenses, and
- (iv) Total variable overheads.

Batty defines marginal costing as "A technique of cost accounting which pays special attention to the behaviour of costs with changes in the volume of output."

According to CIMA, London, "Marginal costing is a technique where only the variable costs are charged to cost units, the fixed attributable being written off in full against the contribution for that period."

The ICWAI defines marginal costing as "A method that considers only the variable cost as cost of production, leaving out period costs to be absorbed from the marginal contribution."

In other words, marginal cost is "The cost of any unit of production is the increase in total costs to which the firms become committed by the production of that unit. But, if one part of total costs is fixed, this part will remain unchanged, as output expands—only the variable costs will increase."

In marginal costing, only variable costs are charged to cost units. Variable cost is one which tends to vary directly with the volume of output. Variable cost changes with the increase or decrease in production. In direct costing, variable cost is known as direct.

Other terms in use for marginal costing are contributory costing and comparative costing. In the marginal costing, profit is calculated by contribution minus fixed cost.

6.2.1 Marginal Cost Equation

The element of cost can be written in the form of an equation. This equation is known as 'marginal cost equation'. The equation is shown below:

$$\text{Sales} = \text{Variable cost} + \text{Fixed cost} + \text{Profit} \quad \text{OR } S = VC + FC + P$$

$$\text{Sales} - \text{Variable cost} = \text{Fixed cost} + \text{Profit} \quad \text{OR } S - VC = FC + P$$

$$\text{Sales} - \text{Variable cost} = \text{Contribution} \quad \text{OR } S - VC = C$$

From the above marginal cost equation, we can understand that in order to earn profit, the contribution must be more than the fixed cost. To avoid any loss, the contribution must be equal to fixed cost.

6.2.2 Features of Marginal Costing

The main features of marginal costing may be expressed in the following ways:

1. In marginal costing, a differentiation is made between the fixed costs elements and the variable costs elements. No other category of costs is taken into consideration.
2. In marginal costing, only variable costs are taken into account for computing cost of production.
3. The finished stocks and work-in-progress are valued at marginal cost.
4. In marginal costing, prices are determined on the basis of marginal costs plus contribution.

5. Marginal income or marginal contribution is known as the income or the profit.
6. Fixed costs remain constant irrespective of level of activity.
7. The difference between the contribution and fixed costs is the net profit or loss.
8. Sales price and variable cost per unit remain the same.
9. Cost-volume-profit relationship is fully employed to reveal the state of profitability at various levels of production activity, and
10. In marginal costing technique, first profit is determined in respect of each product or department.

Example: A factory produces 600 units of fan per annum. The variable cost per unit is ₹ 60. The fixed expenses are ₹ 12,000 per annum. Thus, the cost sheet of 500 fans will appear as follows:

Variable Cost (601 × ₹ 60)	₹ 36,060
Fixed Cost	₹ 12,000
	₹ 48,060

Solution: If production is increased by one unit, i.e., it becomes 601 fans per annum, the cost sheet will then appear as follows:

Variable cost (601 × ₹ 60)	₹ 36,060
Fixed cost	₹ 12,000
Total Cost	₹ 48,060
	₹ 48,060

Marginal cost per unit is, therefore, ₹ 60.

Marginal cost is, thus, the total variable cost because within the capacity of the organisation, an increase of one unit in production will cause an increase in variable cost only. The variable cost consists of direct materials, direct labour, variable direct expenses and variable overheads. The term 'all variable overheads' includes variable overheads plus the variable portion contained in semi-variable overheads.

6.2.3 Advantages of Marginal Costing

Following are the main advantages of marginal costing:

1. **Fixation of Selling Price:** The differentiation between fixed costs and variable costs is very helpful in determining the selling price of the products. Sometimes, different prices are charged for the same product in different markets to meet varying degrees of competition.
2. **Helpful to Management:** It enables the management to start a new line of production which is advantageous. It is helpful in determining which is profitable – whether to buy or manufacture a product. The management can take decision regarding pricing and tendering.
3. **Effective Cost Control:** It divides cost into fixed and variable. Fixed cost is excluded from product. As such, management can control marginal cost effectively.
4. **Helps in Production Planning:** It shows the amount of profit at every level of output with the help of cost volume profit relationship. Here the break-even chart is made use of.

5. **Helpful in Budgetary Control:** The classification of expenses is very helpful in budgeting and flexible budget for various levels of activities.
6. **Helpful in Making or Buying Decision:** Sometimes a decision has to be made whether to manufacture a component/product or to buy it readymade from the market. The decision to purchase it would be having taken if the price paid recovers some of the fixed expenses.
7. **Better Presentation:** The statements and graphs prepared under marginal costing are better understood by management. The break-even analysis presents the behaviour of cost, sales, contribution etc. in terms of charts and graphs.
8. **Preparing Tenders:** Many business organisations have to compete with other organisations in the market in quoting the lowest price. Total variable cost, when separately calculated, becomes the 'floor price'. Any price above this floor price may be quoted to increase the total contribution.

6.2.4 Disadvantages of Marginal Costing

Marginal costing technique suffers from the following limitations:

1. **Difficulty in the Fixation of Price:** Under marginal costing, selling price is fixed on the basis of contribution. In case of cost plus contract, it is very difficult to fix price.
2. **Difficulty to analyse Overhead:** Separation of costs into fixed and variable is a difficult problem. In marginal costing, semi-variable or semi-fixed costs are not considered.
3. **Unrealistic Assumption:** Assumption of sale price will remain the same at different levels of operation. In real life, they may change and give unrealistic results.
4. **Problem of Variable Overheads:** Marginal costing overcomes the problem of over and under-absorption of fixed overheads. Yet there is the problem in the case of variable overheads.
5. **Unreliable Stock Valuation:** Under marginal costing, stock of work-in-progress and finished stock is valued at variable cost only. No portion of fixed cost is added to the value of stocks. Profit determined, under this method, is depressed.
6. **Complete or Full Information not given:** It does not explain the reason for increase in production or sales.
7. **Sales-oriented:** Successful business has to go in a balanced way in respect of selling production functions. But marginal costing is criticised on account of its attaching over-importance to selling function. Thus, it is said to be sales-oriented. Production function is given less importance.
8. **Automation:** Now-a-days, increasing automation is leading to increase in fixed costs. If such increasing fixed costs are ignored, the costing system cannot be effective and dependable.

6.3 ABSORPTION COSTING

Absorption costing technique is total cost technique under which total cost (*i.e.* fixed cost as well as variable cost) is charged as Production 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.

Absorption costing also known as 'full costing' is a conventional technique of ascertaining cost. It is the practice of charging all costs both variable and fixed to operations, processes and products. It is the oldest and widely used technique of ascertaining cost. Under this technique of costing, cost is made up of direct costs plus overhead costs absorbed on some suitable basis.

Under this technique, cost per unit remains same only when the level of output remains same. But when the level of output changes the cost per unit also changes because of the presence of fixed cost which remains constant.

The change in cost per unit with a change in the level of output in absorption costing technique poses a problem to the management in taking managerial decisions. Absorption costing is useful if there is only one product, there is no inventory and overhead recovery rate is based on normal capacity instead of actual level of activity.

Two distinguishing features of absorption costing are that fixed factory expenses are included in:

- (i) Unit cost
- (ii) Inventory value

Ascertainment of Profit under Absorption Costing:

Under this technique of costing the following proforma is used for the ascertainment of profit:

Income Statement

	₹	₹
Sales		XXX
<i>Less: Cost of Goods Manufactured</i>		
Direct Material	XXX	
Direct Labour	XXX	
Factory Overheads:	XXX	
Variable	XXX	
Fixed (at actual production basis)	XXX	
<i>Add: Value of Opening Stock</i>	XXX	
	XXX	
<i>Less: Value of Closing Stock at Current Cost</i>	XXX	
	XXX	
<i>Add: Underabsorption (or Less Overabsorption) of Fixed Factory Overheads</i>	XXX	XXX
		XXX
Gross Profit		
<i>Less: Administration, Selling & Distribution Expenses :</i>		
Fixed	XXX	
Variable	XXX	XXX
Net Income (or Profit)		XXX

Example: Following data relate to XYZ Company:

Normal capacity 40,000 units per month

Variable cost per unit ₹ 6

Actual production 44,000 units

Sales 40,000 units @ ₹ 15 per unit

Fixed manufacturing overheads ₹ 1,00,000 per month or ₹ 2.50 per unit at normal capacity.

Other fixed expenses ₹ 2,40,000 per month.

Prepare Income Statement under absorption costing.

Solution:

Income Statement

	₹	₹
Sales (40,000 × ₹ 15)		6,00,000
Less: Cost of Goods Manufactured		
Variable cost (@ ₹ 6 per unit for 44,000 units.	2,64,000	
Fixed manufacturing overheads (@ ₹ 2.50 for 44,000 units.	1,10,000	
	3,74,000	
Less: Closing inventory $\left(\frac{4,000}{44,000} \times ₹ 3,74,000\right)$		34,000
	3,40,000	
Less: Overabsorption of fixed manufacturing overheads (₹ 1,10,000 – ₹ 1,00,000)		10,000
		3,30,000
	Gross Profit	2,70,000
Less: Other fixed expenses		2,40,000
	Net Income	30,000

6.3.1 Absorption Costing Components

The key costs assigned to products under an absorption costing system are:

- **Direct materials:** Those materials which are included in a finished product.
- **Direct labour:** The factory labour costs required to construct a product.
- **Variable manufacturing overhead:** The costs to operate a manufacturing facility, which vary with production volume. Examples are supplies and electricity for production equipment.
- **Fixed manufacturing overhead:** The costs to operate a manufacturing facility, which do not vary with production volume. Examples are rent and insurance.

6.3.2 Advantages of Absorption Costing

Following are the main advantages of absorption costing:

1. It suitably recognises the importance of including fixed manufacturing costs in product cost determination and framing a suitable pricing policy. In fact all costs (fixed and variable) related to production should be charged to units manufactured. Price based on absorption costing ensures that all costs are covered. Prices are well regulated where full cost is the basis.
2. It will show correct profit calculation in case where production is done to have sales in future (e.g., seasonal sales) as compared to variable costing.
3. It helps to conform to accrual and matching concepts which require matching cost with revenue for a particular period.
4. It has been recognised by various bodies as FASB (USA), ASG (UK), ASB (India) for the purpose of preparing external reports and for valuation of inventory.
5. It avoids the separation of costs into fixed and variable elements which cannot be done easily and accurately.
6. It discloses inefficient or efficient utilisation of production resources by indicating under-absorption or over-absorption of factory overheads.
7. It helps to make the managers more responsible for the costs and services provided to their centres/departments due to correct allocation and apportionment of fixed factory overheads.
8. It helps to calculate gross profit and net profit separately in income statement.

6.3.3 Disadvantages of Absorption Costing

Following are the main limitations/disadvantages of absorption costing:

1. **Difficulty in Comparison and Control of Cost:** Absorption costing is dependent on level of output; so different unit costs are obtained for different levels of output. An increase in the volume of output normally results in reduced unit cost and a reduction in output results in an increased cost per unit due to the existence of fixed expenses. This makes comparison and control of cost difficult.
2. **Not Helpful in Managerial Decisions:** Absorption costing is not very helpful in taking managerial decisions such as selection of suitable product mix, whether to buy or manufacture, whether to accept the export order or not, choice of alternatives, the minimum price to be fixed during the depression, number of units to be sold to earn a desired profit etc.
3. **Cost Vitiating because of Fixed Cost included in Inventory Valuation:** In absorption costing, a portion of fixed cost is carried forward to the next period because closing stock is valued at cost of production which is inclusive of fixed cost.
4. **Fixed Cost Inclusion in Cost not justified:** Many accountants argue that fixed manufacturing, administration and selling and distribution overheads are period costs and do not produce future benefits and, therefore, should not be included in the cost of product.
5. **Apportionment of Fixed Overheads by Arbitrary Methods:** The validity of product costs under this technique depends on correct apportionment of overhead costs. But in practice many overhead costs are apportioned by using arbitrary methods which ultimately make the product costs inaccurate and unreliable.
6. **It is not helpful for Preparation of Flexible Budget:** In absorption costing, no distinction is made between fixed and variable costs. It is not possible to prepare a flexible budget without making this distinction.

6.4 SEPARATION OF SEMI-VARIABLE COSTS

For marginal costing for segregation of all costs between two parts fixed and variable is done. This means that the semi-variable cost will have to be segregated into fixed and variable elements. This may be done by any one of the following methods:

- Levels of output compared to levels of expense method
- Range method
- Degree of variability method
- Scatter-graph method
- Least squares method

Each of the above methods has been discussed in detail with the help of the following details:

1. **Level of Output Compared of Levels of Expense Method:** According to this method, the output at two different levels is compared with corresponding level of expenses. Since the fixed expense remains constant, the variable overheads are arrived at by the ratio of change in expense to change in output.
2. **Range Method:** This method is similar to the previous method except that on the highest and lowest points of output are considered out of various levels. The method is also designated as 'high and low' method.

3. **Degree of Variability Method:** In this method, degree of variability is noted for each item of semi-variable expense. Some semi-variable items may have 30% variability while others may have 70 % variability. The method is easy to apply but difficulty is faced in determining the degree of variability.
4. **Scatter-graph Method.** In this method the given data are plotted on a graph paper and line of best fit is drawn. The method is explained below:
 - ❖ The volume of production is plotted on the horizontal axis and the costs are plotted on the vertical axis.
 - ❖ Corresponding to each volume of production costs are then plotted on the graph paper, thus, several points are shown on it.
 - ❖ A straight line of best fit is then drawn through the points plotted. This is the total cost line. The point where this line intersects the vertical axis is taken to be the amount of fixed element.
 - ❖ A line parallel to the horizontal axis is drawn from the point where the line of best fit intersects the vertical axis. This is the fixed cost line.
 - ❖ The variable cost at any level can be known by noting difference between fixed cost and total cost lines.

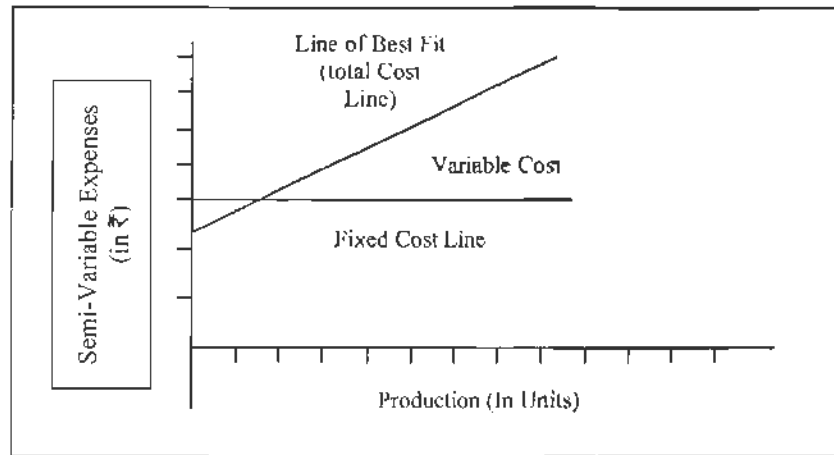


Figure 6.1: Scatter-graph Method

6.4.1 Method of Least Squares

This method is based on the mathematical technique of fitting an equation with the help of observations. The linear equation, *i.e.*, a straight line equation, can be assumed as:

$$\begin{aligned}
 Y &= a + bx \text{ and the various sub-equations shall be} \\
 \sum y &= na + b\sum x; \\
 \sum xy &= a\sum x + b\sum x^2
 \end{aligned}$$

An equation of second order, *i.e.*, a curvilinear, can be drawn as $y = a + bx + cx^2$ and the various sub-equations to solve it *i.e.*, to find out the values of constant a , b , and c shall be:

$$\begin{aligned}
 \sum y &= na + b\sum x + c\sum x^2 \\
 \sum xy &= a\sum x + b\sum x^2 + c\sum x^3 \\
 \sum x^2y &= a\sum x^2 + b\sum x^3 + c\sum x^4
 \end{aligned}$$

Similarly, the equation can be fitted for any number of order or degree depending upon the number of observations available and the accuracy desired.

6.5 COST-VOLUME-PROFIT ANALYSIS

Cost-volume-profit analysis is a part of marginal costing. The cost-volume-profit analysis is the analysis of three variables, viz., cost, volume and profit. In cost-volume-profit analysis, an attempt is made to measure variations of various costs and profit with the volume. Profit as a variable is the reflection of a number of internal and external conditions which exert influence on sales revenue and costs.

According to **CIMA, London**, "*Cost-volume-profit analysis is the study of the effects on future profits of changes in fixed cost, variable cost, sales price, quantity and mix.*"

In the words of **Heiser**, "*The most significant single factor in profit planning of the average business is the relationship between the volume of business, costs and profit.*"

The cost-volume-profit analysis is the relationship among cost, volume and profit. Profit of a business organisation depends upon a number of factors such as selling price, sales volume, per unit of variable cost, fixed cost and sales mix. The cost-volume-profit analysis explains the inter-relationships of these variables for decision-making. The management is always interested in knowing that which product or product mix is most profitable; what effect a change in the volume of output will have on the cost of production and profit etc. Under cost-volume-profit analysis, when volume of output increases, unit cost of production decreases, and vice-versa; because, the fixed cost remains unaffected when the output increases, the fixed cost per unit decreases. Therefore, profit will be more, when sales price remains constant. The basic purpose of cost-volume-profit analysis is to determine the impact of fluctuations in cost and volume on the financial results of the business firm or organisation. All these problems are solved with the help of the cost-volume-profit analysis.

6.5.1 Objectives of Cost-Volume-Profit Analysis

Following are the main objectives of cost-volume-profit analysis:

1. To achieve the minimum level of sales for avoiding losses
2. To arrive at the desirable product mix so as to maximize profit
3. The required level of sales that will fetch the planned rate of profit
4. To ascertain the most viable product and the least profits required to gain ground in the market
5. To determine the resultant impact on cost-volume-profit relationships on account of the planned expansion of activities
6. To ascertain the effect of changes in the volume of output, costs and prices on the planned profit, and
7. To determine the sale of a product of a plant to be discontinued or the operation of the business firm should be temporarily stopped.

To know the cost-volume-profit relationship, a study of the following is essential:

1. Marginal Cost Equation,
2. Profit-Volume Ratio,
3. Break-Even Analysis,
4. Margin of Safety,
5. Break-Even Chart, and
6. Angle of Incidence.

6.6 PROFIT-VOLUME RATIO

The profit-volume ratio, popularly known as the P/V ratio, expresses the relation of contribution to sales. This ratio is also known as contribution to sales or the marginal income ratio. The profit-volume ratio is often expressed as a percentage and is a guide to the profitability of a business firm. Normally, this ratio is expressed in percentage. P/V ratio is very important in decision-making. It can be used for the calculation of BEP and in problems regarding profit sales relationship. The formula for computing the P/V ratio is given below:

$$P/V \text{ Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 \quad \text{OR} \quad = \frac{C}{S} \times 100$$

$$P/V \text{ Ratio} = \frac{\text{Contribution per unit}}{\text{Selling price per unit}} \times 100 \quad \text{OR} \quad = \frac{C \text{ per unit}}{SP \text{ per unit}} \times 100$$

In addition to above, the P/V ratio can be expressed in the following further forms:

$$P/V \text{ Ratio} = \frac{\text{Fixed cost} + \text{Profit}}{\text{Sales}} \times 100 \quad \text{OR} \quad = \frac{F + P}{S} \times 100$$

$$P/V \text{ Ratio} = \frac{\text{Sales} - \text{Variable cost}}{\text{Sales}} \times 100 \quad \text{OR} \quad = \frac{S - V}{S} \times 100$$

$$P/V \text{ Ratio} = \frac{\text{Change in profit (In two periods)}}{\text{Change in sales (In two periods)}} \times 100$$

Improvement of P/V Ratio

Profit-volume ratio is the function of sales and variable costs. Therefore, an improvement of the ratio will mean increasing the gap between sales and variable costs. This can be done by:

- (i) Increasing selling price,
- (ii) Reducing or decreasing variable costs, and
- (iii) Altering sales mixture, *i.e.*, product having low P/V ratio will be substituted by a product with a higher ratio.

6.6.1 Uses of Profit-Volume Ratio

The profit-volume ratio is usually used to ascertain the following:

- (i) To determine the variable cost for any volume of sales,
- (ii) To determine the volume of sales required to earn a given profit,
- (iii) To fix the selling prices.
- (iv) To locate the break-even point and margin of safety.
- (v) To determine the volume of sales required for maintaining the present level of profit, if selling price is reduced, and
- (vi) To compute the profit when margin of safety is given.

Example: Calculate P/V ratio from the following information:

Sales	₹ 50,000
Marginal cost	₹ 20,000

Solution:

$$\begin{aligned}\text{Contribution} &= \text{Sales} - \text{Marginal cost} \\ &= 50,000 - 20,000 \\ &= ₹ 30,000\end{aligned}$$

$$\begin{aligned}\text{P/V Ratio} &= \frac{\text{Contribution}}{\text{Sales}} \times 100 \\ &= \frac{30,000}{50,000} \times 100 = 60\%\end{aligned}$$

6.7 BREAK-EVEN ANALYSIS

Break-even analysis is a technique of studying cost-volume-profit relationship. This analysis may be interpreted in broad as well as in narrow sense. In its narrow sense, the break-even analysis determines the break-even point. It is a point to indicate no profit and no loss situation of the project taken up for implementation. If the same is used in broad sense, the analysis is to indicate the probable profit or loss at any given level of activity. Break-even analysis is also known as cost-volume-profit analysis.

According to **Joseph Baggott**, "*Break-even analysis refers to a system of analysing cost into its fixed and variable components to determine the probable profits at given level of activity*"

6.7.1 Assumption of Break-Even Analysis

Break-even analysis is based on the following assumptions:

1. All costs can be classified into fixed cost and variable cost,
2. Total fixed costs remain unchanged,
3. Variable costs per unit remain unchanged and total variable costs change with the change in the volume of output in direct proportion,
4. With the changes in the volume of sales, selling price does not change,
5. General price-level will not change,
6. Stocks are valued at marginal cost,
7. In case of multi-product sales programme, sales mix will remain constant,
8. Costs and revenues are influenced only by volume,
9. Productivity per worker remains unaffected, and
10. There is synchronisation between production and sales.

6.7.2 Break-Even Point

Break-even point is a point where the total sales or revenue are equal to total costs. In break-even point, there is no profit or loss in the volume of sales. In other words, it is a point at which no profit no loss situation prevails in the operating activity of a

business firm. This indicates that the break-even point is the minimum level of production at which total cost is recovered and no profit or no loss is sustained.

The following fundamental formula is used to calculate break-even point:

$$\text{Break-even Point (in ₹)} = \frac{\text{Fixed cost} \times \text{Sales}}{\text{Contribution}} \quad \text{OR} = \frac{\text{Fixed cost}}{\text{P/V ratio}}$$

$$\text{Break-even Point (in units)} = \frac{\text{Fixed cost}}{\text{Contribution per unit}} \quad \text{OR} \quad \frac{\text{FC}}{\text{C per unit}}$$

Example: From the following particulars, calculate the break-even point:

Selling price	₹ 20 per unit
Variable cost	₹ 14 per unit
Fixed cost	₹ 60,000

Solution:

$$\begin{aligned} \text{Break-even Point (in ₹)} &= \frac{\text{Fixed cost} \times \text{SP per unit}}{\text{Contribution per unit}} \\ &= \frac{60,000 \times 20}{6} = \frac{12,00,000}{6} \\ &= ₹ 2,00,000 \end{aligned}$$

$$\begin{aligned} \text{Break-even Point (in units)} &= \frac{\text{Fixed cost}}{\text{Contribution per unit}} \\ &= \frac{60,000}{6} \\ &= 10,000 \text{ Units} \end{aligned}$$

Working note:

Calculation of contribution per unit:

Contribution = Selling price per unit – Variable cost per unit

Contribution = 20 – 14 = 6 per unit

Example: You are required to calculate the break-even point from the following information:

Selling price	₹ 30 per unit
Variable cost	₹ 20 per unit
Fixed cost	₹ 1,20,000
Estimated sales	₹ 3,00,000

Solution:

Contribution = Selling price per unit – Variable cost per unit

$$\begin{aligned} \text{Contribution} &= 30 - 20 \\ &= ₹ 10 \end{aligned}$$

$$\text{P/V Ratio} = \frac{\text{Contribution per unit}}{\text{Selling price per unit}} \times 100$$

$$= \frac{10}{30} \times 100 = 33.33\%$$

$$\begin{aligned} \text{Break-even Point (in ₹)} &= \frac{\text{Fixed cost} \times \text{SP per unit}}{\text{Contribution per unit}} \\ &= \frac{1,20,000 \times 30}{10} = \frac{36,00,000}{10} \\ &= ₹ 3,60,000 \end{aligned}$$

$$\begin{aligned} \text{Break-even Point (in units)} &= \frac{\text{Fixed cost}}{\text{Contribution per unit}} \\ &= \frac{1,20,000}{10} \\ &= 12,000 \text{ Units} \end{aligned}$$

6.7.3 Contribution

This refers to the excess of selling price over the variable cost. It is also known as 'gross margin'. The amount of profit (loss) can be ascertained by deducting the fixed cost from contribution.

The important element of the marginal cost equation is the 'contribution' factor which is resulted from the sales value after deduction of variable costs. It has been stated above that 'contribution' is the composition of fixed costs plus profit. Contribution is also known as gross margin. In the other words, contribution is the difference between sales and marginal cost. Contribution enables to meet fixed costs and add to the profit. Contribution minus fixed cost is profit, but where fixed cost is more than contribution, the difference is loss.

In other words, fixed cost plus profit is equivalent to contribution. It can be expressed by the following formula:

$$\text{Contribution} = \text{Sales} - \text{Marginal cost} \quad \text{OR } C = S - MC$$

$$\text{Contribution} = \text{Sales} - \text{Variable cost} \quad \text{OR } C = S - VC$$

$$\text{Contribution} = \text{Fixed cost} + \text{Profit} \quad \text{OR } C = FC + P$$

$$\text{Profit} = \text{Contribution} - \text{Fixed cost} \quad \text{OR } P = C - FC$$

$$\text{Sales} - \text{Variable cost} = \text{Fixed cost} + \text{Profit} \quad \text{OR } S - V = F + P$$

Example:

Variable Cost	=	₹ 90,000
Fixed Cost	=	₹ 40,000
Selling Price	=	₹ 1,30,000
Contribution	=	Selling Price - Variable Cost
	=	₹ 1,30,000 - ₹ 80,000
	=	₹ 50,000
Profit	=	Contribution - Fixed Cost
	=	₹ 50,000 - ₹ 40,000
	=	₹ 10,000

Hence, contribution exceeds fixed cost and, therefore, the profit is of the magnitude of ₹ 10,000.

Example: From the following information, find out the (a) Contribution, and (b) Amount of profit earned during the year:

Fixed cost	₹ 5,00,000
Variable cost	₹ 10 per unit
Selling price	₹ 15 per unit
Output	₹ 1,50,000 unit

Solution:

(a) Calculation of contribution:

$$\begin{aligned}\text{Contribution} &= \text{Sales} - \text{Marginal cost} \\ \text{Contribution} &= (1,50,000 \times 15) - (1,50,000 \times 10) \\ \text{Contribution} &= 22,50,000 - 15,00,000 \\ \text{Contribution} &= ₹ 7,50,000\end{aligned}$$

(b) Calculation of amount of profit:

$$\begin{aligned}\text{Profit} &= \text{Contribution} - \text{Fixed cost} \\ \text{Profit} &= 7,50,000 - 5,00,000 \\ \text{Profit} &= ₹ 2,50,000\end{aligned}$$

6.8 MARGIN OF SAFETY

Margin of safety is an important concept in marginal costing approach. Margin of safety is the difference between the actual sales and the sales at break-even point. This is represented by excess sales over and above the break-even point. The margin of safety refers to the amount by which sales revenue can fall before a loss is incurred. That is, it is the difference between the actual sales and sales at the break-even point. Margin of safety indicates the soundness of the business firm. High margin of safety indicates the soundness of a business firm because even with substantial fall in sale or fall in production, some profit shall be made. Small margin of safety on the other hand is an indicator of the weak position of the business firm and even a small reduction in sale or production will adversely affect the profit position of the business firm. To improve the margin of safety, the following measures may be adopted:

- (i) Increase the level of production,
- (ii) Increase the selling price,
- (iii) Reducing the fixed and variable costs,
- (iv) Substitute the existing products by more profitable products, and
- (v) Changing to a product mix that improves P/V ratio.

Margin of safety can be calculated with the help of the following formula:

$$\text{Margin of Safety} = \text{Total sales} - \text{Sales at B.E.P.}$$

$$\text{OR} \quad \text{Margin of Safety} = \frac{\text{Profit}}{\text{P/V ratio}}$$

$$\text{OR} \quad \text{Margin of Safety} = \frac{\text{Profit}}{\text{Contribution}}$$

$$\text{Margin of Safety (as a percentage)} = \frac{\text{Margin of safety}}{\text{Total sales}} \times 100$$

Example: From the following details find out:

(i) P/V Ratio, (ii) Break-even Point, and (iii) Margin of safety

Sales	₹ 1,00,000
Total cost	₹ 75,000
Fixed cost	₹ 20,000
Net profit	₹ 25,000

Solution:

$$\begin{aligned} \text{(i) P/V Ratio} &= \frac{\text{Contribution}}{\text{Sales}} \times 100 \\ &= \frac{45,000}{1,00,000} \times 100 = 45\% \end{aligned}$$

$$\begin{aligned} \text{(ii) Break-even Point (in ₹)} &= \frac{\text{Fixed cost}}{\text{P/V ratio}} \\ &= \frac{20,000}{45} \times 100 \\ &= ₹ 44,444 \end{aligned}$$

$$\begin{aligned} \text{(iii) Margin of Safety} &= \frac{\text{Profit}}{\text{P/V ratio}} \\ &= \frac{25,000}{45} \times 100 \\ &= ₹ 55,556 \text{ (Approx.)} \end{aligned}$$

$$\begin{aligned} \text{OR Margin of Safety} &= \text{Actual sales} - \text{Break-even point sales} \\ &= 1,00,000 - 44,444 \\ &= ₹ 55,556 \end{aligned}$$

6.9 BREAK-EVEN CHART

A break-even chart is a graphical representation of marginal costing or cost-volume-profit analysis. It is an important aid to profit planning. It has been defined as "A chart which shows the profitability or otherwise of an undertaking at various levels of activity and as a result indicates the point at which neither profit nor loss is made."

According to Dr. Vance, "It is a graph showing the amounts of fixed variable costs and the sales revenue at different volumes of operation. It shows at what volume the firm first covers all costs with revenue of break-even"

A break-even chart presents the following information:

- (i) The profit or loss at various levels of activity,
- (ii) The margin of safety and the angle of incidence.

- (iii) The inter-relationship between different costs of production,
- (iv) The sales value and break-even point, and
- (v) The amount of contribution.

At different activity levels, the interaction of volume, selling price, variable costs and fixed costs, the relevant variable and their impact upon profit are considered simultaneously. The most important use of the break-even chart is the ascertainment of a break-even point from the chart, which is a valuable guide to the management.

6.9.1 Assumption of Break-even Chart

Following are the assumptions of break-even chart:

1. Costs can be classified into fixed and variable costs,
2. Fixed costs will remain constant and will not change with the change in level of output,
3. Variable costs will fluctuate in the same proportion, in which the volume of output varies,
4. The number of units produced and sold will be the same so that there is no opening or closing stock,
5. Selling price will remain constant irrespective of change in volume of production,
6. There is only one product or in the case of many products, product mix will remain unchanged, and
7. There will be no change in operating efficiency.

6.9.2 Form of Break-even Chart

A break-even chart can be presented in different forms as given below:

1. **Simple break-even chart:** This can be prepared by any of the following two methods:

First Method: On the X-axis of the graph is plotted the volume of production or the quantities of sales and on the Y-axis (Vertical line) costs and sales revenues are represented. The fixed cost line is drawn parallel to the X-axis because with any volume of production the fixed costs shall remain the same. The variable cost line is depicted above the fixed cost line, which shows that the cost is increasing with the increase in the volume of output. This line can also be regarded as the total cost lines because it starts from the point where variable cost is zero and certain fixed cost has been incurred. Thereafter, figures of sales are plotted from the origin and a line is drawn up which goes in the upward direction with the increase of production sales. The two lines -- total cost line and sales line -- shall intersect each other at one point, and a perpendicular can be drawn from this point to find out the level of output where the business shall be at 'no-profit no-loss' position, since the total costs are equal to total sales revenue here. If the business produces less than this level of output, it shall be running at a loss. The lower sales line and upper total cost line show the portion of loss. If the business produces more units than the break-even level, profit shall result and it shall be higher and higher as the production / sales increase. This is indicated by upper sales line and lower total cost line.

Example: From the following data, calculate the break-even point with the help of a break-even chart:

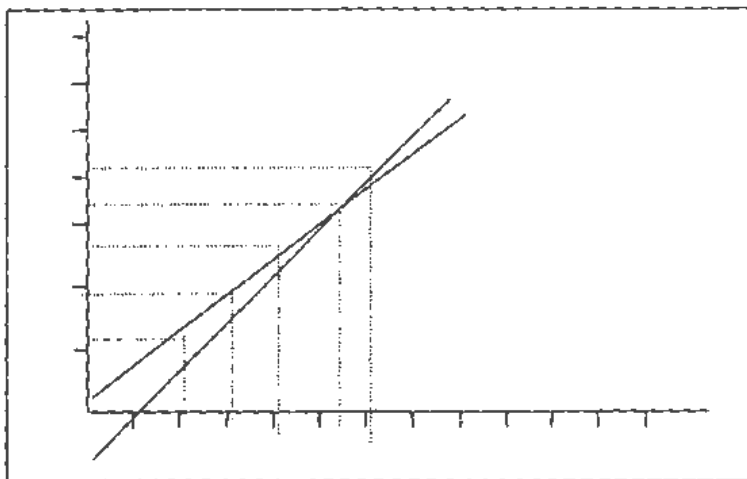
Selling Price per unit	₹ 4.00
Variable Cost per unit	₹ 3.00
Total Cost per unit	₹ 20,000

Solution:

As explained earlier, break-even point is a point of 'no profit no loss'. The point will, therefore, be there where total costs are equal to total sales. In other words, if the two data are plotted on the graph paper, at the break-even point, the two lines, i.e., the total cost line and the total sales line will intersect each other. However, for plotting the data on the graph paper, we need at least two points – one for plotting the total cost line and the other for plotting the total sales line. It is shown below:

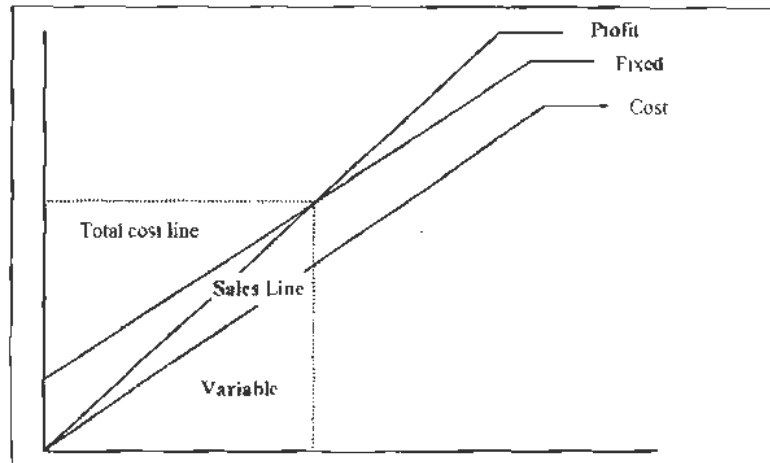
Output (Units)	Variable Costs ₹	Fixed Costs ₹	Total Cost ₹	Sales ₹
10,000	30,000	20,000	60,000	40,000
20,000	60,000	20,000	80,000	80,000
30,000	90,000	20,000	1,00,000	1,20,000
40,000	1,20,000	20,000	1,40,000	1,60,000
50,000	1,50,000	20,000	1,70,000	2,00,000
60,000	1,80,000	20,000	2,00,000	2,40,000

The data can now be plotted on the graph paper as follows:



Second Method: Another of drawing a break-even chart is showing the variable cost line first and therefore drawing the fixed cost line above the variable cost line. The latter, however, will be the total cost line as in the first case. The difference under this method is that the fixed cost line shown above the variable cost line is parallel to the latter, whereas under first method the fixed cost line is parallel to the X-axis. The sales line is drawn as usual and therefore the added advantage of this method is that 'contributions' at varying levels of output are automatically depicted in the chart ('contribution' connotes the difference of sales revenue and the variable cost). The break-even point is indicated by the intersection of the total cost line and the sales line.

The break-even chart on the basis of data given in illustration will appear as shown on the next page according to this method.



2. **Contribution break-even chart:** The chart in ascertaining the amount of contribution at different levels of activity besides the break-even point. In case of this chart, first the fixed cost is plotted parallel to the X-axis. The contribution line is then drawn from the bottom, or the origin, which goes up with the increase of output/sales. The sales line is plotted as usual from the '0' point but since there is no total cost line, the question of intersection of sales line with it to show the break-even point does not arise. In such a case, the contribution line crosses the fixed cost line and the point of intersection is treated as break-even point. At this level, the fixed cost shall be equal to contribution which means that there shall be no profit and no loss. As the contribution increases to more than the fixed cost, profit shall arise to the business at different levels of output/sales and as the contribution steps down from the level of fixed cost, business shall be operated at a loss at varying levels of production/sales. On the basis of data given in example, the break-even chart will appear as given below:

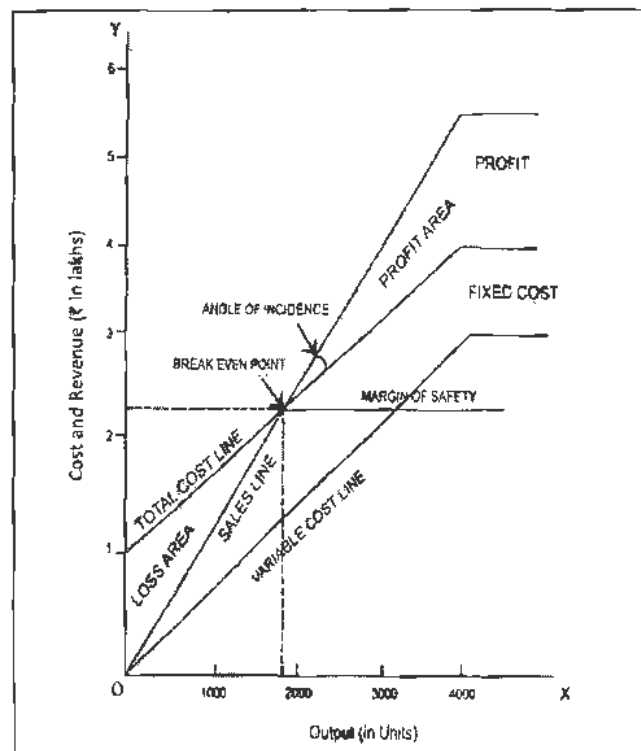


Figure 6.2: Contribution break-even chart

Profit Chart: The break-even point can also be found out graphically by means of a Profit Chart.

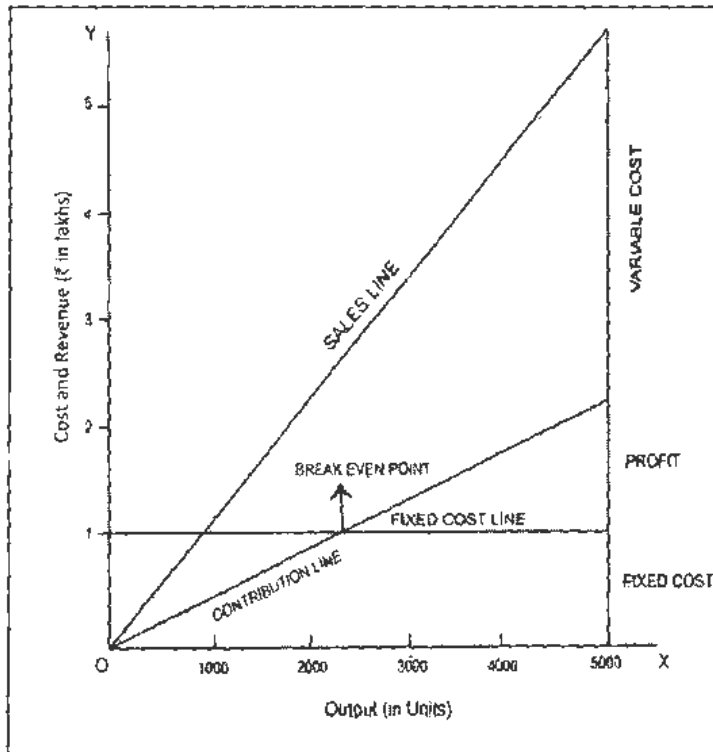
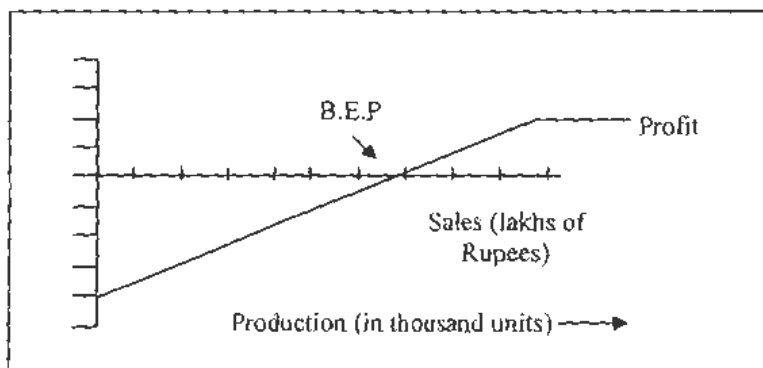


Figure 6.3: Profit Chart

Example: On the basis of figures given in illustration compute the Break-even Point by means of a Profit Chart.

Solution:

Output (Units)	Total Costs ₹	Sales ₹	Profit/Loss ₹
10,000	40,000	25,000	-15,000
20,000	60,000	50,000	-10,000
30,000	80,000	75,000	-5,000
40,000	1,00,000	1,00,000	-
50,000	1,20,000	1,25,000	+5,000
60,000	1,40,000	1,50,000	+10,000



Example: Draw a break-even chart from the following figures:

	Sales	Profit (₹ lakhs)
Year 1	160	4
Year 2	175	10

From the above chart predict the variable cost, contribution, fixed cost and profit associated with a sales volume of ₹ 250 lakhs, and set out your prediction in the form of a profit statement.

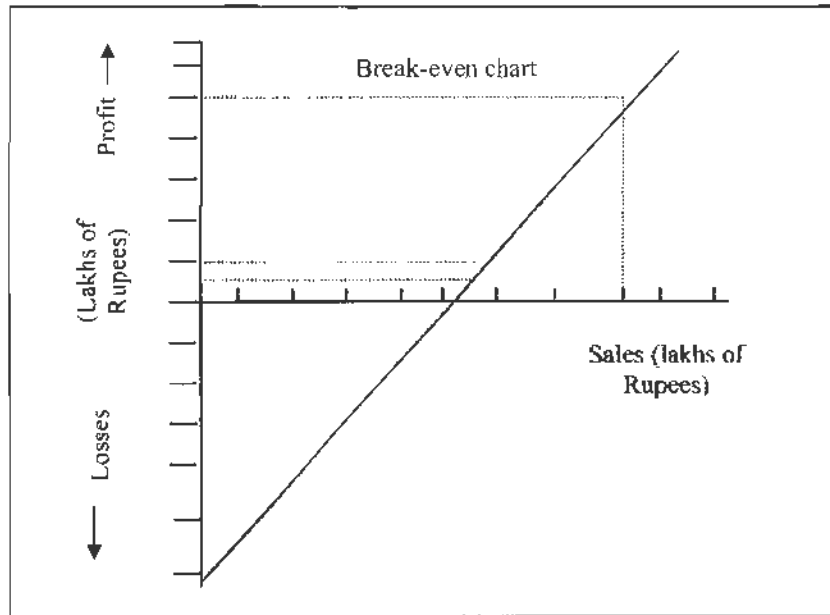
Solution:

Statement Showing Costs & Profit at Sales of ₹ 250 Lakhs

Sales	₹	₹ 250 lakhs
Less: Variable Cost	150 lakhs	
Fixed Cost	<u>60 lakhs</u>	<u>₹ 210 lakhs</u>
Profit * *		<u>₹ 40 lakhs</u>

* The fixed cost is ₹ 60 lakhs since loss at 'nil', sales is ₹ 60 lakhs.

** The perpendicular at sales of ₹ 250 lakhs meet on profit of ₹ 40 lakhs as depicted on the graph.



6.9.3 Advantages of Break-even Chart

Following are the main advantages of break-even chart:

1. The chart is very useful for forecasting costs and profits at various levels of sales.
2. A break-even chart is useful for studying the relationship of cost, volume and profit. The chart is very useful for taking managerial decisions,
3. A break-even chart is a tool for cost control because it shows the relative importance of the fixed cost and the variable cost,
4. Profitability of various products can be compared with the help of break-even chart,
5. It is helpful in knowing the effect of increase or reduction in selling price,

6. Profitability of various products can be studied with the help of break-even chart and a most profitable product mix can be adopted. Profits at different levels of activity can also be ascertained,
7. Information provided by the break-even chart can be understood by the management more easily than contained in the profit and loss account and the cost statements because a break-even chart is the simple presentation of cost, volume and profit of the company, and
8. The profit potentialities can be best judged from a study of the position of the break-even point and the angle of incidence in the break-even chart.

6.9.4 Limitations of Break-even Chart

The main limitations of break-even chart arise from the number of assumptions which are made in drawing break-even charts. These limitations are given as under:

1. The effect of various product mixes on profits cannot be studied from a single break-even chart.
2. A break-even chart is based on a number of assumptions which may not hold upright. In the break-even chart, we have seen that the total cost line and the sales line look straight lines. This is possible only with a number of assumptions. But, in practice, the total cost line and the sales line are not straight lines because the assumptions do not hold good.
3. A break-even chart does not take into consideration capital employed which is a very important factor in taking managerial decisions. Therefore, managerial decisions on the basis of break-even chart may not be reliable.
4. A limited amount of information can be shown, in a break-even chart. A number of charts will have to be drawn up to study the effects of changes in fixed costs, variable costs and selling prices.
5. No importance is given to opening and closing stocks, and
6. Constant selling price is not true.

6.9.5 Construction of Break-Even Chart

The common method, followed in the construction of simple break-even chart, is stated here as under:

1. A break-even chart is drawn on a graph paper.
2. There are two sides on a graph which are known as 'axes'. The horizontal side at the bottom of the graph is 'x-axis' and the vertical side is the 'y-axis'.
3. On the graph, the x-axis shows the volume of production and the y-axis shows the cost and sales price.
4. Draw both axes on the suitable graph paper on the basis of appropriate scale
5. Fixed cost line is drawn on the graph. Fixed cost line is drawn parallel to the x-axis because fixed cost remains the same.
6. Total cost line is drawn above the fixed cost line. For this purpose, the variable cost is added to the fixed cost to arrive at the total cost and drawn at each and every scale of production.
7. Sales revenue line is drawn commencing at zero and finishing at the last point.
8. Then the sales line cuts the total cost line, *i.e.*, sales equals the total cost. This is known as a break-even point. When a line is drawn from BEP to x-axis, it

indicates break-even point in units and when a line is drawn from BEP to y-axis, it indicates break-even point in rupees.

9. The difference between the sales line and total cost line to the right of BEP indicates the profit. The position to the left of the BEP on the graph indicates the loss, and
10. Then the graph indicates the break-even point, profit or loss at various levels of output, contribution, relationship between the marginal cost, fixed cost, total cost and margin of safety.

Example: From the following information, prepare the break-even chart.

Fixed cost	₹ 2,000
Variable cost	₹ 0.50 per unit
Sales or selling price	₹ 1 per unit

Units produced and sold 2,000; 4,000; 6,000; 8,000 and 10,000.

Solution:

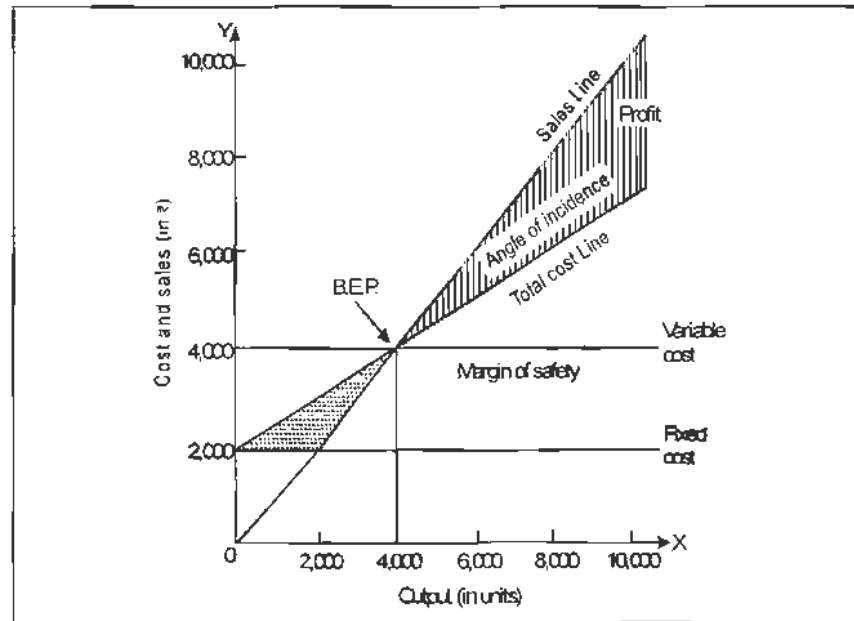


Figure 6.4: Break-Even Chart

Angle of Incidence

This is the angle between sales and total cost line. This angle is an indicator of profit earning capacity over the break-even point. Therefore, the aim of the management will be to have a large other hand, a small angle will mean that even if profits are being made, they are being made at a low rate. This in turn suggests that variable costs form a major part of cost of sales.

Angle of Incidence is formed at the inter-section of total cost line and total sales line. As a matter of fact there are two angles of incidence:

- The angle formed at the right side of the break-even point;
- The angle formed at the left side of the break-even point.

The angle formed at the right side of the break-even point indicates the profit area while that formed at the left side indicates the loss area. The size of the angle of

incidence is indication of the quantum of profit or loss made by the firm at different output/sales levels. For example, if the angle of incidence is narrow to the right side of the BEP, it indicates that the quantum of profits made by the firm is also low. Similarly, if it is narrow to the left side of the BEP, it indicates that the quantum of loss made by the firm is also low. In other words, a narrow angle of incidence shows a slow rate of profit earning capacity while a wider angle of incidence shows a swift rate of profit earning capacity of the firm. A narrow angle also indicates that the variable cost as a proportion to sales is quite high and therefore very little has been left by way contribution.

It should be remembered that a large angle indicates high margin of profit after covering fixed cost. Similarly, a small angle indicates low margin of profit which reveals that variable cost is more in total cost. If margin of safety is considered along with angle of incidence it may be suggested that a large angle of incidence with high margin of safety indicates extremely favourable condition.

The following graph will show the 'Angle of incidence' of a firm:

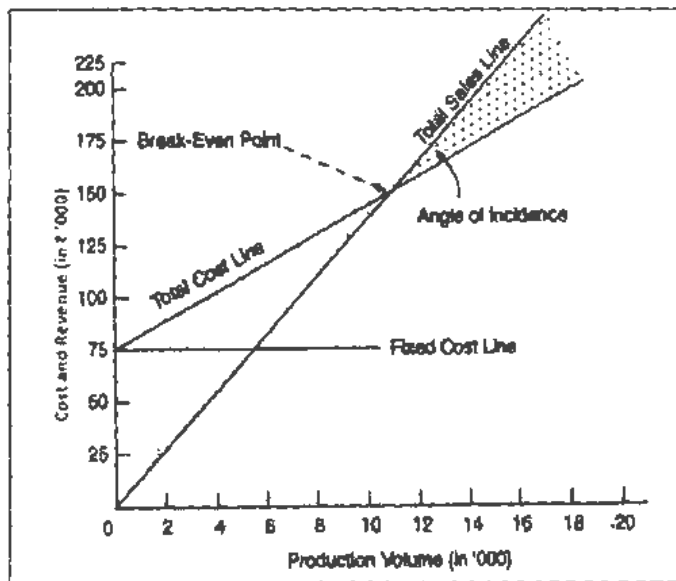


Figure 6.5: Showing Angle of Incidence

However, if margin of safety and angle of incidence is considered together, they will be more informative. For example, a high margin of safety with a large angle of incidence will indicate the most favourable conditions of a business firm or even the existence of monopoly position.

6.10 DECISION-MAKING

Marginal cost helps management to make decision involving consideration of cost and revenue. Basically, marginal costing furnishes information regarding additional costs to be incurred if an additional activity is to be taken up or the saving in costs which may be expected if an activity is given up. This can be compared with the benefit expected from the proposed course of action and thus the management will be able to take the appropriate decision.

Decision-making describes the process by which a course of action is selected as the way to deal with a specific problem. A decision involves the act of choice and the alternative chosen out of the available alternatives.

According to **Heinz Wehrich and Harold Koontz**, "Decision-making is defined as the selection of a course of action from among alternatives "

George R. Terry says, "Decision-making is the selection based on some criteria from two or more possible alternatives."

According to **Haynes and Masie**, "Decision-making is a course of action which is consciously chosen for achieving the desired results."

Following are the important areas of decision-making or applications of marginal costing:

1. **Fixation of Price:** Product pricing is a most important function of management. One of the purposes of cost accounting is the ascertainment of cost for fixation of selling price of product. Marginal cost of a product represents the minimum price of the product. During normal circumstances, price of product is based on full cost. The theory is that only those products should be produced or sold which make the largest contribution towards the recovery of fixed costs. The selling price fixation is also done under different circumstances.

Example: P/V ratio is 50% and the marginal cost of the product is ₹ 60. What will be the selling price?

Solution:

$$\begin{aligned} \text{Selling Price} &= \frac{\text{Variable cost}}{(100 \text{ P/V ratio})} = \frac{60}{(100 - 50\%)} \\ &= \frac{60 \times 100}{50} = ₹ 120 \end{aligned}$$

$$\begin{aligned} \text{Verification: P/V Ratio} &= \frac{\text{Contribution}}{\text{Sales}} \times 100 \text{ OR } = \frac{S - V}{S} \times 100 \\ &= \frac{120 - 60}{120} \times 100 \\ &= \frac{60}{120} \times 100 = 50\% \end{aligned}$$

2. **Decision to Make or Buy:** A business firm may make some products, parts or tools or sometimes, it may buy the same thing from outside. The management must decide which is more profitable to the business firm. If the marginal cost of the product is lower than the price of buying from outside, then the business firm can make the product.

Example: A Pen Manufacturing Company finds that while it costs ₹ 6.25 to make each component X 2730, the same is available in the market at ₹ 4.85 each, with an assurance of continued supply. The breakdown of cost is:

Raw material	₹ 2.75 each pen
Direct wages	₹ 1.75 each pen
Other variable cost	₹ 0.50 each pen
Fixed cost	₹ 1.25 each pen
	₹ 6.25 each pen

Should you make or buy?

Solution: Variable cost of manufacturing is ₹ 5 (₹ 6.25 – 1.25), but the market price is ₹ 4.85. If the fixed cost of ₹ 1.25 is also added, it is not profitable to make the component. Because there is a profit of ₹ 0.15 even in variable cost, it is profitable to procure from outside.

3. **Selection of a Profitable Product Mix:** In a multi-product manufacturing organisation, a problem is faced by the management as to which product mix or sales mix will give the maximum profit. The product mix which gives the maximum profit must be selected. Product mix is the ratio in which various products are produced and sold.

The marginal costing technique helps the management in taking decisions regarding changing the ratio of product mix which gives maximum contribution or in dropping unprofitable product line. The product which has comparatively less contribution may be reduced or discontinued.

Example: Present the following information to show to the management: (i) the marginal cost of product and the contribution per unit, (ii) the total contribution and profits resulting from each of the following sales mixtures:

	Type of Products	Per unit (₹)
Materials	X	10
	Y	9
Wages	X	3
	Y	2

Fixed cost ₹ 2,000

Variable cost is allocated to products as 100% of wages.

Selling price	X	₹ 20
	Y	₹ 16

Sales mixtures:

- (a) 1,000 units of product X and 2,000 units of product Y,
- (b) 1,500 units of product X and 1,500 units of product Y.
- (c) 2,000 units of product X and 1,000 units of product Y.

Solution:

- (i) **Statement of Marginal Cost:**

Type of Products	X (₹)	Y (₹)
Materials	10	9
Wages	3	2
Variable cost (100% of wage)	<u>3</u>	<u>2</u>
Marginal Cost	<u>16</u>	<u>13</u>
Selling price	20	16
Less: Marginal cost	<u>16</u>	<u>13</u>
Contribution	<u>4</u>	<u>3</u>

(ii) **Product Mix Choice:**

Particulars	(a) ₹	(b) ₹	(c) ₹
Total sales	52,000 ⁽¹⁾	54,000 ⁽¹⁾	56,000 ⁽¹⁾
Less: Marginal cost	42,000 ⁽²⁾	43,500 ⁽²⁾	45,000 ⁽²⁾
Contribution	10,000	10,500	11,000
Less: Fixed cost	2,000	2,000	2,000
Profit	8,000	8,500	9,000

Therefore, sales mixture (c) will give the highest profit and as such, mixture (c) can be adopted.

Working notes:

1. $(1,000 \times 20 + 2,000 \times 16) = 52,000$, $(1,500 \times 20 + 1,500 \times 16) = 54,000$, and $(2,000 \times 20 + 1,000 \times 16) = 56,000$
 2. $(1,000 \times 16 + 2,000 \times 13) = 42,000$, $(1,500 \times 16 + 1,500 \times 13) = 43,500$, and $(2,000 \times 16 + 1,000 \times 13) = 45,000$
4. **Decision to Accept a Bulk Order:** Large scale purchasers may demand products at less than the market price. A decision has to be taken now whether to accept the order or to reject it. By reducing the normal sales price, the volume of output and the sales can be increased. If the sales price is below the total cost, rejection of the order is aimed at.

In marginal costing, the offer may be accepted, if the quoted sales price is above marginal cost, because of the reason that existing business contribution can recover the fixed cost and the margin of profits. In such cases, the contribution made by bulk orders will be an addition to the profit. But the sales price should not be less than the marginal cost. However, it should not affect the normal market price.

Example: ABC to industrial depression, a plant is running at present, at 50% of its capacity. The following details are available:

Cost of Production	per unit
Materials	₹ 2.5
Labour	₹ 1.5
Variable cost	₹ 3.0
Fixed cost	₹ 1.5
Total Cost	₹ 8.5

Production per month in units 20,000

Total cost of production $(20,000 \times 8.5) =$ ₹ 1,70,000

Sales price ₹ 1,50,000

Loss ₹ 20,000

An exporter offers to buy 6,000 units per month at the rate of ₹ 7.50 per unit and the company is reluctant to accept the offer for fear of increasing its already operating losses.

Advise whether the company should accept or decline this offer.

Solution:

Particulars	Existing (20,000 units) (₹)	Offer (6,000 units) (₹)	Total (₹)
(a) Sales	1,50,000	45,000	1,95,000
(b) Marginal cost :			
Materials @ ₹ 2.5 per unit	50,000	15,000	65,000
Labour @ ₹ 1.5 per unit	30,000	9,000	39,000
Variable cost @ ₹ 3 per unit	60,000	18,000	78,000
Total Marginal Cost	1,40,000	42,000	1,82,000
Contribution (a - b)	10,000	3,000	13,000
Less : Fixed cost	30,000	--	30,000
Profit/Loss	(-) 20,000	3,000	(-) 17,000

The firm must accept the offer, because the amount of loss stands reduced from ₹ 20,000 to ₹ 17,000.

5. **Closure of a Department or Discontinuing a Product:** Marginal costing technique shows the contribution of each product to fixed cost and profit. If a department or a product contributes the least amount, then the department can be closed or its production can be discontinued. It means the product which gives a higher amount of contribution may be chosen and the rest should be discontinued.

Example: The records of Rajesh Limited which has three departments, give the following figures:

Particulars	Department X (₹)	Department Y (₹)	Department Z (₹)	Total Amount (₹)
Sales	15,000	19,000	23,000	57,000
Marginal cost	14,000	7,000	17,000	38,000
Fixed cost	3,000	4,000	11,000	18,000
Total cost	17,000	11,000	28,000	56,000
Profit/Loss	(-) 2,000	(+) 8,000	(-) 5,000	(+) 1,000

The management wants to discontinue product Z immediately as it gives the maximum loss. How would you advise the management?

Solution:**Statement of Marginal Cost**

Particulars	X (₹)	Y (₹)	Z (₹)	Total (₹)
Sales	15,000	19,000	23,000	57,000
Less : Marginal cost	14,000	7,000	17,000	38,000
Contribution	1,000	12,000	6,000	19,000
Fixed cost				18,000
Profit				1,000

Department Z gives a contribution of ₹ 6,000. If department Z is closed, then it may lead to further loss. Therefore, Z will be continued.

6. **Maintaining a Desired Level of Profit:** A manufacturing organisation has to cut or reduce prices of its products from time to time due to competition, government policies and other reasons. The contribution per unit on account of such cutting is reduced while the organisation is interested in maintaining a minimum level of its profits. Marginal costing technique can ascertain how many units have to be sold to maintain the same level of profits. According to Charles, "When desired

profits are agreed upon their attainability may be quickly appraised by computing the number of units that must be sold to secure the wanted profits. The computation is easily made by dividing the fixed costs plus desired profits by the contribution margin per unit."

Sales are required to earn a desired profit:

$$\text{Sales (in ₹)} = \frac{\text{Fixed cost} + \text{Desired profit}}{\text{P/V ratio}} \quad \text{OR} \quad = \frac{\text{F} + \text{P}}{\text{P/V}}$$

$$\text{Sales (in units)} = \frac{\text{Fixed cost} + \text{Desired profit}}{\text{Contribution per unit}} \quad \text{OR} \quad = \frac{\text{F} + \text{P}}{\text{C}}$$

Example:

Sales 20,000 units @ ₹ 20 per unit

Variable cost ₹ 10 per unit

Fixed cost ₹ 1,50,000

Find out the sales for earning a profit of ₹ 1,00,000.

Solution:

Sales to earn a profit of ₹ 1,00,000:

$$\begin{aligned} &= \frac{\text{Fixed cost} + \text{Desired profit}}{\text{Contribution}} \\ &= \frac{1,50,000 + 1,00,000}{2,00,000} \times 4,00,000 \\ &= \frac{2,50,000}{2,00,000} \times 4,00,000 \\ &= ₹ 5,00,000 \end{aligned}$$

7. **Evaluation of Performance:** Marginal costing helps the management in measuring the performance efficiencies of a department or a product line or sales division. The department or the product or sales division which gives the highest P/V ratio will be the most profitable or that is having the highest performance efficiency.

6.11 SPECIAL ORDERS

All business decisions should not be evaluated in the same way. Sometimes special orders or one time orders often have different characteristics from recurring order. Therefore, each order should be evaluated based on costs relevant to the situation and the goals of the business firm. The question of special orders arises when a company has excess or idle production capacity and management considers the possibility of selling additional products at less than normal selling prices, provided that such a special order will not affect the regular sales of the same product.

The basic problem is to determine an acceptable price for the special order units. Cost analysis using the contribution approach is a useful technique to determine the short-run profit effects of special order transactions. In deciding the pricing of special orders where normal operations are not disturbed and where unused production capacity exists, it is not advisable to attach fixed costs to products. Price determination should take into account the recovery of incremental (variable) costs caused by

accepting the special order. If the normal fixed costs are included in the price of the special order, the price may be too high and the business firm could lose the entire order and the contribution margin to be earned on the special order. Only the relevant (variable) costs should be used in the decision analysis to arrive at an appropriate price. Fixed cost is relevant only if incurred to facilitate the special order.

The following example illustrates the special order decisions:

A manufacturing company produces 20,000 units by operating at 60% of the capacity and swells at a price of ₹3000 per unit. The budgeted figures for the year 2002 are as follows:

	Production (20,000 units) ₹
Raw materials @ 425	85,00,000
Direct labour @ 575	1,15,00,000
Variable factory overhead @ 775	1,55,00,000
Fixed factory overhead	1,25,00,000
Variable selling costs 2.75% of selling price	
Fixed selling and administrative costs	72,50,000

The company receives a special order for 10,000 units from a firm. The company desires to earn a profit of ₹ 100 per unit and no selling expenses are to be incurred for the special order. The minimum price on the special order and income statements are as follows:

Pricing of Special Order

	(10,000 units) ₹
Variable costs to be incurred:	
Raw materials	425
Direct labour	575
Variable overhead	775
Variable cost per unit (no selling expenses)	1775
Desired profit	100
Minimum price	<u>1875</u>
Increase in sales = 10,000 units × ₹ 1875 = ₹ 1,87,50,000	

Income Statement

	Without special order (₹)	Special order (₹)	With special order (₹)
Sales	6,00,00,000	1,87,50,000	7,87,50,000
Less: Variable costs:			
Direct labour	85,00,000	42,50,000	1,27,50,000
Variable factory overhead	1,15,00,000	57,50,000	1,72,50,000
Variable selling costs (2.75% of selling price)	1,55,00,000	77,50,000	2,32,50,000
Variable selling costs	16,50,000	---	16,50,000
Total variable costs	3,71,50,000	1,77,50,000	5,49,00,000
Less: Fixed costs:			
Fixed factory overhead	1,25,00,000	---	1,25,00,000
Fixed selling & admin costs	72,50,000	---	72,50,000
Total fixed costs	1,97,50,000	---	1,97,50,000
Total costs	5,69,00,000	1,77,50,000	7,46,50,000
Net income before taxes	31,00,000	10,00,000	41,00,000

From the above analysis it is clear that the acceptance of the special order will increase the profit by ₹ 10,00,000. Also the bid price (₹ 1875) is significantly less than the normal price of ₹ 3000. However, before arriving at a proper decision, management should consider factors other than just the immediate impact on income. An important point is the effect on regular customers. If regular customers are paying more for the products, they may demand price reduction or quit buying from the firm and seek another source of supply. Another consideration is the possibility of special order customers being the regular customers.

6.12 REPLACEMENT DECISION

It is very important decision. The differential costs which are important to retain or replace decisions are change in fixed overheads costs, loss on sale of old equipment, capital investment and related costs such as rate of return and interest. Management should also consider differential benefits likely to be derived such as higher production and increased sales, realizable value of old machine, saving in operating costs, tax advantages, if any.

Example: If a company has purchased a plant for ₹ 2,00,000 five years ago which has a life of 10 years with no salvage value. The present book value is ₹ 1,50,000. Management is considering the replacement of this plant with a new plant costing ₹ 1,80,000 having a life of five years with no scrap value at the end of its life. The costs of operating present plant and the proposed plant are as follows:

	Present Plant ₹	Proposed Plant ₹
Variable costs:		
Labour, supplies, power etc.	90,000	58,000
Fixed costs:		
Insurance, taxes etc.	20,000	22,000
	20,000	16,000
Depreciation	1,30,000	96,000

It appears that the proposed plant would result into cost savings of ₹ 34,000. However, the book value of the present equipment is a sunk cost and not relevant in the decision. The following analysis helps in making a better use of the data:

	₹	₹
Variable costs:		
Labour, supplies, power etc.	90,000	58,000
Fixed costs:		
Insurance, taxes etc.	20,000	22,000
	0	16,000
Depreciation	1,10,000	96,000

6.13 SHUTDOWN OR CONTINUE DECISIONS

Sometimes a business is faced with the possibility of a temporary shutdown. This analysis has to be made whether the firm is better off operating than not operating. As long as the products sold recover their valuable costs and make a contribution towards the recovery of fixed costs, it may be preferable to operate and not to shutdown. There are some others costs too. Even if sales do not recover the variable cost and the portion of fixed cost that is avoidable the firm may still be better off operating than shutting down the facility. Closing and subsequently reopening it is a costly process. The shutdown may necessitate the incurrence of maintenance procedures in order to preserve machinery and buildings during periods of inactivity. The shutdown may require the incurrence of legal expenditure and employee maintenance pay. There may be some other costs too which have to be analyzed.

Example: An organisation is experiencing problems and thus the directors are considering whether or not the following should be closed down temporarily.

A flexible budget is compiled giving the following details:

Fixed costs	Production capacity (Fixed costs and Variable costs)					
	Close Down (₹)	Normal (₹)	40%	60%	80%	100%
Factory overheads	5000	7000	10,000	11,000	12,000	13,000
Admn. Overheads	4000	6000	6,500	7000	7500	8000
Selling & Distribution overheads	5000	7000	7,000	8000	9000	10,000
Miscellaneous	1000	1000	1500	2000	2500	3000
Direct labour	--	--	10,000	15000	20,000	25,000
Direct material	--	--	12,000	18000	24,000	32,000

Following information is given:

1. Present sales at 50% capacity are estimated at ₹ 30,000 per annum.
2. Cost of closing down is estimated to be ₹ 4500. For maintenance of plant and machinery ₹ 800 per annum are spent.
3. Cost of reopening is ₹ 2000 for overhauling of machines and getting ready and ₹ 1400 for training of personnel.
4. It is estimated that sales should take an upward swing at around 70% capacity at prices which would produce revenue of ₹ 1,00,000 in approximately twelve months' time.

Advise to close down and temporarily or continue operations indefinitely.

Solution:

Statement of Profit (loss)

Particulars	Percentage	Capacity	Level
Sales	0	50	70
Costs	Nil	30,000	1,00,000
Variable costs	Nil	33,000	47,000
Fixed costs	15,000	21,000	21,000

(a) 150 units of X and 250 units of Y

For Product X: 150 units X 3	450
For Product Y: 250 units X 6	<u>1500</u>
	1950
Less Fixed overheads	<u>950</u>
Profit	<u>1000</u>

(b) 400 units of Y only

Contribution 400 X 6	2400
Less Fixed overheads	<u>950</u>
	<u>1450</u>

(c) 400 units of X and 100 units of Y

Product X: 400 X 3	1200
Product Y: 100 X 6	<u>600</u>
	1800
Less Fixed overheads	<u>950</u>
	<u>850</u>

Thus out of above (b) is the best alternative because it gives the maximum profit of 1450.

6.14 DIFFERENTIAL COSTS AND REVENUES

Differential revenues and costs (also called relevant revenues and costs or incremental revenues and costs) represent the difference in revenues and costs among alternative courses of action. Analyzing this difference is called differential analysis. Differential analysis is useful in making managerial decisions related to making or buying products, keeping or dropping product lines, keeping or dropping customers, and accepting or rejecting special customer orders.

Differential costs are often confused with marginal costs. The main reason behind such confusion is due to the fact that both (marginal costing as well as differential cost analysis) the techniques are based on the same concept of costs—variable and fixed. But ‘differential cost analysis’ is a broader concept and it is more fundamental concept than the marginal cost. Differential costs deal with all the costs—variable and fixed. It is the change in the total costs associated with each alternative.

Differential cost is a broader and more fundamental concept than marginal cost. Differential costs are all the costs and only the costs that change as the result of a specific decision. In other words, it is the change in total cost associated with each alternative. In the language of the AAA Committee on cost concepts and standards “it is the increase or decrease in total costs, or the changes in specific elements of cost that result from any variation in operations. As far as nature and variability are concerned, it includes variable and fixed costs if the project involves some expenditure of fixed nature. For example, a part is presently being purchased from a supplier for ₹ 14,000. The company is thinking of manufacturing the part and the increase or decrease in costs as a result of this decision is:

Direct material—(₹ 12,950), Conversion cost—₹ 10,250 and Specific fixed cost—₹ 2,500.

Note: Decrease in costs shown within brackets.

These increases or decreases in cost are known as differential cost.

6.15 DIFFERENTIAL COST ANALYSIS

The increase or decrease in the total costs at a particular level of activity with respect to another is referred to as differential costs. The technique employed to analyse differential cost is known as “differential cost analysis” or “differential costing”. The terminology of CIMA defines differential costing as “a technique used in the preparation of ad hoc information in which only cost and income differences between alternative courses of action are taken into consideration”.

Differential cost analysis is the comparison of the expected changes in costs and revenues pertaining to each course of action for which a decision is going to be made. It is a technique used for making a choice between competing alternatives each having its combination of costs and revenues. Thus, for instance, when two different volumes of production are under consideration, the differential cost is derived (*i.e.*, calculated) by subtracting the cost at one level of production from the cost arising at another level.

The technique ‘differential costing’ deals with the impact on costs and revenues of a proposed course of action. Differential costs arise only when an organisation is thinking of making a change in its existing business. Consequently, it can be said that this concept does not apply to a business which is expected to be set up. This is

because differential costs are future costs that arise when one alternative is selected instead of another and include variable as well as fixed costs.

6.15.1 Salient Features of Differential Cost Analysis

Some of the salient features of differential cost analysis are given below:

- In differential cost analysis, costs are usually presented on the basis of total costing technique (absorption costing).
- Variable costs are the differential costs when the additional output does not involve the additional fixed costs.
- It is used for planning and decision-making only and not incorporated in the accounting records. (Books of accounts)
- It is intended for the comparison of the expected changes in costs and revenues.
- It is applied only to the existing business and not suitable for new business set-up.
- Differential costs are future costs.
- Differential cost analysis is earned on using only relevant costs.
- It ignores the effect of residual costs.
- Its purpose is to make a choice among alternatives. That is the cause for subtracting the costs at one level from that of another.

6.16 MARGINAL COSTING VS. DIFFERENTIAL COSTING ANALYSIS

Both marginal costing as well as differential costing techniques analyse the basic behaviour of costs, that is, the fixed and variable costs. Due to this fact, both techniques are similar in some aspects and vary in some other factors. We focus on the similarities and dissimilarities between these two techniques as follows:

6.16.1 Similarities between Marginal Costing and Differential Costing

Similarities between marginal costing and differential costing are:

Cost Analysis: Both are techniques of cost analysis—that is behaviour of costs, especially fixed costs and variable costs.

- **Decision-making:** Both techniques undertake cost analysis to formulate policies and for taking decisions.
- **Uniform results:** Marginal costing as well as differential costing would provide the same results whereas the fixed costs remain unchanged for alternative course of actions.
- **Resemblance in Concept:** An economist's concept of marginal cost bears resemblance to differential cost concept.
- **Information to Management:** Besides decision-making process, both the techniques provide other related information on cost analysis to the management.

6.16.2 Differences between Marginal Costing and Differential Costing

Differences between marginal costing and differential costing are given as following:

- **Scope:** Differential costing has a wider scope. It can be successfully used for a large number of alternative proposals. On the contrary, the application of marginal costing is limited.

- **Ascertainment:** In practice, it is difficult to ascertain differential costs in a precise manner. However, marginal costs can be ascertained with ease by adding prime cost to variable overheads.
- **Period Covered:** Differential costing can be used in short, medium and long-term decision making while marginal costing is used for short-term and medium-term decision making.
- **Part of Accounting System:** Marginal costing can be incorporated into the accounting system while in the case of differential costing, accounting information is used.
- **Tools Used:** Differential costing makes use of incremental costs, incremental revenues and incremental profit as tools for decision making. However, marginal costing uses break-even analysis, PV ratio, CVP analysis as tools.
- **Compatible with Other Cost Systems:** Differential costing can be used both under marginal cost system and absorption costing system. while it is not the case with marginal costing.

6.17 APPLICATIONS OF DIFFERENTIAL COST ANALYSIS

Generally, a management may seek the assistance of differential-cost-analysis techniques for taking any valuable policy decision and planning for profit, which are as follows:

- **Acceptance of Order:** At times, a management is confronted with the problem—whether or not to accept special orders at a price below the existing price of the product. Differential cost analysis assists in deciding such actions like whether to accept or reject the order.
- **Make-or-buy Decisions:** The other problem that frequently daunts the management is whether it is more profitable to make or buy the component parts. This can be solved by applying differential cost analysis.
- **Further Process Decision:** Some of the products (semi-finished products) may attain a consumable stage. At this stage, the management may not be able to decide on the issue whether the product can be sold in that semi-finished stage itself or to process them further, differential cost analysis will provide a suitable solution for this.
- **Pricing Decisions:** Proper pricing of products is necessary. Interplay of factors—cost and revenue—can be analyzed best by this technique.
- **Operation vs. Shut-down Decisions:** At times of economic recession, many managers may be in a dilemma whether to run the production continuously or shut down temporarily till the economic scenario improves. Proper differential cost analysis will provide an apt decision whether to operate or shut the plant.
- **Sales Policies:** Differential cost analysis assists in arriving at a decision with respect to the following:
 - ❖ Introduction of a new product.
 - ❖ Expansion of selling activities geographically.
 - ❖ Sales promotion activities, etc.
- **Volume of Production:** Differential cost analysis is helpful in deciding the volume of production upon which a maximum profit can be earned.

6.18 TYPES OF CHOICE DECISIONS

Most management decisions may be referred to as alternative choice decisions. Alternative choice decisions cover situations with two or more alternative courses of action from which the manager (decision maker) must select the best alternative. A decision involving more than two alternatives is called a multiple alternative choice decision. Some examples of alternative choice decisions are: make or buy, own or lease, retain or replace, repair or renovate, now or later, change versus status quo, slower or faster, export versus local sales, shutdown or continue, expand or contract, change the produce-mix, take or refuse orders, place special orders, select sales territories, replace present equipment with new machinery, sell at split-up point or process further, etc.

Some of the above alternative choices decisions and the information relevant to the decisions are discussed below:

6.18.1 Lease or Sell

Management may have a choice between leasing or selling a piece of equipment that is no longer needed in the business. The relevant factors to be considered are the differential revenues and differential costs associated with the lease or sell decision.

Example: A corporation can sell an asset for ₹200,000 less a 6% selling commission. An alternative would be to lease the asset for five years at ₹40,000 per year less ₹35,000 in costs over the five years. Which decision would you make?

Differential Revenue from alternatives		
Revenue from selling	₹ 200,000	
Revenue from leasing	₹ 200,000	
Differential Revenue		₹ 0
Differential cost of alternatives		
Cost of selling, Commissions 6% of sales price	₹ 12,000	
Cost of leasing operating costs	₹ 35,000	
Differential cost		-₹ 23,000
Net differential loss from leasing		-₹ 23,000

Therefore we should sell the asset and save ₹ 23,000 in additional costs.

6.18.2 Discontinue a Segment or Product

When a product or a department, branch, territory, or other segment of a business is generating losses, the management may consider eliminating the product or segment. It is often assumed, sometimes in error, that the total income from operations of a business would be increased if the operating loss could be eliminated. Discontinuing the product or segment usually eliminates all of the product or segment's variable costs. However, if the product or segment is a relatively small part of the business, discontinuing it may not decrease the fixed costs.

If contribution margin > 0 then continue production.

Example:

	Shampoo	Conditioner	Lotion	Total
Sales	₹ 500,000	₹ 400,000	₹ 100,000	₹ 1,000,000
Cost of goods sold				
Variable	₹ 220,000	₹ 200,000	₹ 60,000	₹ 480,000
Fixed	₹ 120,000	₹ 80,000	₹ 20,000	₹ 220,000
Total CGS	₹ 340,000	₹ 280,000	₹ 80,000	₹ 700,000
Gross profit	₹ 160,000	₹ 120,000	₹ 20,000	₹ 300,000
Operating expenses				
Variable	₹ 95,000	₹ 60,000	₹ 25,000	₹ 180,000
Fixed	₹ 25,000	₹ 20,000	₹ 6,000	₹ 51,000
Total	₹ 120,000	₹ 80,000	₹ 31,000	₹ 231,000
Income	₹ 40,000	₹ 40,000	₹ (11,000)	₹ 69,000

Should we discontinue the production of Lotion?

Sales	₹ 100,000
Variable cost of goods sold	₹ 60,000
Manufacturing margin	₹ 40,000
Variable operating expenses	₹ 25,000
Contribution Margin	₹ 15,000

Since contribution margin is positive, we continue production of the product.

6.18.3 Make or Buy

The assembly of many parts is often a major element in manufacturing some products, such as autos. The product's manufacturer may make these parts or they may be purchased. Management uses differential costs to decide whether to make or buy a part. Only variable costs are considered. Must have unused capacity in the factory.

The firms which are routinely in need of spares, accessories are bought from the outsiders instead of any production or manufacturing, though the requirement is at regular intervals. Most of the automobile manufacturers are usually buying the components from outside instead of producing them on their own. The Maruthi Udyog Ltd. had given a contract to the Nettur Technical Training Foundation, Bengaluru to design the tool for the panel and to manufacture regularly to the tune of the orders.

The leading four wheelers manufacturer in India is buying the panel from the NTTTF on contract basis instead of manufacturing.

Example: A factory has unused capacity and is considering the production of a part for its product. The cost of making a part is direct materials ₹ 80, direct labour ₹ 75, variable factory overhead ₹52 and fixed factory overhead ₹ 68. The cost of purchasing the product is ₹ 240 a unit. Should we make or buy?

Solution: Does it have unused capacity? Yes

Total variable costs of production:

Direct materials	₹ 80.00
Direct labour	₹ 75.00
Variable factory overhead	₹ 52.00
Total variable costs	₹ 202.00
Total cost of purchasing	₹ 240.00

Since it is cheaper to produce than buy, we will produce and save ₹ 38 per unit.

6.18.4 Replace Equipment

The usefulness of fixed assets may be reduced long before they are considered to be worn out. Equipment may no longer be efficient for the purposes for which it is used. On the other hand, the equipment may not have reached the point of complete inadequacy. Decisions to replace usable fixed assets should be based on relevant costs. The relevant costs are the future costs of continuing to use the equipment versus replacement. The book values of the fixed assets being replaced are sunk costs and are irrelevant.

Example: The business is considering the disposal of a machine with book value of ₹100,000 and an estimated remaining life of five years. The old machine can be sold for ₹25,000. The new machine has a cost of ₹ 250,000. The new machine would have a life of five years and no residual value. Analysis indicates that the estimated annual reduction in variable manufacturing costs from ₹225,000 with the old machine to ₹150,000 per year with the new machine. Should we buy the new machine?

Solution:

Sales price of old		₹ 25,000
Cost savings:		
Old machine	₹ 225,000	
New machine	₹ 150,000	
Savings per year	₹ 75,000	
X five years	X 5 years	₹ 375,000
Total savings		₹ 400,000
Cost of new machine		₹ 250,000
Differential income		₹ 150,000

We should sell the old machine since the savings from the new machine does outweigh the costs.

6.18.5 Process or Sell

When a product is manufactured, it progresses through various stages of production. Often a product can be sold at an intermediate stage of production, or it can be processed further and then sold. Only process further if the revenue is greater than the total costs of production.

Example: Assume that a business produces kerosene in batches of 4,000 gallons. Standard quantities of 4,000 gallons of direct materials are processed which cost ₹ 0.60 per gallon. Kerosene can be sold without further processing for ₹ 0.80 per gallon. It can be processed further to yield gasoline, which can be sold for ₹ 1.25 per gallon. Gasoline requires additional processing costs of ₹ 650 per batch and 20% of the gallons of kerosene will evaporate during production. Should we sell or process further?

Solution:

Kerosene		
Sales: 4,000g x ₹ 0.80		₹ 3,600
Costs of production:		₹ 2,400
4,000g x ₹ 0.60		
Revenue from sales of kerosene		₹ 800
Gasoline		
Sales: 3,200g* x ₹ 1.25		₹ 4,000

Contd...

Cost of production:		
Kerosene	₹ 2,400	
Gasoline	₹ 650	
Total costs of production		₹ 3,050
Revenue from sales of gasoline		₹ 950

Since the revenue from sales of kerosene is less than revenue from sale of gasoline, then gasoline will be produced.

6.18.6 Accept Businesses at a Special Price

Differential analysis is also useful in deciding whether to accept additional business at a special price. The differential revenue that would be provided from the additional business is compared to the differential costs of producing and delivering the product to the customer. If the company is operating at full capacity, any additional production will increase both fixed costs and variable. However, the normal production of the company is below full capacity, additional business may be undertaken without increasing fixed production costs. Only view variable costs.

Example: Assume that the monthly capacity is 12,500 units. Current sales and production are 10,000 units. The current manufacturing costs are ₹ 20 per unit with fixed costs of ₹ 7.50. The normal selling price of the product is ₹ 30. The manufacturer receives from an exporter an offer for 5,000 units at ₹ 18 per unit. The production can be spread over three months. Should we accept the special offer?

Do we have unused capacity?

Solution: Yes, capacity is 12,500 units and we are producing 10,000 units. So we can produce an additional 2,500 units per month. The order is 5,000 units over 3 months and that is feasible.

Costs of production	₹ 20.00
Less fixed costs	₹ 7.50
Variable costs of production	₹ 12.50
Special offer	₹ 18.00
Revenue from special offer	₹ 5.50

Since revenue from special offer is positive, we should take the offer.

6.18.7 Setting Normal Product Selling Prices

Differential analysis may be useful in deciding to lower selling prices for special short run decisions, such as whether to accept business at a price lower than the normal price. The normal selling price must be set high enough to cover all costs and expenses and provide a reasonable profit. The normal selling price can be viewed as the targeted selling price to be achieved in the long run. The basic approaches to setting this price are as follows:

Market Methods	Cost plus Methods
Demand based	Total cost concept
Competition based	Product cost concept
	Variable cost concept

Managers using the market methods refer to the external market to determine the price.

Demand based methods set the price according to the demand for the product.

If there is high demand for the product, then the price may be set high, while the lower demand may require the price to be set low.

Managers use the cost plus methods price of the product in order to achieve a target profit.

Managers add to the cost an amount called MARKUP.

6.18.8 Worth of Production

Cost of the production < Price of the product available in the market

The firm is better advised to take the course of production rather than purchase of the product.

6.18.9 Worth of Purchase

Cost of the production > Price of the product available in the market

The product available in the market is same cheaper than the manufacturing of a product. The firm is better advised to buy the product rather than the manufacturing of the product. If the product price comes down to the price of ₹ 16, facilitates the firm to save Re 1 from the cost of manufacturing.

Example: A refrigerator manufacturer purchases a certain component @ ₹ 50 per unit. If he manufactures the same product he has to incur a fixed cost of ₹ 20,000 and variable cost per unit is ₹ 40, when can the manufacturer make on his own or when he can buy from outside?

When the requirements are ₹ 5,000 units, will you advise to make or buy?

Solution: The very first point to be found is that Break-even point in units.

The break-even point is determined in units at which the cost of buying is equivalent to the cost of manufacturing.

The cost of purchase per unit is ₹ 50.

If the same product is manufactured, what would be the total cost of manufacture?

Total cost of manufacture = Total fixed cost + Variable cost

The cost of buying is felt that an exorbitant one than the cost of manufacturing. Having observed, as a manufacturer undergoes for the manufacturer of a component. If he manufactures a component, he could save ₹ 10 (₹ 50 – ₹ 40), which in other words known as contribution per unit.

Before finding out the Break-even point in units, the contribution of the product should be found out.

Contribution margin per unit = Selling price in the market – Cost of manufacture

Contribution margin per unit is nothing but the amount of savings to the manufacture.

Amount of savings out of the manufacture = Purchase price – Variable cost

Though the firm enjoys savings, it is required to additionally incur fixed cost of operations ₹ 20,000.

$$\text{Break-even point in units} = \frac{\text{Fixed cost}}{\text{Purchase price} - \text{Variable cost}}$$

At 2,000 units, the firm considers both alternatives are incurring equivalent volume of Cost in manufacturing.

Cost of buying for 2,000 units
 = 2,000 units × ₹ 50 per unit = ₹ 1,00,000

Cost of Buying
 = ₹ 20,000 + 2,000 units × ₹ 40 = ₹ 1,00,000

} Break even in Rupees

From the above, it is obviously understood that both are bearing equivalent amount of costs. It means none is profitable or non-profitable.

Which one is better for the firm?

No. of Units	Manufacturing cost	Buying cost	Decision
@ 2,001 units	₹ 20,000 + ₹ 80,0040 = ₹ 1,00,040	2001 × ₹ 50 = ₹ 1,00,050	Manufacturing cost < Buying cost Advisable to manufacture
@ 1,999 units	₹ 20,000 + ₹ 79,960 = ₹ 99,960	1,999 × ₹ 50 ₹ 99,950	Manufacturing cost > Buying cost Advisable to Buy

The next step is to identify the worth of either manufacturing the units or buying the units at 5,000.

If the manufacturer buys from the outsiders = 5,000 × ₹ 50 = ₹ 2,50,000

If the same manufacturer produces the component instead of buying

= ₹ 20,000 + ₹ 2,00,000 = ₹ 2,20,000

From the above, the company is finally advised to manufacture the component due to low cost of manufacture.

6.19 DETERMINATION OF SALES VOLUME IN RUPEES AT DESIRED LEVEL OF PROFIT

To determine the sales volume (Rupees) at desired level of profit, the existing formula for finding out the break even sales has to be redesigned.

$$\text{Break Even Sales (Rupees)} = \frac{\text{Fixed Cost}}{\text{PV ratio}}$$

The above formula is in accordance with the method of coverage i.e. covering the fixed cost and profit.

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

To earn desired level of profit, which the firm intends to earn should have to be combined with the fixed cost, are the two different components to be covered only in order to find out the contribution level to the tune of unchanged selling price and variable cost per unit.

$$\text{New volume of Sales (Rupees)} = \frac{\text{Fixed Cost} + \text{Desired Level Profit}}{\text{PV ratio}}$$

Example: From the following information relating to Quick Standards Ltd., you are required to find out (i) PV ratio (ii) break-even point (iii) margin of safety. Calculate the volume of sales to earn profit of ₹ 6,000.

Total Fixed Costs	₹ 4,500
Total Variable Cost	₹ 7,500
Total Sales	₹ 15,000

Solution: First step to find out the Contribution volume

Sales	₹ 15,000
Variable Cost	₹ 7,500
Contribution	₹ 7,500
Fixed Cost	₹ 4,500
Profit	₹ 3,000

(i) Second step to determine the PV ratio

$$\text{PV ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{7,500}{15,000} \times 100 = 50\%$$

Third step to find out the Break even sales

$$(ii) \text{ Break even sales} = \frac{\text{Fixed cost}}{\text{PV ratio}} = \frac{4,500}{50\%} = 9,000$$

(iii) Margin of safety can be found out in two ways

$$(a) \text{ Margin of Safety} = \text{Actual sales} - \text{Break even sales} \\ = ₹ 15,000 - ₹ 9,000 = ₹ 6,000$$

$$(b) \text{ Margin of Safety} = \frac{\text{Profit}}{\text{PV ratio}} = \frac{₹ 3,000}{50\%} = ₹ 6,000$$

(iv) Sales required to earn profit = ₹ 6,000

To determine the sales volume to earn desired level of profit

$$= \frac{\text{Fixed cost} + \text{Desired Profit}}{\text{PV ratio}} \\ = \frac{₹ 4,500 + ₹ 6,000}{50\%} = ₹ 21,000$$

Example:

Break even sales	₹ 1,60,000
Sales for the year 1987	₹ 2,00,000
Profit for the year 1987	₹ 12,000

Calculate:

(a) Profit or loss on a sale value of ₹ 3,00,000

(b) During 1988, it is expected that selling price will be reduced by 10%. What should be the sale if the company desires to earn the same amount of profit as in 1987?

Solution: The major aim is to compute fixed expenses.

In this problem, the profit volume is given which amounted ₹ 12,000.

Profit = contribution – Fixed expenses

From the above equation, the volume of contribution only is to be found out.

To find out the volume of contribution, the PV ratio has to be found out.

Before finding out the PV ratio, the margin of safety should be found out.

Margin of safety = Actual sales – Break even sales

$$= ₹ 2,00,000 - ₹ 1,60,000 = ₹ 40,000$$

Another formula for to find out the Margin of safety is as follows:

$$\text{Margin of safety} = \frac{\text{Profit}}{\text{PV ratio}}$$

$$\text{PV ratio} = \frac{\text{Profit}}{\text{Margin of safety}} = \frac{\text{₹ 12,000}}{\text{₹ 40,000}} = 30\%$$

What is PV ratio?

$$\text{PV ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100$$

$$30\% = \frac{\text{Contribution}}{\text{₹ 2,00,000}}$$

$$\text{Contribution} = \text{₹ 2,00,000} \times 30\% = \text{₹ 60,000}$$

Now with the help of the available information, the fixed expenses are to be found out from the illustrated formula

$$\text{Fixed expenses} = \text{Contribution} - \text{Profit} = \text{₹ 60,000} - \text{₹ 12,000} = \text{₹ 48,000}$$

The next one is to find out the corresponding variable cost. The variable cost could be found out with the help of the following formula:

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

$$\text{₹ 2,00,000} - \text{₹ 60,000} = \text{Variable cost} = \text{₹ 1,40,000}$$

(a) Profit or loss on the sale value of ₹ 3,00,000

For a sale value of ₹ 3,00,000 what is the contribution ?

$$\text{Contribution for ₹ 3,00,000 sale} = \text{₹ 3,00,000} \times 30\% = \text{₹ 90,000}$$

$$\begin{aligned} \text{Profit or Loss} &= \text{Contribution} - \text{Fixed expenses} \\ &= \text{₹ 90,000} - \text{₹ 48,000} = \text{₹ 42,000 (Profit)} \end{aligned}$$

(b) Sales to be found out to earn same level of profit

Sale value reduced 10% from the actual

$$\text{₹ 2,00,000} - \text{₹ 20,000} = \text{₹ 1,80,000}$$

$$\text{Variable cost} = \text{₹ 1,40,000}$$

$$\text{Contribution} = \text{₹ 40,000}$$

For the new level of sale volume in rupees, the new PV ratio has to be found out

$$\text{PV ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{\text{₹ 40,000}}{\text{₹ 1,80,000}} \times 100 = 2/9 \text{ times}$$

The next important step is to determine the volume of the sales to earn the desired level of profit

$$= \frac{\text{Fixed expenses} + \text{Desired level profit}}{\text{PV ratio}}$$

$$= \frac{\text{₹ 48,000} + \text{₹ 12,000}}{2/9}$$

$$= \text{₹ 2,70,000}$$

Example: SV Ltd., a multi-product company, furnishes you the following data relating to the year 1979:

Particulars	First half of the year	Second half of the year
Sales	₹ 45,000	₹ 50,000
Total cost	₹ 40,000	₹ 43,000

Assuming that there is no change in prices and variable costs that the fixed expenses are incurred equally in the two half year periods, calculated for the year 1979. Calculate the following:

- (a) PV ratio
- (b) Fixed expenses
- (c) Break even sales
- (d) Margin of safety

Solution: (a) The first step is to find out the PV ratio

$$\text{Formula for PV ratio} = \frac{\text{Change in Profit}}{\text{Change in Sales}} \times 100$$

To identify the change in profit, the profits of the two different periods should be known

$$\text{Profit} = \text{Sales} - \text{Total cost}$$

$$\text{Profit of the first half of the year} = ₹ 45,000 - ₹ 40,000 = ₹ 5,000$$

$$\text{Profit of the second half of the year} = ₹ 50,000 - ₹ 43,000 = ₹ 7,000$$

$$\text{Change in profit} = ₹ 7,000 - ₹ 5,000 = ₹ 2,000$$

$$\text{Change in sales} = ₹ 50,000 - ₹ 45,000 = ₹ 5,000$$

$$\text{PV ratio} = \frac{₹ 2,000}{₹ 5,000} \times 100 = 40\%$$

- (b) Fixed expenses, to find out the contribution should be initially found out

$$\begin{aligned} \text{Contribution} &= \text{Sales} \times \text{PV ratio} \\ &= ₹ 50,000 \times 40\% = ₹ 20,000 \end{aligned}$$

The fixed expenses to be found out through the following equation:

$$\begin{aligned} \text{Contribution} - \text{Fixed expenses} &= \text{Profit} \\ ₹ 20,000 - ₹ 7,000 &= ₹ 13,000 = \text{Fixed expenses} \end{aligned}$$

$$\begin{aligned} \text{The fixed expenses found only for six months; for the entire year} \\ &= ₹ 13,000 \times 2 = ₹ 26,000 \end{aligned}$$

- (c) BE Sales

$$= \frac{\text{Fixed expenses}}{\text{PV ratio}} = \frac{₹ 26,000}{40\%} = ₹ 65,000$$

- (d) Margin of safety = Total sales – BE sales

The next component to be found out is total sales

$$\begin{aligned} \text{Total sales} &= \text{Sale of the first half of the year} \\ &+ \text{Sale of the second half of the year} \\ &= ₹ 45,000 + ₹ 50,000 = ₹ 95,000 \end{aligned}$$

$$\text{Margin of safety} = ₹ 95,000 - ₹ 65,000 = ₹ 30,000$$

$$\text{Margin of safety in percentage of sales} = \frac{₹ 30,000}{₹ 95,000} \times 100 = 31.578\%$$

6.20 ACCEPTING THE EXPORT OFFER

Example:

The cost statement of a product is furnished below:

Direct material	₹ 10.00	
Direct wages	₹ 6.00	
<u>Factory overhead</u>		
Fixed	₹ 1.00	
Variable	<u>₹ 1.00</u>	₹ 2.00
Administrative expenses	₹ 1.50	
<u>Selling or distribution overheads</u>		
Fixed	₹ 0.50	
Variable	<u>₹ 1.00</u>	
		<u>₹ 1.50</u>
Selling price per unit	₹ 24.00	₹ 21.00

The above figures are for an output of 50,000 units. The capacity for the firm is 65,000 units. A foreign customer is desirous of buying 15,000 units a price of ₹ 20 per unit.

Advise the manufacturer whether the order should be accepted, what will be your advice if the order were from the local merchant?

Solution: The acceptance of the order is mainly based on the two important covenants viz. Additional cost and Additional revenue.

If the additional demand of the foreign buyer is able to generate the additional revenue more than the additional cost of the operations, the firm should have to accept the foreign order.

Decision criteria

Marginal/Additional cost for the additional order of 15,000 units

		Per unit (₹)	15,000 units
Selling price		20	3,00,000
Less: Marginal cost ₹			
Direct material	10.00		
Direct wages	6.00		
Variable overhead			
Factory	1.00		
Selling & Distribution	1.00	18	2,70,000
		2	30,000

The acceptance of the order will generate marginal profit of ₹ 30,000 which should be accepted. The fixed portion of the factory and selling overheads were already met out which should not be included again in the computation of the marginal or additional cost of the foreign order placed by the business enterprise.

Instead, if the firm accepts the local order at the rate of ₹ 20; which automatically will spoil the relationship with the loyal customers who regularly purchase at the rate of ₹ 24. This will lead to cannibalization of the existing pricing strategy.

6.21 KEY FACTOR

Key factor is nothing but a limiting factor or deterring factor on sales volume, production, labour, materials and so on.

The limiting factor normally differs from one to another.

Volume of sales: the limiting factor is that production of required number of articles.

Volume of production: the limiting factors are as follows in adequate supply of raw materials, labour, inability to sell the produced articles and so on.

The limiting factors are studied in the lights of the contribution. The limiting factor is bearing the inverse relationship with the volume of contribution. To study the worth of the business proposals among the limiting factors, the contribution is considered as a parameter to rank them one after another.

Example: From the following data, which product would you recommend to be manufactured in a factory, time being the key factor?

Particulars	Per unit of Product A ₹	Per unit of Product B ₹
Direct Material	24	14
Direct Labour (at ₹ 1 per hr)	2	3
Variable overhead ₹ 2 per hr	4	6
Selling price	100	110
Standard time to produce	2 Hours	3 Hours

Solution: The product is being chosen by the manufacturer based on the ability of generating higher contribution. The higher contribution leads to a better the position for the firm. The worth of the product is being selected on the basis of following:

Particulars	Per unit of Product A ₹		Per unit of Product B ₹	
Selling price		100		110
Less: Direct Material	24		14	
Direct Labour (at ₹ 1 per hr)	2		3	
Variable overhead ₹ 2 per hr	4	30	6	23
Contribution	70		87	
Standard time to produce	2 Hours		3 Hours	
Contribution per hour per product	₹ 70/2 Hrs = ₹ 35		₹ 87/3 Hrs = ₹ 29	

From the above calculation, it is obviously understood that the firm is having higher contribution margin per hour in the case of product A over the other one, portrays the product A is better than B.

Example: The following particulars are obtained from costing records of a factory:

Particulars	Per unit of Product A ₹	Per unit of Product B ₹
Direct Material ₹ 20 per Kg	80	320
Direct Labour (at ₹ 10 per hr)	100	200
Variable overhead	40	80
Selling price	400	1,000
Total fixed overheads	₹ 30,000	

Comment on the profitability of each product during the following conditions:

- (a) Inadequate supply of raw material
- (b) Production capacity is limited
- (c) Sales quantity is limited
- (d) Sales value is limited

Solution: The first step is to determine the contribution per product.

According to the constraints given in the problem, contribution of two products should be compared.

Particulars	Per unit of Product A ₹		Per unit of Product B ₹	
Selling price		400		1,000
Direct Material ₹ 20 per Kg	80		320	
Direct Labor @ ₹ 10 per hr	100		200	
Variable overhead	40	220	80	600
Contribution margin per unit	180		400	

Now the contribution per unit has found out with the help of above given information the next step is to study the contribution margin per unit to the tune of given constraints of the firm.

1. The first constraint is inadequate supply of the raw material. The raw materials are considered to be precious due to insufficient supply to the requirement of the firm. Having considered the scarcity of the raw material, the constraint in availing the raw material is denominated in terms of ability of contribution generation.

Particulars	Per unit of Product A ₹	Per unit of Product B ₹
Contribution margin per unit	180	400
Consumption of raw material per unit		
<u>Cost of raw material per unit</u>	₹ 80 = 4 Kgs	₹ 320 = 16 Kgs
Cost of material per Kg	₹ 20	₹ 20
Contribution per Kg	₹ 180 = ₹ 45 4 Kgs	₹ 400 = ₹ 25 16 Kgs

It obviously understood that the firm enjoys greater contribution margin per k.g. in the case of Product A during the scarcity of raw material than the product B.

2. Then the production capacity of the firm is subject to the availability of the labour and the hours normally consumed by them for the production of a single product. Due to shortage of the labour, the firm should identify the product which requires lesser labour hours as well as able to generate more contribution margin per labour hour.

In the next step, Contribution margin per hour should be calculated.

Particulars	Per unit of Product A ₹	Per unit of Product B ₹
Contribution margin per unit	180	400
Consumption of Labour Hrs		
<u>Cost of Labour per unit</u>		
Cost of Labour per Hour	₹ 100 = 10 Hrs ₹ 10	₹ 200 = 20 Hrs ₹ 10
Contribution per Hr of the product	₹ 180 = ₹ 18 10 Hrs	₹ 400 = ₹ 20 20 Hrs

The contribution per hour is greater in the case of the product B, considered to be as a better product among the given. It means that the firm has better opportunity to earn greater contribution in the case of product B than A.

3. The next one is that sale of the quantities is the major limiting factor. It means that the vendor finds somewhat difficulties in selling the articles. While considering the difficulties in selling the quantities, the firm should identify the product which is able to generate greater contribution.

From the earlier calculation, it is clearly understood that, the product B is bearing greater value of contribution margin per unit than the product.

4. If the sales value is considered to be a limiting factor, to choose one among the given products PV ratio is being applied as a measure. It means that the sales value of the products is ignored for comparison in between them. To identify the better product, irrespective of the price, PV ratio should be applied. The PV ratio of the Product A & B is calculated as follows:

$$\text{Profit volume ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100$$

For A = 45%

For B = 40%

The PV ratio is greater in the case of product A than B. The product A has to be chosen.

6.22 SELECTING THE SUITABLE PRODUCT MIX

In the market, dealership is offered by the various companies to the individual intermediaries in promoting the sale of products. Before reaching an agreement with the company to act as a dealer, normally every individual considers the profitability of the product mix offered by the firm. For example, there are two different companies brought forth their advertisements in offering the dealership to the individual trading firms viz. HCL and IBM.

The profitability under the dealership banner should be appropriately considered prior to take decision. To take rational decision, the firm should compare the profitability of both different dealerships of two different giant industrial brands. The greater share of the profitability in volume will be selected and vice versa.

Example: Following information has been extracted of EXCEL Rubber Products Ltd.

Direct materials A	₹ 16
Direct materials B	₹ 12
Direct wages A	24 Hrs at 50 paise per hour
Direct wages B	16 Hrs at 50 paise per hour
Variable overheads	150% of wages
Fixed overheads	₹1,500
Selling price A	₹ 50
Selling price B	₹ 40

The directors want to be acquainted with the desirability of adopting any one of the following alternative sales mixes in the budget for the next period.

- 250 units of A and 250 units of B
- 400 units of B only
- 400 units of A and 100 units of B
- 150 units of A and 350 units of B

State which of the alternative sales mixes you would recommend to the management?

Solution: The first step is to determine the contribution margin per unit of A and B.

The determination of the contribution of product A and B are through the preparation of Marginal costing statement.

Particulars	Product A ₹		Product B ₹	
Selling price		50		40
Less: Direct Materials	16		12	
Direct wages	12		8	
Variable overheads	18		12	
Variable cost		46		32
Contribution		4		8

The next step is to determine the profit level of every mix.

(a) 250 units of A and 250 units of B

The first step is to determine the total contribution of the mix. Why the total contribution has to be found out?

The main reason is to determine the profit level of the mix through the deduction of the fixed overheads

Product of A	250 units ₹ 4 =	₹ 1,000
Product of B	250 units ₹ 8 =	<u>₹ 2,000</u>
Contribution		₹ 3,000
Fixed overheads		<u>₹ 1,500</u>
Profit		<u>₹ 1,500</u>

(b) 400 units of B only

Product B Contribution	400 units ₹ 8 =	₹ 3,200
Fixed overheads		<u>₹ 1,500</u>
Profit		<u>₹ 1,700</u>

(c) 400 units of A and 100 units of B

Product of A	400 units ₹ 4	₹ 1,600
Product of B	100 units ₹ 8	<u>₹ 800</u>
Contribution		₹ 2,400
Fixed overheads		<u>₹ 1,500</u>
Profit		<u>₹ 900</u>

(d) 150 units of A and 350 units of B

Product A	150 units ₹ 4	₹ 600
Product B	350 units ₹ 8	<u>₹ 2,800</u>
Contribution		₹ 3,400
Fixed overheads		<u>₹ 1,500</u>
Profit		<u>₹ 1,900</u>

Mix	A	B	C	D
Contribution (₹)	1,500	1,700	900	1,900

The profit level among the given various mixes, the mix (D) is able to generate highest volume of profit over the others.

6.23 DETERMINING OPTIMUM LEVEL OF OPERATIONS

Under this method, the level has to be found out which is having lesser selling price, cost of operations and greater profits known as optimum level of operations.

Example: A factory engaged in manufacturing plastic buckets is working at 40% capacity and produces 10,000 buckets per annum.

The present cost break up for bucket is as under:

Material	₹ 10
Labour	₹ 3
Overheads	₹ 5 (60% fixed)

The selling price is ₹ 20 per bucket.

If it is decided to work the factory at 50% capacity, the selling price falls by 3%. At 90% capacity the selling price falls by 5% accompanied by a similar fall in the prices of material. You are required to calculate the profit at 50% and 90% capacities and also calculate break-even point for the same capacity productions.

The very first step is to compute number of units at every level of capacity i.e. 50% and 90%.

But in this problem, 40% capacity utilization is given which amounted 10,000 units.

$$\text{For 50\%} = \frac{10,000}{40} \times 50 = 12,500 \text{ units}$$

$$\text{For 90\%} = \frac{10,000 \text{ units}}{40} \times 90 = 22,500 \text{ units}$$

The important information is that the changes taken place in the selling price of the product.

Selling price = ₹ 20 (@ 40% i.e. 10,000 units)

Selling price (@ 50% i.e. 12,500 units) = ₹ 20 - 3% on ₹ 20 = ₹ 19.40

Selling price (@ 90% i.e. 22,500 units) = ₹ 20 - 5% on ₹ 20 = ₹ 19

While preparing the marginal costing statement, the fixed cost portion should not be included for the computation of the contribution.

The next step is to prepare the marginal costing statement.

Particulars	50 % capacity (12,500 Units)		90% capacity ₹ (22,500 units)	
	Per unit ₹	Total ₹	Per unit ₹	Total ₹
Selling price	19.40	2,42,500	19.00	4,27,500
Less: Direct Materials	10	1,25,000	9.50	2,13,750
Direct wages	3	37,500	3	67,500
Variable overheads	2	25,000	2	45,000
Variable cost	15		14.50	
Contribution	4.40	55,000	4.50	1,01,250
Fixed costs		30,000		30,000
Profit		25,000		71,250

The last step is to determine that the break-even point

Particulars	50 % capacity 12,500 units	90% capacity 22,500 units
Break-even point in units	₹ 30,000	₹ 30,000
= $\frac{\text{Fixed cost}}{\text{Contribution margin per unit}}$	₹ 4.40 = 6,818 units	₹ 4.50 = 6,667 units
Break-even point in value	6,818 units × ₹ 19.40	6,667 units × ₹ 19
BEP in units × Selling price	= ₹ 1,32,269.2	= ₹ 1,26,673

6.24 ALTERNATIVE METHOD OF PRODUCTION

It is a method to identify the best method of production to generate greater contribution as well as profit. The method which is able to earn greater profit only will be considered, known as limiting factor method.

Example: Product X can be produced either by machine A or machine B. Machine A can produce 100 units of X per hour and machine B 150 units per hour. Total machine hours available during the year are 2,500. Taking into account the following data determine the method of profitable manufacture.

	Per unit of Product X	
	Machine A	Machine B
	₹	₹
Marginal Cost	5	6
Selling Price	9	9
Fixed Cost	2	2

Solution:

Profitability Statement

	Machine A	Machine B
Selling Price per unit (₹)	9	9
Less : Marginal Cost (₹)	5	6
Contributions per unit (₹)	4	3
Output per hour	100 unit	150 units
Contributions per hour (₹)	400	450
Machine Hours per year	2,500	2,500
Annual Contribution (₹)	10,00,000	11,25,000
Hence, production by machine B is more profitable.		

6.25 MARGINAL COSTING VS. ABSORPTION COSTING

Marginal costing is also termed as variable costing, a technique of costing which includes only variable manufacturing costs, in the form of direct materials, direct labour, and variable manufacturing overheads while determining the cost per unit of a product. Whereas Absorption costing is a costing technique that includes all manufacturing costs, in the form of direct materials, direct labour, and both variable and fixed manufacturing overheads, while determining the cost per unit of a product. It is also referred to as the full-cost technique.

In the costing of product/service, a marginal costing technique considers the behavioural characteristics of costs (segregations of costs into fixed and variable elements), because per unit variable cost is fixed and total costs are variable in nature, whereas total fixed costs are fixed and per unit fixed cost is variable in nature and furthermore variable costs are controllable in nature, while total fixed costs are

un-controllable in nature. Marginal costing is useful for short-term planning, control and decision-making, particularly in a business where multi-products are produced. In marginal costing technique, the contribution is calculated after deducting variable costs from sales value with reference to each product or service, in order to calculate the total contribution from all products/services which are made towards the total fixed costs incurred by the business. As the fixed costs are treated as period costs, are deducted from total contribution to arrive at net profit.

In the context of costing of a product/service, an absorption costing considers a share of all costs incurred by a business to each of its products/services. In absorption costing technique, costs are classified according to their functions. The gross profit is calculated after deducting production costs from sales and from gross profit, costs incurred in relation to other business functions are deducted to arrive at the net profit.

Absorption costing gives better information for pricing products as it includes both variable and fixed costs.

Marginal costing may lead to lower prices being offered if the firm is operating below capacity. Customers may still expect these lower prices as demand/capacity increases.

6.25.1 Profit Statements under Marginal and Absorption Costing

The net profit shown by marginal costing and absorption costing techniques may not be the same due to the different treatment of fixed manufacturing overheads. Marginal costing technique treats fixed manufacturing overheads as period costs, where as in absorption costing technique these are absorbed into the cost of goods produced and only charged against profit in the period in which those goods are sold. In absorption costing income statement, adjustment pertaining to under or over-absorption of overheads is also made to arrive at the profit.

Terms are explained as below:

Product and Period Costs:

1. **Product costs:** The costs of manufacturing the products;
2. **Period costs:** These are the costs other than product costs that are charged to, debited to, or written off to the income statement each period.

A Case Example on Marginal and Absorption Costing:

Data for a Quarter for a manufacturing company:

Level of Activity	60%	100%
Sales and Production (Units)	36,000	60,000
	₹ ('000)	₹ ('000)
Sales	432	720
Production costs (Variable and fixed)	366	510
Sales, distribution and administration costs (Variable and fixed)	126	150

The normal level of activity for the current year is 60,000 units, and fixed costs are incurred evenly throughout the year.

There were no stocks of the product at the start of the quarter, in which 16,500 units were made and 13,500 units were sold. Actual fixed costs were the same as budgeted.

Then, various calculations regarding Absorption vs. Marginal costing can be worked out as under:

	Production Costs (₹)	Sales etc. costs (₹)
Total costs of 60,000 units (fixed plus variable)	5,10,000	1,50,000
Total costs of 16,000 units (fixed plus variable)	3,66,000	1,26,000
Difference = variable costs of 24,000 units	1,44,000	24,000
Variable costs per unit	₹ 6	₹ 1
	Production Costs (₹)	Sales etc. Costs (₹)
Total costs of 60,000 units	5,10,000	1,50,000
Variable costs of 60,000 units	3,60,000	60,000
Fixed costs	1,50,000	90,000

The rate of absorption of fixed production overheads will therefore be:

$$₹ 1,50,000 \div 60,000 = ₹ 2.50 \text{ per unit.}$$

- (i) The fixed production overhead absorbed by the products would be 16,500 units produced \times ₹ 2.50 = ₹ 41,250
- (ii) Budgeted annual fixed production overhead = ₹ 1,50,000

	₹
Actual quarterly fixed production overhead = budgeted quarterly fixed production overhead (1,50,000 \div 4)	37,500
Production overhead absorbed into production [see (i) above]	41,250
Over-absorption of fixed production overhead	3,750

- (iii) (a) Profit statement for the quarter using Absorption Costing

	₹	₹	₹
Sales (13,500 \times ₹ 12)			1,62,000
Costs of production (no opening stocks)			
Value of stocks produced (16,500 \times ₹ 8.50)		1,40,250	
Less value of closing stock			
(3,000 units \times full production cost of ₹ 8.50)		(25,500)	
		1,14,750	
Sales etc. Costs			
Variable (13,500 \times ₹ 1)	13,500		
Fixed (1/4 of ₹ 90,000)	22,500		
		36,000	
Total cost of sales		1,50,750	
Less over-absorbed production overhead		3,750	
			1,47,000
Profit			15,000

- (b) Profit statement for the quarter using Marginal Costing

	₹	₹
Sales (13,500 \times ₹ 12)		1,62,000
Variable costs of production (16,500 \times ₹ 6)	99,000	
Less value of closing stocks (3,000 \times ₹ 6)	18,000	
Variable production cost of sales	81,000	
Variable sales etc. costs (13,500 \times ₹ 1)	13,500	
Total variable cost of sales (13,500 \times ₹ 7)		94,500
Contribution (13,500 \times ₹ 5)		67,500
Fixed Costs: Production	37,500	
Sales etc.	22,500	
		60,000
Profit		7,500

Conclusion: Hence, Profits as shown by Marginal and Absorption Costing techniques are not the same, due to the reasons explained above.

Check Your Progress

Fill in the blanks of the following:

1. Marginal cost is the amount by which total cost changes when there is a change in output by _____.
2. Absorption costing also known as _____.
3. The _____ expresses the relation of contribution to sales.
4. _____ is a technique of studying cost-volume-profit relationship.
5. Contribution refers to the excess of selling price over the variable cost is also known as _____.
6. The angle formed at the right side of the break-even point indicates the _____ area.

6.26 LET US SUM UP

- Marginal costing is one of the special techniques of costing used for analysis and interpreting cost data for the purpose of assessing the profitability of the products, departments and cost centres. Economists define marginal cost as the additional cost of producing one additional unit of product. This shall include an element of fixed cost also.
- Marginal cost is the amount by which total cost changes when there is a change in output by one unit. In marginal costing, only variable costs are charged to cost units. Variable cost is one which tends to vary directly with the volume of output. In marginal costing, a differentiation is made between the fixed costs elements and the variable costs elements. No other category of costs is taken into consideration. Sometimes a decision has to be made whether to manufacture a component or a product or to buy it readymade from the market. The decision to purchase it would be having taken if the price paid recovers some of the fixed expenses.
- Under marginal costing, selling price is fixed on the basis of contribution. In case of cost plus contract, it is very difficult to fix price. Cost-volume-profit analysis is a part of marginal costing. The cost-volume-profit analysis is the analysis of three variables, viz., cost, volume and profit. In cost-volume-profit analysis, an attempt is made to measure variations of various costs and profit with the volume. The element of cost can be written in the form of an equation. This equation is known as 'marginal cost equation'. The important element of the marginal cost equation is the 'contribution' factor which is resulted from the sales value after deduction of variable costs.
- The profit-volume ratio, popularly known as the P/V ratio, expresses the relation of contribution to sales. The marginal costing technique helps the management in taking decisions regarding changing the ratio of product mix which gives maximum contribution or in dropping unprofitable product line. Marginal costing technique shows the contribution of each product to fixed cost and profit. Marginal costing technique can ascertain how many units have to be sold to maintain the same level of profits. Marginal costing helps the management in measuring the performance efficiencies of a department or a product line or sales division.

- A management of any type of business organisation is confronted with the problem of making appropriate decision. "Behaviour of cost "plays a vital and crucial role in decision-making areas.
- Differential revenues and costs (also called relevant revenues and costs or incremental revenues and costs) represent the difference in revenues and costs among alternative courses of action. Differential cost is a broader and more fundamental concept than marginal cost. Differential Costs are all the costs and only the costs that change as the result of a specific decision. The increase or decrease in the total costs at a particular level of activity with respect to another is referred to as differential costs. The technique employed to analyse differential cost is known as "differential cost analysis" or "differential costing".
- Both marginal costing as well as differential costing techniques analyse the basic behaviour of costs, that is, the fixed and variable costs. Due to this fact, both techniques are similar in some aspects and vary in some other factors. Most management decisions may be referred to as alternative choice decisions. Alternative choice decisions cover situations with two or more alternative courses of action from which the manager (decision maker) must select the best alternative. A decision involving more than two alternatives is called a multiple alternative choice decision.

The limiting factor normally differs from one to another.

Volume of sales -- the limiting factor is that production of required number of articles.

In the market, dealership is offered by the various companies to the individual intermediaries in promoting the sale of products. Before reaching an agreement with the company to act as a dealer, normally every individual considers the profitability of the product mix offered by the firm.

6.27 LESSON END ACTIVITY

"Marginal costing is essentially a technique of cost analysis and cost presentation." Discuss the statement with reference to advantages and limitations of marginal costing.

6.28 KEYWORDS

Marginal Cost: The amount of any given volume of output, by which aggregate variable costs are changed if the volume of output is increased by one unit.

Marginal Costing: Marginal costing is not a special method of costing but is an application of the existing methods in such a way that costs are presented in a particular form by segregating fixed and variable costs.

Contribution: Contribution margin of a product is the difference between the selling price and its variable cost. It is obtained by subtracting marginal cost from sales revenue of a given activity. The difference between sales revenue and variable cost is called contribution since it contributes towards fixed expenses and profit of the entire business.

P/V Ratio: The profit-volume ratio is the contribution expressed as a percentage of sales.

Break-even Point: It is the level of activity at which total costs of the units equal to total revenue, leaving no profit or loss.

Break-even Chart: The breakeven chart is a graphical representation of cost volume profit relationship. It depicts the profitability/loss, breakeven of the undertaking at different levels of output.

Differential Revenue: It is the amount of increase or decrease in revenue expected from a course of action as compared with an alternative.

Differential Cost: It is the amount of increase or decrease in cost that is expected from a course of action as compared with an alternative.

Differential Income or Loss: It is the difference between the differential revenue and the differential costs.

Differential Analysis: It focuses on the effect of alternative courses of action on the relevant revenues.

6.29 QUESTIONS FOR DISCUSSION

1. What do you mean by marginal costing? Explain the main features of marginal costing.
2. Discuss the meaning, advantages and disadvantages of marginal costing.
3. Distinguish between marginal costing and absorption costing.
4. What do you mean by break-even analysis? What are its assumptions?
5. Briefly explain the term "Break-even point" and give its uses. How can the break-even point be computed?
6. Explain the following terms:
(a) Contribution, (b) P/V Ratio, (c) Break-even point, (d) Margin of safety, (e) Angle of incidence.
7. From the following figures, you are required to calculate:
(a) P/V ratio, (b) Break-even sales volume, (c) Margin of safety, and (d) Profit.
Sales ₹ 4,000; Variable cost ₹ 2,000; Fixed cost ₹ 1,600
8. Given:
Fixed cost ₹ 8,000
Break-even units 4,000
Sales (units) 6,000
Selling price ₹ 10 per unit
You are required to work out: (a) variable cost per unit, and (b) profit.
9. From the following data, you are required to calculate:
(a) Profit, (b) P/V Ratio, (c) Break-even units, and (d) Break-even sales volume.
Production/Sales 200 units @ ₹ 20 per unit,
Variable cost @ ₹ 10 per unit, and
Fixed cost ₹ 800
10. Define differential cost and revenues.
11. List out the features of differential cost analysis.
12. Elucidate the various similarities between marginal costing and differential costing.
13. Write brief notes on applications of differential cost analysis.
14. Distinguish between the marginal costing and differential costing.

15. List out the types of choice decisions taken with the help of differential analysis.
16. Write about the make or buy decision under differential analysis.
17. Write briefly on adding or dropping a product.
18. Elucidate the key factor analysis.

Check Your Progress: Model Answer

1. One unit
2. Full costing
3. Profit-volume ratio
4. Break-even analysis
5. Gross margin
6. Profit

6.30 SUGGESTED READINGS

Charles T. Horngren, *Introduction to Management Accounting*, Prentice Hall, Englewood Cliff, New Jersey 07632.

Ray H. Garrison, *Managerial Accounting*, Homewood, Illinois 60435.

Robert S. Kaplan and Anthony A. Atkinson, *Advanced Management Accounting*, (Prentice Hall, Englewood Cliff, New Jersey 07632).

Dr. S. N. Maheshwari, *Management Accounting for Bankers*, Sultan Chand & Sons, New Delhi: 110002.

N. K. Kulshrestha, *Management Accounting Concepts & Cases*, Tata McGraw Hill Publishing Co. Ltd., New Delhi.

K.S. Thakur, *Cost Accounting Theory and Practice*. Excel Books, 2009.

Pradip Kumar Sinha, *Accounting and Costing for Management*, Excel books, 2010.

UNIT V

LESSON

7

BUDGET AND BUDGETARY CONTROL

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Contd...

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7.0 AIMS AND OBJECTIVES

After studying this lesson, you should be able to:

- Understand the meaning of Budget, Budgeting and Budget Manual
- Discuss the nature or characteristics of budget
- Describe the objectives, advantages and limitations of Budgetary control
- Discuss essentials of effective budgeting
- Explain various kinds of Budget

7.1 INTRODUCTION

"Every business, no matter how small, needs a budget. Without a budget, it is like a ship without a course, cruising along blissfully unaware of how far off the best route is or which rocks it hits next; only sheer luck can save it from misfortune and misadventure"

M.A. Pitcher – Management Accounting for the Lending Banker

The above quotation stresses the need for a "budget" in a business enterprise. Every business activity for one specific period has to be planned, and controlled. There are several control techniques adapted to control the business operations, Budget is one such control technique, which is gainfully employed in many business enterprises.

7.2 MEANING OF BUDGET

The term 'budget' appears to have been derived from the French word "bougette" which means a leather bag or a receptacle of documents and accounts in which funds are appropriated for meeting anticipated expenses. But in business, a budget is an expression of a firm's plan, policies and programmes in the form of a numerical statement for a definite period of time in future. It is a plan laying down the targets to be achieved within a specified period. It anticipates income for a given period as well as estimates cost and expenses of obtaining the income with the object of earning a desired profit or as an aid in controlling losses. It puts in black and white quantitative plans to co-ordinate and controls the use of resources for a specified period. Welsch who uses "Budgeting" and "Profit Planning and Control" in the same sense, says, "The budget or profit plan is a formal quantitative statement of management plans and policies for a given period and is used as a guide or blueprint in that period." Truly speaking, a budget is a standard with which to measure the actual achievements of departments, departmental heads and the business as a whole. As the budget is

prepared for a business unit, hence, it is called "business budget". A few important definitions of budget are given below:

"A budget is a pre-determined statement of management policy during a given period which provides a standard for comparison with the results actually achieved "

—Brown and Howard

"A budget is an estimate of future needs arranged according to an orderly basis covering some or all activities of an enterprise for a definite period of time "

—George R. Terry

"A budget is a comprehensive and coordinated plan, expressed in financial terms, for the operations and resources of an enterprise for some period in the future."

—Fremgen James

According to ICMA, England, a budget is, *"a financial and/or quantitative statement, prepared and approved prior to a defined period of time, of the policy to be pursued during the period for the purpose of attaining a given objective"*.

In his book *"A Dictionary for Accountants"*, Kohler defines budget as:

- Any financial plan serving as an estimate of and a control over future operations.
- Hence, any estimate of future costs.
- Any systematic plan for the utilisation of manpower, material or other resources.

The Chartered Institute of Management Accountants, London, (terminology) defines a budget as *"a plan expressed in money. It is prepared and approved prior to the budget period and may show income, expenditure and the capital to be employed. It may be drawn up showing incremental effects on former budgeted or actual figures, or be compiled by zero-based budgeting."* A budget thus is a precise statement of the financial and quantitative implications of the course of action that management has decided to follow in the immediate next period of time (usually a year).

It is also defined as, *"a blueprint of a projected plan of action of a business for a definite period of time"*.

7.3 NATURE OR CHARACTERISTICS OF BUDGET

On analysis the aforesaid definition of budget, the following characteristics are identified:

1. **Comprehensive and Integrated Plan:** A budget is the plan of a firm's expectations in the future. It is a comprehensive plan in the sense that all activities such as purchase, sales, production, finance etc. are considered when it is prepared. It is the budgets of the enterprise as a whole, known as master budget. Though budgets are prepared for various departments of the enterprise, but they are components of the total budget *i.e.* master budget. The comprehensive or the master budget is prepared after coordinating budgets for various departments of the enterprise.
2. **Expressed in Monetary/Financial Terms:** A budget is always expressed in financial terms. Initially the budgets may be prepared in terms of quantities, but finally they must be expressed in the money units. For example, purchase and production budgets will involve units of raw material and finished goods respectively; the labour budget will involve men and labour hours or the sales

budget may involve territories and customers to be served. But coordinated and comprehensive budget can be prepared only when all these budgeted are expressed in some common denominator. This common denominator is money.

3. **Plan of Firm's Activities and Resources:** A budget is a technique to plan for all operations and resources of an enterprise. The budget must plan both the aspects i.e. revenues and expenses relating to a specific operation. Along with this, planning for the resources necessary to carry out these operations should also be made. The planning of resources will include asserts and sources of funds.
4. **Future Plan for Specified Period:** A budget is meaningful only when it is related to a specified period. Therefore, budget estimates are prepared for a specified period. For example, a production target of 50,000 units or a profit target of ₹1,00,000 has no meaning unless it is stated when these targets have to be achieved. This budget period may be a week, month or year. With this view, budgets may be short-term as well as long-term.
5. **Budget as a Standard:** A budget incorporates targets related to different activities of the enterprise. These targets are fixed on the basis of accomplishments and future changes. Thus, targets incorporated in a budget are the standards, which are tried to complete with the actual results. If there is any variation between these targets (standards) and actual results, the causes are analysed and corrective action is taken or budget estimates are revised in future.

7.4 MEANING OF BUDGETING

The progress of preparing and using budgets to achieve management objectives is called budgeting. The most important functions of management at the highest level in business are planning, co-ordination and control. Budgeting is helpful in performing these three functions properly. Thus, budgeting is a managerial progress that involves preparation of budget, budget control, budget co-ordination and acknowledgement of the problems and difficulties relating to future budget period and taking timely decisions for further retrieval. Really speaking, budgeting implies all the methods and techniques of budget and budgetary control. That is why, J. Betty has said, "*the entire process of preparing the budget is known as budgeting.*" A few important definitions of budgeting are given below:

"Budgeting may be said to be the act of building budget."

—Rowland and Harr

"Budgeting is the preparation of comprehensive operating and financial plans for specific intervals of time."

—Shillongow

7.4.1 Objectives of Budgeting

The management process of an organisation contains planning, directing, communication, co-ordination, and control systems. The budget takes care of these operational aspects and is prepared accordingly. Following are the objectives of budgets:

- (i) **To implement the desired plans:** Budget provides a definite course of action. The element of planning is infused in it. This means, every operation is well-defined and policies and procedures are set to follow automatically by the workforce to achieve the desired results. Budget facilitates planning of business operations. Purchase, sales, production, research, finance etc., areas are covered in planning process and in the absence of budgets, there may be over-estimation of profits,

mis-management of working capital, or wrong allocation of resources. Thus, one of the important objectives of budgeting is to plan and forecast the future course of business action in an enterprise and provide necessary methods and procedure to achieve the desired result *i.e.* maximising profit.

- (ii) ***It provides control tools:*** Although budget itself is a control tool, control methods are incorporated in the budget. The objective here is to control through "Management by Exception". This means fixing responsibility to each level of management in the organisation and provides them with plan of action to be carried out by them with certain amount of powers. These middle managers are only to monitor the courses of action in their departments and send periodical reports to the top brass about the performance and variance, if any, from the set action plan. This will assist the top management in redesigning its operations or adopting other alternative techniques to achieve the desired result. Thus, 'management by exception' as a control technique will be successful. Control techniques are inbuilt in budgets and it is one of the objectives of budgeting. It provides control with delegated authority.
- (iii) ***To provide sound communication system:*** Whatever plan prepared by the top brass will be successfully communicated through budgets. Every activity is pre-determined and is well-defined in the budget. The middle managers need not seek any clarification now and then. They have to implicitly follow the procedure laid down in the budget. Thus, it will act as an effective written communication system which facilitates the smooth functioning of business operations.
- (iv) ***To co-ordinate the various functions:*** Every business operation in an enterprise is interlinked and cannot be isolated. Ziz-zag or back-tracking operations consume much time and money and eat away the profits. There should be harmonious relationship between the departments of the enterprises and every related activity should be suitably co-ordinated. Budget does this job effectively. It fixes the course of action for each operation and gives a direction to work. Each level in an organisational hierarchy is taken care of and responsibility is fixed to each level. Profit centres are identified and performance levels are fixed to each centre. Thus, the budget determines the work for each functional area and co-ordinates each related work to see that work flows smoothly and economically

7.4.2 Difference between Budget and Budgeting

On the basis of aforesaid description, the difference between the terms budget and budgeting may be stated as follows:

- Budget is a financial plan for a specified future period; whereas budgeting is a managerial process of preparing future plan.
- Budget is a means to attain business targets; whereas budgeting is a method of budget preparation which determines budget targets.
- Budget contains estimates of income and expenditure for future specified period whereas budgeting contains the whole process of budget preparation, performance and evaluation.
- Budget assists the management in attaining the objectives, whereas budgeting provides the yardsticks to the management.
- Budget provides pre-determined standards, whereas budgeting formulates the budget in the form of standards.
- Budget is a forecast, whereas in budgeting forecasting helps in budget preparation.
- Budget is a work plan, whereas budgeting is a technique of planning.

7.5 PRINCIPLES OF BUDGETING

Budgets are based on certain principles for which there is general acceptance among different experts. Robert N. Anthony has described the following principles of budgeting in his book, '*Principles of Management Accounting*'.

1. **Sponsored by Management:** Budget is a management tool, hence it should be sponsored and supported by top management. All the employees of the firm must know the fact that management is interested in budgeting.
2. **Determination of Responsibility Centres:** For budgeting each and every official in the organisation must know, what are his rights and for what sort of duties he may be held responsible. This requires creation of responsibility centres for each part of the budget. The controllable costs of each responsibility centres should also be specified.
3. **Co-operation of Responsibility Supervisors:** The management must seek co-operation of all the responsible supervisors in preparation and execution of budgets, and in estimating resources required for its execution. They should be acquainted with all matters relating to budgeting. If it is not so, they begin to oppose budget targets and do not take interested in achieving them.
4. **Education of Budget Process:** Responsible supervisors must have full knowledge of budget procedure. For this, they should be imparted proper training from time to time. Budget manual and other material can be used for this purpose. Besides it extra meeting and conferences can be arranged where knowledge about techniques of formulating and plans, comparing and analysing actual and budgeted results can be imparted.
5. **Budget Period:** Budget period should be decided by taking into consideration the nature of business and features of each responsibility centre. This period should be sufficient to view the working results of executives. Generally, a budget is prepared for one year, but if the results of some functions are to be evaluated in a short period, then short-term budgets covering three to six months can also prepared.
6. **Uniformity in Budget and Accounting Terminology:** The words used in budget and accounting should be synonym, otherwise comparison between actual and budgeted figures will be difficult and conclusions drawn will be misleading. For example, if direct labour cost includes wages for actual working days, holidays, idle time and all fringe benefits, then direct labour cost in accounting system should also be commensurate to it.
7. **Reasonably Attainable Targets:** The targets or proposed programmes in the budget should be such that can be achieved with minimum efforts. If targets are set too low that may cause slackness among the workers.
8. **Significant Exceptions:** When actual results are compared with budget targets, some variations are bound to arise. While considering these variations, the 'principles of exceptions' should be followed i.e. only important variations should be considered.
9. **Matching Budgeting Costs and Benefits:** One should be very careful to expenses incurred on budgetary system. In no case, the expenses incurred on this system should exceed the benefits derived from it otherwise the system will prove a futile exercise.
10. **Distinction between Line and Staff Functions:** The duty of the budget officials is to assist in the basic functions of the firm; preparation of budget is not their main function. The responsibility of formulating plans for accomplishing the basic

objectives of the firm rests with the top management. Hence, there should be clear-cut demarcation between line and staff functions.

11. **Review of Budget Estimates:** Top management should scrutinize and review the budget estimates at frequent intervals, otherwise it may convey the message among the employees that management has no faith in budgeting.
12. **Final Approved:** A definite procedure should be followed to finally approve the budget. This requires immediate communication of budget approval to all the officials. Tacit consent creates confusion among the employees of the concern.

7.6 LIMITATIONS OF BUDGETING

The advantages of budgeting are unquestionable, impressive in nature and for reaching in their impacts. But, at the same time, it suffers from serious limitations. The management should keep them in view while using the tool of budgeting. Following are the main limitations of budgeting:

1. **Based on Estimates:** Budgets are based on estimates or forecasts and the success or failure of budgeting depends to a large extent upon the accuracy of these estimates or forecasts. Estimates or forecasts are based on approximation and managerial judgement. Managerial judgement may suffer from subjectivity and personal biases. Therefore, quality of budgets is associated with the intelligence, skill and experience of management. This aspect of budgeting should always be kept in view while interpreting the results there of.
2. **Danger of Rigidity:** When budgets are prepared with targets in quantity and money value, there is a tendency to consider the budget figures as something final. In such a case, the budget plan is bound to become rigid. But budget estimates relate to business conditions, which may be constantly changing, and it becomes necessary to change the budget estimates in the light of changed business conditions. Thus, it is dangerous to treat budget estimates as rigid.
3. **Budget Execution is not automatic:** Budgeting implies the preparation of budgets and their execution also. As such, a mere preparation of budget does not mean that their execution is automatic. The execution or implementation of budgets depends upon the co-operation and participation of executives at all levels of management. Every member of the organisation must exert continuous and aggressive efforts to achieve the objectives of the budget.
4. **Internal Struggle:** The budgeting system encourages internal conflict competition and undue pressures in the organisation. Every department tries to achieve targets set for it without taking into consideration the targets set for other departments and overall objectives of the budget. All these result in the conflict, which ultimately affect the efficiency of the budgeting system.
5. **Encouragement to Dictatorial Tendency:** Budgets have been used as a pressure device in many instances. Experience has shown that responsible officers adopt dictatorial tendency to drag costs downward with a view to keep the expenditure within budget limits. They put more burdens on the employees. Thus, they act as a steam roller and seek to attain their objectives by exploiting people under the pretence of compliance of enterprise goals. This aspect of budgeting creates discontentment in the organisation.
6. **No Substitute of Management:** It should always be remembered that budgets cannot replace management nor make decisions, i.e. it is not a substitute of management. "A budget is not designed to reduce the managerial functions to a formula. It is a managerial tool." Therefore, the budget should be regarded not as a master but as a servant.

7.7 BUDGETARY CONTROL

Budgetary control is intimately connected with budgets. The Chartered Institute of Management Accountants, London defines budgetary control as "the establishment of budgets, relating the responsibilities of executive to the requirements of a policy and the continuous comparison of actual with budgeted results either to secure by individual action the objectives of that policy or to provide a firm basis for its revision". A budgetary control system secures control over performance and costs in the different parts of a business:

- (i) by establishing budgets
- (ii) by comparing actual attainments against the budgets; and
- (iii) by taking corrective action and remedial measures or revision of the budgets, if necessary.

The budget is a blue-print of the projected plan of action expressed in quantitative terms and for a specified period of time. The budgets put the plan in a concrete form and follow up with action to see that plan is adhering to complete the system of control. In other words, while budgeting is the art of planning, budgetary control is the act of adhering to the plan. In fact, budgetary control involves continuous comparison of actual results with the budgets and taking appropriate remedial action promptly.

It is well-recognised that a control system involves fixing of targets (in the form of specific tasks), collection of information regarding actuals and continuous comparison of actuals with the targets with a view to reporting for action. A budgetary control system, in this sense is also a control system. It is an excellent system for decentralisation of authority without losing control over the operations of the firm.

"Exactly so it is with the industrial ship; the past records represent the log and the auditor is responsible for verifying so far as he can that those records are correct and reveal a true and fair view of the financial position of the concern. But what modern management requires for day-to-day operating purposes and forecasts showing in detail anticipated course of business for (say) the coming year. During the course of the years' operations the management requires immediate reports of any material variance from the pre-determined course together with explanation of the reasons for variations".

7.7.1 Definitions of Budgetary Control

Budgetary control is the planning in advance of the various functions of business so that the business as a whole can be controlled.

"An exact and rigorous analysis of the part and the probable and desired future experience with a view to substituting considered intention for opportunism in management"

—International Management Conference (1930)

"Budgetary control is a system of controlling costs which includes the preparation of budgets, co-ordinating the departments and establishing responsibilities, comparing actual performance with the budgeted and acting upon results to achieve maximum profitability"

—Brown & Howard

According to Author "budgetary control means laying down in momentary and quantitative term what exactly has to be done and how exactly it has to be done over the coming period and then to ensure that actual results do not diverge from the

planned course more than necessary". The word "necessary" is not to be loosely interpreted. Divergence due to inefficiency is not necessary.

7.7.2 Objectives of Budgetary Control

Objectives of Budgetary Control are given as following:

- To use different levels of management in a co-operative endeavour for achievement of the objectives of the firm.
- To facilitate centralised control with delegated authority and responsibility.
- To achieve maximum profitability by planning income and expenditure through optimum use of the available resources.
- To ensure adequate working capital in other resources for efficient operation of business.
- To reduce losses and wastes to the minimum.
- To bring out clearly where effort is needed to remedy the situation.
- To see that the firm is not deflected from marching towards its long-term objectives without being overwhelmed by emergencies.
- Various activities like production, sales, purchase of materials etc. are co-ordinated with the help of budgetary control.
- To define the goal of the enterprise.
- To provide long and short period plans for attaining these goals.
- To co-ordinate the activities of different departments.
- To estimate capital expenditure requirements of the future.
- To centralise the control system.
- To correct deviations from established standards.
- To fix the responsibility of various individuals in the organisation.
- To ensure that adequate working capital is available for the efficient operation of the business.
- To indicate to the management as to where action is needed to solve problems without delay.
- To operate various cost centres and departments with efficiency and economy.
- To eliminate waste and increase the profitability.

7.7.3 Advantages of Budgetary Control

Budgetary control makes all the difference between drifting in an uncharted sea and following a well-plotted course towards a predetermined destination. It serves as a valuable aid to management through planning, co-ordination and control.

The principal advantages of a budgetary control system are enumerated below:

- Budgetary control aims at maximisation of profits through effective planning and control of income and expenditure—directing capital and resources to the best and most profitable channel.
- There is a planned approach to expenditure and financing of the business so that economy is affected in the utilisation of funds to the optimum benefit of the concern.

- It provides a clear definition of the objective and policies of the concern and a tool for objecting these policies to periodic examination.
- The task of managerial co-ordination is facilitated through budgetary control.
- Since each level of management is aware of the task and is fully conscious as to the best way by which it is to be performed, maximum effective utilization of men, materials and resources can be attained.
- Reports are furnished under the principles of management or control by exception. Only deviations from budgets that point out the weak spots and inefficiencies are properly looked into.
- It cultivates in the management the habit of thinking ahead—making careful study of the problems in advance before making decisions.
- A budgetary control system assists delegation of authority and is a powerful tool of responsibility accounting.
- Budgets are the forerunners of standard costs in the sense that they create necessary conditions to suit setting up of standard costs.
- The method of evaluating performance against budgets provides a suitable basis for establishing incentive system of remuneration by results as also spotting people with exceptional qualities of leadership and management.
- Since it involves foreseeing difficulties of various types, it will lead to their removal in time.

7.7.4 Limitations of Budgetary Control

The limitations stated below are merely point to the need of maintaining the budgetary control system on a realistic and dynamic basis, rather than as a routine.

- The preparation of a budget under inflationary conditions and changing government policies is really difficult. Thus, the accurate position of the business cannot be estimated.
- Accuracy in budgeting comes through experience. Hence it should not be relied on too much in the initial stages.
- Budget is only a management tool. It is not a substitute for management in decision-making.
- Budgetary control begins with the formulation of budgets, which are mere estimates. Therefore, the adequacy or otherwise of budgetary control system, to a very large extent, depends upon the adequacy or accuracy with which estimates are made.
- Budgets are meant to deal with business conditions which are constantly changing. Therefore, budgets estimates lose much of their usefulness under changing conditions because of their rigidity. It is necessary that budgetary control system should be kept adequately flexible.
- The system of budgetary control is based on quantitative data and represents only an impersonal appraisal to the conduct of business activity, unless it is supported by proper management of personal administration.
- It has often been found that in practice, the organisation of budgetary control system become too heavy and, therefore, costly especially from the point of view of small concern.
- Budgets and budgetary control have given rise to a very unhealthy tendency to be regarded as the solvent of all business problems. This has resulted in a very

lukewarm human effort to deal with such problems and ultimately results in failure of budgetary control system.

- It is a part of human nature that all controls are resented. Budgetary control, which places restrictions on the authority of the executive, is also resented by the employees.
- Budgeting involves heavy expenditure, which small concerns cannot afford.
- There will be active and passive resistance to budgetary control as it points out the efficiency or inefficiency of individuals.
- The success of budgetary control depends upon willing co-operation and teamwork. This is often lacking.

7.7.5 Requirements of a good budgetary control system

The following are the requirements of a good budgetary control system:

- Budgetary control system should have the whole-hearted support of the top management.
- A budget committee should be established consisting of the budget director and the executives of various departments of the organisation.
- There should be proper fixation of authority and responsibility. The delegation of authority should be done in a proper way.
- The budget figures should be realistic and easily attainable.
- Variation between actual figures and budgeted figures should be reported promptly and clearly to the appropriate levels of management.
- A good accounting system is essential to make budgeting successful.
- The budget should not cost more to operate than is worth.

7.8 BUDGET MANUAL

Budget preparation and its operation is a collective process in which many executives and departments are associated. It is, therefore, necessary to ensure that each of them understands his functions under the budgeting system. Hence, budget manual is used for this purpose. A budget manual is a document, which contains the essential information required for the construction, administration and execution of the budget. It further indicates the reporting and communicating system within the organisation. According to the Institute of Cost and Management Accountants, England budget manual is, "*a document which set out the responsibilities of the persons engaged in the routine of and the forms and records required for hudgetary control.*" Horngren has defined the hudget manual as a written set of instructions and pertinent information that serves as a rulebook and a reference for the implementation of a budget programme. It tells what to do, how to do it, when to do it and which form to do it on". Thus, the main content of a budget manual are:

- A brief explanation of the principles and objectives of the budgetary control system.
- A statement defining the lines of authority and responsibilities of the various executives.
- Functions and responsibilities of the budget committee and the budget officer.
- Time schedules for budget preparation.

- The detailed procedure to be followed in the preparation of budgets, and their scope and areas to be covered.
- Reports and statements along with their format required for each budget period.
- Deadline dates for the submission of departmental budgets and for making available the control reports.
- Budget approval and revision process.

7.8.1 Advantages of Budget Manual

A detailed budget manual serves as a ready reckoner for the executives connected with budgeting system as it provides with them proper guidelines in the preparation and implementation of budgets. The following are the main advantage of budget manual:

1. **Education Value:** Budget manual serves as a good education to all executives associated with the budgetary control system as it contains all designed information in black and white in precise terms.
2. **Avoidance of Ambiguity:** Budget manual also avoids ambiguity as it contains well-defined instructions. This also results in reducing the training period required for staff.
3. **No Overlapping of Authority:** The budget manual defines the authority and responsibility of each person in exact terms and therefore, overlapping of authority is avoided.

Commending on the importance of budget manual, a corporate controller of a reputed American firm is of the opinion that, "budget manuals serve to define and clarify many terms. Numerous uncertainties may be discovered and through clarifications, a better understanding of the parts and the whole may evolve. Period of training may be reduced when oral instructions are supplemented by written procedures. Less embarrassment may occur if eliminated when a procedure is reduced to writing. Furthermore, unless procedures have been reviewed and written down, employees' turnover and the passage of time may help to change procedures without the knowledge and content of supervisors.

7.8.2 Principles or Key Budget Factor

Coordination is the major function of budgeting. Hence, it is essential that all the budgets are to be coordinated before they are approved. But when a factor is of such an importance that it affects a particular budget and influences all other budgets so that the coordination must be centred round it, it is known as, 'principal budget factor' or 'governing factor'. According to I.C.M.A. Terminology "*key factor is the factor, the extent of whose influence must first be assessed in order to insure that functional budgets are reasonably capable of fulfillment*".

7.9 ESSENTIALS OF EFFECTIVE BUDGETING

At present, the significance of business budgeting is increasing Banks and other financial institutions, while granting loans, ask for information about future activities of the firm. It had made budgeting process a necessity, but budgeting is not such an easy task. A successful and sound budgeting is based on certain prerequisites, known as 'essentials of an effective budgeting system'. The following are some of the important essentials or fundamentals of a successful budgeting:

1. **Clearly Defined Objectives and Policies:** Budgeting is a means to achieve goals and objectives. Hence, for the success of budgeting, the objectives and policies should be clearly defined as well as they should be free from ambiguity. This will

enable the head of each department. If the goals to be achieved are not be systematic, employees will lack a proper direction and ultimately the efforts of the management will go in vain. The enterprise's objectives and budget goals should not be only realistic but also reasonably capable of attainment. Goals set at a very high level are impossible to attain and result in a depressing effect on the morale of employees. On the other hand, goals set at a very low level are easily attainable. There would be no incentive to special efforts as they do not present a real challenge.

2. **Support of Top Management:** Budgeting is not merely an accounting device, but it is an important management tool. Hence, top management must understand the nature and characteristics of budgeting and be willing to implement it. A firm will be able to implement the budget if top management gives active support and directions. The whole-hearted support of top management is bound to ensure the active support of the line managers also. Top management's confidence in the budgeting system makes the subordinate employee more confident and consensus. Hence, budgeting should have the full support and cooperation of every member of the management team.
3. **Established Lines of Authority and Responsibility:** A sound organisational structure is essential for the success of budgeting system. Budget preparation is a cooperative effort of the entire department that is possible only through proper co-ordination among different departments. It is, therefore, necessary that authorities and responsibilities of each manager should be clearly identified and established. The performance of each manager should be evaluated in terms of these assigned authorities and responsibilities. In the absence of clear cut authorities and responsibilities either manager cannot held responsible or they will be held responsible for those activities for which they have no responsibility.
4. **Full Participation:** In developing the budgeting system, full participation of all the managers and their subordinates at all levels should be sought. If employees have effectively participated in developing the budget targets, they will make special efforts to see that these targets are achieved. A meaningful participation creates positive motivation but a non-serious participation produces negative motivation and makes employees less productive.
5. **Sound Participation:** Business forecasts are the foundation of budgets. These forecasts are used by departmental heads in preparing different functional budgets such as sales budget, production budget, labour budget etc. The more sound and the forecasts, better results will come out of the budgeting system. Hence forecasts should not be based on mere estimates or personal whims, but these should be made by using most scientific and statistical methods and techniques.
6. **Cost and Statistical Information:** As stated above, budgets are based on forecasts and these are prepared and expressed in quantitative terms. It is, therefore, necessary that reliable, accurate and adequate relevant cost data should be made available to each department. Such data may not be available from accounting system alone and therefore, they may be processed through statistical techniques. For example, sales forecasts, production targets, price data etc, may not flow from normal accounting system. These should be collected and processed using sophisticated statistical techniques.
7. **Adequate Planned Accounting System:** Budgets are prepared on the basis of data generated from accounting system. Control of performance requires the comparison of actual performance with the budgeted performance. Therefore, it is essential to adopt a suitably planned accounting system so that the budget objectives should be attained. The accounting system adopted for the external

users (shareholders, creditors etc.) may not suit for budgeting. In fact, a sound budgeting system needs the creation of responsibility accounting where accounts are classified and maintained based on responsibility centres.

7.10 FIXED BUDGET

A budget is a budget, which is used unchanged during the budget period. It is prepared for a particular activity level, and it does not change with actual activity level being higher or lower than budgeted activity level. Thus, fixed budget is a budget, which is designed to remain unchanged irrespective of the level of activity actually attained. For example, a budget may be prepared for, say, 50,000 units. Actual activity level may be say, 70,000 units. If it is a fixed budget, then absolute differences of budgeted figures and actual figures will be found out without any type of adjustments for change in the level of activity. It, however, does not mean that the fixed budget is a rigid one and is not to be changed at all. Of course, the budget is not adjusted to the actual volume attained, but it is liable to be revised if actual operations differ widely from those planned in the fixed budget due to business conditions undergoing a basic change.

A fixed budget will serve the purpose in industries, where the conditions of demand are stable and sales could be forecasted with a substantial degree of accuracy for a short period of six months to one year. In practical situation, it is likely for actual activity and budgeted activity to be the same. Therefore, a fixed budget may roughly meet the needs of profit planning and co-ordination, but it is almost completely inadequate as a cost control technique as it suffers from the following drawbacks:

- **Misleading:** It is misleading because a poor performance may remain undetected and a good performance may go unrealised.
- **Inadequate for Control:** It is not useful for control purpose, because while comparing the actual cost with a fixed budget, the difference cannot be promptly explained. Hence, it is not possible to say whether the entire variance was due to change in the level of activity or other factors were responsible for it.
- **Not Logical:** Based on logic, comparison should be made between two things with a similar base. But, in fixed budget, budgeted costs at budgeted activity are compared with actual cost at actual activity i.e. two things with two different bases are compared. Therefore, fixed budget is not logical.

7.11 CONCEPT OF FLEXIBLE BUDGET

Budgets are generally prepared by keeping a certain level of activity as the target. All the functional budgets are based on that planned level of activity say 75% level of production capacity or 50,000 units. But due to changing economic and business conditions, the actual level of production or sales may differ from the budgeted level. In such a situation, the performance cannot be evaluated with the help of fixed budget. Therefore, the budget has to be revised according to actual level of activity. For example, if a firm has a target of 15,000 units of production during a certain period and the actual output comes to 12,000 units, then the costs and sales based on 15,000 units cannot form the standard certain for measuring the performance. This requires the revision of the original budget at 12,000 units.

Revision of original budget in accordance with the actual level of activity is not a simple task. Certain costs can easily be adjusted according to the level of activity and certain others cannot be. The reason behind it is that there are certain elements of costs, which do not change proportionately to the change in the level of activity. If we can identify those elements and determine their variability, then we should be able to

revise the costs for any actual level of activity. Thus, sorting out of the costs and determining their variability for different levels of activity is the crux of the problem in flexible budgeting.

7.11.1 Nature and Behaviour of Costs

The revision of the budget costs for the actual level of activity is to be done by classifying the cost into fixed, variable and semi-variable or semi-fixed. These terms have been used in the following senses:

- **Fixed Costs:** This is also known as non-variable cost or period cost or capacity cost. It is the cost that does not vary in relation to the level of output during a given period of time *i.e.* cost which tends to be unaffected by variations in the volume of output or level of activity up to the installed capacity. The total amount of such costs remains constant for all levels of output but per unit cost varies in reverse direction to the volume of output. Examples of such costs are rent, rates and insurance, manager's salary etc. These costs are said to be controllable. It is to be noted that no cost is fully fixed in the long-term. It increases with the increase in installed capacity.
- **Variable Cost:** This is the cost which tends to vary in direct proportion to the volume of output or level of activity. On a change in volume of output, per unit variable cost remains the same but the total amount of variable cost varies in proportion to the volume of output. The examples of such costs are direct material, direct labour, selling commission, etc. Variable costs are said to be controllable because they are incurred only when production takes place.
- **Semi-variable Cost:** This cost is partly fixed and partly variable *i.e.* a mixture of fixed and variable costs. Such costs change in the same direction in which output changes but this change is less than proportionate in output. Examples of such costs are repair and maintenance, depreciation, telephone charge etc.

The major problem in preparing a flexible budget is to segregate the fixed cost portion and variable cost portion of these semi-variable costs. The variable cost portion is treated as part of variable costs. There are three important methods of segregating semi-variable costs into fixed costs and variable costs. They are:

- High and low point method
 - Scatter diagram method, and
 - Method of Least square.
1. **High and Low Point Method:** Under this method, the total cost of two volumes of output, one higher and the other lower is taken. The difference in the two total cost figures divided by the difference in the volume of output between the two levels gives the variable cost per unit. Once the variable cost per unit is calculated, the total variable cost for any volume of output can easily be calculated. Then the total cost of the volume of output less the total variable cost gives the fixed cost which is supposed to remain fixed for all levels of output. The formula used is:

$$\text{Variable Cost per Unit} = \frac{\text{Difference between total costs}}{\text{Difference between volumes of output}}$$

Example: The following are the maintenance costs incurred in a machine shop for six months with corresponding machine hours:

Months	Jan.	Feb.	Mar.	April	May	June	Total
Maintenance Costs	300	320	270	340	280	290	1,800
Machine Hours	2,000	2,200	1,700	2,400	1,800	1,900	12,000

Analyse the maintenance cost which is semi-variable into fixed and variable elements.

Solution:

	Machine Maintenance Cost	Hours
High Point (April)	2,400	340
Low Point (March)	<u>1,700</u>	<u>270</u>
	<u>700</u>	<u>70</u>

$$\text{Variable Cost per machine hour} = \frac{70}{700} = ₹ 0.10$$

Total Variable Cost for 2,400 machine hours @ ₹ 0.10 = ₹ 240

Fixed Cost: ₹ 340 – ₹ 240 = ₹ 100

Months	Machine Hours	Maintenance Cost	Variable Costs @ ₹ 0.10 p.h.	Fixed Costs (3-4)
1	2	3	4	5
January	2,000	300	200	100
February	2,200	320	220	100
March	1,700	270	170	100
April	2,400	340	240	100
May	1,800	280	180	100
June	1,900	290	190	100

- Scatter Diagram Method:** This is a statistical technique based on correlation. In this method, the total cost for different volumes of output is plotted on a graph in which total cost is measured along the y-axis and the volume of output along the x-axis. Then a straight line is drawn by inspection in such a manner that the line is nearer to all the plotted points in the graph. From that point at which it merges with the y-axis, draw a parallel line to the x-axis. This line known as the line of the best fit will demonstrate the fixed costs for all the levels of output.
- Method of Least Square:** This method is based on the 'line of the best fit' but, bifurcation of fixed and variable element is done by mathematical computation instead of drawing a graph. In this method, two simultaneous equations are formed assuming volume of output X and cost Y. By solving these equations, the amount of the fixed cost (a) and variable cost per unit (b) is ascertained.

$$Y = a + bX$$

$$\Sigma Y = Na + b\Sigma X \quad \dots(i)$$

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

7.12 MEANING OF FLEXIBLE BUDGET

Flexible budget also known as variable or sliding scale budget is a budget which is prepared to furnish budgeted costs for any level of activity actually attained. In this way, a flexible budget is a series of fixed budgets i.e. one budget for each level of activity. According to the Institute of Cost and Management Accountants, a flexible budget is a budget which, by recognizing the difference between fixed, semi-fixed and variable costs, is designed to changes in relation to the level of activity attained." R. M. S. Wilson defines a flexible budget thus, "a flexible budget is a set of alternative budget plans appertaining to different expected levels of activity." This budget is not prepared for any specific level of activity but it presents budget estimates for different levels of activity such as estimates of costs and revenues for 70%, 80%, 90%, and 95% of normal production capacity. In this way, a flexible budget becomes a ready-made budget available in advance in relation to the actual volume of production and sale under varying conditions. For preparing a flexible budget, the

costs are classified as per their nature of variability *i.e.* fixed, variable and semi-variable. The following features of flexible budgeting are identified:

- These budgets are prepared for different levels of activity instead of a single level.
- They present a dynamic basic for comparison as they are automatically geared to the changes in volume of output.
- They provide a tailor-made budget for any volume of output or level of activity.
- These budgets are based on adequate knowledge of cost behaviour pattern *i.e.* the nature of fixed, variable and semi-variable costs are recognised.

7.13 METHODS OF PREPARING FLEXIBLE BUDGET

Flexible budget can be prepared according to any of the following three methods:

- Multi-activity or Tabular Method
- Formula or Ratio Method
- Graphic Method

7.13.1 Multi-activity or Tabular Method

Under this method a budget is prepared for each budget centre for different levels of activity. The levels of activity may be expressed in terms of percentage of total capacity, say 50%, 60%, or 75% or in terms of physical units or for monetary value. All costs are linked to various levels of activity by classifying them into fixed, variable and semi-variable. Semi-variable costs are further bifurcated into fixed and variable by any of the method stated earlier. Then, a unit of measurement is determined for various levels of activity.

After classifying the costs into various groups and determining the unit of measurement, a flexible budget is prepared showing different activity or capacity levels in vertical columns. The costs are usually recorded under three groups *viz.* variable, semi-variable and fixed. A specimen of a flexible budget is given below:

Table 7.1: Specimen of a Flexible Budget

Flexible Budget (Normal Level of activity: 80%) Period ending.....			
Particulars	Capacity		
	50%	80%	100%
1. Prime Cost:			
Direct Material
Direct Labour
Direct Expense (if any)
2. Variable Overheads:			
Maintenance and Repairs
Indirect Labour
Indirect Material
3. Marginal Cost (1 + 2)
4. Sales
5. Contribution (4 - 3)
6. Fixed Cost:			
Production
Administration
Selling & Distribution
7. Profit/Loss (5 - 6)

Notes: The aforesaid method of presentation is based on marginal cost concept. Alternatively it can be prepared based on total or absorption cost concept but unless it is stated, the former method should be adopted as compared to the later method.

Example (Total Cost Basic): With the following data for 60 percent activity, prepare a budget for production at 80 percent and 100 percent activity:

Production at 60% activity	600 units
Material	₹ 100 per unit
Labour	₹ 40 per unit
Expenses	₹ 10 per unit
Factory Expense	₹ 40,000 (40% fixed)
Administration Expenses	₹ 30,000 (60% fixed)

Solution:

Flexible Budget (Normal Level of Activity: 60%)			
Particulars	Capacity		
	60%	80%	100%
Production (units)	600	800	1000
Direct Costs:	₹	₹	₹
Material (₹ 100 per unit)	60,000	80,000	1,00,000
Labour (₹ 40 per unit)	24,000	32,000	40,000
Expenses (₹ 10 per unit)	6,000	8,000	10,000
Total Direct Costs	90,000	1,20,000	1,50,000
Factory Expenses			
Variable (₹ 40 per unit)	24,000	32,000	40,000
Fixed (40% of ₹ 40,000)	16,000	16,000	16,000
Administration Expenses			
Variable (₹ 20 per unit)	12,000	16,000	20,000
Fixed (60% of ₹ 30,000)	18,000	18,000	18,000
Total Cost	1,60,000	2,02,000	2,44,000

Working Notes:

- (i) Variable Factory Expenses = 60% of ₹ 40,000 = ₹ 24,000 for 600 units. Hence, per unit amount is ₹ 40 (24,000 ÷ 600).
- (ii) Variable administration Expense: 40% of ₹ 30,000 = ₹ 12,000 for 600 units. Hence, per unit amount is ₹ 20 (12,000 ÷ 600).

7.13.3 Formula or Ratio Method

It is also known as 'budget cost allowance method'. Under this method, first of all expected normal level of activity is determined and a budget is prepared for the same. After ascertaining the fixed and variable part in different expenses, the relationship of each expense or group of expenses is established with the unit level of activity by computing ratios of expenses per unit of activity. For example, a level of activity which is 90% of production capacity, the overhead budget is for ₹ 4,600 of which ₹ 2,700 are variable and ₹ 1,900 fixed. In this case, the variable overheads at 1% level of activity would be ₹ 30 (2700 ÷ 90). Now, if the actual level of activity is 95%, the variable overhead would be ₹ 2,850 (95 × ₹ 30) and total overhead ₹ 4,750 (1900 + 2,850). The total costs for any level of activity can be computed on the basis of the following formula:

$$\text{Total Cost or TC} = a + bx$$

Or

$$\begin{aligned} \text{Budget Cost Allowance} &= \text{Fixed Cost} = (\text{Variable Cost per unit of activity} \times \\ &\quad \text{Actual Units of Activity}) \\ &= ₹ 1,900 = (₹ 30 \times 95) \\ &= ₹ 1,900 + 2,850 = ₹ 4,750 \end{aligned}$$

Example can be solved by formula method as under:

Formula: $TC = a + bx$

Elements of Cost	A (fixed cost)	B (variable cost p.u.)
Direct Material (per unit)	₹	₹
Direct Labour (per unit)	- +	
Direct Expenses (per unit)	- +	
Factory Expenses	- +	100
Administration Expenses	16,000 +	40
	18,000 +	10
		40
		20

$$\text{Total Cost} = 34,000 + 210x$$

Level of Activity % (Units)	Flexible Budget $a + bx$	= TC or Total Cost ₹
60% (600)	$34,000 + 210 \times 600$	= 1,60,000
80% (800)	$34,000 + 210 \times 800$	= 2,02,000
100% (1,000)	$34,000 + 210 \times 1,000$	= 2,44,000

7.13.3 Graphic Method

This method is the geometrical form of the second method. Actually total cost can be estimated at any level of activity by plotting the different values on a graph paper. This requires the following steps to be taken:

- An estimate of cost is made for different levels of activity by classifying the costs into variable, fixed and semi-variable. The semi-variable costs are bifurcated into fixed and variable.
- The estimated costs are plotted on a graph paper on Y-axis and level of activity is plotted on X-axis.
- Fixed cost line, variable cost line and total cost line are drawn. The budgeted cost line is drawn. The budgeted costs corresponding to the level of activity attained can be read out from the graph and the performance of the department can be assessed.

Example:

Cost of Various Levels of Activity

Activity Level	Fixed Costs	Variable Costs	Total Costs
₹	₹	₹	₹
20% (200 Units)	34,000	$210 \times 200 = 42,000$	76,000
40% (400 Units)	34,000	$210 \times 400 = 84,000$	1,18,000
60% (600 Units)	34,000	$210 \times 600 = 1,26,000$	1,60,000
80% (800 Units)	34,000	$210 \times 800 = 1,68,000$	2,02,000
1000% (1,000 Units)	34,000	$210 \times 1,000 = 2,10,000$	2,44,000

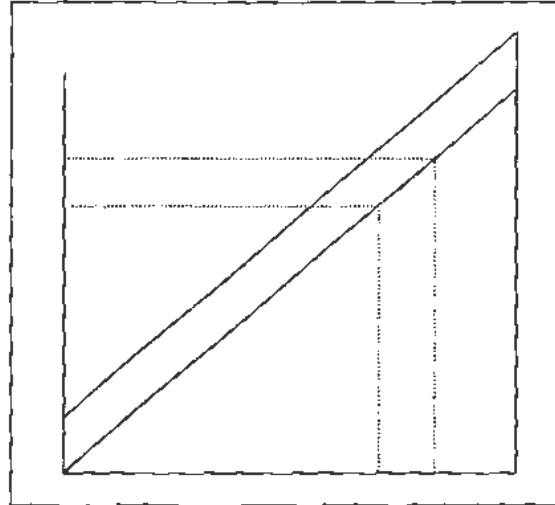
Flexible Budget Graphs

At 80% Capacity: Fixed Cost ₹ 34,000 (X1)

Variable Cost ₹ 1,68,000 (X2)

Total Costs ₹ 2,02,000 (X3)

Similarly, calculations can be made for other levels of activity.



7.14 SALES BUDGET

Sales budget is a forecast of the total sales expressed in quantity and/or money during the budget period. It is the most important budget of the firm and forms the basis on which all other budgets are built up. For instance, after estimating the quantities to be sold, a production budget can be prepared on which again all cost budgets depend. Likewise, estimates of cash receipts during budget period are based on sales budget.

The preparation of sales budget is the responsibility of the sales manager who is assisted by the budget officer, the accountant, and the staff of his own department. While forecasting sales, the sales manager should consider the following points:

- **Analysis of Past Sales:** The trend in sales can be estimated by analysing the past sales data. The record of past year's sales is the most reliable basis for the obtained from statistical reports produced by trade journals and government publications.
- **Market Analysis:** Market analysis or market research is essential to know the market potential. The purpose growth, purchasing power of consumers, product design required by the customers, changes in tastes, fashions etc. This work can be done by the firm's own staff or by using the sources of a firm of market analysis.
- **Reports of Salesmen:** Sales estimates can be made accurately by those persons who are in direct contact with customers. Therefore, salesmen, travelling agents' potential and expected sales are considered during the budget period. However, the estimates submitted by them should be scrutinised thoroughly by the sales manager.

Example: Mr. Devraj manufactures two types of toys 'Raja' and 'Rani' and sells them in Agra and Mumbai market. The following information is made available for the current year:

	Market	Budgeted	Actual Sales
Agra:	Raja	400 at ₹ 9 each	500 at ₹ 9 each
	Rani	300 at ₹ 21 each	200 at ₹ 21 each
Mumbai:	Raja	600 at ₹ 9 each	700 at ₹ 9 each
	Rani	500 at ₹ 21 each	400 at ₹ 21 each

Market studies reveal that toy 'Raja' is popular as it is underpriced. It is observed that if its price is reduced by ₹ 1 it will find a ready market. On the other hand, 'Rani' is overpriced and market could absorb more sales if its selling price is reduced to ₹ 20. The management has agreed to give effect to the above price changes.

On the above basis, the following estimates have been prepared by the sales manager:

Product	Percent (%) increase in sales over current budget	
	Agra	Mumbai
Raja	+ 10%	+ 5%
Rani	+ 20%	+ 10%

With the help of an intensive advertisement campaign, the following additional sales above the estimated sales of Sales Manager are possible:

Product	Agra	Mumbai
Raja	60 units	70 units
Rani	40 units	50 units

You are required to prepare a budget for sales incorporating the above estimates.

Solution:

Sales Budget

Area	Items	Period								
		Budget for the current year			Actual Sales			Budget for the future period		
		Units	Price	Value	Units	Price	Value	Units	Price	Value
Agra	Raja	400	9	3,600	500	9	4,500	500	10	5,000
	Rani	300	21	6,300	200	21	4,200	400	20	8,000
	Total	700	--	9,900	700	--	8,700	900	--	13,000
Mumbai	Raja	600	9	5,400	700	9	6,300	700	10	7,000
	Rani	500	21	10,500	400	21	8,400	600	20	12,000
	Total	1,100	--	15,900	1,100	--	14,700	1,300	--	19,000
Total	Raja	1,000	9	9,000	1,200	9	10,800	1,200	10	13,000
	Rani	800	21	16,800	600	21	12,600	1,000	20	20,000

Working Note: Quantity of sales for future period is calculated as under:

	Raja		Rani	
	Agra	Mumbai	Agra	Mumbai
Budgeted	400	600	300	500
Increase	40 (10%)	30 (5%)	60 (20%)	50 (10%)
	440	630	360	550
Adv. Effect	60	70	40	50
	500	700	400	600

7.15 PRODUCTION BUDGET

Production budget is the second important budget of the firm next to sales budget. It is based on sales budget and forms the basis of other cost budget such as material budget, labour budget, plant utilisation budget etc. The production budget, which is prepared by the production manager, is a forecast of anticipated production of each product to be produced by the firm during the budget period. Thus, a production budget is an estimate of the total production product-wise with the scheduling of

operations by days, weeks and months. The budget also includes the inventory of finished goods. The production budget is generally prepared on the basis of:

- The sales budget
- The production capacity of the factory
- The estimated changes in stock position
- The inherent loss in production, and
- The policy regarding manufacture or purchase of components.

7.15.1 Objectives of Production Budget

The objective of production budget is to produce at minimum cost as per demand and to establish co-ordination between sales, production and inventory policies. This will ensure adequate supply of goods for all. Therefore, the production budget should be prepared carefully. Generally, the production budget is prepared with the following objectives:

- To know the quantities to be produced during the budget period by – (i) product-wise, (ii) department-wise or process-wise, and (iii) period-wise.
- To maintain the desired inventory levels so that the firm may not lose customers for want of goods.
- To put down and organise the production programme in such a way that sales targets fixed by the sales budget may be achieved thereby.
- To serve as a basis for preparation of cost budgets such as material, labour, overhead and plant utilisation budget.
- To establish proper co-ordination between sales department and production department. This will help in preventing the situation of unutilised capacity.

7.16 MASTER BUDGET

After preparing the separate budgets for all the departments or functions, their summarised statements are transferred to a separate budget, known as master budget. Thus, master budget is a summary budget incorporating its component functional budgets. R. M. S. Wilson has defined a master budget as a consolidated summary of all the detailed budgets. According to Rowland and Williams, it is a summary of budget schedules in a capsule form for the purpose of presenting in one report, and the highlights of the budget forecast. The master budget is a complete financial presentation of the operating plans of the entire concern for the budget period, and is thus a profit plan. That is why it takes the form of a projected profit and loss account and the balance sheet. Therefore, some accountants accept 'Budgeted Profit and Loss Account and Balance Sheet' as the master budget. In this respect it is like the financial statements with the difference that it considers future data while financial statements are summarised historical data.

This budget is prepared by the budget officer, which after approval by budget committee is sent to the Board of Directors for final approval. If the Board finds the profit as projected by profit and loss account to be satisfactory, it is accepted as master budget indicating the formal plans of action for the forthcoming budget period.

Master budget is mainly useful to top management. It is a key to successful financial planning and control. It sets out the basis for computing the costs, profits and financial conditions resulting from any sales volume or product mix. It segregates income, costs

and profits, information about assets and important financial ratios. In brief, the following are the advantages of a master budget:

1. **Profit forecasting:** Master budget is an approved document which shows projected profit position of the firm. Profit ascertainment is easy because of availability of information about all business activities.
2. **Knowledge of Causes of Changes in Financial Position:** Budgeted balance sheet shows the projected financial position of the firm. The analysis of this financial position by use of different ratios will reveal the causes of different changes.
3. **Co-ordination:** Preparation of master budget enforces co-ordination among functional budgets.

The master budget may be prepared in the form of a statement also, and giving details of product wise, sales, cost of sales, gross profit, net profit, assets ratios, appropriation from profits etc. The following is a specimen of master budget prepared in this form.

Period	Normal Capacity		Budgeted Capacity	
	Product A	Product B	Total	
	₹	₹	₹	
Sales				
Less : Cost of Sales				
Direct Materials				
Direct labour				
Factory Overhead				
Add : Opening Stock				
Less : Closing Stock				
Gross Profit				
Administrative Cost				
Selling & Distribution Cost				
Net Profit				
Assets :				
Fixed				
Current (Net)				
Total Capital Employed				
Ratios :				
Sales / Capital Employed				
Profit / Turnover				
Current Ratio				
Liquidity Ratio				
Appropriations from Profit				
Dividends				
Reserves				
Taxes				
Balance of Profit or Loss				

Example: A glass manufacturing company requires you to prepare the Master Budget for the year from the following information:

Sales

Toughened Glass	₹ 3,00,000
Bent Toughened Glass	₹ 5,00,000
Direct Material Cost	60% of sales
Direct Wages	20 worker @ ₹ 150 per month

Factory Overhead

Indirect Labour	
Works manager	₹ 500 per month
Forman	₹ 400 per month
Store and spares	2 1/2 % on sales
Depreciation on machinery	₹ 12,600
Light and power	₹ 5,000
Repairs and maintenance	₹ 8,000
Other sundries	10% on direct wages
Administration, selling and Distribution expenses	₹ 14,000 per year

Solution

Master Budget

		Period.....	
		₹	₹
Sales (as per Sales Budget)			
	Toughened glass .....units @ ₹....		3,00,000
	Bent toughened glass.....units @ ₹...		5,00,000
			<u>8,00,000</u>
Less. Cost of Production (as per cost of Production Budget):			
	Direct Material	4,80,000	
	Direct Wages (20 × 150 × 12)	<u>36,000</u>	
	Prime Cost		5,16,000
Factory Overheads:			
Variable:			
	Store and Spares (2 1/2 % on sales)	20,000	
	Light and Power	5,000	
	Repairs	8,000	33,000
Fixed:			
	Works Manager's Salary	6,000	
	Foremen's Salary	4,800	
	Depreciation	12,600	
	Sundries (10% on direct wages)	3,600	<u>27,000</u>
	Work Cost		5,76,000
	Gross Profit		2,24,000
Less: Admin. Selling and Distribution Overheads			<u>14,000</u>
Net Profit			<u>2,10,000</u>

For recapitulation of the various facets of different budgets are given in the table on next page.

Table Showing Various Facets of Different Budgets

Name of Budget	What it shows	Prepared by	Based upon	Classification
Sales Budget	Estimated Sales of Products	Sales Manager	Historical analysis of sales business conditions / Report by salesman Market Analysis Special conditions	Product-wise, Territory-wise, Type of customer Salesman-wise Month-wise
Production Budget	Quantity of product to be manufactured	Production Manager	Sales Budget, production Capacity, Stock requirements	Product-wise, department-wise Month-wise Element of Cost
Production Cost	Cost of production	Production Manager	Production Budget	Product-wise, department-wise Month-wise
(a) Material budget	Quantity and value of Material needed for Production Budget	Production Manager and Costing Deptt.	Production Budget stocks on hand	Item-wise (major)
(b) Labour budget	Labour Hours (No.) and Cost and needed for Production Budget	Production Manager and Costing Deptt.	Production Budget	Category / skill-wise
(c) Production Overheads Budgets	Estimated Overhead expense for the Production Budget	Production Manager and Costing Deptt.	Production Budget and Fixed Expenses	Expense Item-wise Department-wise
Plant Utilisation Budget	Requirement of plant to meet the production budget showing machine load in each manufacturing Deptt. & reveals over-loading and under-loading	Production Manager	Production requirements Plant capacity	Department-wise Machine-wise

Contd..

Administration Overheads Budget	Estimated selling and distribution costs for coming period.	Finance Manager	Past records expected future changes, increments of staff, funds and other assets and facilities	Item-wise
Selling and Distribution Budget	Estimated selling and distribution costs for coming period.	Sales Manager	Market information Past performance	Item-wise, Media-wise, product-wise, Territory-wise
Cash Budget	Budgeting cash receipts and payments.	Budget Officer	All functional Budgets	
Capital Expenditure Budget	Estimated expenditure on Fixed Assets during the budget period.	Budget Officer	Plant utilisation on budget showing over-loading. Requisition for new assets or alteration to existing assets received from various department	Item-wise
Master Budget	Summary of all Budgets. Projected Profit and Loss Account and Balance Sheet for the budget period.	Budget Officer	All functional Budgets	

Example: (Production Budget): Ace Ltd. manufactures three products X, Y, Z. The cost accountant is preparing the annual budget for the next year and he has asked you to production budget for product X, Y, and Z using the data given below:

	Product X	Product Y	Product Z
	₹	₹	₹
Budgeted Stock:			
1 st Jan – Next Year	72,000	54,000	1,80,000
31 st Dec – Next Year	60,000	57,000	1,00,000
All stocks are valued at			
Standard cost price per unit	24	15	20
Standard Profit % of selling price	20%	25%	16%
Budgeted sales (₹)	4,20,000	3,80,000	10,08,000
Normal loss in production	10%	20%	5%

Solution

Production Budget

Items	Product X (units)	Product Y (units)	Product Z (units)
Sales Budgeted (i)	14,000	19,000	42,000
Add: Closing stock (ii)	2,500	3,800	5,000
Total Requirements	16,500	22,800	47,000
Less: Opening Stock (ii)	3,000	3,600	9,000
(a) Production Requirements	13,500	19,200	38,000
Add: Loss in Production (balancing figure)	1,500	4,800	2,000
(b) Number of units to be produced (iii)	15,000	24,000	40,000

Working Notes:

(i) Sales in units

	Product X ₹	Product Y ₹	Product Z ₹
Budgeted Sales	4,20,000	3,80,000	10,08,000
Less: Profit @ 20%, 25% and 16 ² / ₃ % respectively	<u>84,000</u>	<u>95,000</u>	<u>1,68,000</u>
Cost of sales (a)	<u>3,36,000</u>	<u>2,85,000</u>	<u>8,40,000</u>
Standard cost per unit (b)	<u>24</u>	<u>15</u>	<u>20</u>
No. of units sold (a ÷ b)	<u>14,000</u>	<u>19,000</u>	<u>42,000</u>

(ii) Number of units of closing stocks and opening stock has been calculated by dividing the value by cost per unit of each product:

(iii) Number of units to be produced

$$\text{Product X} = 13,500 \times 100 / 80 = 15,000$$

$$\text{Product Y} = 19,200 \times 100 / 80 = 24,000$$

$$\text{Product Z} = 38,000 \times 100 / 95 = 40,000$$

7.17 CASH BUDGET

A cash budget represents a detailed estimate of cash inflows from all sources, cash disbursements for all purposes and the cash balance during the budget period.

7.17.1 Preparation of Cash Budget

The responsibility of preparing cash budget in any concern lies with the financial manager. This budget is based on budgets prepared by various departments. Therefore, it is essential that all the departmental heads should be consulted before preparing cash budget:

1. **Fixation of Budget Period:** Before preparing the cash budget, first of all, it is decided what should be the budget period. Generally, budget period commensurate with other departmental budgets and it is usually one year. But, in determining this period, the budget is prepared for each season. In manufacturing

concern, it may be made for long-term. After determining the budget period, it is sub-divided in small periods such as quarter, month, week or days.

2. **Forecasting Cash Flows:** After determining the budget period, an estimate is made of cash inflows and cash outflows during the budget period. Cash inflows in a business concern, usually, arise from cash sales, collection from debtors' income from investments etc. while cash outflows result from various expenses incurred by the firm. These may be purchase of goods, wages, interest, dividend etc.
3. **Forecasting Cash Requirements:** After estimating cash inflows and cash outflows, the excess or shortage of cash in various months is ascertained. Arrangements will be made to make good the shortages from different sources and surplus will be invested elsewhere in profitable avenues.

7.18 METHODS OF PREPARING CASH BUDGET

There are three recognised methods of preparing the cash budget. These are as follows:

- Receipts and Payments Methods
- Adjusted Profit and Loss Method
- Balance Sheet Method

7.18.1 Receipts and Payments Method

Under this method of presenting cash budget, consideration has to be given to all cash receipts and payments expected during the budget period. Hence, the budget is divided into two parts. The first part contains amount of cash received and its timing and the other part, amount of cash paid and its timings. The method is more suitable for short-term cash forecasts. Under this method, the necessary information for preparing cash budget is obtained from the following budgets:

- Sales budget that reveals cash sales but only after adjusting sales figures with the lag in payment by debtors to arrive at collection from debtors.
- Purchase budget that reveals cost of purchases but after taking into account the payment to creditors according to the terms of credit given.
- Labour budget that reveals labour cost but after considering the lag in payment of wages and salaries to employees.
- Expenditure budget that reveals cash overhead with due consideration for the time-lag in the payment of these costs.
- Plant and equipment budget shows cash required for purchase of new equipment or for replacement.
- Financial budget reveals cash requirements for dividend, taxes, loans, donations etc.

The computation of cash receipts and cash payments is made as follows:

Estimating Cash Receipts or Cash Inflows

The cash inflows or cash receipts during the budget period may arise from operations, from non-operating sources and from capital transactions.

1. **Cash Receipts from Operations:** The most important source of cash receipts from operations is sales which can be ascertained from the sales budget. Sales can be for cash or on credit basis. In case of cash sales, cash is received at the time of sales. On the other hand, in case of credit sales, cash is realised after some time

depending upon the firm's credit policy reflected in the average collection period. While estimating cash from sales and collection from debtors, account should be taken of sales discount, returns, allowances and bad debts as they reduce the amount of cash collected from debtors. This has been explained with the following example:

Example: A large retail store makes 25% of its sales for cash and the balance on 30 days' terms. Due to faulty collection practice, there have been losses from bad debts to the extent of 1% of credit sales on an average in the past. The experience of the past reveals that normally 60% of credit sales are collected in the month following the sales, 25% in the second following month and 14% in the third following month. Sales in the preceding three months for January, February and March, 2002 were ₹ 80,000, ₹ 1,00,000 and ₹ 1,40,000 respectively. Sales for the next three months from April to June are estimated to ₹ 1,50,000, ₹ 1,10,000 and ₹ 1,00,000 respectively.

Prepare a schedule of the expected cash collection during the months of April, May and June, 2002 for the presentation to the finance department.

Payment:			
Cash Purchases	.....	.....	.....
Payment to Creditors	.....	.....	.....
Wages and Salaries	.....	.....	.....
Expense paid	.....	.....	.....
Dividend and tax paid	.....	.....	.....
Repayment of Loans	.....	.....	.....
Purchase of Fixed Assets	.....	.....	.....
Total Payment (B)	.....	.....	.....
Balance c/d (A - B)	.....	.....	.....

Example: Summarised income and expenditure forecasts for the month of March to August, 2002 are given below:

Months	Sales	Purchases	Wages	Overheads
	₹	₹	₹	₹
March	60,000	36,000	9,000	10,000
April	62,000	38,000	8,000	9,500
May	64,000	33,000	10,000	11,500
June	58,000	35,000	8,500	9,000
July	56,000	39,000	9,500	9,500
August	60,000	34,000	8,000	8,500

You are required to prepare a cash budget for 3 months starting on 1st May, 2002 keeping in view the following information:

- (i) Cash balance as on 1st May, 2002 ₹ 8,000.
- (ii) Sales and purchases all are on credit;
- (iii) Plant costing ₹ 16,000 are due for delivery in July payable 10% on delivery and the balance after 3 months;
- (iv) Advance tax installments of ₹ 8,000 each are payable in March and June;
- (v) The period of credit allowed by suppliers is 2 months and that allowed to customers is 1 month; and
- (vi) Lag in payment of all expenses is one month.

Solution

Cash Budget
Period of three months ending July, 2002

Particular	May	June	July
	₹	₹	₹
	Balance b/d	8,000	16,500	13,000
Receipts			
Cash collected from Debtors	<u>62,000</u>	<u>64,000</u>	<u>58,000</u>
Cash Available (A)	70,000	80,500	71,000
Payments			
Accounts Payable	36,000	38,000	33,000
Wages	8,000	10,000	8,500
Overheads	9,500	11,500	9,000
Plant (10%)	--	--	1,600
Advance Tax	--	8,000	--
Total Payments (B)	<u>53,500</u>	<u>67,500</u>	<u>52,100</u>
Balance c/d (A - B)	16,500	13,000	18,900

Working Notes:

- (i) Customers are allowed one month's credit, hence credit sales of April, May and June will be realised in the month of May, June, July respectively.
- (ii) Payment for credit purchases is made after two months of purchase hence purchases for March, April and May will be paid in the month of May, June, July respectively.

Example: From the following particulars make out a cash budget of Chanakya Limited from October to December.

Months	Sales	Purchases	Wages & Expenses
	₹	₹	₹
July (Actual)	3,00,000	1,00,000	60,000
August (Actual)	3,50,000	1,50,000	70,000
September (Actual)	4,00,000	2,00,000	64,000
October (Budgeted)	6,00,000	3,00,000	80,000
November (Budgeted)	4,50,000	2,50,000	72,000
December (Budgeted)	5,00,000	2,00,000	60,000

Other Information:

- (i) Credit allowed to customers for 2 months and from creditors 1 month;
- (ii) Lag in payment of Wages and Expenses ¼ month;
- (iii) Advance tax is to be paid in November ₹ 25,000;
- (iv) Insurance @ ₹ 5,000 payable in every month which is not included in the above 'Wages and Expenses';
- (v) Machinery purchased in December amounted to ₹ 1,50,000;
- (vi) 10% sales and purchases are made for cash;
- (vii) Selling commission is payable @ 5% on sales payable in the month following the month of collection;
- (viii) The Bank Balance on 1st October is ₹ 1,00,000.

Cash Budget
Period: Three months ending 31st December, 2002

	₹	₹	₹
Balance b/d	1,00,000	1,69,000	1,57,500
Receipts			
Cash Sales	60,000	45,000	50,000
Cash collected from Debtors	3,15,000	3,60,000	5,40,000
Cash Available(A)	4,75,000	5,74,000	7,47,500
Payments:			
Cash Purchases	30,000	25,000	20,000
Payment to Creditors	1,80,000	2,70,000	2,25,000
Wages and Expenses	76,000	74,000	63,000
Advance Tax	---	25,000	----
Insurance	5,000	5,000	5,000
Machinery purchased	---	---	1,50,000
Selling Commission	15,000	17,500	20,000
Total Payments (b)	3,06,000	4,16,500	4,83,000
Balance c/d (A - B)	1,69,000	1,57,500	2,64,500

Working Notes:

- (i) Collection from debtors is equal to 90% of sales of prior to two months.
(ii) Payment to creditors is equal to 90% of previous month's sales.
(iii) Amount of wages and expenses is calculated by adding $\frac{1}{4}$ of previous month and $\frac{3}{4}$ of current month's wages and expenses. For example, the amount for October is:

$$\text{Of September } \frac{1}{4} \text{ of ₹ 64,000} = \text{₹ 16,000}$$

$$\text{Of October } \frac{3}{4} \text{ of ₹ 80,000} = \text{₹ 60,000}$$

$$\text{₹ 76,000}$$

The amount for next months will be calculated in the similar way.

- (iv) Time lag in payment of sales commission will of 3 months (2 months collection from debtors and one month later) i.e. the commission on July sales will be paid in October, August sales in November and September sales in December.

7.18.2 Adjusted Profit and Loss Method

Under this method, profit and loss account is adjusted to know the cash estimates. Cash increase on account of income from operation (after adjusting non-cash items like depreciation, outstanding expenses, write off of intangible assets etc), reduction in current assets (except cash), sales of fixed assets; increase in liabilities and sale of shares and debentures. Decrease in cash occurs due to increase in current assets (except cash); decrease in liabilities purchase of fixed assets, payments of dividend; tax etc. This method of preparing cash budget is also called "Adjusted Net Income Method" or "Adjusted Profit and Loss Method". It is because; the forecasts of the budget period are converted into cash by adjusting the items which do not affect cash inflows and outflows. It is based on the principle that profits of a business are equal to cash. If there are no credit transactions, capital transaction, accruals, provisions, appropriations etc., the balance of profit as shown by profit and loss account should be equal to the balance in the cash book. A specimen of such budget is given below:

Cash Budget for the period ended.....

	₹	₹
Opening Cash Balance		....
Budgeted Net Profit	....
Add: (i) Non-cash transaction:		
Depreciation	....
Amortisation	....
Provision and Reserves	....
(ii) Decrease in current Assets	....
<i>(i.e. Stock, Debtors, B/R)</i>	....
(iii) Increase in Current Liabilities	....
(iv) Issue of Share Capital, Debentures	....
(v) Sales of Fixed Assets	....	....
Less: (i) Purchase of Fixed Assets	....
(ii) Payment of Dividends	....	....
(i) Redemption of Debentures & Preference Share	....
(ii) Increase in Current Assets (Debtors, B/R, Stock)	....
(iii) Decrease in Current Liabilities (Creditors, B/P, Taxes)	....
Cash Balance at the end of the year		....

Example: From the following information prepare a Cash Budget by adjusted profit and loss method:

	₹		₹
Creditors	1,34,600	Cash	36,800
Debentures	1,47,000	Debtors	98,000
Accumulated Depreciation	1,00,000	Stock	1,23,800
Equity Share Capital	2,50,000	Investments	2,00,000
Profit and Loss A/c.	<u>2,67,000</u>	Plant at cost	<u>4,40,000</u>
	8,98,600		8,98,600

Forecast Profit and Loss Account
For the year ended 31st December, 2002

	₹		₹
To Accumulated Dep. A/c	44,000	By Gross profit	4,00,000
To Adm. & Selling Exp.	20,000	By profit on sale of Invest.	4,000
To Income Tax	10,000	By Interest	20,000
To Interest charges	6,000		
To Loss on sale of Plant	16,000		
To net profit c/d	3,28,000		
	4,24,000		4,24,000
To Dividend	20,000	By Net Profit b / d	3,28,000
To Balance c/ d	3,08,000		
	3,28,000		3,28,000

Additional Information.

- (i) New plant costing ₹ 1,60,000 was purchased during the year;
- (ii) An old plant costing ₹ 1,20,000 and accumulated depreciation of ₹ 84,000 was sold for ₹ 20,000;
- (iii) Investments costing ₹ 20,000 were sold for ₹ 24,000.

On 31st December, 2002 Debtors were ₹ 1,66,400; Stock ₹ 1,85,000; Creditors ₹ 2,00,000; Debentures ₹ 1,00,000; Equity shares issued during the year ₹ 1,00,000.

Solution

Cash Budget
For the budget period ended 31st December, 2001

Opening Balance of Cash		36,800
Budgeted Profit for the Year	3,28,000	
<i>Add:</i> Depreciation written off	44,000	
Increase in Creditors	65,400	
Loss on sale of Plant	16,000	
Sale of Investments	24,000	
Sale of Plant	20,000	
Issue of Share Capital	1,00,000	<u>5,97,400</u>
		6,34,200
<i>Less:</i> Redemption of Debentures	47,000	
Purchase of Plant	1,60,000	
Payment of Dividend	20,000	
Profit on sale of Investments	4,000	
Increase in Stock	61,200	
Increase in Debtors	68,400	<u>3,60,600</u>
Closing Balance of Cash		2,73,600

7.18.3 Balance Sheet Method

This method of preparing cash budget is another form of adjusted profit and loss account method. Under this method, a budgeted balance sheet is prepared showing all items of assets and liabilities except cash balance. The balancing figure is considered to represent cash balance. If there is excess of liabilities over assets, the balance is ordinary cash balance, if there is excess of assets over liabilities, the balance is assumed to be bank overdraft.

Of these three methods, the first method (receipt and payment method) is mostly preferred because it is short-term forecast and is much more detailed than the other two methods, which are normally used as long-term forecasts.

Example: Using the data of above mentioned concept, prepare cash forecast showing cash at bank under Balance Sheet Method.

Solution

Forecast Balance Sheet
As on 31st December, 2002

	₹		₹
Equity Share Capital	3,50,000	Plant	4,80,000
Profit & Loss A/c	5,75,000	Investments	1,80,000
Debentures	1,00,000	Stock	1,85,000
Accumulated Depreciation	60,000	Debtors	1,66,400
Creditors	2,00,000	Cash at Bank	2,73,600
	<u>12,85,000</u>	(Balancing figure)	<u>12,85,000</u>

Example: On 1st January, 2001 Yunus Limited had ₹ 7,50,000 Shares Capital and ₹ 90,000 reserve against ₹ 6,00,000 invested in Fixed Assets. Stock and Debtors were ₹ 80,000 and ₹ 1,95,000 respectively and Trade and other Creditors were ₹ 30,000. To sustain the increase in activity, stock level was proposed to be increased by 50% by the end of the year. Machinery worth ₹ 30,000 were proposed to be purchased during the year as per capital budget. Estimated profit for the year was ₹ 1,05,000 after

charging ₹ 60,000 depreciation and 50% of profit for taxation. Advance Income tax payment was estimated to ₹ 90,000. Trade and other Creditors were likely to be doubled. 5% dividend was to be paid and provision for 10% dividend for next year was to be made. Debtors were estimated to be outstanding for 3 months. Sales budget shown ₹ 15,00,000 sales.

Make an estimate of cash position at the end of the budget period by preparing Budgeted Balance Sheet.

Solution

Budgeted Balance Sheet
As at 31st December 2001

	₹	₹		₹	₹
Share Capital		7,50,000	Fixed Assets :		
Reserve & Surplus			Balance	6,00,000	
Balance	90,000		Additions	<u>30,000</u>	
Less : Dividend	<u>37,500</u>			6,30,000	
	52,500		Less : Dep.	<u>60,000</u>	5,70,000
Add: profit after tax	<u>1,05,000</u>		Current Assets :		
Less : Proposed	<u>1,57,500</u>		Stock		1,20,000
Dividend	<u>75,000</u>	82,500	Debtors		3,75,000
Current Liabilities			Advance Income Tax		90,000
Trade & Other Creditors		60,000			
Proposed Dividend		75,000			
Provision for Income Tax		1,05,000			
Overdraft		82,500			
(balancing figure)					11,55,000
		<u>11,55,000</u>			

Working Notes

(i) Stock = $80,000 \times 1.5 = ₹ 1,20,000$

(ii) Debtors are equal to three month's sales = $15,00,000 \times 3/12 = ₹ 3,75,000$

Check Your Progress

Fill in the blanks of the following:

- The progress of preparing and using budgets to achieve management objectives is called _____.
- The budget is a _____ of the projected plan of action expressed in quantitative terms and for a specified period of time.
- The _____ defines the authority and responsibility of each person in exact terms and therefore, overlapping of authority is avoided.
- _____ is the cost which tends to vary in direct proportion to the volume of output or level of activity.
- A _____ is an estimate of the total production product-wise with the scheduling of operations by days, weeks and months.
- The most important source of cash receipts from operations is _____ which can be ascertained from the sales budget.

7.19 LET US SUM UP

- A budget is a precise statement of the financial and quantitative implications of the course of action that management has decided to follow in the immediate next period of time (usually a year).
- A budget is always expressed in financial terms. Initially the budgets may be prepared in terms of quantities, but finally they must be expressed in the money units.
- Budgeting is a managerial process that involves preparation of budget, budget control, budget co-ordination and acknowledgement of the problems and difficulties relating to future budget period and taking timely decisions for further retrieval.
- Budgetary control is the planning in advance of the various functions of business so that the business as a whole can be controlled. Budgetary control makes all the difference between drifting in an uncharted sea and following a well-plotted course towards a predetermined destination.
- A budget manual is a document, which contains the essential information required for the construction, administration and execution of the budget.
- A detailed budget manual serves as a ready reckoner for the executives connected with budgeting system as it provides with them proper guidelines in the preparation and implementation of budgets.
- Budgets are prepared on the basis of data generated from accounting system. Control of performance requires the comparison of actual performance with the budgeted performance.
- A fixed budget is a budget that does not change or flex when sales or some other activity increases or decreases. A fixed budget performance report compares data from actual operations with the single level of activity reflected in the budget.
- Flexible budget also known as variable or sliding scale budget is a budget which is prepared to furnish budgeted costs for any level of activity actually attained.
- Sales budget is a forecast of the total sales expressed in quantity and /or money during the budget period. It is the most important budget of the firm and forms the basis on which all other budgets are built up.
- The production budget, which is prepared by the production manager, is a forecast of anticipated production of each product to be produced by the firm during the budget period.
- A master budget is a set of interconnected budgets of sales, production costs, purchases, incomes, etc. and it also includes proforma financial statements.
- A cash budget represents a detailed estimate of cash inflows from all sources, cash disbursements for all purposes and the cash balance during the budget period.

7.20 LESSON END ACTIVITY

You are appointed as a finance officer of a big business concern. What steps will you like to introduce in budgeting system there?

7.21 KEYWORDS

Budget: A budget is an estimation of revenue and expenses over a specified future period of time; it is compiled and re-evaluated on a periodic basis.

Budgetary Control: Budgetary control refers to how well managers utilize budgets to monitor and control costs and operations in a given accounting period.

Budget Manual: A budget manual is a document, which contains the essential information required for the construction, administration and execution of the budget.

Fixed Budget: A fixed budget, also called a static budget, is financial plan based on the assumption of selling specific amounts of goods during a period.

Flexible Budget: A flexible budget is a budget that adjusts or flexes for changes in the volume of activity.

Sales Budget: Sales budget is a forecast of the total sales expressed in quantity and /or money during the budget period.

Production Budget: Production budget is a schedule showing planned production in units which must be made by a manufacturer during a specific period to meet the expected demand for sales and the planned finished goods inventory.

Master Budget: The master budget is the aggregation of all lower-level budgets produced by a company's various functional areas, and also includes budgeted financial statements, cash forecasts, and a financing plan.

Cash Budget: A cash budget is an estimation of the cash inflows and outflows for a business over a specific period of time, and this budget is used to assess whether the entity has sufficient cash to operate.

7.22 QUESTIONS FOR DISCUSSION

1. What do you mean by Business Budgeting? State the procedure for preparation of a budget by a business undertaking.
2. What is the purpose of Budgeting? Discuss the essentials of an effective budgeting.
3. On what factors the success of a budgeting system depends in a business organisation?
4. "Budget is an essential tool for managers". Explain this statement and discuss the qualities of an effective budget.
5. What do you understand by Budget Committee? What are its functions?
6. What is Budget Manual? What types of information it contains? Discuss its advantages.
7. "The principal budget factor (or limiting factor) is of vital significance to management". Comment on this statement giving a list of principal budget factors.
8. What important changes have taken place in the realm of budgeting in India?
9. Write short note on the following:
 - (i) Budget Manual
 - (ii) Budget Officer

(iii) Budget Period

(iv) Key Budget Factor

10. Explain the objectives of cash budget.
11. How does cash budget help in formulating effective dividend / investment policy?
12. How does Cash Budget help in availing cash discount? Explain.
13. How is Cash Budget useful in planning the purchase of fixed assets?
14. How are long-term cash forecasts made?
15. Explain the difference between cash budget and finance budget.
16. Ravindra Ltd. expects monthly sales in January ₹ 70,000 in February ₹ 45,000, in March ₹ 75,000 and in April ₹ 50,000. 75% of the sales are credit sales. The company receives 30% of credit sales in the month following the sales, 40% after 2 months and the remaining in three months. Find out the cash collected in April.
17. What is Cash Budget? What is the difference between Cash Budget and Finance Budget? Discuss its main functions.
18. Discuss the importance of Cash Budget and explain as to how cash budget helps in cash planning.
19. Briefly discuss the various items of 'Cash Receipts' and 'Cash Payments'.
20. From the following prepare a monthly cash budget for the four months ending 31st December

Months	Expected Sales	Expected Purchases
	₹	₹
September	50,000	32,000
October	60,000	60,000
November	45,000	70,000
December	80,000	45,000

Other relevant information is as under:

- (a) Wages to be paid to workers ₹ 6,000 per month.
 - (b) Dividends from investments amounting to ₹ 1,000 are expected on 31st December.
 - (c) Income-tax to be paid (in advance) in December, ₹ 2,000.
 - (d) Preference share dividend of ₹ 5,000 is to be paid on 30th November.
 - (e) Balance at Bank on 1st September is expected to be ₹ 6,000.
21. ABC Co. wishes to arrange overdraft facilities with its bankers during the period April to June of a particular year, when it will be manufacturing mostly for stock. Prepare a Cash Budget for the above period from the following data, indicating the extent of the bank facilities the company will require at the end of each month:

(a)

Month	Sales	Purchases	Wages
	₹	₹	₹
February	1,80,000	1,24,000	12,000
March	1,92,000	1,44,000	14,000
April	1,08,000	2,43,000	11,000
May	1,74,000	2,46,000	10,000
June	1,26,000	2,68,000	15,000

(b) 50% of the credit sales are realised in the month following sales and remaining 50% sales in the second month following. Creditors are paid in the following month of purchase.

(c) Cash at Bank on 1st April (estimated) ₹ 25,000.

22. A company is expecting to have ₹ 25,000 cash in hand on 1st April, 2002 and you are required to prepare an estimate of cash position during the three months, April to June, 2002. The following information is provided to you.

Month	Sales	Purchases	Wages
	₹	₹	₹
February	70,000	40,000	6,000
March	80,000	50,000	7,000
April	92,000	52,000	7,000
May	1,00,000	60,000	8,000
June	1,20,000	55,000	9,000

Other Information:

(a) Period of credit allowed by suppliers two months;

(b) 25% of sale is for cash and the period of credit allowed to customers for credit sale one month;

(c) Delay in payment of wages and expenses on month;

Income tax ₹ 25,000 are to be paid in June, 2001.

23. A company expects to have ₹ 37,500 cash in hand on 1st April and requires you to prepare an estimate of cash position during the three months -- April, May and June. The following information is supplied to you:

Month	Sales	Purchases	Wages	Factory Expenses	Office Expenses	Selling Expenses
	₹	₹	₹	₹	₹	₹
February	75,000	45,000	9,000	6,000	6,000	4,500
March	84,000	48,000	9,750	8,250	6,000	4,500
April	90,000	52,500	9,000	9,000	6,000	5,250
May	1,20,000	60,000	11,250	11,250	6,000	6,570
June	1,35,000	60,000	14,000	14,000	7,000	7,000

Other Information:

- (a) Period of credit allowed by suppliers 2 months.
- (b) 20% of sales are for cash and period of credit allowed to customers for credit is one month.
- (c) Delay in payment of all expenses – 1 month.
- (d) Income tax of ₹ 57,500 are due to be paid on June 15th.
- (e) The company is to pay dividends to shareholders and bonus to workers of ₹ 15,000 and ₹ 22,500 respectively in the month of April.
- (f) Plant has been ordered to be received and paid in May. It will cost ₹ 1,20,000.

Check Your Progress: Model Answer

1. Budgeting
2. Blue-print
3. Budget manual
4. Variable cost
5. Production budget
6. Sales

7.23 SUGGESTED READINGS

Charles I. Horngren, *Introduction to Management Accounting*, Prentice Hall, Englewood Cliff, New Jersey 07632.

Ray H. Garrison, *Managerial Accounting*, Homewood, Illinois 60435.

Robert S. Kaplan and Anthony A. Atkinson, *Advanced Management Accounting*, (Prentice Hall, Englewood Cliff, New Jersey 07632).

Dr. S. N. Maheshwari, *Management Accounting for Bankers*, Sultan Chand & Sons, New Delhi: 110002.

N. K. Kulshrestha, *Management Accounting Concepts & Cases*, Tata McGraw Hill Publishing Co. Ltd., New Delhi.

LESSON

8

MANAGEMENT AUDIT

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8.0 AIMS AND OBJECTIVES

After studying this lesson, you should be able to:

- Understand the definition, scope, objectives and functions of Management audit.
- Discuss who is an auditor and what are his/her qualities and functions.
- Describe the working procedure of management audit.
- Understand the various types of audits.

8.1 INTRODUCTION

Management audit is audit of the management. It is similar to operational audit in several aspects. However, management audit concentrates more on the inefficiencies

and weaknesses of the management. Management audit is an emerging concept of auditing. It has been originated from America. Management audit is an act of evaluation of all the activities of all the departments with a view to provide appropriate suggestions to the management to help their work. In other words, management auditing is a future oriented task which evaluates timely in all the levels of management like production management, sales management etc.

8.2 EMERGING CONCEPT OF MANAGEMENT AUDIT

Management audit is a method of independent and systematic evaluation of the management activities at all levels of management to ascertain the functions, efficiency and achievement of the management (*i.e* policies) as compared to standards set by the company.

According to L. R. Howard, "*Management audit is an investigation of business from the highest level downward in order to ascertain whether sound management prevails throughout, thus facilitating the most effective relationship with outside world and smooth running of internal organisation.*"

As per Taylor and Perry, "*Management auditing is a method to evaluate the efficiency of management at all levels throughout the organisation, or more specifically, it comprises the investigation of a business by an independent body from the highest executive level downwards, in order to ascertain whether sound management prevails through and to report as to its efficiency or otherwise with recommendations to ensure its effectiveness where such is not the case*"

Management audit may be defined as the systematic and dispassionate examination, analysis and appraisal of management's overall performance. It takes into account both financial and non-financial factors including economic environment, their effect on the administration and goals of the business organisation.

It is essentially a procedure or a form of appraisal of the total performance of the management by means of an objective and comprehensive examination of the organisation structure, its components such as a department, its plans and policies, methods of process or operation and controls, and its use of physical facilities and human resources.

Thus management audit signifies critical assessment of management of the enterprise from the broadest possible point of view. The thrust of this audit is, therefore, on evaluation, with appropriate analysis for improvement on contribution towards industrial development.

In this regard, George A. Terry states, "*The periodic assessment of a company's managerial planning, organising, actuating, and controlling compared to what might be called the norm of successful operation is the essential meaning of management audit. It reviews the company's past, present and future. The areas the company covers are examined with a view to determine whether the company is achieving maximum results out of its endeavours.*"

Such an audit may be undertaken by the management itself, or it may be carried out with the help of management consultants. In the same way, while a comprehensive management audit may be recommended, companies may even apply it independently to some specific sections or areas of the organisation. For example, production efficiency or investment appraisal may well be the subject-matter of management audit.

Management audit may even be used to provide guidance on critical assessment of capital budgeting or profit performance, forecasting and planning activities on

long-term and short-term basis. Management audit is thus concerned with evaluation and appraisal of the control system and information system in various segments of the organisation.

8.3 FEATURES OF MANAGEMENT AUDIT

The essential features of an audit can be described as follows:

1. **Systematic process:** Auditing is a systematic and scientific process that follows a sequence of activities, which are logical, structured, and organized.
2. **Three party relationships:** The audit process involves three parties, that is, shareholders, managers, and the auditors.
3. **Subject matter:** Auditors give assurance on a specific subject matter. However, the subject matter may differ considerably, such as – data, systems or processes and behaviour.
4. **Evidence:** Auditing process requires collecting the evidence that is, financial and non-financial data, and examining thereof.
5. **Established criteria:** The evidence must be evaluated in terms of established criteria, which include International Accounting Standards, International Financial Reporting Standards, Generally Accepted Accounting Principles, industry practices, etc.
6. **Opinion:** The auditor has to express an opinion as to the reasonable assurance on the financial statements of the entity.

8.4 SCOPE OF MANAGEMENT AUDIT

The scope of management audit is much wider than financial audit because management audit evaluates not only financial audit but also other aspects of the business. It is the method of evaluating the total efficiency of the management from the top level to the lowest level. Therefore, the main scope of management audit is:

1. **Evaluate the Efficiency of the Management:** Management audit evaluates and appraises the efficiency of the management at all levels.
2. **Implementation of Principles and Policies of the Management:** Management audit reviews whether principles and policies formulated by the management have been successfully implemented or not.
3. **Find Variances:** It detects the variances in efficiency with the standards set by the management.
4. **Analyze the Reasons for Variances:** Management audit analyzes the reasons for inefficiencies of the management for not fulfilling the targets.
5. **Recommend Suggestions for Improvement:** It gives suggestions for improvement in the areas e.g. production, sales, purchase, finance, human resources, administration etc.

8.5 NEED AND OBJECTIVES OF MANAGEMENT AUDIT

Management audit is the total audit of the management *i.e.* reviews how the policies of the management have been implemented and its efficiency to execute the policy. Therefore, the scope is much greater than financial audit, as it examines the all aspects of the management. Management audit has some objectives. These are discussed below:

1. ***It verifies the Efficiency:*** Management audit aims at to assess the efficiency at all levels of management and implementation of policies.
2. ***It gives Suggestion for Increase in Efficiency:*** Management audit highlights the inefficiencies in different areas of management and gives his valuable suggestions and means to improve the efficiencies.
3. ***It assesses the Effectiveness of Planning and Policies:*** Management audit examines and evaluates the plans and policies and judge whether planning and policies are properly implemented.
4. ***It helps to Increase Profitability:*** Management audit helps the management to increase profitability by giving remedies to maximize the organisation's resources in an efficient way.
5. ***It helps to Co-Ordinate Activities:*** Management audit detects the interrelationship among the activities, evaluates the authority and responsibility and gives valuable suggestions for improvement of co-ordination among the activities and the employees.
6. ***It gives Valuable Advice:*** By scanning the management efficiency and detecting the weak spots of different levels of management, the management auditor gives valuable advice to the top management regarding different policies and future course of action.

8.6 FUNCTIONS OF MANAGEMENT AUDIT

Management audit is a difficult and complex task. It performs the following functions:

1. Management audit identifies the objectives of an organisation if such objectives are not set up.
2. Management audit allocates the overall objectives of an organisation in small parts.
3. Management audit reviews the structure of organisation and asset of the organisation and decides whether goals can be obtained or not.
4. Management audit examines all the scope of work and liability centres..
5. Management audit provides valuable suggestions to the management after the evaluation of all above facts.

8.7 WHO IS AN AUDITOR?

Auditor is an independent person who vouches for the correctness of books of accounts. He reports on the truth and fairness of the financial statement. He may be appointed by the organisation itself or may be appointed by the government authority under a law. The auditor's job is to write a report at the conclusion of the audit which determines the level of accuracy and clarity that the organisation has accounted for.

They can also act in an advisory role to recommend possible risk aversion measures and cost savings that could be made. Auditors work in the accounting departments of a huge range of firms and with independent chartered and certified firms, examining the money going in and out of organisations and making sure it is recorded and processed correctly.

8.7.1 Auditor's Report

An auditor's report provides an opinion on the validity and reliability of a company's financial statements. An audit report is a written opinion of an auditor regarding an

entity's financial statements. The report is written in a standard format, as mandated by generally accepted auditing standards (GAAS). GAAS requires or allows certain variations in the report, depending upon the circumstances of the audit work that the auditor engaged in. The following report variations may be used:

- A clean opinion, if the financial statements are a fair representation of an entity's financial position.
- A qualified opinion, if there were any scope limitations that were imposed upon the auditor's work.
- An adverse opinion, if the financial statements were materially misstated.
- A disclaimer of opinion, which can be triggered by several situations. For example, the auditor may not be independent, or there is a going concern issue with the auditee.

The typical audit report contains three paragraphs, which cover the following topics:

- The responsibilities of the auditor and the management of the entity.
- The scope of the audit.
- The auditor's opinion of the entity's financial statements.

An audit report is issued to a user of an entity's financial statements. The user may rely upon the report as evidence that a knowledgeable third party has investigated and rendered an opinion on the financial statements. An audit report that contains a clean opinion is required by many lenders before they will loan funds to a business. It is also necessary for a publicly-held entity to attach the relevant audit report to its financial statements before filing them with the Securities and Exchange Commission.

8.8 QUALITIES OF A MANAGEMENT AUDITOR

A management auditor should have the following specific qualities:

- (i) Ability to understand and gauge business problems.
- (ii) General understanding of the organisation.
- (iii) Expert knowledge on the principle of delegation of authority, management by objective, management by exception, management planning and control and the different budgetary systems, and those of internal control devices (*viz.* flow chart, flow of work, analysis of work scheduling, use of computer, etc.).
- (iv) Sufficient knowledge and experience in preparing various reports for presentation.
- (v) General understanding of different laws—general laws, company law, tax laws FERA, MRTP, etc. that affect the functioning of the whole of the organisation.
- (vi) Background knowledge about—Engineering, Statistics, Costing, Management accounting, Financial accounting, Industrial psychology, Managerial economics, etc.
- (vii) Tactfulness, perseverance, and lastly—pleasing and dynamic personality.

8.9 FUNCTIONS OF A MANAGEMENT AUDITOR

There are three broad functions of a management auditor:

1. To furnish guidance in the development of format and related instructions pertaining to revenue and expense budgets for each responsibility centre.

2. To review or give guidance in the preparation of complete statements of the performance standards and yardsticks for measurement applicable to each major decision or performance area. The auditor should carefully examine each set of statements to make sure that they are consistent with policies, plans, procedures and standards established at higher levels of responsibility and they should assure that they are compatible with and properly support the company wide profit budget.
3. To critically examine and refine the units of measurement commonly applied in each major performance or decision area. In this regard the auditor should help management in pinning down and inter-relating the performance standards and measurements with the operating responsibilities of each person affected.

Thus, the functions (or services) of a Management Auditor may embrace the following aspects:

- (i) **Formulation of plan and policy:** He should ensure that “accounting, economic and other data needed by the management in constructing its basic policy framework” are supplied by the management services unit.
- (ii) **Decision-making process:** He should take into account the outcome of the decisions previously applied, and see that the decisions are based on—management by objectives, management by exception, management information services.
- (iii) **Designing organisational authority structure:** He should assist in the flow of information among different functional managers (responsibility-wise).
- (iv) **Measuring and evaluating business performance:** He should concentrate on key functions or operations in the profit-making process.
- (v) **Tax-planning and budgeting:** He should appraise the appropriateness of tax implications, and those of different information and data needed for budget preparation.
- (vi) **Improving communication system:** He should guide in the flow of internal communication (between various departments) to strengthen the organisation structure, and in the flow of external communication (e.g. market conditions, legal requirements, social accounting, competitors’ standing, economic trends, etc.) with a view to strengthening the progress of the business.

8.10 ROLE OF MANAGEMENT AUDITOR

A management auditor should have the following general considerations to:

1. Indicate source, nature and basis of data.
2. Stick to essential information; that is, not matters of general knowledge.
3. Avoid gathering data acquired during a previous study, except when a change in the data presents new evidence.
4. Obtain the complete details where cost is an important factor.
5. Look for irregularities, uncertainties, conflicts and possible disagreements about plans, objectives, functions, systems and operations.
6. Aware for weaknesses in organisation systems, methods, controls, operations and personnel.
7. Substantiate all data by verification through actual observation, examination or test checks.

8. Watch out for inaccurate, incomplete, inadequate and unnecessary reports, forms and statements.
9. Determine compliance of policies and procedures by checking performance.
10. Seek out methods for improvement.
11. Note areas and functions for greater effectiveness in performance.
12. Be on the lookout for inadequate protective and preventive methods.
13. Determine whether or not responsibilities are being appropriately discharged.
14. Look into the matters of cost-effective utilisation of all resources—human, physical financial and national, including the scarce resources and utilities of public nature.
15. Take note of fluctuations in production, work-loads and services.
16. Ascertain the ultimate use (*i.e.* utility aspects) of each activity, record and report in order to determine value or necessity.
17. Look for problems, bottlenecks, waste, unnecessary work or function, poor co-ordination, low morale, inadequate motivation and other defects in all functions and areas under study.

8.11 WORKING PROCEDURE OF MANAGEMENT AUDIT

Management audit is a complex task closely linked with the process of management. It usually involves the following steps:

1. First step of management auditing is to identify of the objectives of the organisation. Sometimes the objectives are stated in specific terms but in most cases they remain undefined. It is important that the objectives are clearly perceived and identified.
2. The overall objectives of the organisation are to be broken up into detailed targets and plans for various segments.
3. The organisational structure is to be reviewed to assess whether it can effectively fulfill the overall objectives and the detailed targets. If possible, specific responsibility centres may be identified in the organisation.
4. The performance of each functional area or responsibility centre is to be examined. In many cases the performance can be expressed in quantitative terms. It should be compared with the objectives and targets.
5. On the basis of the above examination, realistic course of action is to be suggested. A motivation system is operated whereby incentives are given to various personnel on the basis of the results of the management audit.

8.12 DIFFERENT TYPES OF AUDIT

Audits are primarily classified into the following:

1. **Statutory Audit:** Where the appointment of the auditors, manner of audit, contents of audit reports etc. are specifically mentioned in the Act, the audit conducted according to them is called statutory audit. Statutory audit is carried each year by an auditor, is called statutory auditor. In India, the accounts of joint stock companies, banking companies, insurance companies, co-operative societies, trust institutions are subject to compulsory audit.

2. **External Audit:** When the auditor is not appointed by the management. For example, director of the company cannot appoint the statutory auditor directly but the statutory auditor is appointed by the shareholders. It means the statutory auditor is also called an external auditor.
3. **Internal Audit:** When the appointment of auditor is made by the person responsible for the performance of the entity, he is called internal auditor and the audit done by him is called internal audit. Internal auditor is the employee of the company and gives his report to management only.
4. **Financial Audit:** It deals with the assessment and verification of the financial statements of an organisation. The aim of this auditing is to ensure that the financial documents are not mishandled and are fair. They must also comply with the accounting principles established by that particular organisation. It primarily deals with Balance Sheet and Profit and Loss Accounts. Financial audit evaluates the revenues and expenses. It checks that the reporting or the financial documents are in accord with the concerned law, policies and procedures.
5. **Operational Audit:** This type of audit is performed to verify that the resources are being use up in the organisation in the best possible manner to fulfill the aim of the organisation. These are also sometimes known as performance audits. This type of audit takes ingredients from financial as well as compliance audit. In addition it also aims to identify the operations which have chances for further improvement. It is done in order to improve operational efficiently. It verifies that the activities being performed in the company are in the way of meeting predefined management objectives.
6. **Information System Audit:** This audit focuses on the organisation information system and its related operations. This is generally done with other types of audits like financial, etc. It examines the data from IT systems and evaluates their reliability, especially the ones effecting the financial statements of the organisation. It is known by various names like Information System Audit, technology audit, computer audit, etc. IT looks into the technical operation, data center operation and other application controls.
7. **Compliance Audit:** This audit focuses on reviving the level of compliant with policies framed by the organisation or external regulatory requirements. It basically verifies the compliance of rules including legislation, regulations, contractual and regulatory requirements. It tries to determine that whether there is any violation of concerned laws and regulations that are affecting the organisation. Procedures and rules established by the company play a significant role in maintaining the smooth functioning of the system, and therefore this audit plays an important rule to find out whether these rules are implemented properly or not.
8. **Integrated Audit:** Integrated auditing combines many component primarily financial and operations, also including the aspect of information technology. It focuses on the broader spectrum and therefore is termed as the integrated audit as it is jointly planned by the audit team of financial, operational and IT field. It also looks into the quality and other compliance concerns.

This type of audit is important as it is able to provide a complete picture of concerned risks. It may also be used for determine opportunities to increase the flow of information in IT and process groups. This holistic approach of audit is beneficial for increasing the usage of automated controls.

It is important to mention that main types of audits like financial statements audit, operational audit and the compliance audit are generally conducted by the external auditors.

8.13 ADVANTAGES OF MANAGEMENT AUDIT

There are several advantages of conducting management audit of an organisation. When an organisation grows in its volume and activities, there is a need for management audit for evaluating efficiency and effectiveness of the management at all levels of the organisation. The advantages and importance of management audit are discussed below:

1. ***It evaluates Efficiency of the Management:*** Management audit is a method of independent and systematic evaluation of the management activities at all levels of management to ascertain the functions, efficiency and achievement of the management (*i.e.* policies) as compared to standards set by the company.
2. ***It scrutinises of the Plans, Policies and Procedure:*** Management audit helps to determine how the management has implemented its plans, policies and procedure to reach the organisations goal.
3. ***It helps for Correction of Plans, Policies and Procedure:*** Through management audit, it is possible to change or revise the plans, policies and procedure as per needs of the company.
4. ***It aids for Decision Making:*** Management audit assesses the ability of the managers to take important decisions and helps them to rectify the defects.
5. ***It assists to Get Loan:*** Financial institutions who give huge loan to the organisations are interested to know the efficiency of the management and the profitability. Management audit certainly gives a guide to them.
6. ***It helps to Get Subsidy:*** Before granting subsidy by the government to any entity they are interested to know the efficiency and functioning of the management. Management audit helps in this matter.
7. ***It helps to Increase Profitability:*** Management audit helps the management to increase profitability by giving remedies to maximize the organisation's resources in an efficient way.

8.14 LIMITATIONS OF MANAGEMENT AUDIT

Management audit suffers from the following disadvantages:

1. The management audit is audit of the management, by the management, and for the management. The management auditors are selected by the management itself. Such auditors may or may not be able to handle the job assigned to them.
2. The management auditors are generally familiar with the organisation and the staff and employees. The personal aspects cannot be overlooked in such audits. Some may use this audit to level the score with someone while other may utilize it to favour someone.
3. They are more likely to take the facts for granted and may not probe into depth to investigate the matter any further.
4. Time and cost constraints may limit the scope, operation and extent of such audits.
5. The management audit team as selected by the management may not look, act and work as a team. Conflicting interests, attitude and inclination may jeopardize the entire objective of the audit.

Check Your Progress

Fill in the blanks of the following:

1. The audit process involves _____ parties.
2. The auditor's report is written in a _____ format.
3. The statutory auditor is also called _____ auditor.
4. _____ audit focuses on reviving the level of compliant with policies framed by the organisation or external regulatory requirements.
5. Conflicting interests, attitude and inclination may jeopardize the entire objective of the _____.
6. _____ Audit is also known as performance audit.

8.15 LET US SUM UP

- Management audit, as the name signifies, attempts to evaluate the performance of various management processes and functions. It is an audit to examine, review and appraise the various policies and actions of the management on the basis of certain objectives standards.
- The scope of management audit is much wider than financial audit because management audit evaluates not only financial audit but also other aspects of the business.
- Management audit is the total audit of the management *i.e.* reviews how the policies of the management have been implemented and its efficiency to execute the policy.
- Auditor is an independent person who vouches for the correctness of books of accounts. He reports on the truth and fairness of the financial statement. An audit report is a written opinion of an auditor regarding an entity's financial statements.
- Audits are primarily classified into the following: Statutory Audit, External Audit, Internal Audit, Financial Audit, Operational Audit, Information System Audit, Compliance Audit and Integrated Audit.
- When an organisation grows in its volume and activities, there is a need for management audit for evaluating efficiency and effectiveness of the management at all levels of the organisation.

8.16 LESSON END ACTIVITY

Let's say that Company XYZ wants to conduct a management audit. It decides that good management results in higher profits, happier employees and more customers. What are the three measures according to you the board of Company XYZ sets?

8.17 KEYWORDS

Management audit: Management audit may be defined as the systematic and dispassionate examination, analysis and appraisal of management's overall performance.

Auditor: An auditor is an individual who examines the accuracy of recorded business transactions.

Auditor' Report: An audit report is a written opinion of an auditor regarding an entity's financial statements.

Statutory Audit: Statutory audit is the official inspection of a company's accounts typically by an independent body.

External Audit: An external audit is an independent examination of the financial statements prepared by the organisation.

Internal Audit: An internal audit is the examination, monitoring and analysis of activities related to a company's operations, including its business structure, employee behaviour and information systems.

8.18 QUESTIONS FOR DISCUSSION

1. Define management audit.
2. What are the essential features of an audit?
3. Highlight the scope of management audit.
4. Why there is a need of management audit?
5. Discuss the functions of management audit.
6. Explain auditor's report variations.
7. What are the qualities of a management auditor?
8. Discuss the advantages and disadvantages of management audit.
9. Highlight the three broad functions of a management auditor.
10. Explain the working procedure of management audit.
11. Compare and contrast Internal and external audit.
12. What is integrated audit?

Check Your Progress: Model Answer

1. Three
2. Standard
3. External
4. Compliance
5. Audit
6. Operational

8.19 SUGGESTED READINGS

Charles T. Horngren, *Introduction to Management Accounting*, Prentice Hall, Englewood Cliff, New Jersey 07632.

Ray H. Garrison, *Managerial Accounting*, Homewood, Illinois 60435.

Robert S. Kaplan and Anthony A. Atkinson, *Advanced Management Accounting*, (Prentice Hall, Englewood Cliff, New Jersey 07632).

Dr. S. N. Maheshwari, *Management Accounting for Bankers*, Sultan Chand & Sons, New Delhi: 110002.

N. K. Kulshrestha, *Management Accounting Concepts & Cases*, Tata McGraw Hill Publishing Co. Ltd., New Delhi.

LESSON

9

RESPONSIBILITY ACCOUNTING

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9.0 AIMS AND OBJECTIVES

After studying this lesson, you should be able to:

- Define responsibility centres
- Describe controllability and accounting concept
- Discuss the advantages and disadvantages of responsibility accounting

9.1 INTRODUCTION

Responsibility accounting is an underlying concept of accounting performance measurement systems. The basic idea is that large diversified organisations are difficult, if not impossible to manage as a single segment, thus they must be decentralized or separated into manageable parts. These parts or segments are referred to as responsibility centres that include: Revenue centres, Cost centres, Profit centres, and Investment centres. Responsibility accounting is appropriate where top management has delegated authority to make decisions. The idea behind responsibility accounting is that each manager's performance should be judged by how well he or she manages those items under his or her control. This approach allows responsibility to be assigned to the segment managers that have the greatest amount of influence over the key elements to be managed. These elements include revenue for a revenue centre (a segment that mainly generates revenue with relatively little costs), costs for a cost centre (a segment that generates costs, but no revenue), a measure of profitability for a profit center (a segment that generates both revenue and costs) and return on investment (ROI) for an investment centre (a segment such as a division of a company where the manager controls the acquisition and utilization of assets, as well as revenue and costs).

9.2 RESPONSIBILITY CENTRES

The concept of responsibility accounting has emerged to accommodate the need for management information at a more specific level of detail than can be provided by financial accounting procedures. Responsibility accounting attempts to report results (actual performance) in such a way that:

1. Significant variances from planned performance can be identified.
2. Reasons for variances can be determined.
3. Responsibility can be fixed.
4. Timely action can be taken to correct problems.

Under this approach, pertinent costs and revenues are assigned to various organisational units – departments, bureaux, and programmes – designated as responsibility centres. A decentralized environment results in highly dispersed decision making. As a result, it is imperative to monitor and judge the effectiveness of each manager. This is easier said than done. Not all units are capable of being evaluated on the same basis. Some units do not generate any revenue; they only incur cost in support of some necessary function. Other units that deliver goods and services have the potential to be assessed on the basis of profit generation.

As a generalization, the part of an organisation under the control of a manager is termed a "responsibility centre." To aid performance evaluation it is first necessary to consider the specific character of each responsibility centre. Some responsibility centres are cost centres and others are profit centres. On a broader scale, some are considered to be investment centers. The logical method of assessment will differ based on the core nature of the responsibility centre.

9.2.1 Cost Centre

A cost centre is the smallest segment of activity or area of responsibility for which costs are accumulated. Obviously most business units incur costs, so this alone does not define a cost centre. A cost centre is perhaps better defined by what is lacking; the absence of revenue, or at least the absence of control over revenue generation.

Human resources, accounting, legal, and other administrative departments are expensive to support and do not directly contribute to revenue generation. Cost centres are also present on the factory floor. Maintenance and engineering fall into this category. Many businesses also consider the actual manufacturing process to be a cost centre even though a saleable product is produced (the sales “responsibility” is shouldered by other units).

It stands to reason that assessments of cost control are vital or key component in evaluating the performance of cost centres. This unit will show how standard costs and variance analysis can be used to pinpoint areas where performance is above or below expectation. Cost control should not be confused with cost minimization. It is easy to reduce costs to the point of destroying enterprise effectiveness. The goal is to control costs while maintaining enterprise effectiveness.

Non-financial metrics are also useful in monitoring cost centres; documents processed, error rates, customer satisfaction surveys, and other similar measures can be used.

Example:

1. The manager for purchasing department.
2. The manager for maintenance department.

9.2.2 Revenue Centre

Revenue centre can be defined as a distinctly identifiable department, division, or unit of a firm that generates revenue through sale of goods and/or services.

Example: Rooms department and food and beverages department of a hotel.

9.2.3 Profit Centre

Some business units have control over both costs and revenues and are therefore evaluated on their profit outcomes. For such profit centres, “cost overruns” are expected if they are coupled with commensurate gains in revenue and profitability.

Example: A restaurant chain may evaluate each store as a separate profit centre. The store manager is responsible for the store’s revenues and expenses. A store with more revenue would obviously generate more food costs; an assessment of food cost alone would be foolhardy without giving consideration to the store’s revenues.

Thus, profit centre is a segment of a business, often called a division that is responsible for both revenue and expenses. The reason has been Revenue minus Cost that is the Profit. The manager is therefore overall responsible or accountable for making profit for the company.

Example: A company has many restaurants which are all profit centres. A manager is assigned to each restaurant to make sure it is a profit centre.

9.2.4 Investment Centre

At higher levels within an organisation, unit managers will be held accountable not only for cost control and profit outcomes, but also for the amount of investment capital that is deployed to achieve those outcomes. In other words, the manager is responsible for adopting strategies that generate solid returns on the capital they are entrusted to deploy. Evaluation models for investment centres become more complex and diverse. They usually revolve around various calculated rates of returns.

Thus, an investment centre, like a profit centre, is responsible for both revenue and expenses, but also for related investments of capital.

Example: An example of an investment centre is a corporate division responsible for project investments. Here, the manager is responsible for the investment which includes all the revenue, costs and investments (invested capital or assets).

Outside of relatively large corporations, the cost centre is the most common building block for responsibility accounting. In fact, the terms cost centre and responsibility centre are often used interchangeably.

9.3 CONTROLLABILITY CONCEPT

An underlying concept of responsibility accounting is referred to as controllability. Conceptually, a manager should only be held responsible for those aspects of performance that he or she can control. In our view, this concept is rarely, if ever, applied successfully in practice because of the system variation is present in all systems. Attempts to apply the controllability concept produce responsibility reports where each layer of management is held responsible for all subordinate management layers. The managers thus, should take care of certain essential elements to ensure adequate responsibility accounting.

- **Relevance:** The convention of relevance emphasises the fact that only such information should be made available by accounting as is relevant and useful for achieving its objectives.

Example: Business is interested in knowing as to what has been total labour cost? It is not interested in knowing how much employees spend and what they save.

- **Objectivity:** The convention of objectivity emphasises that accounting information should be measured and expressed by the standards which are commonly acceptable.

Example: Stock of goods lying unsold at the end of the year should be valued as its cost price not at a higher price even if it is likely to be sold at higher price in future. Reason is that no one can be sure about the price which will prevail in future.

- **Feasibility:** The convention of feasibility emphasises that the time, labour and cost of analyzing accounting information should be compared vis-à-vis benefit arising out of it.

Example: The cost of 'oiling and greasing' the machinery is so small that its break-up per unit produced will be meaningless and will amount to wastage of labour and time of the accounting staff.

9.4 ACCOUNTING CONCEPTS

Responsibility accounting is based on certain concepts. They are utmost important to be followed while accounting the responsibility. A detailed discussion on each of them is as follows:

9.4.1 Accounting Period

Though accounting practice believes in continuing entity concept *i.e.* life of the business is perpetual but still it has to report the 'results of the activity undertaken in specific period (normally one year). Thus, accounting tries to present the gains earned or losses suffered by the business during the period under review. Normally, it is the calendar year (1st January to 31st December) but in other cases it may be financial year (1st April to 31st March) or any other period depending upon the convenience of the business or as per the business practices in country concerned.

Due to this concept it is necessary to take into account during the accounting period, all items of revenue and expenses accruing on the date of the accounting year. The problem confronting this concept is that proper allocation should be made between capital and revenue expenditure. Otherwise the results disclosed by the financial statements will be affected.

9.4.2 Realization

This concept emphasises that profit should be considered only when realized. The question is at what stage profit should be deemed to have accrued, whether at the time of receiving the order or at the time of execution of the order or at the time of receiving the cash. For answering this question the accounting is in conformity with the law and recognizes the principle of law, *i.e.* the revenue is earned only when the goods are transferred. It means that profit is deemed to have accrued when 'property in goods passes to the buyer' *viz.* when sales are affected.

9.4.3 Matching

Though the business is a continuous affair yet its continuity is artificially split into several accounting years for determining its periodic results. This profit is the measure of the economic performance of a concern and as such it increases proprietor's equity. Since profit is an excess of revenue over expenditure it becomes necessary to bring together all revenues and expenses relating to the period under review. The realization and accrual concepts are essentially derived from the need of matching expenses with revenues earned during the accounting period. The earnings and expenses shown in an income statement must both refer to the same goods transferred or services rendered during the accounting period. The matching concept requires that expenses should be matched to the revenues of the appropriate accounting period. So we must determine the revenue earned during a particular accounting period and the expenses incurred to earn these revenues.

9.4.4 Entity

According to this concept, the task of measuring income and wealth is undertaken by accounting, for an identifiable Unit or Entity. The unit or entity so identified is treated different and distinct from its owners or contributors. In law the distinction between owners and the business is drawn only in the case of joint stock companies but in accounting this distinction is made in the case of sole proprietor and partnership firm as well.

Example: Goods used from the stock of the business for business purposes are treated as business expenditure but similar goods used by the proprietor, *i.e.* by owner for his personal use are treated as his drawings.

Such distinction between the owner and the business unit has helped accounting in reporting profitability more objectively and fairly. It has also led to the development of "responsibility accounting" which enables us to find out the profitability of even the different sub-units of the main business.

9.4.5 Stable Monetary Unit

Accounting presumes that the purchasing power of monetary unit; say rupee, remains the same throughout.

For example, the intrinsic worth of one Rupee is same and equal in the year 1900 and 2000 thus ignoring the effect of rising or falling purchasing power of monetary unit due to deflation or inflation. In spite of the fact that the assumption is unreal and the practice of ignoring changes in the value of money is now being extensively

questioned, still the alternatives suggested incorporating the changing value of money in accounting statements viz., Current Purchasing Power method (CPP) and Current Cost Accounting method (CCA) are in evolutionary stage. Therefore, for the time-being we have to be content with the 'stable monetary unit' concept.

9.4.6 Cost

This concept is closely related to the going concern concept. According to this, an asset is ordinarily recorded in the books at the price at which it was acquired, i.e. at its cost price. This 'cost' serves the basis for the accounting of this asset during the subsequent period. This 'cost' should not be confused with 'value'.

It must be remembered that as the real worth of the assets changes from time to time, it does not mean that the value of such an asset is wrongly recorded in the books. The book value of the assets as recorded does not reflect their real value. It does not signify that the values noted therein are the values for which they can be sold. Though the assets are recorded in the books at cost, in course of time, they become reduced in value on account of depreciation charges. In certain cases, only the assets like 'goodwill' when paid for will appear in the books at cost and when nothing is paid for, it will not appear even though this asset exists on name and fame created by a concern.

Therefore, the values attached to the assets in the balance sheet and the net income as shown in the Profit and Loss account cannot be said to reflect the correct measurement of the financial position of an undertaking, as they do not have any relation to the market value of the assets or their replacement values. This idea that the transactions should be recorded at cost rather than at a subjective or arbitrary value is known as Cost Concept. With the passage of time, the market value of fixed assets like land and buildings vary greatly from their cost.

These changes or variations in the value are generally ignored by the accountants and they continue to value them in the balance sheet at historical cost. The principle of valuing the fixed assets at their cost and not at market value is the underlying principle in cost concept. According to them, the current values alone will fairly represent the cost to the entity.

The cost principle is based on the principle of objectivity. The supporters of this method argue so long as the users of the financial statements have confidence in the statements, there is no necessity to change this method.

9.4.7 Conservatism

This concept emphasises that profit should never be overstated or anticipated. Traditionally, accounting follows the rule "anticipate no profit and provide for all possible losses.

Example: The closing stock is valued at cost price or market price, whichever is lower. The effect of the above is that in case market price has come down then provide for the 'anticipated loss' but if the market price has gone up then ignore the 'anticipated profits'. Critics point out that conservation to an excess degree will result in the creation of secret reserve. This will be quite contrary to the doctrine of disclosure. However, conservatism to a reasonable degree may not come in for criticism.

9.5 ADVANTAGES AND DISADVANTAGES OF RESPONSIBILITY ACCOUNTING

Responsibility accounting has been an accepted part of traditional accounting control systems for many years because it provides an organisation with a number of

advantages. Perhaps the most compelling argument for the responsibility accounting approach is that it provides a way to manage an organisation that would otherwise be unmanageable.

1. In addition, assigning responsibility to lower level managers allows higher level managers to pursue other activities such as long-term planning and policy making.
2. It also provides a way to motivate lower level managers and workers.
3. Managers and workers in an individualistic system tend to be motivated by measurements that emphasise their individual performances.

However, this emphasis on the performance of individuals and individual segments creates what some critics refer to as the “stovepipe organization.” Others have used the term “functional silos” to describe the same idea.

1. Information flows vertically rather than horizontally.
2. Individuals in the various segments and functional areas are separated and tend to ignore the interdependencies within the organisation.
3. Segment managers and individual workers within segments tend to compete to optimize their own performance measurements rather than working together to optimize the performance of the system.

Thus, it can be said that an implicit assumption of responsibility accounting is that separating a company into responsibility centres that are controlled in a top down manner is the way to optimize the system. However, this separation inevitably fails to consider many of the interdependencies within the organisation. Ignoring the interdependencies prevents teamwork and creates the need for buffers such as additional inventory, workers, managers and capacity. Of course, a system that prevents teamwork and creates excess is inconsistent with the lean enterprise concepts of just-in-time and the theory of constraints. For this reason, critics of traditional accounting control systems advocate managing the system as a whole to eliminate the need for buffers and excess. They also argue that companies need to develop process oriented learning support systems, not financial results, fear oriented control systems. The information system needs to reveal the company’s problems and constraints in a timely manner and at a disaggregated level so that empowered users can identify how to correct problems, remove constraints and improve the process. According to these critics, accounting control information does not qualify in any of these categories because it is not timely, disaggregated, or user friendly.

This harsh criticism of accounting control information leads us to a very important controversial question. Can a company successfully implement just-in-time and other continuous improvement concepts while retaining a traditional responsibility accounting control system? Although the jury is still out on this question, a number of field research studies indicate that accounting based controls are playing a decreasing role in companies that adopt the lean enterprise concepts. In a recent study involving nine companies, each company answered this controversial question in a different way by using a different mix of process oriented versus results oriented learning and control information. Since each company is different, a generalized answer to this question for all firms in all situations cannot be provided.

Check Your Progress

Fill in the blanks of the following:

1. A _____ is a unit within an organisation that is responsible for generating revenues.
2. A _____ is part of an organisation that does not produce direct profit and adds to the cost of running a company.
3. _____ is a unit within an organisation whose manager not only has profit responsibility but also some influence on capital expenditures.
4. A manager should only be held responsible for those aspects of performance that he or she can _____.
5. Conservation to an excess degree will result in the creation of _____.
6. Responsibility accounting is appropriate where top management has _____ authority to make decisions.

9.6 LET US SUM UP

- Responsibility accounting is a concept of accounting performance measurement systems.
- The basic idea under responsibility accounting is that large diversified organisations are difficult, if not impossible to manage as a single segment.
- Thus, they must be decentralized or separated into manageable parts.
- These parts or segments are referred to as responsibility centres that include: cost centres, profit centres and investment centres.
- This approach allows responsibility to be assigned to the segment managers that have the greatest amount of influence over the key elements to be managed.
- There are many advantages and disadvantages of responsibility accounting.
- The benefits exceed the limitations, thus rendering responsibility accounting a big space to settle in.

9.7 LESSON END ACTIVITY

Analyse different centres of a food chain of your choice and categorise them into various types of responsibility centres.

9.8 KEYWORDS

Cost Centre: A cost centre is part of an organisation that does not produce direct profit and adds to the cost of running a company.

Investment Centre: A unit within an organisation whose manager not only has profit responsibility but also some influence on capital expenditures.

Profit Centre: It is a segment of a business for which costs, revenues, and profits are separately calculated.

Revenue Centre: Unit within an organisation that is responsible for generating revenues.

9.9 QUESTIONS FOR DISCUSSION

1. Can responsibility be delegated? Why?
2. Analyse the concept of revenue centres. How are they evaluated in traditional responsibility accounting?
3. How would you evaluate cost centres in traditional responsibility accounting?
4. How does an investment centre differ from a profit centre?
5. How are investment centres evaluated in traditional responsibility accounting?
6. Examine the key elements of the responsibility accounting controversy.
7. Put arguments to support traditional responsibility accounting.
8. Present arguments against traditional responsibility accounting.
9. Examine the controllability concept related to responsibility accounting.
10. An issue closely related to responsibility accounting is the controversy over budgeting and how budgets are used. For example, Jensen describes a problem with typical executive compensation plans where bonuses are based on budget targets. He argues that corporate budgeting is a joke because it encourages managers to tell a lie, cheat, lowball targets and inflate results. Explain Jensen's argument and proposed solution.

Check Your Progress: Model Answer

1. Revenue centre
2. Cost centre
3. Investment centre
4. Control
5. Secret reserve
6. Delegated

9.10 SUGGESTED READINGS

Charles T. Horngren, *Introduction to Management Accounting*, Prentice Hall, Englewood Cliff, New Jersey 07632.

Ray H. Garrison, *Managerial Accounting*, Homewood, Illinois 60435.

Robert S. Kaplan and Anthony A. Atkinson, *Advanced Management Accounting*, (Prentice Hall, Englewood Cliff, New Jersey 07632).

Dr. S. N. Maheshwari, *Management Accounting for Bankers*, Sultan Chand & Sons, New Delhi: 110002.

N. K. Kulshrestha, *Management Accounting Concepts & Cases*, Tata McGraw Hill Publishing Co. Ltd., New Delhi.

LESSON

10

MANAGEMENT REPORTING

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10.0 AIMS AND OBJECTIVES

After studying this lesson, you should be able to:

- Understand the concept of Management Reporting System
- Discuss the principles and modes of reporting
- Describe the requisites of a good report
- Explain the steps for effective reporting
- Discuss several ways of classifying the reports

10.1 INTRODUCTION

Information is the life blood of the business. The efficiency of the organisation is to a certain extent governed by the pertinence and regularity of the information provided to those who perform the function of management. As a matter of fact the ultimate effectiveness of the information is itself dependent upon the form and timing of its

presentation. It is, therefore, necessary to have an effective and efficient management or reporting system.

10.2 MANAGEMENT REPORTING SYSTEM

A 'management reporting system' can be defined as an organised method of providing each manager with all the data and only those data which he needs for his decisions, when he needs them and in a form which aids his understanding and stimulates his action. The organisation can design such a system only after it has established its goals, broad policies and the basic organisation structure.

The term information means 'data processed or evaluated for a specific purpose'. It is indicative of the fact that the data is in a form which has reduced if not removed, uncertainty significance to be of some definite use.

The reporting system involves all levels of management. The reports originate from junior levels of management and go up to top level management, consisting of Board of Directors. The sectional in-charge of every section regularly reports the progress of his section to his superior. Functional managers have deputy managers who control departmental sections. The combined reports of different sections reach the departmental manager called functional managers. Different functional managers submit the progress of their departments to the managing director. The brief summaries of departmental reports are submitted to the Board of Directors for reviewing policies and making strategy for the future. Information means data have been shaped into a form that is meaningful and useful to human being. Data are stream of raw facts reporting events occurring in organisation or physical environment before they have been organised and rearranged into a form that people can understand and use.

10.2.1 Report

As indicated earlier, management reporting refers to the formal system whereby through reports relevant information is constantly fed to the management. Thus, 'report' is the essence of any management information system.

The term 'Reporting' may be defined as a formal communication, which moves upward. It differs from the word 'communication'. The superior communicates orders to the subordinate. The subordinate communicates the results. The word 'report' is generally used for factual communication by a lower level to a higher level of authority. Thus, orders are 'communicated', while results are 'reported'.

10.3 PRINCIPLES OF A GOOD REPORTING SYSTEM

A good reporting system is helpful to the management in planning and controlling. Every level of management needs information relating to its activities centre so that effective planning may be undertaken and current activities may be controlled and necessary corrective action may also be taken in time, if needed. Some general principles are followed for making the reporting system effective. These principles are discussed below:

1. **Proper Flow of Information:** A good reporting system should have a proper flow of information. The information should flow from the proper place to the right levels of management. The information should be sent in the right form and at proper time so that it helps in planning and coordination. The frequency of reports will depend upon the nature of report, the types of data required for preparing the information and cost involved in preparing such reports. The flow of reports should be such that it does not cause delay in taking decisions. The reports should

flow at regular intervals so that international needs of different managerial levels are met at a proper time.

Flow of information is a continuous activity and affects all levels of the organisation. Information may flow upward, downward or sideways within an organisation. Orders, instructions, plans, etc. may flow from top to bottom. Reports grievances, suggestions, etc. may flow from bottom to top. Notifications, letters, settlements, complaints may flow from outside. Information also flows sideways, from one manager to another at the same level through meetings discussions, etc.

2. **Proper Timing:** Since reports are used as a controlling device they should be presented at the earliest or immediately after the happenings of an event. The time required for preparation of reports should be reduced to the minimum; for routine reports the period should be known and strictly adhered to. It will be a waste of time and effort to prepare information that is too late to be of any use. The absence of information when needed will either mean wrong decisions or ferment of decisions on matters that may be urgent in nature.

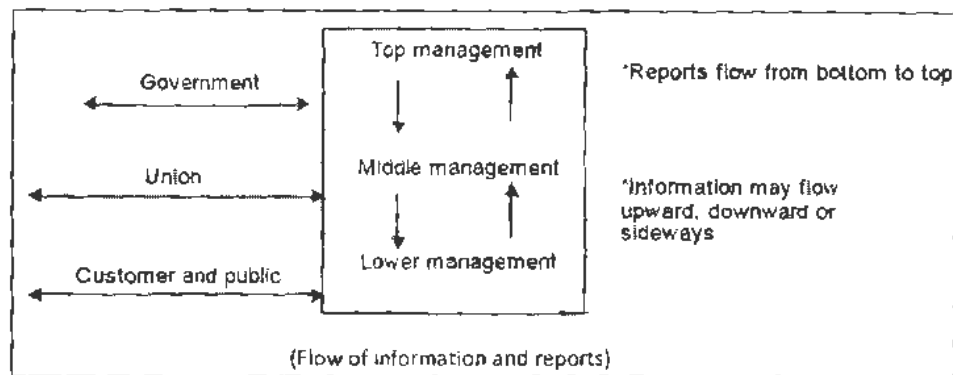


Figure 10.1: Flow of Information and Reports

3. **Accurate Information:** The information should be as accurate as possible. However, the degree of accuracy may differ in different reports. Sometimes, part information may be supplied as a guide for future policy making, so the degree of accuracy may be less. The supply of exact figures may involve a problem of understanding. Accuracy should also not involve excessive cost of preparation nor should be achieved at the sacrifice of promptness of presentation. It will be better to have approximate figures at a proper time than delayed information prepared accurately.
4. **Basis of Comparison:** The information supplied through reports will be more useful when it is supplied in comparison with past figures, standards set or objectives lay down. The decision-making authority will be able to make use of comparative figures while making a decision. Corrective measures can also be initiated to improve upon past performance.
5. **Reports should be clear and simple:** The information should be presented in a clear manner by avoiding extraneous data. Only relevant important information should become the part of a report. If supporting information cannot be avoided, then it should be given in appendix or separate chart should be attached to it. The method of presenting information should be such that it attracts the eye and enables the reader to form an opinion about the information. The graphic presentation of information will enable the reader to find out the trends and also to determine deviations more quickly than in other methods. The arrangement of

presentation should be brief, clear and complete. Simplicity is a good guide for reports preparation.

6. **Cost:** The benefits derived from reporting system must be commensurate with the cost involved in it. Though it is not possible to assess the benefit of this system in monetary terms, there should be an endeavour to make the system as economic as possible.
7. **Evaluation of Responsibility:** The reporting system should enable the evaluation of managerial responsibility. The targets are fixed for various functional departmental heads. The record of actual performance is monitored along with the standards so as to enable management to assess the performance of different individuals. So, management reporting should be devised in a way that it helps in evaluating the work assigned to various persons.

10.4 MODES OF REPORTING

Reports may be presented in any of the following form:

1. **Written:**
 - (a) **Formal Financial Statement:** Such statement may deal with any one or more of the following:
 - (i) Actual against the budgeted figures.
 - (ii) Comparative statements over a period of time.
 - (b) **Tabulated Statistics:** The report may deal with statistical analysis of a particular type of expenditure over a period of time or sales of a product over period in different territories, etc.
 - (c) **Accounting Ratios:** These may be a part of the formal financial statement prepared or may be given in the form of a separate statement. The various types of accounting ratios have already been explained in an earlier chapter.
2. **Graphic**
 - (a) Charts
 - (b) Diagrams and pictures.

Graphic Reports have the advantage of facilitating quick grasp of significant trends by those who receive the information.
3. **Oral**
 - (a) Group meeting
 - (b) Conferences with individuals.

It will always be appropriate to make written reports as the basis for important managerial decisions.

10.5 REQUISITES OF A GOOD REPORT

A report is vehicle carrying information. The fruitfulness of the work done by the different executives not only depends on the quantity of work itself but also the way in which the information or results are conveyed to their superiors. Thus, good reporting is necessary for effective communication. A good report should therefore, have the following requisites:

1. **Good Form and Content:** Following points are important in this respect:
 - (a) Report should have a suggestive title, headings, sub-headings and paragraph divisions.
 - (b) In case statistical figures are to be quoted in the report, only the significant totals may be given in the body of the report. The other statistical details should be given in the appendix.
 - (c) The report should contain facts rather than opinions. In case certain opinions are expressed, they should be logical sequence of facts presented in the report.
 - (d) In case report is in response to a request or letter, cross reference of such request or letter should be given.
 - (e) The report should bear the date on which it is put. The names of the persons to whom the report (or its copies) is / are to be sent should also be mentioned on the top.
 - (f) The objectives of the report should be perfectly served by the contents of the report.
 - (g) The contents should follow a logical sequence:
 - (i) The summary of present position.
 - (ii) The course that might be taken and the expected results.
 - (iii) The recommendations and reasons for their submission.
2. **Promptness:** The report should be submitted as soon as possible because delayed information may lose its promptness and utility. Reports are meant for action. The sooner the report is made, the quicker action can be taken. In some cases, promptness in presentation is more important than any other general principles of reporting. Accuracy may have to be sacrificed to achieve the objective of promptness.

In order to increase utility of collecting the requisite information following steps may be taken:

 - (a) A proper record-keeping system, tailored information according to the requirements of submission of different reports, should be established in the organisation.
 - (b) In order to avoid clerical errors and increase productivity, mechanical accounting devices may be used.
 - (c) Requisite work should be allotted according to departments in order to prevent bottlenecks in reporting.
 - (d) Employees may be asked to report immediately about any abnormal or extraordinary situation.
3. **Comparability:** Reports are also meant for comparison. This is possible only when information contained in the report is placed in some perspective, *i.e.*, time norms or standards. Figures should be given for some previous period such as "last month" or "some month for the last year," etc. Actual figures may also be placed side by side with corresponding budgets, standards or estimates. The objective is to highlight significant deviations from previous periods or standards or estimates. The principle of 'management by exception' should be applied while drafting reports. Trivial variations need not be reported.
4. **Consistency:** Consistency is closely linked with comparability since comparison is possible only when the reports are prepared and information embodied in the

report emanates from a common source. Moreover, uniform procedure should be followed over a period of time for collection, classification and presentation of the accounting information.

5. **Simplicity:** The report should be in a simple, unambiguous and concise form. Professional or technical jargon should be avoided since those who receive the report may be quite unfamiliar with expression the accountant takes for granted. It should also be readable. Both conciseness and rounding off figures to a significant point add to the readability of the report which is another dimension to simplicity.
6. **Appropriateness:** The report should be appropriate for the person for whom it is meant. The points of significance in this context are mentioned below:
 - (i) Report should be related to the responsibilities of the recipients. For example, the Production Manager should be supplied with only such reports which relate to his division or area of control.
 - (ii) Report should be designed to suit the level of management for whom it is meant. The general principle is higher the level of management the more concise should be the report. The top management gets reports from all areas but the number of reports and the details of the information have to be carefully pruned. However, reports to the middle management have to be more detailed, covering section-wise performance and deviations. For example, top management has to be given reports covering profit and loss statement, the estimated funds flow, the capital expenditure follow-up, the sales, production and other appropriate statistics. But a Sales Manager may be given reports only regarding such matters which directly affect him. He may be supplied with reports having detailed analysis of actual sales with the budgeted with reference to products, customers, territories and individual salesmen.
7. **Controllability:** In order to have an appropriate response of the report, it is necessary that every report should be addressed to a responsibility centre and should contain a message about the various areas which are controllable at the point. There is no objection to the mention of all variances which to the area covered in order to make the report complete. But variances which are beyond the control of the executive receiving the report should be mentioned separately in the report.
8. **Accuracy:** The report should be reasonably accurate. The degree of the accuracy will depend upon the purpose for which the information is required. Such inaccuracies which will not alter the significance or the information may be ignored.
9. **Consideration of Cost:** The reporting system should not become an unnecessary drag on the resources of the business. The cost of maintaining the system should be commensurate with the benefits derived therefrom.
10. **Effective Communication:** Reports that communicate effectively to all levels of management stimulate action and influence decisions. Persons responsible for designing and preparing management reports must know and understand the problems and methods of management.

10.6 STEPS FOR EFFECTIVE REPORTING

In order to have effective and efficient reporting the following steps should be taken:

- (i) Reporting should be the logical outcome of accounting routine. This requires detailed planning of flow of paper work and its analysis.

- (ii) Efforts should be made to avoid duplication of work. Journals, ledgers, etc., should be designed in a way that “control data” is available without additional analysis.
- (iii) Codification and mechanisation should be extensively used. They greatly help in speeding up of reports.
- (iv) Accounts for a period should be closed a few days before the close of the period. For example, accounts relating to month of June 30th may be closed on the 15th June. The period from 15th June to 30th June may be used for processing the data and the reports may be sent on 1st July.
- (v) In case actual data are not readily available, the interim estimates may be used in their place. The quality of reports in such a case would depend upon the quality of estimates. The actual may later on be compared with the estimates and the deviations or the variations will help the persons responsible for reporting better estimates for the future.

10.7 KINDS OF REPORTS

There are several ways of classifying the reports. Some of the important bases on which reports are classified are as follows:

- According to purpose
 - ❖ External reports
 - ❖ Internal reports
- According to period
 - ❖ Routine Reports
 - ❖ Special Reports
- According to function
 - ❖ Operating Reports
 - ❖ Financial Reports

10.7.1 According to Purpose

Following are the types of report according to purpose:

External Report

The reports meant for persons outside the business that is to say the shareholders, bankers, financial institutions, etc., are termed as External Reports. The example of such reports is the published annual reports (*i.e.*, the income statement, balance sheet, etc.,) of companies. Copies of such reports are to be filed with the Registrar of Companies, Stock Exchanges, etc., besides sending them to the shareholders of the company. In the interest of general understanding these reports are expected to conform to certain minimum standards of disclosure and disclose certain basic details. In India, Schedule VI to the Companies Act provides for such disclosure. Thus, in our country, it is the government which has taken the initiative to protect the interests of the investing public from mischievous management.

Internal Reports

Internal Reports are the reports meant for different levels of management. These are not public documents. They generally do not have to conform to any statutory standards. The shape, size and nature of reports depend on the recipient of the

reports—his accomplishment, his time for scanning the reports, the purpose to be served by the reports, etc. From the managerial viewpoint, we can classify these reports in these categories:

1. **Reporting Meant for Top Management:** The top management is concerned with the following:
 - ❖ Formulating the basis goal of enterprise.
 - ❖ Evolving proper plans keeping the basic objective in view.
 - ❖ Proper delegation of responsibility to subordinate executives with the objective of getting efficient and effective utilisation of the resources.
 - ❖ Promoting appropriate development schemes.

Thus the top management is primarily concerned with planning and organising and not with the execution of plans. The information submitted to them should not, therefore, be in minute details giving day-to-day report of operating activity. They should rather be supplied with summary reports giving an overall view of the operating activities together with a comparison of actual with the planned performance.

The following reports should be sent at the intervals mentioned therein to the top management:

Table 10.1: Top Management with their Reports

Board of Directors	<ol style="list-style-type: none"> 1. Quarterly balance sheet and profit and loss account. 2. Quarterly funds flow statement. 3. Quarterly production cost statement. 4. Quarterly machine and labour utilisation statement.
Production Director	<ol style="list-style-type: none"> 1. Monthly production cost statement. 2. Monthly machine utilization—department-wise. 3. Monthly labour utilisation statement—department-wise. 4. Monthly scrap material statement—department-wise. 5. Overheads cost statement—department-wise. 6. Monthly production statement showing quantity budgeted, quantity produced and orders outstanding.
Sales Director	<ol style="list-style-type: none"> 1. Monthly report of orders received, orders executed, order kept pending—division-wise. 2. Monthly report of finished goods stock position. 3. Monthly reports of selling and distribution cost—division-wise. 4. Monthly report of credit collection, arrears and bad debts—division-wise.
Finance Director	<ol style="list-style-type: none"> 1. Monthly funds flow statement. 2. Monthly abstract or receipts and payments.

2. **Reports Meant for Middle Management:** The middle management is concerned with the execution of plans formulated by the top management. They function as coordinating executives to administer policies, direct operating supervisors and

appraise their performance. Thus, the reports submitted to them should be such which would assist them in performing these functions.

Following is the list of such reports:

Table 10.2: Middle Management with their Reports

Work Manager	<ol style="list-style-type: none"> 1. Weekly report of idle time and idle capacity—department-wise. 2. Weekly report of scrap -department-wise. 3. Weekly report of production costs. 4. Weekly production statement showing quantity budgeted, quantity produced, orders outstanding.
Sales Divisional Manager	<ol style="list-style-type: none"> 1. Fortnightly report of budgeted and actual sale—area-wise and product-wise. 2. Fortnightly report of credit collections, outstanding and bad debts. 3. Fortnightly report of orders booked, orders executed and orders outstanding. 4. Fortnightly report of stock position.

3. **Report Meant for Junior Level Management:** This level of management consists of foremen, superintendents, etc., who are interested in reports which will keep them abreast of progress of jobs under their charge.

The following is a list of reports which will suit their purposes:

Table 10.3: Lower/Junior Management with their Reports

Shop Foremen	<ol style="list-style-type: none"> 1. Daily report of idle time and machine utilisation. 2. Daily scrap report. 3. Daily report of production—budgeted and actual.
Sales Area Supervisors	<ol style="list-style-type: none"> 1. Weekly report of sales—salesman-wise. 2. Weekly report of orders booked, executed and outstanding. 3. Weekly report of credit collections, outstanding and bad debts.

The following is a list of some other reports that would be helpful to the supervisory level management in the successful operation of budgetary control system:

Table 10.4: List of Reports at Supervisory Level

Sales	<ol style="list-style-type: none"> 1. Sales force progress of work 2. Sales promotion work 3. Exports 4. Publicity and advertisement 5. Cost of sales 6. Efforts to be made to cover lower actuals
Production	<ol style="list-style-type: none"> 1. Inventory 2. Work-in-process

Contd.

	<ol style="list-style-type: none"> 3. Capital expenditure 4. Progress of capital works.
Personnel	<ol style="list-style-type: none"> 1. Direct workers employment estimates—approved as well as proposed. 2. Other workers employment—approved and proposed. 3. Approximate cost of present and proposed staff.
Overheads	<ol style="list-style-type: none"> 1. Estimates based on past trends 2. New items
Finance	<ol style="list-style-type: none"> 1. Accounts receivable position and estimates. 2. Account payable position and estimates.

10.7.2 According to Period

On the basis of period of reporting, the reports can be classified into two categories:

Routine Reports

These reports are submitted to different levels of management as per fixed time schedule. The schedule should indicate the following:

- Title of the report
- The recipients of the report and its copies
- The periodicity of reporting
- The respective dates on which the manuscript and the report are to be sent.
- Sources of data and the date by which the data should be ready at the respective sources.

Routine reports are usually printed or cyclostyled, leaving blank spaces to be filled in. Most of the internal reports are of the nature of Routine Reports. A list of these reports has already been given while explaining Internal Reports.

Special Reports

Special reports are required for special purposes. The purpose of obtaining such report, and the time limit within which such report has to be submitted, have to be specifically and clearly laid down. Sometimes special staff may have to be employed for this purpose. A special report may require coordination of various functions such as industrial engineering, marketing, etc. Examples of some of the specific reports are given below:

- Reports for information about competitive products
- Report by purchase department on problems involved in purchasing of materials.
- Report by the cost accountant on the implication of price movements on the cost of the products.
- Report regarding market research about a specific product or products.
- Report regarding choice of products or selection of a method of production when alternative choices are available, etc.

10.7.3 According to Function

Following are the types of reports according to function:

Operating Reports

These reports provide information about the operations of the company at different functional levels. They can be classified into the following three categories:

1. **Control Reports:** This report helps in controlling different activities of the organisation. They provide facts properly collected and analysed to suit the different levels of management. They become a routine affair in the organisation and, therefore, they are a sort of routine reports. The various types of Control Reports needed by the different levels of management have been explained under Internal Reports.

The periodicity of the control reports varies according to the urgency of the matter reported. They may be prepared weekly, monthly, fortnightly or yearly. The effectiveness of control increases with decrease in the time interval and decreases with increase in the time interval. Thus, as far as practicable these reports should be for a shorter duration.

2. **Information Reports:** These reports provide useful information for planning and policy formulation for the future. Such reports can take the form of Trend Reports and Analytical Reports. Trend Reports provide information in a comparative form over a period of time. Graphic representation can be effectively used in Trend Reports. On the other hand, Analytical Reports provide information in a classified manner so that one can identify the significant factors. For example, the composition of different elements of cost of a product can be depicted in the form of a histogram so as to help in identifying the share of each element of cost in total cost of the product.
3. **Venture Measurement Reports:** These reports communicate in a summarised form the results of operation of a specific venture or of the organisation as a whole for specific period.

Financial Reports

Financial reports provide information about the financial position of the company. They can be classified into two categories.

1. **Static Reports:** Static Reports disclose the financial position on a particular date. The Balance Sheet of a business is an example of a Static Report.
2. **Dynamic Reports:** These reports disclose the movement of finance during a specified period. Funds flow statement cash flow statement etc., are the examples of financial reports.

10.8 REVIEW OF REPORTS

Constant review regarding the utility of different reports should be done so that no executive is starved of information and no executive is fed with unwanted data. In other words, a report should neither be a burden to the sender nor a nuisance to the receiver. It will be appropriate for each executive to ask himself the following questions regarding each of the reports submitted to him:

- (a) "Do I want it?"

In case the answer is 'No', he need not ask any further questions.

(b) "Is it relevant to my position?"

In other words, such a report is helpful for him in making better decisions or not.

(c) "Does it come in time?"

In other words, whether it comes too late or too early than what is required.

(d) "Does it come at the right frequency?"

In other words, the report should not come more or less often than what is required.

(e) "Is it accurate enough?"

In other words, it is too accurate or unnecessarily accurate than required.

(f) "Is its presentation in the best form for me?"

In case correct answer is found to these questions and remedial measures are taken when necessary, the reports – the carriers of information – will effectively serve the objectives for which they are meant for.

Check Your Progress

Fill in the blanks of the following:

1. Orders are communicated while results are _____.
2. Corrective measures can also be initiated to improve upon past _____.
3. _____ reports have the advantage of facilitating quick grasp of significant trends by those who receive the information.
4. _____ Reports are not public documents.
5. The _____ management functions as coordinating executives to administer policies, direct operating supervisors and appraise their performance.
6. _____ reports communicate in a summarised form the results of operation of a specific venture or of the organisation as a whole for specific period.

10.9 LET US SUM UP

- The reporting system involves all levels of management.
- The reports originate from junior levels of management and go up to top level management, consisting of Board of Directors.
- A good reporting system is helpful to the management in planning and controlling.
- Every level of management needs information relating to its activities centre so that effective planning may be undertaken and current activities may be controlled and necessary corrective action may also be taken in time, if needed.
- Reports may be presented in any of the following form: Written, Oral and Graphics.
- The fruitfulness of the work done by the different executives not only depends on the quantity of work itself but also the way in which the information or results are

conveyed to their superiors. Thus, good reporting is necessary for effective communication.

- There are several ways of classifying the reports. Some of the important bases on which reports are classified are as follows:
 - ❖ According to purpose: External reports and Internal reports
 - ❖ According to period: Routine Reports and Special Reports
 - ❖ According to function: Operating Reports and Financial Reports

10.10 LESSON END ACTIVITY

Critically examine different types of Management Reports and their relevance to the banker.

10.11 KEYWORDS

Management Reporting: The process of providing information to the management is known as management reporting. The reports are regularly sent to various levels of management as to enable in judging the effectiveness of their responsibility centres. These reports also become a base for taking corrective measures, if necessary.

Report: Report is a form of statement that presents and examines facts relating to an event, problem, progress of action, state of business affairs etc. and for the purpose of conveying information, reporting findings, putting forward ideas and making recommendations as the basis of action.

Information: The communication or reception of knowledge or intelligence—information in a sentence.

Tabulated Statistics: The process of placing classified data into tabular form is known as tabulation. A table is a symmetric arrangement of statistical data in rows and columns. Rows are horizontal arrangements whereas columns are vertical arrangements.

Accounting Ratios: An accounting ratio compares two aspects of a financial statement, such as the relationship (or ratio) of current assets to current liabilities.

Charts: A graph of the price movements of a given security over a given time period, sometimes along with volume data.

External Reports: An External Report is a kind of organisational report which is intended for use of outside people or for outside circulation.

Internal Reports: Internal reporting involves the compilation of financial and operational information on a frequent basis, which is distributed to those within an organisation who can use it to improve performance.

Routine Reports: A routine report is prepared and presented as a routine work and at a regular period of time.

Operating Reports: Operational reporting is intended to support the day-to-day activities of the organisation.

Financial Reports: Financial reporting is the process of producing statements that disclose an organisation's financial status to management, investors and the government.

10.12 QUESTIONS FOR DISCUSSION

1. What do you understand by the expression 'Reporting to Management'? Discuss briefly the matters that you would deal with while reporting to the Board of Directors.
2. What is Special Report? Why is it prepared?
3. What are the guiding principles relating to the preparation of management reports?
4. What are objectives of financial reporting of business enterprises?
5. Describe in brief the needs of different levels of management and point out clearly as to how the system of reporting can satisfy.
6. Explain the importance of the Management Reporting System for a banker. Enumerate five such reports.
7. Suggest some principles for preparing a good reporting system.
8. Only an effective information system can provide managers with both internal and external information that is timely and accurate. Discuss.

Check Your Progress: Model Answer

1. Reported
2. Performance
3. Graphic
4. Internal
5. Middle level
6. Venture Measurement

10.13 SUGGESTED READINGS

Charles T. Horngren, *Introduction to Management Accounting*, Prentice Hall, Englewood Cliff, New Jersey 07632.

Ray H. Garrison, *Managerial Accounting*, Homewood, Illinois 60435.

Robert S. Kaplan and Anthony A. Atkinson, *Advanced Management Accounting*, (Prentice Hall, Englewood Cliff, New Jersey 07632).

Dr. S. N. Maheshwari, *Management Accounting for Bankers*, Sultan Chand & Sons, New Delhi: 110002.

N. K. Kulshrestha, *Management Accounting Concepts & Cases*, Tata McGraw Hill Publishing Co. Ltd., New Delhi.

