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Paper V

ACCOUNTING AND FINANCE FOR MANAGERS

मध्यप्रदेश भोज (मुक्त) विश्वविद्यालय – भोपाल

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SYLLABI-BOOK MAPPING TABLE

Accounting and Finance For Managers

Syllabi	Mapping in Book
UNIT - 1: THE FRAMEWORK 1. The World of Finance 2. Accounting Simplified 3. Financial Markets and Financial Instruments 4. Financial Reporting	**Unit-1:** The Framework **(Pages 3-57)**
UNIT - 2: FINANCIAL INFORMATION ANALYSIS FOR EXTERNAL DECISION MAKERS 5. Balance Sheet Demystified 6. Profit and Loss A/c Demystified 7. Cash Flow Statement Demystified 8. Financial Statement analysis	**Unit-2:** Financial Information Analysis for External Decision Makers **(Pages 59-98)**
UNIT - 3: FINANCIAL INFORMATION ANALYSIS FOR INTERNAL DECISION MAKERS 9. Accounting for Decision Making 10. Standard Cosing and Variance analysis 11. Activity Based Costing 12. Cost-Volume-Profit Analysis	**Unit-3:** Financial Information Analysis for Internal Decision Makers **(Pages 99-176)**
UNIT - 4: FINANCIAL DECISIONS 13. Investment Appraisal - Basic Concepts 14. Investment Appraisal: Methods and Considerations 15. The Financing Mix 16. Payout Decisions	**Unit-4:** Financial Decisions **(Pages 177-232)**
UNIT - 5: OPERATING DECISIONS 17. Budgets as a Basic for Planning and Control 18. Introduction to Working Capital 19. Managing Liquid Assets	**Unit-5:** Operating Decisions **(Pages 233-281)**

CONTENTS

INTRODUCTION

NOTES

Accounting is a vast subject and encompasses all the information which helps management in planning, controlling, decision making and performance measurement of business operations. CIMA has observed that management accounting combines accounting with finance and management with the leading edge techniques needed to drive successful business. There exists an inseparable relationship between finance on the one hand and production, marketing and other functions on the other. Almost all business activities, directly or indirectly, involve the acquisition and use of funds.

The role of finance has changed over the years. Although initially it help to understand the fund-raising aspect of business, now the problem-solving and analytical aspects have become an indispensable element as well. In the current scenario, finance is associated with critical areas of business decision-making. The role of financial managers is no longer confined to storing data but also includes analytical thinking. The correct identification of needs, sourcing and allocation of funds can make or break a company. This is why it is important to study all the aspects of financial management very carefully.

This book, *Accounting and Finance for Managers*, is written with the distance learning student in mind. It is presented in a user-friendly format using a clear, lucid language. Each unit contains an Introduction and a list of Objectives to prepare the student for what to expect in the text. At the end of each unit are a Summary and a list of Key Words, to aid in recollection of concepts learnt. All units contain Self-Assessment Questions and Exercises, and strategically placed Check Your Progress questions so the student can keep track of what has been discussed.

UNIT 1 THE FRAMEWORK

NOTES

Structure

1.0 INTRODUCTION

The subject of finance is more than 40 years old, though accounting and economics were in existence long before that. Today, everyone has started recognizing the importance of personal finance as well as in corporate finance functions. The language of money and finance impresses everyone, but it is also true that it is not understood by many. The contribution of finance in value creation is direct. Also, the language of finance is universal. Therefore, some understanding of the subject is desirable for all. This unit discuss some basic concepts relating to finance.

1.1 OBJECTIVES

After going through this unit, you will be able to:

- Understand the basic concepts relating to finance
- Explain the concept of financial accounting
- Discuss the role of financial markets and financial instruments
- Examine the importance of financial reporting

1.2 THE WORLD OF FINANCE

What is finance? What are a firm's financial activities? How are they related to the firm's other activities? Firms create manufacturing capacities for production of

NOTES

goods; some provide services to customers. They sell their goods or services to earn profit. They raise funds to acquire manufacturing and other facilities.

The three most important activities of a business firm are:

- production
- marketing
- finance

A firm secures whatever capital it needs and employs it (finance activity) in activities which generate returns on invested capital (production and marketing activities).

Real and Financial Assets

A firm requires real assets to carry on its business. **Tangible real assets** are physical assets that include plant, machinery, office, factory, furniture and building. **Intangible real assets** include technical know-how, technological collaborations, patents and copyrights. **Financial assets,** also called securities, are financial papers or instruments such as shares and bonds or debentures. Firms issue securities to investors in the **primary capital markets** to raise necessary funds. The securities issued by firms are traded—bought and sold—by investors in the **secondary capital markets**, referred to as stock exchanges. Financial assets also include lease obligations and borrowings from banks, financial institutions and other sources. In a **lease**, the lessee obtains a right to use the lessor's asset for an agreed amount of rental over the period of lease. Funds applied to assets by the firm are called capital expenditures or investment. The firm expects to receive return on investment and might distribute return (or profit) as dividends to investors.

Equity and Borrowed Funds

There are two types of funds that a firm can raise: equity funds (simply called equity) and borrowed funds (called debt). A firm sells shares to acquire equity funds. **Shares** represent ownership rights of their holders. Buyers of shares are called shareholders (or stockholders), and they are the legal owners of the firm whose shares they hold. Shareholders invest their money in the shares of a company in the expectation of a return on their invested capital. The return consists of dividend and capital gain. Shareholders make capital gains (or losses) by selling their shares.

Shareholders can be of two types: ordinary and preference. **Preference shareholders** receive dividend at a fixed rate, and they have a priority over **ordinary (equity) shareholders**. The dividend rate for ordinary shareholders is not fixed, and it can vary from year to year depending on the decision of the board of directors. The payment of dividends to shareholders is not a legal obligation; it depends on the discretion of the board of directors. Since ordinary shareholders receive dividend (or repayment of invested capital, in case the company is wound up) after meeting the obligations of others, they are generally called owners of residue. Dividends paid by a company are not deductible expenses for calculating corporate income taxes, and they are paid out of profits after corporate taxes. As per the current laws in India, a company is required to pay 12.5 per cent tax on dividends.

A company can also obtain equity funds by retaining earnings available for shareholders. Retained earnings, which could be referred to as internal equity, are

undistributed profits of equity capital. The retention of earnings can be considered as a form of raising new capital. If a company distributes all earnings to shareholders, then, it can reacquire new capital from the same sources (existing shareholders) by issuing new shares called **rights shares.** Also, a **public issue** of shares may be made to attract new (as well as the existing) shareholders to contribute to equity capital.

Another important source of securing capital is **creditors** or **lenders.** Lenders are not the owners of the company. They make money available to the firm as loan or debt and retain title to the funds lent. Loans are generally furnished for a specified period at a fixed rate of interest. For lenders, the return on loans or debt comes in the form of **interest** paid by the firm. Interest is a cost of debt to the firm. Payment of interest is a legal obligation on the part of the firm. The amount of interest paid by a firm is a deductible expense for computing corporate income taxes. Thus, the interest provides **tax shield** to a firm. The **interest tax shield** is valuable to a firm. The firm may borrow funds from a large number of sources, such as banks, financial institutions and public or by issuing bonds or debentures. A **bond** or a **debenture** is a certificate acknowledging the amount of money lent by a bondholder to the company. It states the amount, the rate of interest and the maturity of the bond or debenture. Since bond or debenture is a financial instrument, it can be traded in the secondary capital markets.

Finance and Management Functions

There exists an inseparable relationship between finance on the one hand and production, marketing and other functions on the other. Almost all business activities, directly or indirectly, involve the acquisition and use of funds. For example, recruitment and promotion of employees in production is clearly a responsibility of the production department; but it requires payment of wages and salaries and other benefits, and thus, involves finance. Similarly, buying a new machine or replacing an old machine for the purpose of increasing productive capacity affects the flow of funds. Sales promotion policies come within the purview of marketing, but advertising and other sales promotion activities require outlays of cash and therefore, affect financial resources.

Where is the separation between production and marketing functions on the one hand and the finance function of making money available to meet the costs of production and marketing operations on the other hand? Where do the production and marketing functions end and the finance function begins? There are no clear-cut answers to these questions. The finance function of raising and using money although has a significant effect on other functions, yet it needs not necessarily limit or constrain the general running of the business. A company in a tight financial position will, of course, give more weight to financial considerations, and devise its marketing and production strategies in the light of the financial constraint. On the other hand, management of a company, which has a reservoir of funds or a regular supply of funds, will be more flexible in formulating its production and marketing policies. In fact, financial policies will be devised to fit production and marketing decisions of a firm in practice.

NOTES

1.2.1 Current Challenges in Finance

Corporate finance is a fast evolving subject right now. Two main factors have contributed in its development. They are (a) globalization and (b) development of information technology. Both phenomena have been happening almost simultaneously since the last few decades.

Globalization

In the pre-globalization era, financial activities were restricted within a boundary of a nation with a limited and controlled international engagement of capital. Today globalization has blurred the boundaries for the movement of goods, services and capital. This has created more opportunities for finance practitioners, and also greater challenges. Firms can access global funds for their financing needs, but also get exposed to the threat of being taken-over if things do not go well. Share price may get influenced if foreign money starts pouring in back. Thus, newer opportunities and challenges, along with ever becoming complicated financial markets and regulations, make the role of finance managers very vital.

Information technology

Information technology (IT) and its adaptation in business is an interesting phenomenon. In fact, development of IT has made globalization easy. Stock markets have become virtual, buy and sell are squared off sooner, dematerialized accounts have enhanced speed of transactions and reduced costs, more frequent (quarterly) filing of financial results dissemination of good and bad news through electronic media, including social media, and so much more, have been a mixed blessing for businesses and the function of finance. As a result, the subject of finance has been evolving at a fast rate.

1.2.2 Career Opportunities in Finance

Three categories of financial jobs have emerged, though some boundaries are overlapping. These are (a) corporate finance jobs, (b) investment function jobs and (c) money and capital market jobs. These are not tight compartments. Students with inclination in one area need to still thoroughly acquire knowledge and skills needed for other areas.

Corporate finance

Every company, non-profit organization, school, government and its departments, banks and institution needs people with expertise in the finance function. These institutions need to raise funds (short-term and long-term) from the market, invest in assets (for replacement, expansion and growth), and efficiently fund operations for smooth running of business and for creating wealth for stakeholders. Data collection, data analysis and reporting, budgeting, credit policy decisions, and several other functions also require people with knowledge of finance. One would notice that raising of funds require knowledge of markets, institutions, instruments and regulations. Investing surplus funds require good knowledge of investment function as well as knowledge of money and capital market.

Investment

Individuals and institutions invest money and their investment portfolios have to be managed according to their needs and characteristics. Investment function involves investors, money managers and brokers. Ability to bring business, people skills for dealing with clients, and skills of understanding individual investor's needs come handy when working as investment advisor or investment manager for banks, insurance companies or mutual funds for their portfolio management. Those who work for investment banks need to design instruments, get regulatory clearances and market them because they provide these services to client companies. Working in a brokerage firm would require acquiring licences and then performing buy and sell orders of investors, or working as analyst to perform fundamental and technical analysis. There are diverse job opportunities in the field of investment.

NOTES

To repeat, this classification is not sacrosanct. While one may have inclination towards one type of job, knowledge of all three aspects of financial management is essential.

Check Your Progress

1. Mention the three important activities of a business firm.
2. What are financial assets?
3. What are the two types of funds that a firm can raise?

1.3 ACCOUNTING SIMPLIFIED

Accounting as the 'language of business' provides details of the activities and events that can be expressed in monetary units. Therefore, accounting presents a partial history of the activities of an organization as it deals only with such activities that are financial in their character. In this context, accounting can be recognized as a process that is concerned with financial information. This view of accounting is supplemented by the opinion of the majority of accounting experts who recognize accounting as the art of recording, summarizing, reporting and interpreting business transactions. Commenting on the nature and task of accounting, Smith and Ashburne, (1960) are of the opinion: *Accounting is the science of recording and classifying business transactions and events, primarily of financial character, and the art of making significant summaries, analysis and interpretations of those transactions and events and communicating the results to persons who must make decisions or form judgements.*

Accounting is a systematic process that records, classifies, summarizes, analyses, reports and interprets financial information. It is an art that enables an organization to keep track of its activities that can be measured in terms of money. The analysis of the above-mentioned definitions culls out the following tasks of accounting:

- To set up routines or procedures for systematically recording the daily transactions of the business;

NOTES

- To classify and summarize the recorded transactions so that the data is available in a form that is understandable for the parties interested in its use; and
- To interpret the available data with the help of appropriate tools and techniques in order to derive some information that is useful for managers for managing the organization.

Types of Accounting Works

As mentioned earlier, the discipline of accounting is in the process of evolution, and accordingly, its scope and role is changing with time. However, to enact its contemporary role, accounting carries out a series of activities. The important activities among them are summarized below:

- ***Constructing:*** It is the prerequisite for the operation of accounting process and involves the designing of the accounting system and the formulation of fundamental principles and procedures that governs the accounting system chosen by the organization.
- ***Recording:*** This activity involves recording of various transactions on original documents according to the established principles and policies. Much of the recording in accounting is still done manually where a transaction is recorded in a book called a 'journal'. However, a number of organizations have replaced manual recording by computer recording where the details of the transactions are entered into the system of computer through the use of punched cards or some other input device of the machine. Since the processing of the transaction in computer accounting is done through multiple ways, therefore, the term *recording* as used in manual accounting is replaced by the term data entry in computer accounting.
- ***Classifying:*** It refers to the process of data analysis engaged by the organization with the purpose to sort or group similar aspects of the transactions recorded during a particular accounting period.
- ***Summarizing:*** This activity attempts to put together the classified data of the transactions in a summarized form with an aim either to measure the business results or to assess the business position of an organization.
- ***Reporting:*** The reporting activity of the accounting calls for the preparation of analytical reports and statements for the parties that are interested to use the accounting information. Traditionally such reports and statements are mostly presented in tabular form rather than narrative form. However, a combination of the two can be easily used to enhance the utility of such reports and statement for the business.
- ***Interpreting:*** The measures taken to direct the attention of the reader of a financial statement to crucial financial matters and relationships fall within the scope of interpreting. For this purpose firms make use of a number of managerial techniques, e.g., comparative statements, common-size statements, ratio analysis, trend analysis, funds flow analysis, and so on.
- ***Auditing:*** The activity is concerned with the verification of the accuracy, authenticity, and correctness of the bookkeeping records and statements and reports drawn from those accounting records.

Systems of Accounting

The study of the accounting practices followed by the organizations across the globe reveals that the following systems of accounting are most popular among the organizations:

- ***Cash System:*** This system focuses mainly on the transactions that involve cash, *i.e.*, cash receipts and payments, and therefore, the said system neither recognizes nor records credit transactions until cash is actually received or paid against these transactions. Such a system is generally recommended for service organizations like charitable institutions, educational institutions, hospitals, etc. The cash system of accounting is also popular among professional people like doctors, management consultants, lawyers, etc.
- ***Single Entry System:*** Such a system of accounting recognizes only cash and personal aspects of the transactions. Since the system completely ignores impersonal aspects of transactions, therefore, it is an incomplete system of accounting.
- ***Double Entry System:*** This system of accounting is recognized as the most scientific one as it is governed by the principle of *dual aspect of accounting*. The system not only recognizes the two aspects of a transaction but also records them in the books of accounts. It is based on the philosophy that when the organization gives something, it receive something else in return. For example, when it sells goods for cash, it receives cash and gives goods in return, similarly when goods are purchased on credit, goods are received and the seller becomes the creditor. The system which records both aspects of each transaction is known as *double entry system of accounting*. Of the two aspects, one is recorded as *debit* while the other is recorded as '*credit*' with the similar amount. This brings to light an important fact there every debit has a corresponding credit.

The Accounting Equation

The double entry system of accounting is governed by accounting equation that claims that the assets of a business are equal to its equities. Though the accounting equation sounds simple, yet the concepts underlying it are somewhat complex. Therefore, it is essential to study the components and progression of the accounting equation to understand its anatomy on which the entire accounting system is built.

Basic Accounting Equation

To run a business, every organization—large and small—needs economic resources like cash, land and building, furniture and fixtures, plant and machinery, etc. At the same time, these economic resources known as *assets* in accounting terminology, are derived from a particular source(s) (*i.e.*, places from which a business has acquired resources to finance its assets). Therefore, sources of resources have a claim against assets, which in accounting terminology is known as *equities*. Since every asset acquired by the business has its own derived source, therefore, it can be easily claimed that

Assets = Equities

NOTES

As we know that two major deriving sources for acquiring the assets for a business are:

I. Investment of owner's—known as *Equity of Owners*, and

II. Borrowings—known as *Equity of Creditors*.

Thus, the above equation may be restated in the following manner:

Assets = Creditors Equity + Owner's Equity
↓ ↓
Liabilities Capital

The application of the above accounting equation can be well understood from the example given below:

Example: Mr 'ESS' started a business with ₹ 3,00,000 on 1 January 2003. On the same day he deposited ₹ 2,50,000 in the State Bank out of the said amount and the balance he kept in office to meet the daily expenditure of business. The financial position of the business on 1 January would appear as:

Equities	₹	*Assets*	₹
ESS's Capital	3,00,000	Cash at Bank	2,50,000
(Owners equity)		Cash in hand	50,000
	3,00,000		3,00,000

Then on 10 January, he purchased goods for business worth about ₹ 60,000 from BEE Co. and paid it the entire amount of purchase through bank. The transaction changes the asset side of the equation and accordingly the financial position of the business appears as:

Equities	₹	*Assets*	₹
ESS's Capital	3,00,000	Cash at Bank	1,90,000
(Owners equity)		Cash in hand	50,000
		Inventory	60,000
	3,00,000		3,00,000

After comparing the above two financial positions of Mr ESS at the two different dates mentioned above, we observe that cash at bank has decreased from ₹ 2,50,000 to ₹ 1,90,000 which reveals that the outflow of cash from the bank account amounts to ₹ 60,000 (*i.e.*, the amount paid to BEE Co.).

The outflow of cash has decreased the amount of assets by ₹ 60,000. But, at the same time the increase of ₹ 60,000 in the stock of goods as a result of purchase has increased the amount of assets by ₹ 60,000. Therefore, a decrease of ₹ 60,000 in the asset as a result of payment to BEE Co. is balanced by an increase of ₹ 60,000 in the assets as a result of purchase of goods, leaving the total amount of assets unchanged.

Then on 15 January, Mr ESS purchased goods from S & Co. for ₹ 1,00,000 on credit and Mr ESS agreed to pay the amount after three months. This transaction changes both sides of the accounting equation as is shown below:

Equities	₹	*Assets*	₹
ESS's Capital	3,00,000	Cash at Bank	1,90,000
Creditors (S & Co.)	1,00,000	Cash in hand	50,000
		Inventory	1,60,000
	4,00,000		4,00,000

The comparative study of the financial positions of the business on 10 and 15 January reveals that the stock has increased from ₹ 60,000 to ₹ 1,60,000 during the period under study which amounts to increase in the assets by ₹ 1,00,000. On the other side of the balance sheet, the equities of the business increased by the same amount due to credit purchase which resulted in the balancing of assets and equities of the business.

The above discussion brings to light the fact that no matter what activity a business is engaged in, the equality of assets with that of the total equities (*i.e.*, liabilities and capital) will always hold true.

Assets = Liabilities + Capital

Expanded Accounting Equation

As we know, there exists a close relationship between owner's equity and business results, therefore, it will be an interesting study to examine the progression of the basic accounting equation in order to understand the relationship and interaction between the profit and loss account (*i.e.*, business results) and balance sheet (*i.e.*, owner's equity). Such a study is critical for understanding the process of accounting system.

Usually owner's equity comprises capital and retained earnings in the shape of undistributed profits, reserves, etc. Accordingly, the basic equation may be restated as:

Assets = Liabilities + Capital + Retained Earnings

But one must remember that retained earnings are the result of incomes and expenses of the business so one can rewrite the equation without changing its meanings as:

Assets = Liabilities + Capital + (Income – Expenses)

or $A = L + C + (I - E)$

Thus, the components of income and expenses of the above equation help an organization to measure profit, *i.e.*, business result by reflecting them in the profit and loss account whereas assets and liabilities help it to assess the financial position by depicting them in the balance sheet. This brings to light an important fact that the entire accounting system, which basically aims to produce profit and loss account and balance sheet, revolves around four accounts that are based on the following components of accounting equation:

- Assets—properties or the material things of a business;
- Liabilities—amount that a business owes either to creditors or owners;
- Income—amount of revenue from the sale of the organization's output; and
- Expenses—the cost incurred in producing the organization's output.

Consequently, business transactions are examined and recorded in the light of the above-mentioned four accounts.

NOTES

The Accounting Process

A financial accounting system is designed to produce a set of financial statements, viz., profit and loss account and balance sheet. Consequently, a sound financial accounting system must provide forms and procedures that a business must use to process its accounting data through the accounting cycle. The accounting cycle represents a series of steps that an organization uses to record, classify, summarize and communicate financial events that occur during an accounting period. The accounting cycle usually comprises a seven-step process as shown below in Figure 1.1:

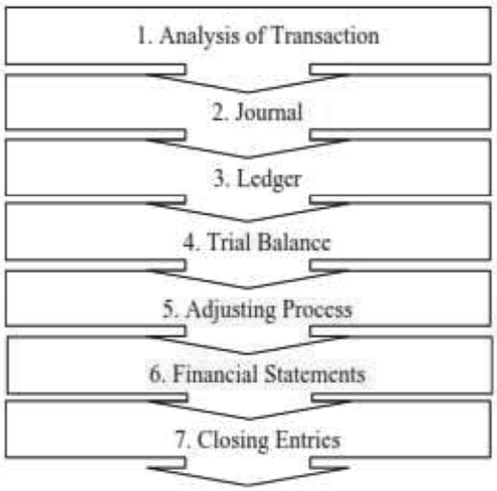

Fig. 1.1 *The Accounting Process*

Analysis and Recording of Accounting Transactions

An accounting transaction is defined as a business event that brings a change in one or more components of the accounting equation. Thus, transaction is a business event that alters in some way the value of the component(s) of the equation—A = L + C + (I – E). Before examining the procedure of recording a transaction, it is essential to analyse some of the business transactions in order to understand their behaviour (*see* Table 1.1).

Table 1.1 *Analysis of Business Transactions*

	Transactions	*Analysis*
1.	Sold goods for cash ₹ 50,000	– Cash will increase by ₹ 50,000 – Stock of goods will decrease by ₹ 50,000
2.	Paid for machinery ₹ 1,20,000	– Properties (assets) will increase by ₹ 1,20,000 – Cash position will decrease by ₹ 1,20,000
3.	Purchased goods for cash ₹ 60,000	– Stock of goods will increase by ₹ 60,000 – Cash position will decrease by ₹ 60,000

Thus, before a transaction is recorded in the accounting system, the accountant must analyse it to identify its two aspects that may change the financial position of the organization. The identification of the two aspects of a transaction can be done by analysing the effect of such transaction on the accounting equation (*see* Table 1.2). For example, Mr Bhat started business on 1 April by investing ₹ 2,00,000 in cash. After this transaction, the business possesses assets worth about

₹ 2,00,000, and the owner's equity, that is claim of Mr Bhat on the assets, amounts to ₹ 2,00,000. With the help of accounting equation, this transaction can be expressed as:

Assets	=	Liabilities	+	Capital
Cash	=	—	+	Mr Bhat's capital
(+) 2,00,000				(+) 2,00,000

Thus, to maintain creditability of the accounting equation, one aspect of a transaction should be recorded as *debit* and the other one as *credit*. To understand which aspect of a transaction should be debited and which one to be credited (*see* Table 1.2), one must master the rules for recording increases (+) and decreases (–) in the components of the accounting equation. These rules are summarized as follows:

Table 1.2 *Analysis of the Transactions*

Transactions	*Impact on the Components of Accounting Equation*	*Accounting Rule*	*Entry*
1.	(a) The increase in the stock of goods will result in the increase of assets by ₹ 30,000	(a) To increase an asset, debit the account	(a) Debit: Goods account ₹ 30,000
	(b) The cash (asset) will decrease by ₹ 30,000	(b) To decrease an asset, credit the account	(b) Credit: Cash account ₹ 30,000
2.	(a) The payment for account stationery will increase the amount of expenses by ₹ 5,000	(a) To increase expenses, debit the account	(a) Debit: Stationery ₹ 5,000
	(b) The cash (asset) will decrease by ₹ 5,000	(b) To decrease an asset, credit the account	(b) Credit: Cash account ₹ 5,000
3.	(a) The sale of goods on credit to SB & Co. will increase the asset (debtors) by ₹ 15,000	(a) To increase an asset, debit the account	(a) Debit: SB & Co (debtor) account ₹ 15,000
	(b) The goods (asset) will decrease by ₹ 15,000	(b) To decrease an asset, credit the account	(b) Credit: Goods account ₹ 15,000
4.	(a) The payment for salaries to executives will increase the amount of expenses by ₹ 50,000	(a) To increase expenses, debit the account	(a) Debit: Salaries account ₹ 50,000
	(b) The cash (asset) will decrease by ₹ 50,000	(b) To decrease an asset, credit the account	(b) Credit: Cash account ₹ 50,000

Table 1.3 *Depiction of how Accounting Rules Affect the Components of Accounting Equation*

Components of Accounting Equation	*Debit (Dr.)*	*Credit (Cr.)*
Capital	Decrease (–)	Increase (+)
Liabilities	Decrease (–)	Increase (+)
Assets	Increase (+)	Decrease (–)
Incomes/Profits	Decrease (–)	Increase (+)
Expenses/Losses	Increase (+)	Decrease (–)

Balance Sheet Components

1. Regarding Capital:
   - Debit – Decrease in capital
   - Credit – Increase in capital

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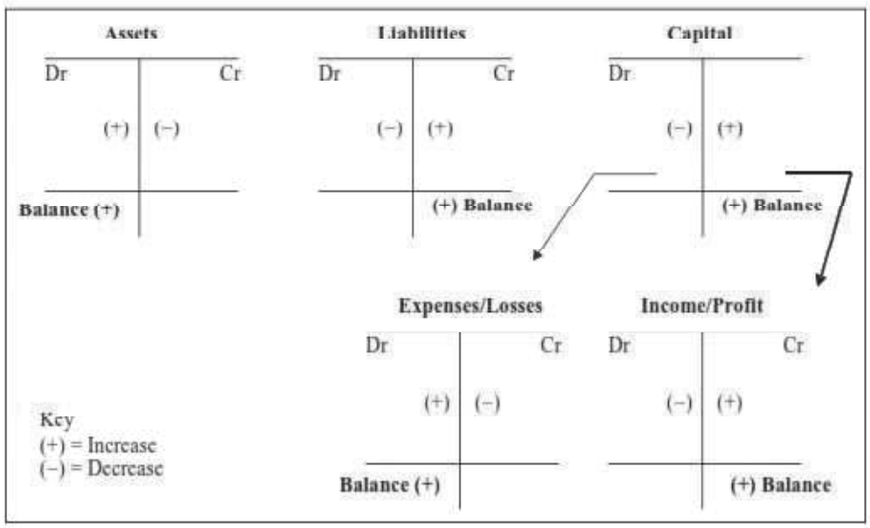
2. Regarding Liabilities:
   - Debit – Decrease in liabilities
   - Credit – Increase in liabilities
3. Regarding Assets:
   - Debit – Increase in assets
   - Credit – Decrease in assets

Income Statement Components

1. Regarding Incomes/Profits:
   - Debit – Decrease in Incomes/Profits
   - Credit – Increase in Incomes/Profits
2. Regarding Expenses/Losses:
   - Debit – Increase in Expenses/Losses
   - Credit – Decrease in Expenses/Losses

For the convenience of students, the rules of debit and credit can also be summarized graphically in T Account form as shown in Exhibit 1.1 below.

Exhibit 1.1 *Double Entry Accounting Rules*



After understanding the concept of accounting equation and rules for recording changes in the components of the accounting equation, answers to the questions mentioned below must be sought for the proper recording of the transactions. The questions are:

- What is the impact (in terms of increase or decrease) of transaction on the components of accounting equation?
- What rules of accounting will govern the impact of transaction for its record in the books of accounts?
- What entry will be made in the books of accounts to record the transaction?

Let us take a few specimen transactions and analyse them in the light of the above-mentioned questions:

Specimen Transactions

1. Purchased goods for cash ₹ 30,000.
2. Paid for stationery ₹ 5,000.
3. Sold goods to S.B. & Co. ₹ 15,000.
4. Paid salaries to executives ₹ 50,000.

The study of Table 1.3 reveals that the major tasks of the transaction analysis include:

- identification of the specific accounts involved in the transaction;
- measurement of the monetary change in each account;
- expression of the monetary changes in terms of accounting language, *i.e.*, debit and credit; and
- recording the transaction in the Journal.

The Journal

The term 'journal' has been derived from the French word *jour*, which means 'a day'. Thus, daily record of business transactions is known as *journal*. It is a book of original entry in which all transactions are recorded in the form of *entries*. The transactions are recorded as and when they occur and in the order in which they occur. *Journalizing* means a systematic process of recording a transaction in the journal and the form in which it is recorded is known as *journal entry.* A commercial organization usually makes use of two types of journals, viz.,

- General journal
- Special journal
  - (i) Sales journal
  - (ii)Purchase journal
  - (iii) Cash receipts journal
  - (iv)Cash disbursement journal

The format of the journal is given in Exhibit 1.2:

Exhibit 1.2 *Format of the Journal*

JOURNAL

1	*2*	*3*	*4*	*5*
Date	*Particulars*	*Ledger Folio*	*Debit-amount* ₹	*Credit-amount* ₹

- Column 1 (Date)—It is the date on which transaction takes place.
- Column 2 (Particulars)—It contains the name of the accounts to be debited or credited.

The account to be debited must be suffixed with the word 'Dr.' (which means debited) and the account to be credited must be prefixed with the word 'To' (which mean credited). The narration (*i.e.*, explanation to the Journal Entry) is also mentioned in the particulars column. It is given in the brackets below the account credited.

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- Column 3 (L.F.)—This column is for reference about the posting of entry to the ledger.
- Column 4 (Debit Amount); and
- Column 5 (Credit Amount)—These are for debit and credit amounts concerning the transactions.

When a transaction is taken up for Journalization in the General Journal, it must be first decided which account is to be debited and which to be credited. This is done according to the rules of debit and credit as discussed in the analysis of accounting transactions.

The Ledger

Ledger is an accounting book that contains accounts in a classified and summarized form. The term *account* means a record consisting of specific information. A *ledger account* is a form used to assemble information that shows the cumulative effect of all the transactions on the accounts specific item of asset, liability, owners' equity, revenue, or expense of the business. Thus, ledger is a device for grouping and summarizing the changes caused by the transactions during a particular time. A separate account is maintained for each asset, liability, revenue or expenses, and for owners' equity. The number of accounts required in recording the transactions/operations of a business varies widely depending upon many factors such as the nature of the business, the volume of business and the type of business organization. In its simplest form, a ledger account can be represented in the form of a 'T' as shown in Exhibit 1.3.

Exhibit 1.3 *Ledger Account Sample*

ACCOUNT TITLE
(Name of the Account)

Dr.							Cr.
Date	*Particulars*	*Journal Folio*	*Amount* ₹	*Date*	*Particulars*	*Journal Folio*	*Amount* ₹
	To.....				By.....		

The title of the account appears across the top of the T. The stem of the T divides the account into two sides. The *left hand* side is called *Debit side* and the *right hand* side is called the *credit side*. Amounts shown on the left side are called debits and the amounts shown on the right side are called credits. To debit an account means to enter an amount on the left side. To credit an account means to enter an amount on the right side. The difference between the sum of the debit entries and the sum of the credit represents the balance of the account.

Each side of the account has four columns. The abbreviations *Dr.* and *Cr.* on the top left and right hand corners of the account stand for debit and credit. The date column records the year, month and day on which the transaction has taken place. The source of the transaction is recorded in the particulars column. Next is the Journal folio column, in which the page number of the journal form which the entry has been transferred to the ledger is recorded. Finally, in the amount column, the amount mentioned in the Journal for a particular account is recorded.

Thus, in ledger accounts the chronological record contained in the Journal is organized according to account classifications. This data organizing process is technically known as *posting*.

Trial Balance

After posting from the Journal to the ledger accounts, the balances of the accounts are determined and are listed on a trial balance. A *trial balance* is a list of account balances taken from the ledger to test the mathematical accuracy of the ledger as indicated by an equality of debits and credits. The closing balance for each account is recorded in the appropriate debit or credit column of the trial balance, and before proceeding further, the total of debit and credit columns of the trial balance must be equal. The matching of debit and credit columns of the trial balance does not mean that all transactions have been recorded properly but it definitely verifies the mathematical accuracy of the accounting transactions. A trial balance may be taken daily, weekly, monthly or whenever desired. The format of a trial balance is given in Exhibit 1.4.

Exhibit 1.4 *Format of Trial Balance*

TRIAL BALANCE

Name of the Account	*Debit Balances* ₹	*Credit Balances* ₹
TOTAL		

Adjusting Process

Adjusting process consists largely of mechanical record-keeping techniques designed to meet the standards of accounting system. It asks for the recording of such items that have not yet been entered in the accounting system through the usual journalization of transactions. The adjusting entries are used to bring incorrect account balances to their correct amounts. It enables accountants to arrive at proper measures of income and financial position. Adjustments can be made at any time when it is determined that an account has an improper balance. If such an entry is made to correct an error that was made in the books, the entry is referred to as a *correcting entry*. The term *adjusting entry* is usually used for adjustments that are made at the end of an accounting period.

In general terms, the following three steps are involved in adjusting a ledger account:

- Close and balance the account to see what its present balance is.
- Determine the balance that the account should show for a fair representation of the situation.
- Make adjusting entry to bring the recorded balance into agreement with the correct or fair balance.

It is obvious that the second and third step can involve estimates and judgements by the accountant. Yet the process of adjusting the accounts is governed by definite principles and procedures that help to protect the output of the users of the accounting system. They must know that adjustments have been made fairly

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and consistently, so that the financial statements are a reliable guide to the financial information about a business.

Usually, adjustments for a company can be classified under the following three general headings:

- actual adjustment
- prepayment adjustment
- valuation adjustment

Financial Statements

From a trial balance and adjusting entries, the financial statements can be prepared. Financial statements consist of the following statements:

- Profit and loss account
- Balance sheet

Closing Entries

The year-end balance in each profit and loss related account must be zeroed out, and the net difference between these accounts must be transferred to profit and loss appropriation account at year-end so that these accounts are ready to receive the ensuing fiscal year's revenue and expenses without being intermingled with amounts from prior periods. After the revenue and expense accounts are closed, only the asset, liability and owner's equity accounts have balances that need to be carried forward to the next accounting period and to serve as a cumulative record.

Check Your Progress

4. What is a journal?
5. What does financial statement consist of?

1.4 FINANCIAL MARKETS AND FINANCIAL INSTRUMENTS

Everyone is aware of product markets, where goods and services are bought and sold. Likewise, there are markets wherein financial products are bought and sold. There are formal markets for some products, like bullion (specious metal) and agro-products like cotton, spices etc. Also, there are secondary markets for non-consumable goods. New cars are sold by manufacturers through dealers, and used cars also have markets. Likewise, there are primary and secondary markets for financial products like shares, debt and foreign currency.

1.4.1 Types of Financial Markets

Financial system comprises regulators, markets, institutions (players) and financial instruments (products).

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Financial Markets

It comprises money market and capital market. Capital market also has two segments securities market and the market where funds are borrowed or lent through means other than securities. The securities market has two parts the primary market, in which borrowers through issuance of securities collect funds directly (or through the services of some intermediaries) form the surplus units, while securities issued in primary market are traded among investors on the secondary markets.

Figure 1.2 depicts the financial market along with its segments, regulators and institutions.

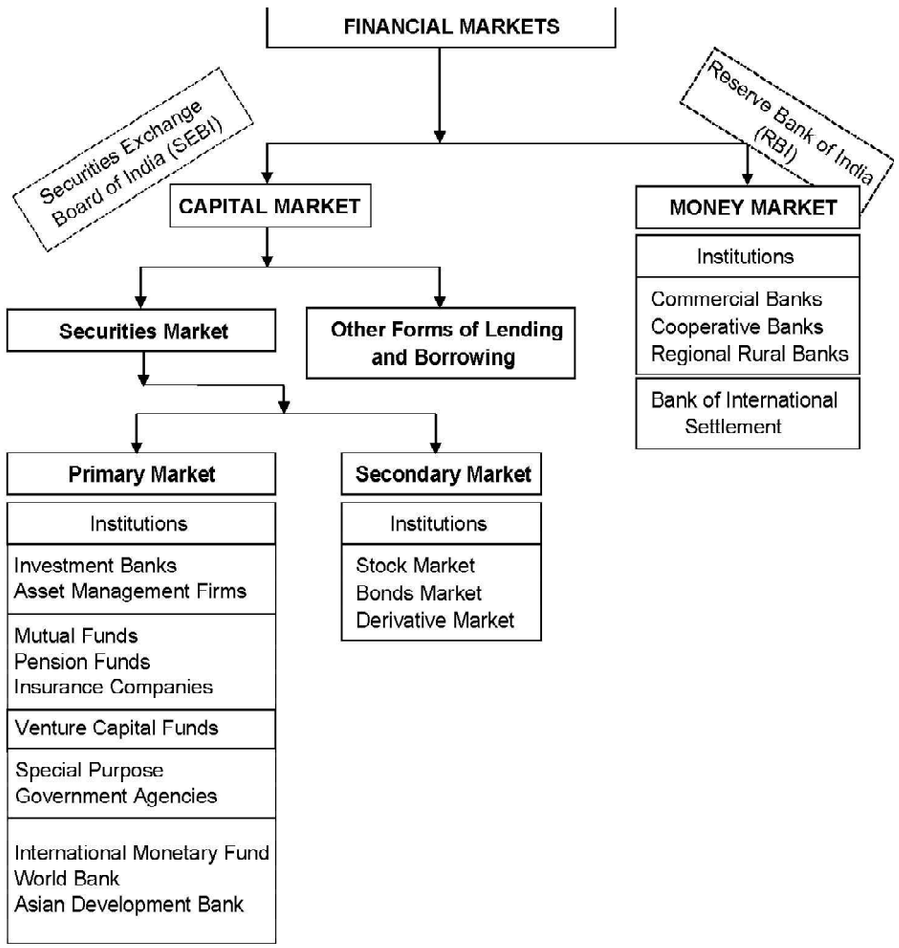

***Fig. 1.2** Financial Markets and Institutions*

(i) Money Market

Money market is that part of financial market in which high liquidity financial instruments with very short maturity period are traded. This is the market for securities with maturity ranging from overnight to less than one year. The Reserve Bank of India acts as the regulator of this market, its institutions and instruments. Commercial and cooperative banks are important institutions in the organised sector of the Indian money market, along with some roles for development banks and

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other non-banking finance companies (NBFCs). There are also special purpose banks like regional rural banks. Unorganised sector players like money-lenders, indigenous bankers and chit funds are also part of the money market.

Money market includes instruments like treasury bills, repurchase agreement, money market mutual funds, call-money, negotiable certificate of deposit, inter-corporate deposits, commercial papers, commercial bills, inter-bank participation certificate, bill rediscounting, banker's acceptance, etc.

(ii) Capital Market

Capital market is the market wherein funds are borrowed and lent. The borrowing and lending may be done by dividing the total requirements in smaller portions called securities (shares, bonds etc.) or borrowing or lending the complete requirement in wholesale. Borrowing and lending other than securities includes bank loan.

1.4.2 Securities Markets: Primary and Secondary Markets

The securities market has two segments: primary market and secondary market. Primary market directly connects surplus funds with mostly long-term needs for the money, which usually gets invested in creating goods and services. This flow from surplus to the deficit is either direct from savers to the businesses or through intermediaries. The mismatch created by short-term surplus and long-term needs is addressed by the secondary market on which securities issued in primary market are traded.

Primary market

When the lender and borrower make deal directly or through an intermediary, it is called the primary market. Businesses and government either privately or publicly raise funds from the surplus units this market. Intermediaries like investment (merchant) banks and asset management firms help in connecting the two sides by providing services for the meaningful connection. Investment banks provide services, which include designing of instrument, pricing the issue, completing all legal formalities for the issue of securities, creating awareness through road-show, book-building etc., and asset management firms manage financial surplus of institutions and individuals.

Some other intermediaries collect money from the surplus units and invest this collected pool of money in the issue of securities by the companies. Mutual funds, pension funds and insurance companies form this category of intermediary in the capital market. Venture funds extend help to whom access to money is difficult but have high potential business idea. They provide equity capital to entrepreneurs for their start-ups. The government has also set up a few special purpose agencies to extend financial support to certain kind of economic activities, which are important for the economy but cannot easily get funds from the market.

Advantages of primary market

Primary market is useful in creating economic wealth for the nation and people. Important benefits of capital market include:

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- **Encourages savings and investment**: Chance of earning higher returns encourages the savings and channelizes it toward investment. Usually capital market returns are higher than bank deposit rates.
- **Better productivity of resources**: Since there are no go-betweeners in the money market the entire money invested through primary market gets into the productive investment to generate gross domestic product (GDP). For example, bank is a go-betweener; if banks collect ₹100, it has to keep liquidity and loan only the remaining funds. The liquidity maintained by bank is unproductive. In primary market surplus units and deficit units make direct deal without diluting investible funds of the economy.
- **Satisfy different needs of savers**: Different savers have different characteristics and needs. Some are able to take more risk and some less. Some want regular income flow from investment and others look for capital gain. Primary market allows designing of instruments with different features to meet needs of different groups of investors.

Secondary markets

The secondary market is a market where investors exchange their investment for cash, without withdrawing money from the borrowers (companies). Financial securities bought in the primary market are traded in the secondary market. Therefore, sometimes secondary market is also called as 'after-market'. Secondary market offers liquidity to investors. After having invested money in any company in the primary market, if any investor wants to takeout money, he can do so by selling the full or part holdings to someone else who is interested in buying these securities. The companies remain unaffected by this transaction, though the price at which trade happen gives a valuable feedback to the companies.

Secondary markets are separate for stock, bonds and derivatives securities. Some secondary markets have physical location (floor) and some others are online.

Advantages of secondary market

Important benefits of capital market include:

- **Fair pricing of financial products**: Active trading of securities creates good amount of demand and supply of the securities. Speculators who have interest of making money on short-term price movement make the market more active. Active market determines the price which is fair. The fair pricing mechanism lets the investor liquidate the investment and attain efficient risk-return trade-off.
- **Efficient allocation of resources**: The prices, which change with every incoming news about the company and economy, signal impending weakness and strength of the companies. Investors and speculators switch their investments from weak companies to strong companies. Thus, secondary market keeps channelizing money constantly towards efficient producers, bringing efficiency for the overall economy.
- **Liquidity:** Investors are greedy. They want good returns and also retain liquidity. The desire for liquidity is due to two main reasons: one, need for cash may arise anytime, and two, one may like to exit with the maximum

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gain or minimum loss. Active trading of securities on the secondary market allows this liquidity.

- **Converts short-term surplus into the long-term investment**: Highly liquid secondary market and opportunity of earning higher returns attracts short term surplus funds in the financial market and invest them in long term business activities. The process of converting short-term surplus to long-term investment increases efficiency and productivity of funds in the economy.

Types of secondary markets

Secondary markets can be classified in several ways to explain the instruments traded on them as well as some other characteristics. Important ways of classification of secondary markets include:

- Stock market, debt market and derivatives market
- Spot market vs derivative markets
- Physical location (floor based) market vs over-the-counter (OTC) market
- Regulated market vs private market

Let us discuss these classification

Stock market, debt market and derivative market: Market where stocks (rather their units i.e., shares) are traded is called stock market. In the debt market (often called as bonds market) debt securities are traded. Derivative markets are separate from stock market and debt markets. Futures contracts and options contracts are traded on derivative market. The futures and options are the instruments that derive their value from the other assets which are often notional.

Spot market vs derivative market: As name indicates, **spot market** is one where purchase and sale of shares of bonds are affected on the spot (actually within pre-specified days; usually on 3rd day after transaction day i.e. T+3).

Whereas, in **derivative markets** different types of instruments are traded, which derive their value from other underlying securities. Derivative instruments are of the following types:

- **Forward contracts:** An agreement to buy/sale particular goods/security at a specific date in the future in a specified quantity at a price decided now is the forward contract. The settlement of the contract is done as per the agreement.
- **Future contract:** Futures contract is a forward contract, which is standardised in terms of settlement (due) date and quantity for a specific quality goods or financial instrument. The standardisation enables transaction on the secondary market, so that the any party of original contract can easily transfer the obligation to someone else who is willing to take up the obligation. Future contracts are binding to the holder of the contact at the time of due date.
- **Option contract:** Option contracts are like future contracts (or standardised forward contract) which gives an option to each party to escape from the obligation. Because one party can escape from the obligation option market works through dealers, who take up the

obligation for a premium. Because of the presence of dealer option contracts require only payment of dealer's premium for even a large value underlying asset.

- **Swaps:** When the cash flow underlying a financial contract is exchanged for some other type of financial contracts it is called swaps. One party of swaps makes a payment to the other depending upon whether a price is higher or lower than a reference price mentioned in the swap contract. In case of interest swap, a firm that issued a fixed rate bonds can exchange them for a variable rate bonds and pass on the burden of fixed rate and take up the burden of variable rate and vice-versa.

Now most auction markets also offer OTC trading, as well as provide for derivative trading.

Physical location market vs over-the-counter (OTC) market: Physical markets meet at a specified location for a specified days and time. These markets are also called *'auction market'* or *'brokers' market'*. The securities are sold and bought through auction mechanism based on out-cry system in which buyers and sellers (actually their brokers) shout the code of security, asking or offering price and whether for sale or purchase. When buyer and seller agree on the number of shares and price the agreement is completed, documented and recorded. This is the reason it is called as 'auction market'. This process requires help of brokers; therefore it is called as 'brokers market' too. A reference to ***exchange traded security*** means they are exchanged between buyers and sellers on the auction market.

On the auction market, securities of big listed companies were usually traded. Small and mid-cap companies and unlisted companies did not have much liquidity. Some traders saw opportunity here to buy the securities of small and mid-cap firms if someone wanted to sell, keep them as inventory, and sell them if someone wanted to buy. These traders or dealers keep inventory of securities and do their trading. Individually these traders were able to keep inventory of only a few securities. Therefore, they formed groups and started accepting deals for group members. This became the '*dealers market'*. Since the securities are traded over the counter of a dealer this market is known as *over-the-counter* (OTC) market. With the advent of information technology the group members became connected through their own computer network, which was then established as organised OTC market and acquired modern shape.

The secondary markets are usually established as public limited companies.

BSE Ltd *(http://www.bseindia.com/)* (formerly the Bombay Stock Exchange Ltd.) was established in 1875, and it is the physical market (though it also has now electronic trading). It is the 10th largest stock market of the world in market capitalization. National stock exchange (*http://www.nseindia.com/*) is the dealers' market or OTC market.

Participants in the Secondary Markets

Many players collectively make the secondary markets relevant. These are discussed below:

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Exchange

The first and foremost institutions in the secondary markets are the institutions that offer a marketplace for trading of securities. The Bombay Stock Exchange, National Stock Exchange and others are the institutions that provide physical or electronic platform for trading of securities. They allow trading within prescribed rules for securities registered with them. All players on the securities market are subject to rules and supervision.

Investors

Investors are the prime stakeholders in the market. Markets serve all types of investors, including speculators. Investors may be wholesale or retail, domestic or foreign, and individual or institutional. Each investor has his own goal, risk appetite and needs.

Brokers or dealers

On floor-based physical markets brokers are essential to represent the investors. They charge commission for completing the deal as per the instruction of the investor. Full-service brokers also advise investors. Dealers are important on OTC market. They buy and sell securities from sellers and buyers at the price as they feel appropriate (or on electronic market, they match the offer and ask prices of investors).

Clearing houses

Buy and sell contacts are made frequently by the people who do not know each other. This may cause real difficulty in settling (transferring securities for money) the transactions.

The Indian Clearing Corporation Limited (ICCL) was set up as a wholly owned subsidiary of the Bombay Stock Exchange Limited with the objective of promoting financial stability and integrity. Its primary function is to clear and settle transactions of diverse and sophisticated financial products. Therefore, it operates under the regulations of SEBI as well as RBR.

National Securities Clearing Corporation Limited (NSCCL) is set up to act as settlement agency for all deals executed on the derivatives market.

Depositories

CDSL and NSDL are important participants in the securities markets. Depositories Act, 1996, regulates depositories in securities and matters connected with that. The shift to demat (electronic) format of securities from the paper format of securities required enactment of this act. Two institutions are noteworthy in the arena of demat securities and their accounts NSDL and CSDL.

The *National Securities Depository Limited (NSDL*), established in 1996, is the first and largest depository in India. The NSDL provides basic services like dematerialization, rematerialization, settlement of trade through market transfer or off-market transfers or inter-depository transfer and also accounts maintenance.

The *Central Depository Services (India) Limited (CDSL*) is a depository which facilitates holding of securities in the electronic form and enables processing

and book entry of transactions. All securities in demat form are getting services of CSDL and depository participants (financial institutions, banks, brokers etc. with whom investors open demat account) get the services of CSDL.

International securities markets

Securities can be issued in the foreign markets and investors can trade in the securities on the foreign markets. In *direct way* to invest in foreign securities, an investor can buy securities on the security market of a foreign nation in the host country currency, and sale also when needed. In *indirect way* of investment one can chose a mutual fund that has a product, which invests in foreign securities. Companies also can issue securities in the foreign countries in the denomination of the host country currency. For example, ADR (American Depository Receipts) can be issued by Indian business in USA. With liberalization spreading over the world the world financial markets are shrinking boundaries allowing companies and investors to operate on any financial market of the world, subject to international and local laws.

1.4.3 Stock Exchanges: BSE, NSE and Process of Demat

The stock exchanges are a part of the securities market. The stock exchanges play a primary role in channelizing household savings to investments in productive enterprises. They play a signifi cant role in the pace of national industrialization. The stock exchanges act as a mirror to the stock market. The securities market and stock exchanges are closely interlinked. Small investors have gradually realised that the securities market provides several investment opportunities for capital appreciation, apart from the income from dividends. It is necessary to know how stock exchanges and the securities market function, before placing surplus funds in the stock market, so that investors can make informed decisions. Some investors may be professionals, while a large number come from a class that does not know much about the operations of stock exchanges or stock markets. The latter category of investors has to rely on the advice of brokers, sub-brokers or specialized professionals. To protect the interests of all categories of investors from vested interests, and to protect them from malpractices prevalent in stock exchanges, it is necessary for the government to frame regulations.

We have two major stock exchanges. The Bombay Stock Exchange (BSE), the oldest stock exchange in Asia, was established in 1875. Later, the National Stock Exchange (NSE) was 128 *Management of Financial Services* established in 1994. BSE and NSE account for most of the equity trading in India, though many other exchanges exist.

History of the BSE

The BSE traces its history to the 1850s, when four Guajarati and one Parsi stockbrokers gathered under the banyan trees in front of Mumbai's town hall. As the number of brokers increased, the location of these meetings changed frequently. With the share trading business developing rapidly, the group eventually moved to Dalal Street in 1874 and in 1875 became an official organization known as The Native Share & Stock Brokers Association, also known as The Bombay Stock Exchange. In 1956, the BSE became the first stock exchange to be recognized by

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the Indian Government under the Securities Contracts (Regulation) Act, 1956. The BSE is, currently, housed in Dalal Street, in the Fort area, since 1980.

The BSE Sensitivity Index (SENSEX), also called the BSE 30, is the oldest stock exchange in

Asia. It is also the fourth largest stock exchange in Asia and the eighth largest in the world. The

BSE has the largest number of listed companies in the world.

History of the NSE

Till the formation of the NSE in 1992, BSE enjoyed a monopoly. Since its inception, the NSE

has pioneered changes in the Indian securities market. The NSE has been set up with the following objectives:

- The creation of a nationwide trading facility for all the types of securities
- The provision of uniform and equal access to all the investors over the country
- The establishment of an electronic trading system for efficient, fair and transparent trading in the securities market
- Setting up shorter settlement cycles
- The achievement of international benchmarks and standards

Within a very short span of time, NSE has been able to achieve the objectives for which it was set up. Though a number of other exchanges exist, NSE and the BSE are the two most significant stock exchanges in India. Though established later, the share volume in NSE is, typically, fi ve times that of BSE. The National Stock Exchange's Fifty (NIFTY) is for NSE while SENSEX for BSE. The NIFTY is an index of fifty major stocks weighted by market capitalization. Some mutual funds use the NIFTY index as a benchmark, which means the mutual funds' performance is compared against the performance of NIFTY.

Innovations

NSE's pioneering efforts include:

- Setting up the first national, anonymous, electronic limit order book exchange to trade securities in India. An electronic limit order book results in computerized orders matching.

  Since the success of the NSE, existing as well as new market structures have followed the NSE model.
- Setting up the first clearing corporation, National Securities Clearing Corporation Ltd. (NSCCL) in India.
- Co-promoting and setting up the National Securities Depository Limited (NSDL), the fi rst depository in India.
- Setting up the S&P CNX Nifty.

Pioneering the commencement of Internet trading in February 2000 to make stock-broking

operations more transparent and visible, creating confidence among the public.

Markets

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Currently, NSE has the following major segments of the capital market:

- Equity
- Futures and options
- Retail debt market
- Wholesale debt market
- Currency futures
- Stocks lending and borrowing

Hours

NSE's normal trading sessions are conducted from 9:15 am to 3:30 pm IST on all days of the week except Saturdays, Sundays and official holidays declared by the exchange or by the Government of India in advance.

National Securities Clearing Corporation (NSCC)

The NSCC provides centralized clearance, settlement and information services. This has been set up by the NSE. This nets trades and payments among its participants with net obligations for each brokerage firm. On account of NSCC, the value of securities and payments that need to be exchanged are reduced, substantially, by an average of 98 percent each day, with an excellent record of reliable settlement schedules since its inception in the mid-nineties. The NSCC is assisted by the NSDL in its operations.

(iii) Over-the-Counter Exchange of India (OTCEI)

Traditionally, trading in the stock exchanges in India took place conventionally, when people used to gather at the exchange and bids and offers were made by open outcry. This age-old trading mechanism in the Indian stock markets created much functional inefficiency in the following areas:

Lack of transparency

When investors used to buy or sell on stock exchanges, they were not sure that the rates advised by their brokers were the actual rates at which their securities were transacted, either for buying or selling. There was no mechanism to verify the actual rates. The newspaper reports were the only means of information. They used to show the different rates at which they were transacted during the day and the variance in rates was substantial. Investors used to feel that their securities were bought at the highest rates of the day while their sales were made at the lowest rates of the day. Now, online information facilitates the investors to verify the correctness of the transaction. In many cases, the investors make their own buy or sale actions online, after satisfied with the prevailing rates.

Long settlement periods

Settlement period relates to the period of time between the transaction date (purchase/ sale) and settlement date (payment/receipt). The buyer must make

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payment on the stipulated date within the settlement period, while the seller must deliver the purchased security on the fi xed date within this period. The entire process used to be long. The buyer could get the securities in his name after a long-period while the seller could receive the funds, equally, after delay of so many days,Now, the settlement process has been on T + 2 basis. T stands for transaction date. IT means that a transaction entered into on day 1 has to be settled on the day 1 + 2 working days, when funds pay in and securities pay out takes place. This goes on rolling settlement basis. Transactions entered on Monday are to be settled on Wednesday.

Conflict of interest

There used to be conflict of interest between investors and its broker members. Stock brokers were the owners, traders and brokers and this resulted in confl ict of interest when they dealt with investors either for buying or selling. More so, this lead to absolute control on the stock exchanges which the brokers used for their personal gains.

Benami transactions

Benami transaction refers to any transaction in which property is transferred to one person for a consideration paid or provided by another person. In simple words, property does not stand in the name of the real owner. The property in whose name it stands is not the real owner. Benami transactions were prevalent, earlier, in stock exchange operations. With the introduction of demat (dematerialization), benami transactions have disappeared. Demat is a process where the holding of securities is made electronically. The demat account can be opened after establishing identity and compliamce of KYC (know your customer) norms.

OTCEI was set up in 1990 in order to overcome these ineffi ciencies, much earlier than NSE, which commenced its operations from 1995. OTCEI was incorporated under the Companies Act 1956. This has been created by Unit Trust of India (UTI), Industrial Credit and Investment Corporation of India (ICICI), Industrial Development Bank of India (IDBI), SBI Capital Markets, Industrial Finance Corporation of India (IFCI), General Insurance Corporation (GIC) and its subsidiaries and Can Bank Financial Services.

Before the introduction of information technology on stock exchanges in trading, buying and selling of shares used to take place through open outcry mode. Open outcry involved shouting verbal bids and offers were made through hand signals to convey trading. Onlookers could never understand their language. Matching and recording of trades consumed time and there was inefficiency in functioning. In order to provide efficiency, liquidity and transparency, screen-based stock exchanges started functioning. In screen based trading, a member can punch into the computer the quantity of a security as well as the price at which he would like to transact, either for buying or selling. The transaction is executed as soon as a matching sale or buy order from a counter party is found.

OTCEI is the first screen-based nationwide stock exchange in India. Screen-

based trading brought fairness and transparency in dealings on stock exchanges, above all created confidence to investors about the price of buying and selling securities. OTCEI is a recognized stock exchange under the Securities Contracts (Regulation) Act, 1956. OTCEI was modelled on the lines of the NASDAQ market, introducing several novel concepts to the Indian capital markets, such as screen-based nationwide trading, market making and scrip-less trading.

Advantages of OTCEI

Compared to other stock exchanges, OTCEI has the following unique benefits:

1. **Listing benefit for small and medium companies:** It allows the listing of small and medium-sized companies. To be listed on OTCEI, the minimum share capital of a company should be '30 lakh and the maximum '25 crore. To be listed on other recognized stock exchanges, companies require an issued capital of not less than '3 crore, out of which normally 25 per centis to be offered to the public.

   The main purpose of offsetting up the OTCEI is to aid enterprising promoters in raising finance for new projects in a cost-effective manner. This exchange requires a minimum issued equity share capital of '30 lakh only for a company, which enables small companies to benefit from being listed. Companies that are listed on any other stock exchange are not eligible to list on OTCEI.

   However, companies engaged in investment, leasing, finance, hire purchase, amusement parks etc., and companies listed on any other recognized stock exchange in India are not eligible for listing on OTCEI. Listing is granted on OTCEI only if the issue is fully subscribed to by the public.

2. **Introduction of electronic exchange and market makers:** This is the first automated electronic OTC stock exchange in India. This is also the first exchange in India to introduce market makers who quote both buy and sell rates for securities they deal in. *Market makers are fi rms that hold shares in companies that facilitate the trading of securities by buying and selling from other participants.*

   On account of compulsory market making, improved access and speed of transactions are possible with the extensive network of electronically interlinked counters.

3. **High liquidity:** This exchange provides liquidity to investors as every scrip listed on the OTCEI will have at least two makers who will continuously give two-way quotes. *The listing of small companies on a national ringless stock market has become possible on account of OTCEI, which is a great advantage to them. This would not have been possible as any other exchange requires a minimum of three crore issued share capital.*

   Earlier, stock operations used to occur in a circular ring where brokers used to stand and shout at each other for trading Now, the stock market operations are conducted online through computers and the stock exchange has become ringless. OTCEI's wide computerized network has provided high liquidity for these small companies' securities. In its wide computerized dedicated network, transactions are entered even through remote terminals

NOTES

of computer systems linked together, via cables or the Internet, to a common server to share programs, fi les and other information. The stock exchange operations, now, facilitate quick deals to investors of even small companies.

4. **Inexpensive fund-raising mechanism:** Companies can obtain a fair price for their securities by placing their securities with sponsors, after negotiation. The sponsors, in turn, off-load the securities to the public. This procedure saves the unnecessary expense of an issue. This mechanism is, now, popularly known as a bought-out deal. It helps companies to raise finance from the capital market in a cost-effective manner. This method provides a convenient and effective avenue of capital market investment for investors at large.
5. **Transparency and accuracy of prices:** Scripless trading ensures transparency and accuracy of prices.

(v) MCX Stock Exchange Limited (MCX-SX)

MCX Stock Exchange Limited (MCX-SX), a new generation stock exchange, was notified as a recognized stock exchange under Section 2(39) of the Companies Act, 1956, by the Government of India on 21 December 2012. This stock exchange commenced trading in the capital market (equity cash) and the futures and options (equity derivatives) segments with effect from 11 February 2013.

MCX-SX commenced its operations in the currency derivatives (CD) segment on 7 October 2008 under the regulatory framework of the Securities and Exchange Board of India (SEBI) and the Reserve Bank of India (RBI). MCX-SX has been a market leader in this segment, witnessing a steady and significant growth in its average daily turnover, since its inception. The exchange started trading in currency derivatives, with an average daily turnover of '324.78 crore in the first month of operations, which significantly increased to '12,430.48 crore at the end of September 2012.MCX-SX is controlled by the commodity bourse Multi- Commodity Exchange of India Ltd and the trading software provider Financial Technologies (India) Ltd. The Exchange is recognized by SEBI under Section 4 of the Securities Contracts (Regulation) Act, 1956.

MCX-SX received government permission to deal in equities in 2012. 'Information, innovation, education and research' are the four cornerstones of philosophy adopted by MCXSX. It supports the mission of 'Financial literacy for financial inclusion', as envisaged by the Government of India. In line with global best practices and regulatory requirements, clearing and settlement are conducted through a separate clearing corporation, MCX-SX Clearing Corporation Ltd (MCX-SX CCL).

SX40 is the flagship index of MCX-SX, a free-fl oat-based index of 40 large-cap liquid stocks, which represents diversified sectors of the economy. MCX-SX is the first ever IPO by an Indian exchange.

Equities trading is dominated by the NSE in India, which has overtaken the older BSE in trading volumes. MCX-SX is confident that trading volumes will grow substantially in the coming years as the Indian government pushes through initiatives to bolster mutual fund and insurance investments in a bid to bring more retail investors into the stock markets. However, the value of shares traded on this

exchange is a fraction of those traded on the Shanghai Stock Exchange. Whether MCX-SX can succeed in a country will depend mainly on how successfully the bourse can attract liquidity, especially from established brokers.

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Demat and Process of Demat

Demat stands for dematerialized, which means ceasing to have material or physical existence. A demat account is one in which customers hold shares and other securities in electronic format. A demat account is a mandatory requirement for all new companies to issue securities and it is equally necessary for investors to convert their physical share certificates for trading in India. All scheduled commercial banks provide demat account facilities at their select branches. SEBI has made it mandatory for all existing and new account holders to submit a copy of their PAN card, along with the original for verification to ensure proper identification of the customers and comply with know your customer (KYC) requirements.

All allotments of new issues by companies have to be in the demat form. Additionally, all existing paper certificates are to be converted into demat form, which is applicable to all public companies and their subsidiaries as per the notification of Ministry of Corporate Affairs (MCA) dated 6 June 2011. The move is expected to bring in transparency, regulatory scrutiny and an easy transaction platform for companies and investors. The move brings more business for intermediaries, such as depositories and depository participants.

Demat Benefits

These are the benefits made available consequent on the introduction of demat accounts.

- It is more convenient to hold securities in demat form.
- It is safer, because securities no longer remain in the physical form, but in electronic form.
- Risks associated with the physical form (bad delivery, fake securities, delays, thefts, etc.) are eliminated.
- Paperwork has been reduced significantly.
- Securities are easily and instantly transferred.
- Such transfers do not require stamp duty.

Demat account has a nomination facility. However, it does not have a survivor facility as available with a bank account, which would make it more convenient for investors, even as it eliminates unnecessary problems for them.

Dematerialization

Dematerialization is the process by which investors' physical share certificates are converted to an equivalent number of securities in electronic form with their depository participants. In this process, the physical share certificates belonging to an investor are taken back by the company and an equivalent number of securities are credited in electronic form.

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The role of the following players in the process of dematerialization is detailed below:

1. **Depository:** The organization responsible for maintaining the investor's securities in the electronic form is called the depository. In other words, a depository is like a bank for securities. In India, there are two such organizations—National Securities Depository Limited (NSDL) and Central Depository Securities Limited(CDSL). As per the SEBI guidelines, the minimum net worth stipulated for a depository is '100 crores. NSDL was established in August 1996, and was the first depository in India. CDSL is the other depository established in the year 1999. The depository concept is similar to the banking system, with the exception that banks handle funds, whereas a depository handles investors' securities. An investor wishing to utilize the services offered by a depository has to open an account with the depository through the depository participant. The depository service providers have authorised the company secretaries in full-time practice to undertake internal audits of the operations of depository participants.
2. **Depository participant (DP):** A depository participant is an agent of the depository. A DP is a market intermediary that interfaces with investors and provides depository services. Public financial institutions, scheduled commercial banks, foreign banks operating in India with RBI approval, state financial corporations, custodians, stock-brokers and registrars to issues or share transfer agents, complying with the requirements prescribed by SEBI, can be registered as depository participants. The depository evaluates the DPs on their capability to meet with strict service standards, before admission. Of late, a good number of reputed broking firms have started providing depository services, which is a win-win situation for the investors, who would find it more convenient, as well as the brokers, who will find this an additional source of revenue generation.

Banks are the most popular DPs and their services can be availed of at select branches. Each DP is assigned a unique identification number known as DP-ID. The system of using their existing distribution channel, through a wide network of branches, helps the depository to reach a wide cross section of investors, spread across a large geographical area, at a minimal cost. Realizing the potential, all the custodians in India and a number of banks, financial institutions and major brokers, have already joined as DPs to provide services in a number of cities.

Dematerialization Process

Dematerialization is very similar to opening a bank account. First, an investor is required to open an account with a DP, and comply with KYC requirements. Later, the investor requests the dematerialization of share certificates, through the depository participant, so that the dematerialized holdings can be credited into that account.

In order to dematerialise physical securities already issued, the holder of the securities has to fill in a demat request form (DRF), available with the DP, and

submit it along with physical certificates that are to be dematerialized. A separate DRF has to be filled in for each security. Each security bears an international securities identification number (ISIN) with a unique 12-digit alpha-numeric identification number.

The complete process of dematerialization is outlined below:

- The investor surrenders the share certificate along with DRF for dematerialization to the DP.
- The DP informs the depository regarding the request.
- The DP submits physical certificates and dematerialization requests to the registrars of the issuer companies.
- The registrar confirms the dematerialization request, verifying the authenticity of the documents.
- After the certificates are dematerialized, the registrar updates the accounts.
- The registrar informs the depository regarding the completion of the process.
- The depository updates its accounts and informs the DP.
- The DP updates the investor's demat account.
- The DP advises the investor that the demat account is credited with the securities.

An investor has the option to hold the shares in the physical or demat form. However, if the investor wants to buy or sell them on the stock exchanges, the share certificates have to be dematerialized. For a new issue, according to the Issue of Capital and Disclosure Requirements Regulations (ICDR) 2009, the concerned company has to issue the shares in the demat form only.

There is no need to fi ll in a transfer deed. Physical documents are not sent to the DP, at any time, for the purpose of dematerialization. Dematerialization requires no stamp duty for transfer of physical securities into the electronic form. The depository does not levy any charge for dematerialization of securities. However, DPs may collect dematerialization charges for the postage / courier charges, which are the expenses incurred.

1.4.4 Financial Market Regulatory System

Financial markets handle money, and therefore become very sensitive for all as well as for the entire economy. Strong and balanced financial regulations are the key for bridling the greed which is always the cause for economic growth and also for the exploitation and unethical behaviour. Efficient markets work under pragmatic regulations, supervisory agencies and fair rules of play. Dissemination of material and fair information and protection of genuine players should remain the key in the regulations and role of regulators. In the process the financial system works with regulations, regulators, markets, participants, institutions and instruments (products).

Financial Regulations

Financial / securities markets are highly regulated. Important regulations are listed below:

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- The Securities Contract (Regulations) Act, 1956, for regulating transactions of securities on the secondary market through control over stock exchanges.
- The Companies Act, 1956, has provisions for issue, allotment and transfer of securities as well as for the disclosure requirements for the companies.
- The Securities and Exchange Board of India (SEBI) Act 1992 enabled the creation of SEBI for the regulation of securities market and protection of investors.
- The Depositories Act, 1996, provides for dematerialization of securities and regulations thereof.
- The Reserve Bank of India Act, 1934, under which the Reserve Bank of India (RBI) was established for the regulation of money flow in India. RBI is the main regulator of the money market.

Regulators

Financial markets need strong regulations. The regulators of Indian financial markets can be grouped in two, namely, independent regulators and part of government department or ministry.

Independent bodies via Act of Parliament

- **SEBI**: SEBI was established in 1988 as a non-statutory body to protect investors and to develop and regulate securities markets. It became an autonomous body after the enactment of the SEBI Act, 1992.
- **RBI**: Reserve Bank of India was established on 1 April 1935 under the Reserve Bank of India Act, 1934, as a central bank to regulate flow on money in the economy. It is, therefore, framing and implementing monetary policies of the country. Since money is handled by banking sector, banks and money market activities are regulated by the RBI.
- **IRDA**: The Insurance Regulatory and Development Authority (IRDA) was established under the IRDA Act, 1999, with a view to protecting the interest of policyholders, to regulate, promote and ensure orderly growth of insurance sector in India.

Part of government departments/ministry

- **FMC**: The Forward Market Commission of India is a regulatory body set up in 1953 under the Ministry of Consumer Affairs, Food and Public Distribution, Government of India. It was established under the Forward Contract Act, 1952. The FMC allows commodity trading in 22 exchanges in India, of which three are national level.
- **PFRDA**: The Pension Fund Regulatory and Development Authority was established in 2003 under the Finance Ministry to regulate pension funds.

1.4.5 Financial Market Institutions

Let us discuss in detail the important institutions of the financial markets.

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Commercial banks

Commercial banks collect deposits in the form of current accounts, savings accounts and fixed deposits from those who have surplus funds, and lend the funds to individuals and businesses. Their primary role was working capital loans to the businesses. Commercial banks provide working capital loan to businesses through various schemes. Overdraft facility, factoring and bill discounting facility and letter of credit are among them. Commercial banks also provide term loan for a longer period for financing projects. In the current competitive periods commercial banks provide several fee-based services also.

There are public sector banks and private sector banks, as well as foreign banks, in India. Commercial banks are regulated by the Reserve Bank of India, which requires the banks to maintain their capital adequacy ratio, cash reserve ratio and also to abide by several other regulations so that the financial health of bank can be maintained and depositors can 'bank' (rely) upon them. If the banking system fails, the entire economy would fail.

Cooperative banks

Cooperative banks are just like commercial banks, except that they are formed by people with common interest and goals and they operate with the cooperation motto rather than profit motto. They came into existence to get out of the clutches of money-lenders who used to exploit farmers, labourers and other small businesses, and extend small credit to its members. The cooperative structure in India for short-term and medium-term credit is a three-tier structure with *agriculture credit societies* at the base and then *central cooperative banks* and *state cooperative banks.* Central cooperative banks are usually registered under the Cooperative Societies Act 1912, whereas state cooperative banks are registered under the act of the respective states. Therefore, regulations of cooperative banks are different from that of commercial banks.

Regional rural banks (RRBs)

RRBs are jointly owned by the Government of India, state government and a sponsor bank to extend much needed assistance to small and marginal farmers, labourers and rural artisan. These banks operate only in the notified areas, which primarily include rural areas, but also some urban areas. RRBs are established under the provisions of RRB Act, 1976. These banks help in implementing certain policies of the Governments. For example, wages under MGNREGA are distributed through RRBs.

Bank of International Settlement (BIS)

Banking sector has been always integrated internationally for transfer of money and issuance of international letter of credit etc. The BIS was established in 1930 to promote and facilitate collaborations among central banks of all member nations with a view to promote monetary and financial stability. It acts as a prime counterparty for central banks for their international transactions. It is based in Basel, Switzerland, where banking norms are discussed and decided for each central bank to adopt in their respective country. It does not accept any deposits or perform any banking function.

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Investment banks

Investment banks are also known as merchant banks. In the US, they are known as investment banks and in the UK, as merchant banks. They primarily provide issue management services which includes advising corporate clients for determining debt-equity ratio, designing of an instrument, getting legal approvals, organising marketing (road-show) for the selling of securities, determining fair price for the issue of security, actually issuing the securities and making allotment of them. During this process, they also provide the services of underwriting of the issue either on good-faith basis or guaranteed basis. In good-faith underwriting they provide issue services for a fee, whereas in guaranteed basis underwriting, the unsubscribed portion of the issue is taken up by the investment banks, which they in turn sell in the market. The fees for guaranteed based underwriting are higher than good-faith underwriting.

Today, many investment banks have expanded themselves to the full-service banks and provide many additional services including providing market intelligence, helping to buy or sale target companies, portfolio management, syndication of loan, insurance, etc.

Asset management firms

Asset management company (AMC) is an investment management company. These firms manage any type of assets. Some manage infrastructure assets and some manage firms. In the context of financial market, the asset management firms manage pooled financial resources of others. Mutual funds, hedge funds and pension funds pool the money and hire asset management firms to manage the funds as per the funds' philosophy and in exchange earn fees.

Mutual funds

Mutual funds appeal to small savers who want the same advantages as big investors. Mutual funds pool small savings to make a large pool, employ asset management firm and invest the pooled sum in the portfolio of financial assets. Some mutual funds are open-ended while others are close-ended. In an open ended fund, units in mutual funds are sold back to the mutual fund at the net asset value (NAV), whereas close-ended funds are traded on the secondary market, where units can be traded at a price different from its NAV as may be determined by supply and demand. Each mutual fund is designed with certain philosophy; either to offer continuous returns, or to offer growth opportunity or to provide a balanced portfolio or to provide hedge against risk, or anything else.

Pension funds

Pension funds serve to the employees of companies and government for their retirement benefits. In India employees and employers contribute in the retirement benefits of employees. The most common form of private pension plan is the trust fund. The employer establishes a trust, which is overseen by trustees for the benefit of plan members. Pension fund assets are not part of company balance sheet. Pension funds need to invest in securities as prescribed by law. Traditional pension plans are defined-benefit plans in which employees are certain about the pension

amount upon retirement. The newer pension plan schemes have provided for defined-contributions only and returns depend upon the choice of type of investment made by the employee. Pension funds, collectively, have a large pool of long-term savings with them.

Insurance companies

The insurance firm is the oldest type of financial institution. They sell insurance products, some of which cover risk of life and some other cover risk of property and casualty that people and businesses do not want to take. Thus, there are two types of insurance companies life insurance companies and general insurance companies. Life insurance companies cover the risk of policyholders in exchange of yearly premium and guarantees a lump sum payment in case the policy holder dies. One can take a full-life insurance policy and pay premium every year, or else can take a term policy and cover the life only for a certain period. Some are endowment policies that not only cover the life but also assure a lump sum payment at a certain age. Endowment policies are savings oriented life policies.

Property or casualty (P&C) insurers are known as general insurance companies. General insurance covers the risk of potential financial loss from unexpected events like accident, fire, riots, earth quake, health, lawsuits, etc.

Venture capital funds

Venture capital funds pool of investible money from those investors who are willing to take extra risk and invest in high potential risky start-ups. Some entrepreneurs have business ideas and passion but cannot access capital market. Venture capital funds are ready to participate in the equity requirement of such start-ups and help them with managerial and other assistance. Venture funds exit the ventures at appropriate time with profit or loss. Each venture fund specializes in certain types of business ventures, for example some invest in IT start-ups only and some other in bio-tech start-ups only. Venture capitalists have encouraged entrepreneurship in India. Like venture funds, there are angel funds and charitable funds, too.

Developmental institutions or special purpose government agencies

Central and state governments have established some developmental institutions that act as special purpose agencies of the government. Important among them are:

Industrial Development Bank of India (IDBI): IDBI was established by RBI in 1964 and in 1976 it was transferred to the Government of India. Its primary purpose was to assist the industrial development of India by granting project loans, underwriting and direct subscription in securities of the industrial companies, provide soft loan and technical development funds. It used to also act as lead institution for providing consortium loan jointly with other financial institutions for industrial development. After establishment of Small Industrial Development Bank of India it started refinancing them and also to commercial banks and RRBs. It is raising funds from international money markets too.

State Industrial Development Bank of India (SIDBI): SIDBI was established by IDBI in 1990 for working at the grass-root level and for providing developmental

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assistance for businesses in backward areas of the country. They offer financial lease and offer guarantees and act as agencies for the implementation of central and state schemes for industrial development. They also undertake projects and conduct survey for finding developmental opportunities.

National Bank for Agricultural and Rural Development (NABARD): NABARD was set up by Government of India in 1982. Its main role has been to uplift rural areas by increasing credit flow towards agriculture and rural non-farm sector. It is associated with international agencies like World Bank and its affiliated developmental institutions.

National Housing Bank (NHB): NHB was established in 1988 as a wholly owned subsidiary of RBI to promote private real estate. It is regulating and refinancing social housing programmes of Housing Finance Companies as well as other activities like research and IT infrastructure.

State Financial Corporations (SFCs): SFCs are established under the State Finance Corporation Act, 1951. SFCs grant loans to industrial units for purchase of fixed assets and sometimes for working capital also, through pledge, mortgage and hypothecation or guarantee by the state government and commercial banks. It subscribes in shares and bonds of industrial units also. It also provides services like underwriting and guarantees.

1.4.6 Financial Market Instruments (Products)

There are several instruments available in the market. They are designed to attract different and changing needs of savers and borrowers. Speculators also design some products, especially derivative products. The list of financial products is given in Table 1.4 is just as a reference without much narration on them.

Table 1.4 *Financial Instruments in Secondary Markets and their Main Features*

Instrument	Institutions involved	Major features	Risk category
Money Market Instruments			
Cash Management Bills	RBI on behalf of GoI	Maturity <90 days	Risk-free
Treasury bills	RBI on behalf of GoI	Maturity 91 days, 182 days and one year	Risk-free
Repurchase agreement	RBI and banks	Overnight maturity	Risk-free
Negotiable Certificate of Deposits (NCDs)	Banks and large depositors	<1 year Unsecured	Low risk as per bank's financial strength
Banker's Acceptance	Seller-buyer and bank	Maturity 30 to 180 days Bank guarantee	Low risk as per bank's financial strength
Commercial Papers (CPs)	Companies, mostly banks and large investors	Unsecured Maturity 270 days	Some default risk of company's failure
Money market mutual funds	Mutual fund with investors' money	No maturity; but can be liquidated anytime	Some risk
All money market instruments have a par value and issued at discount. In case of Repo rate is predetermined, but in all other cases rate is determined by the maturity value and discount rate in the context of maturity period left.			

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Capital Market Instruments			
Treasury bonds	RBI on behalf of GoI	Maturity 2 to 30 years Either fixed rate or floating rate	Risk-free, except interest rate risk
Equity	Companies, individual and institutional investors	Infinite maturity period Unsecured	All risks; default risk, maturity risk, interest rate risk, liquidity risk etc.
Preference shares	Companies, individual and institutional investors	Infinite maturity, except for redeemable preference shares Unsecured	Risky, but less than equity
Debentures	Companies, individual and institutional investors	Varying maturity of more than one year Unsecured	Very risky, but less than preference share
Bonds	Companies, individual and institutional investors	Varying maturity of more than one year Secured against assets	Very risky but less than debentures
Financial Leases	Companies, lessor firm	Maturity less than lease asset's life Secured as asset is owned by lessor	Somewhat less risky than bonds since asset is owned by lessor
Most instruments carry a coupon rate, fixed or variable; equity shares and preference shares carry no interest rate but get dividends; finance lease has built-in interest in its instalment amount			

Derivative Market Securities			
Forward contracts	Buyers and sellers	Fixed date for settlement No secondary market Non-standardised	Less risky than spot market Interest rate risk, liquidity risk etc.
Various futures	Buyers, sellers and brokers	Defined settlement date Standardised forward contract in maturity, quantity are futures	Less risky than forward contracts
Various options	Buyers and dealers	Defined settlement date Futures with option not to honour the contract is option	Less risky than futures contracts
SWAPs	Buyer and dealers	Notional quantity of swaps Enables converting fixed rate into variable and vice-versa	Hedge against interest rate risk

Note: The above list is not comprehensive and just explanatory.

1.4.7 Money Market Instruments

Let's discuss the features of some of the major types of money market instruments in this section.

1. Call Money/Notice Money/Term Money

The period for which funds are lent is the basis for distinguishing amongst call money, notice money and term money. Call money is lent for one day in the market. Notice money refers to sums lent for more than a day but less than fifteen days. Term money is lent for 15 days or more in the inter-bank market. Intervening holidays and Sundays are excluded for this purpose.

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Call money market participants

The call money market participants include:

- Banks (excluding regional rural banks [RRBs])
- Cooperative banks
- Primary dealers
- Development financial institutions such as LIC, UTI, GIC, IDBI and NABARD
- Insurance companies
- Select mutual funds
- RBI (through its liquidity adjustment facility)

All institutions are not allowed to borrow and lend. Of the above, commercial banks, cooperative banks and primary dealers can operate both as borrowers and lenders in the market.

But non-bank institutions (such as all-India financial institutions, select insurance companies or mutual funds) have been given specific permission to operate in the call/notice money market, operating as lenders only.

Features

- It is a wholesale market, which is highly competitive and sensitive.
- The volumes are very large and transactions are generally settled on a daily basis.
- Trading in the money market is conducted over the telephone, followed by written confirmation from both the borrowers and lenders.
- This market enables banks and institutions to even out their day-to-day temporary surpluses and deficits in funds.
- This market gives an opportunity for the banks to meet their mandatory cash reserve ratio (CRR) and statutory liquidity ratio (SLR) requirements as stipulated by the RBI.
- This market is characterized by liquidity (quick conversion into money), minimum transaction cost and the lowest market risk. It enables businesses to meet the sudden demand for funds arising out of large outflows.
- Commercial banks, co-operative banks and primary dealers are allowed to lend and borrow in these markets.
- Specified all-India financial institutions, mutual funds and certain entities are allowed to lend only in these markets.
- In view of the short tenure of transactions, both the borrowers and lenders are required to maintain a current account with the RBI.
- It is the major mechanism through which the RBI influences the liquidity and the level of interest rates in the economy.
- In the call/notice money market, the minimum size of each transaction is ‘3 crore.

- Foreign banks and private sector banks are the primary borrowers while nationalized banks are the predominant lenders.
- No collateral security is needed to cover these transactions.
- All the dealings in call/notice money have to be on the NDS, which is a screen-based, negotiated, quote-driven system, just like share trading on the electronic platform. There is no separate reporting.

Thus, call money usually serves the role of equilibrating the short-term liquidity position of banks.

2. Banker's Acceptance

A banker's acceptance is a bill of exchange drawn by a person and accepted by a bank. In a banker's acceptance, the drawee is the bank while the drawee can be any person in a bill of exchange and the drawee differentiates between the two. Payment is guaranteed as this instrument is accepted by a bank. The banker's acceptance is traded in the secondary market.

Mechanism

A buyer or importer draws the bill of exchange on the bank with whom it has made the arrangement to accept the instrument. The bank accepts the bill for payment, which means that it assumes responsibility for the payment of a business debt. The instrument need not be held till its maturity date as the holder (seller/exporter) has the option to sell it off in the secondary market whenever he finds it suitable or needs funds. The beneficiary who last owns the instrument when the debt becomes due has a right to collect from the borrower. Should the borrower default, the beneficiary can also demand payment from the accepting bank. Payment is assured as the commitment is made by the bank in the form of an acceptance.

3. Certificate of Deposit

A certificate of deposit (CD) is a short-term instrument issued by commercial banks and special financial institutions (SFIs). It is freely transferable from one party to another, unlike normal fixed deposits. CDs are negotiable money market instruments and have been issued in dematerialization form (demat) only from 30 June 2002. SBI DFHI is an active player in the secondary market of CDs.

CDs issued by banks should not have a maturity of less than seven days and not more than one year, unlike the normal fixed deposits in banks, whose tenure is not restricted to one year. Investors can buy CDs through the SBI DFHI Invest Plus scheme of SBI DFHI Ltd, which starts from a minimum of '5 crore face value.

CDs are, normally, issued for a period of one year by commercial banks to individuals, cooperatives and companies. State financial institutions (SFIs) can issue for a minimum period one year and maximum three years.

Features

- CDs can be issued by all scheduled commercial banks except RRBs.
- CDs are issued at a discount to their face value.
- CDs are issued for a minimum period of seven days.

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- CDs are issued for a maximum period of one year.
- CDs are freely transferable by endorsement and delivery.
- Banks have to maintain CRR and SLR on such deposits.
- CDs are to be stamped.
- The issuer can determine the discount rate for issue freely, depending on the demand in the market.
- Loan against CDs is not permitted.
- CDs cannot be cancelled prematurely, unlike traditional fi xed deposit receipts.
- CDs can be issued in dematerialized form only, with effect from June 30, 2002.
- Duplicate CDs can be issued, after giving a public notice and obtaining indemnity.

4. Treasury Bills

The Indian government is one of the largest borrowers in the country. The government borrows to meet the shortfall in receipts and expenditures through the issue of government securities (popularly known as G-secs), which consist of treasury bills and dated government securities. Treasury bills, which were first issued by the Indian government in 1917, are promissory notes issued by the RBI on behalf of the Government of India to meet its short-term requirement of funds. Treasury bills are highly liquid instruments.

Treasury bills, or T-bills, are the safest money market instrument issued by Government of India through RBI to meet its deficits.

It is one of the safest money market instruments as there is no market risk, though the return on investments is modest. T-bills are issued for periods of 91, 182 and 364 days, while dated government securities are issued for more than one year. All entities registered in India, such as banks, financial institutions, primary dealers, fi rms, companies, corporate bodies, partnership firms, institutions, mutual funds, foreign institutional investors, provident funds, research organizations and individuals are eligible to bid upon and purchase treasury bills. Banks, financial institutions and corporations normally play a major role in the Treasury bill market.

SBI DFHI Ltd is an active player in both the primary and secondary markets for treasury bills. 38 *Management of Financial Services*

SBI DFHI Ltd is a leading primary dealer in government securities, which offers the facility to buy treasury bills through it at RBI's primary market auctions. It also quotes both buy and sell rates to provide the liquidity for treasury bills in the secondary market.

Benefits of investment in treasury bills

- There is no income-tax deduction at source.
- There is zero default risk being sovereign paper.
- Treasury bills are highly liquid money market instruments.
- Treasury bills provide better returns, especially in the short-term.

- Treasury bills provide transparency.
- Treasury bills provide simplified settlement.
- Treasury bills have a high degree of tradability.
- Treasury bills are active in the secondary market that helps to meet the unplanned fund requirements.

5. Commercial Bills

A commercial bill is a bill drawn by one merchant fi rm on another. The legitimate purpose of a commercial bill is established with the document of title to the goods, which can be a railway receipt, lorry receipt or bill of lading. When such a document of title accompanies the bill of exchange, it is called a documentary bill. In business, the seller wants immediate payment or even an advance, while the buyer wants credit for the goods purchased to make payment later. The answer for this situation is to discount a documentary bill of exchange with a commercial bank. By doing this, the seller gets the sale proceeds, after paying the discount charges immediately, and the buyer can enjoy credit and make payment on the due date, after selling the goods, in the meanwhile.

The introduction of the New Bill Market Scheme in 1970 enabled the discounting bank to rediscount with approved financial institutions, such as commercial banks, insurance companies, mutual funds, development financial institutions and primary dealers. However, the scheme has not been successful.

An accommodation bill is meant to accommodate the requirements of one of the parties in the bill of exchange, which has not arisen out of a trading transaction. This is not discounted by the commercial banks.

Advantages of bill discounting for banks

Banks have derived the following advantages.

1. **Self-liquidating character:** A bill of exchange has a self-liquidating character as the date of maturity is known when it is discounted, unlike a conventional loan sanctioned by a commercial bank. As payment is reasonably certain, a discounted bill of exchange facilitates the discounting/ rediscounting institutions to plan inflows.
2. **Effective judicious utilization of funds:** Banks that have surplus funds have an outlet to invest with a return.
3. **Certainty of payment on due date:** If a payment is not made on the due date, the credibility of the acceptor is at stake. Even if the bill is dishonoured by the acceptor, the drawer has recourse to the law. As the trade transaction is documented in the form *Money Market Instruments* 39 a bill, it is easier for the drawer to recover through the court of law, without producing any other evidence.
4. **Liquidity:** The bill of exchange is a liquid asset. In case the discounting bank is in need of funds, it can rediscount in the rediscount market, before the due date, at the discount rate prevailing in the market.
5. **Higher yield:** The yield on discounting the bills is marginally high. On loans, a bank charges interest at the end of the quarter, while it deducts discount at the time of discounting, i.e. while parting with the funds, initially, which results in a higher yield to the discounting bank.

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6. Commercial Paper

Commercial paper is an unsecured instrument issued by highly rated corporate fi rms to diversify their sources of short-term financing. This instrument was introduced in India in 1990 to enable corporate borrowers with a high credit rating to diversify their sources of short-term borrowings. It is an important money market instrument to raise short-term finance at a low interest rate. Equally, it provides individuals and entities in the corporate and noncorporate sector an outlet to invest temporary and short-term excess funds in this safe and liquid instrument to secure higher returns, compared to the interest rates offered by banks on short-term deposits. Commercial paper is considered safe as it can be issued by rated companies only. Even non-residents and foreign institutional investors can invest in commercial paper. As the number of investors increases, commercial paper provides a real opportunity to raise finances from various investors.

The RBI stipulates conditions for the issue of commercial paper from time to time. The relevant guidelines on commercial paper have been issued by the RBI on 1 January 2013 (RBI 2012-13/358IDMD.PCD. 07/14.01.02/2012-13).

Eligibility criteria for issuing commercial paper

Presently, companies that satisfy the following requirements are eligible to issue commercial paper:

- The tangible net worth of the company, as per its latest audited balance sheet, should not be less than ₹ 4 crore.
- The company's working capital (fund-based) limit is sanctioned by bank/s or all-India financial institution/s.
- The borrower's account is classified as a standard asset by the financing bank/s/ institution/s.
- Only corporates who get an investment grade rating can issue CPs, as per RBI rules.

Rating requirements

All eligible participants have to obtain a credit rating from CRISIL, ICRA or CARE or any other recognized credit rating agency. The minimum credit rating should be A3, as per rating symbol and definition prescribed by SEBI. The rating has to be current and valid till the end of the maturity period of the CP.

Period and maturity Commercial paper can be issued for a minimum of seven days and a maximum of one year from the date of issue.

Minimum investment and denomination The amount that can be invested by a single investor cannot be less than ₹ 5 lakh (face value). Commercial paper can be issued in denominations of ₹ 5 lakh or multiples thereof.

Period for raising subscription Commercial paper has to be raised within two weeks from the date of opening the issue for subscription.

Aggregate limit The aggregate amount of CP from an issuer should be within the limit as approved by its board of directors or the quantum indicated by the credit

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rating agency for the specified rating, whichever is lower. Banks and financial institutions enjoy the freedom to fix the working capital limits of borrowers, after assessing their total requirements, duly taking into account the resource pattern of companies' financing, including CPs.

Earlier, the concerned bank that had financed the working capital limit used to reduce the cash credit limit of the borrower to the extent of issue of CP. Now, the sanctioning bank enjoys the freedom to fi x the working capital limit, considering the borrower's total requirements. This is a dynamic step on the part of RBI towards the deregulation of commercial banks.

Issuing and paying agent (IPA) Every issuing company must appoint IPA to handle the issuance of commercial paper. Only a scheduled commercial bank can act as an IPA for the issuance of CP. It is the responsibility of the IPA to ensure compliance of the RBI guidelines and issue a certificate to the issuer.

Disclosure The issuer should disclose its latest financial position to the potential investors as per the standard market practice.

IPA certificate Investors are given a copy of the IPA certificate, which proves that the issuer has a valid agreement with the IPA and the documents are in order.

Mode of holding Presently banks, financial institutions and primary dealers are required to make fresh investments and hold CP only in dematerialised form.

Eligible investors CP can be issued to individuals, banks, companies and other corporate bodies registered in India and unincorporated bodies, non-resident Indians (NRIs) and foreign institutional investors (FIIs).

Stand-alone product CP is a stand-alone product. It means the issuer can issue the commercial paper without a guarantor. Commercial paper cannot be underwritten.

Credit enhancement The question of credit enhancement arises when the issuer's credit rating is inadequate and investors require additional reassurance, which is provided through commercial banks. Credit enhancement strengthens the rating of the CP to attract the investors' response to raise finance at a lower interest rate.

Pricing CP The issuer may fix the discount rate for the issue of CP in a uniform manner for all prospective investors. Alternatively, CP may also be issued to the investors at a negotiated price from time to time.

Interest Commercial paper is issued at a discount to its maturity value. The amount of difference between the issue price and maturity amount is the return to the investor.

Trading and reporting CP All the trades over the counter (OTC) in CP are to be reported within 15 minutes of the trade to the Fixed Income Money Market and Derivatives Association of India (FIMMDA) reporting platform. If trading is done directly between two parties, without any supervision of an exchange, it is called OTC trading. OTC trades in CP shall be settled through the clearing house of the National Stock Exchange (NSE), i.e., the National Securities Clearing Corporation Limited (NSCCL) and the clearing house of the Bombay Stock

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Exchange (BSE), as per the norms specified by NSCCL and ICCL from time to time. The settlement cycle for OTC trades in CP shall either be T + 0 or T + 1.

SBI DFHI is actively involved in trading and investing in investment grade commercial paper.

Buyback of CP The issuers may buy back the CP, issued by them to the investors, before maturity. The buyback of CP shall be through the secondary market and at prevailing market price. The CP cannot be bought back before a minimum period of seven days from the date of issue. The issuer shall intimate the IPA of the buyback undertaken. The buyback of CPs have to be undertaken after taking approval from the board of directors.

Advantages of commercial paper

Companies with high credit ratings enjoy a lower cost of capital.

- CP provides a cheaper source of funds, compared to the bank limits to the issuer.
- Wide range of maturity periods provides greater flexibility.
- When issuing CP, the issuing company's assets are not encumbered by debt.
- CP is a highly liquid instrument.
- Since CP is tradable, investors have an exit option.
- CP is backed by liquidity and returns to buyers as they are traded in money market.
- CP involves less paper work.

Benefit to issuers and buyers A CP issue benefits both the issuer and the buyer. A highly rated company can issue CP to raise short-term funds at a lower interest rate. Normally, the total cost of issuing CP is lower than the interest rate charged by commercial banks. Equally, this instrument is advantageous to the buyers as it provides an avenue to invest their short-term surplus funds, earning a reasonable return with liquidity. Adequate liquidity is available as the instruments are actively traded on the OTC market.

7. Repo and Reverse Repo

Repo is classified as a money-market instrument, which is used to raise short-term capital. As this instrument is backed by government securities, it is highly popular as there is no risk of credit default. Those who deal in government securities use repo as a form of overnight borrowing.

Repo, also known as repurchase rate, is the rate at which banks borrow funds from the RBI to meet the gap between the demands for money they face and the funds they have on hand.

A reduction in the repo rate enables banks to get funds at a cheaper rate. At repo rate, the RBI lends money to bankers against approved securities to meet their day-to-day requirements or to fill short-term gaps.

Types of repo There are three types of repo maturities. They are overnight, term and open repo. Overnight refers to a one-day maturity transaction. Term repo

refers to a repo with a specified end date. Open repo has no end date. Though repos are short-term measures, it is not unusual to see repos with a maturity as long as two years.

Reverse repo The reverse repo rate is the rate at which banks park their short-term excess liquidity with the RBI. The RBI uses this tool to reduce excess liquidity in the banking system.

An increase in the reverse repo rate means that the cost of RBI's borrowing from the banks would be higher. As a result, banks prefer to keep their money with the RBI.

Reverse repo is when RBI borrows money from banks by lending securities. The interest rate paid by RBI on the loan is called the reverse repo rate. The reverse repo operation absorbs the liquidity in the system.

RBI uses repo and reverse repo as tools to manage liquidity in the system. It also uses a host of other measures.

Repo rate working mechanism If commercial banks are short of money, they sell their treasury bills or gilt-edged securities to RBI or other players, such as commercial banks, which have surplus liquidity, with an agreement to repurchase these securities at a slightly higher price on a specified date. For example, they may sell a treasury bill for '100 and then agree to buy it back at '106. The repo rate is effectively a 6 per cent interest rate because that is the difference between the two. The repo rate is the difference between the purchase price and selling price of a security, expressed as a percentage.

8. Cash Management Bills

RBI has introduced a new money market instrument—cash management bills. The objective of the instrument is to meet the temporary cash flow mismatches at a reduced overall cost The government would issue CMBs for shorter duration only when funds are needed, avoiding idle funds. When longer maturity instruments like treasury bills are issued, the government has to pay interest for the total duration, even for the idle funds. Issue of CMBs for shorter duration avoids the idle funds. Though the CMBs tend to pay higher yields than the instruments with fixed maturities, their shorter maturities lead to lower overall interest expenses.

The advantage with the newly introduced money market instrument 'cash management bills' is to reduce the cost of borrowing, compared to the interest rate paid on the existing treasury bills and government securities. This will allow the government to raise finance only *when it needs and avoid holding excess cash for longer duration.*

1.4.8 Capital Market and Derivative Market Instruments

Capital Market Instruments

Treasury bonds: Treasury bonds are issued by central government through the RBI. Their maturity period may range from two years to 30 and they carry fixed coupon rate or floating rate. Fixed coupon bonds carry interest rate risk due to the possibility of change in interest rate over the longer period. Floating interest rate bonds are risk-free.

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Equity shares: Equity shares are units of stock (share capital) of a company. Equity shares give ownership funds and in return have voting rights and right to get dividends. Equity shareholders have pre-emptive rights also which enables them to get first right to take up the new issue of equity shares.

Preference shares: Preference shares are hybrid securities that carry some features of equity shares and some of debentures. Unlike bonds they do not earn interest but get dividends if there are profits and if management decides to pay dividends. They have preferential right of getting dividends before any dividend is paid to equity shareholders. There are different types of preference shares like redeemable, cumulative or participative.

Debentures: These are unsecured debt instruments issued by companies to the public. They come in different varieties such as fixed or variable interest rate debentures, zero-coupon debentures, convertible debentures and many others.

Bonds: When debentures are secured, they are called bonds. Types of bonds are otherwise the same as debentures.

Financial lease: Financial lease is a bundle of investment and financing option for a firm. In a financial lease a firm acquires an asset on long term basis (almost close to the life of an asset) paying some down payment and the rest in monthly (or any other frequency) equated instalments. Instalment comprises interest and principal sum repayment. Lease can work out cheaper when lessor specialises in the asset purchase, enjoys low cost of capital and has some other advantages. Otherwise, generally lease is expensive. Lease terms can be negotiated to match the expected cash inflow of the firms to avoid any liquidity hardship. Lease has no secondary market.

Derivative Instruments

As mentioned previously, the most common types of derivative instruments are forwards futures, options and swaps.

Forwards: When any commodity or financial assets are bought in the spot market there is a risk of change in price (interest rate). In case of some commodities, supply on future date can be uncertain too. To avoid these risks forward contracts are signed between the buyer and seller. In forward contracts buyer and seller agrees to buy/sale certain commodity/security at a price and in quantity and on a date decided now. Forward contracts lock in the price for buyer and seller both and removes risk of change in price of commodity/security.

Futures: Futures are standardised forward contracts. Forward contracts cannot be traded in the market because quantity, quality (in case of commodities) and delivery date are unique in each contract as agreed by both the sides. In futures, the quantity for one contract is fixed, delivery dates in a year are also fixed and in case of commodity grade/quality is also defined. The standardisation allows parties to sell the contract in the secondary market. In case prices are expected to fall then a buyer can sell the contract or if prices are expected to increase a seller can sell the contract and reduce the risk of price (interest rate in case of financial securities) change. Futures contracts are less risky than forward contracts.

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Options: The holder of futures contracts have to honour their obligations on the delivery date, which is the risk. Option contracts are designed such that the holder of contract on the delivery date can exercise his right not to honour the obligations. A dealer takes up the obligations of a party who exercises the option of not honouring the obligations. Option contracts are less risky than even futures.

Swaps: A company would feel at risk if there is an anticipated decline in interest rate after having issued fixed rate bonds at higher interest rate. Another company may feel at risk if there is an expected increase in interest rate after having issues variable rate bonds. These two companies can exchange (swap) their fixed rate for floating rate and vice-versa. Usually a dealer or trader would be available to swap in exchange for a small premium. Thus, swaps remove the expected risk of interest rate for a small premium.

Check Your Progress

6. What are forward contracts?
7. In which year was PERDA established?
8. Why was the Asian Development Bank established?
9. What are debentures?

1.5 FINANCIAL REPORTING

Financial reporting refers to the financial results of an organization that are released to the stakeholders and public. It mainly involves the following documents:

- Financial statements: This includes the income statement, balance sheet, and statement of cash flows.
- Accompanying footnote disclosures, which include more detail on certain topics, as prescribed by the relevant accounting framework
- Any financial information that the company chooses to post about itself on its website
- Annual reports issued to shareholders

Financial Statements

Financial statements are the end result of book-keeping and finalization of accounts. In a way, they present the summary of the year's business transactions that carry monetary values. The financial statements provide a window through which outsiders can look into the business. The management also gets a good idea about the viability of the business from these statements. Interpretation of financial statements gives a good idea about the reasons why things shaped up so. In this section, we will understand different financial statements.

Types of Financial Statements

Mainly, there are five types of financial statements that every public company is required to present to the public.

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- Income statement
- Balance sheet
- Cash flow statement
- Statement of changes in equity
- Notes to accounts

Out of these, the purposes and contents of the first three are explained in the following sections.

Income statement

Income statement is also called 'Profit and Loss Account'. It is a kind of a report card of the business. Therefore, sometimes it is also called the 'earning report'. Income statement shows the sales revenue and subtracts from it, step-by-step, all expenses. First all operating expenses and then the administrative expenses are subtracted. Financing expenses and tax are subtracted subsequently for reporting net profit after tax, which belongs to stockholders. For the purpose of analysis, it has to regroup items and present appropriately.

Meaning: Income statement is a document generated periodically (monthly, quarterly or annually, as may be required by regulators or internal management) listing all heads of income earned and expenses incurred during the period and reporting net profit or loss of the period. If income is more than expenses, it is called 'net profit' and if expenses are more than income, it is called 'losses'.

Purpose: The purpose of income statement is clear from its meaning. The accounts that record repetitive transactions of revenue nature are closed and their balances are transferred to the income statement. This accounting process allows calculating profit when total of income accounts and total of expense accounts are compared. Also, by this process, the repetitive accounts are closed and not carried forward. Balance sheet, on the contrary, is just a statement of assets and liabilities accounts, which are carried forward to the next year. In the process, balance sheet reveals the financial health of the firm.

Sample income statement: Academicians use a 'T' shape income statement, in which revenue income is shown on the right hand side and expenses on the left. Right hand side is the credit side and left hand side debit. Regulators prescribe the vertical format, in which sales revenue is shown first and expenses are subtracted from it step-by-step. First, all operating expenses are subtracted and then administrative expenses. Financing expenses (interest) and tax are subtracted separately for reporting net profit after tax, which belongs to stockholders.

Balance sheet

Balance sheet lists assets on one side and liabilities and stockholders' equity on the other. The total of both sides is equal. The items on both sides are listed in descending order or permanency of funds. That means, on the asset side, land is mentioned first, followed by building, and cash on hand comes last. In USA, the items are listed in ascending order of permanency. An analyst will group the items on both sides as per the need and convenience.

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Meaning: Balance sheet is a statement of assets and liabilities that shows financial position of a firm at a given time. This statement is given the name 'balance sheet' because both sides are always equal, means they balance.

Purpose: Balance sheet shows list of assets on one side and liabilities and shareholders' equity on the other, both in a particular order. This information presented in a specific order gives adequate idea to understand the financial position of the firm. Therefore, sometimes it is also called as 'position statement'. Balance sheet gives a structure of sources of funds and applications as on a particular date. This structure can be well understood when long-term sources are compared with long-term assets and short-term sources with short-term assets. The financial health of the firm can be viewed from the asset and liability structure of the business. A healthy company can raise funds easily and at lower cost.

Sample balance sheet: In traditional method, balance sheet is presented in a 'T' shape, in which liabilities and owners equity are shown on left hand side and assets on right. However, the regulators require the public companies to present their balance sheet in a vertical shape. For the purpose of analysis, we will present both the sides of balance sheet in a somewhat different way.

Cash flow statement

Cash flow statement is not part of accounts. Still, regulators have now made it mandatory to include a cash flow statement in published annual report of listed companies. Financial management subject is not built on earning profits but on value creation. Cash flow and time value of money are the two factors that distinguish value from profits. Therefore, all financial evaluations are based on cash flows rather than profit.

Meaning: The cash flow statement is a summary of business transactions that affected cash or cash equivalents (marketable securities) during a period. Alternatively, it is a summary of all the cash payments and cash receipts that occurred during the period for a business.

Purpose: If you look at all business transactions and group them logically, you will find that firms (a) raise funds, and (b) deploy them in assets, (c) to carry out business operations. These three functions are reflected in the cash flow statement. Each section of the cash flow statement independently and collectively explains the inflow and the outflow of the cash and reasons for change in cash position. In other word, cash flow statement explains from where the money has come and where it has gone during the period. When read collectively, it can explain what source of money has been used for, say, buying assets or paying dividends, or financing working capital, and so on.

Cash flow statement derives numbers from income statement as well as balance sheet, and explains the change in period-end balance sheet from the beginning period balance sheet. Thus, it ties both the statements together.

Important note on cash flow statement: Cash flow statement is presented in three parts to explain how the cash balance changed during the period from the beginning date. Three groups of cash flows are:

- Cash flow from operations
- Cash flow from investing activities
- Cash flow from financing activities

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Cash flow from operations is different from net profit because of some non-cash transactions like depreciation, and some cash getting deployed in working capital, which is calculated from changes in various working capital items from the two successive balance sheets. A business operation generating net positive cash flows is generally considered a healthy situation. Selling old assets and buying new, as well as investing in new projects are common activities of firms. Also, financing the requirement of funds is another distinct activity of firms.

Check Your Progress

10. What do you mean by financial reporting?
11. What is Income Statement also known as?

1.6 ANSWERS TO 'CHECK YOUR PROGRESS'

1. The three most important activities of a business firm are:
   - production
   - marketing
   - finance
2. Financial assets, also called securities, are financial papers or instruments such as shares and bonds or debentures.
3. There are two types of funds that a firm can raise: equity funds (simply called equity) and borrowed funds (called debt).
4. A journal is a book of original entry in which all transactions are recorded in the form of entries.
5. Financial statements consist of the following statements:
   - Profit and loss account
   - Balance sheet
6. An agreement to buy/sale particular goods/security at a specific date in the future in a specified quantity at a price decided now is the forward contract.
7. The Pension Fund Regulatory and Development Authority was established in 2003 under the Finance Ministry to regulate pension funds.
8. The ADB is a regional development bank established in 1966 to facilitate economic development of member countries in Asia.
9. Debentures are unsecured debt instruments issued by companies to the public. They come in different varieties such as fixed or variable interest rate debentures, zero-coupon debentures, convertible debentures and many others.
10. Financial reporting refers to the financial results of an organization that are released to the stakeholders and public.
11. Income Statement is also known as Profit and Loss Account.

1.7 SUMMARY

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- Firms create manufacturing capacities for production of goods; some provide services to customers. They sell their goods or services to earn profit. They raise funds to acquire manufacturing and other facilities.
- A firm requires real assets to carry on its business. Tangible real assets are physical assets that include plant, machinery, office, factory, furniture and building. Intangible real assets include technical know-how, technological collaborations, patents and copyrights. Financial assets, also called securities, are financial papers or instruments such as shares and bonds or debentures.
- Firms issue securities to investors in the primary capital markets to raise necessary funds. The securities issued by firms are traded—bought and sold—by investors in the secondary capital markets, referred to as stock exchanges.
- There are two types of funds that a firm can raise: equity funds (simply called equity) and borrowed funds (called debt).
- Shareholders can be of two types: ordinary and preference. Preference shareholders receive dividend at a fixed rate, and they have a priority over ordinary (equity) shareholders.
- Another important source of securing capital is creditors or lenders. Lenders are not the owners of the company. They make money available to the firm as loan or debt and retain title to the funds lent. Loans are generally furnished for a specified period at a fixed rate of interest.
- There exists an inseparable relationship between finance on the one hand and production, marketing and other functions on the other. Almost all business activities, directly or indirectly, involve the acquisition and use of funds.
- Corporate finance is a fast evolving subject right now. Two main factors have contributed in its development. They are (a) globalization and (b) development of information technology. Both phenomena have been happening almost simultaneously since the last few decades.
- Three categories of financial jobs have emerged, though some boundaries are overlapping. These are (a) corporate finance jobs, (b) investment function jobs and (c) money and capital market jobs.
- Accounting is the science of recording and classifying business transactions and events, primarily of financial character, and the art of making significant summaries, analysis and interpretations of those transactions and events and communicating the results to persons who must make decisions or form judgements.
- The discipline of accounting is in the process of evolution, and accordingly, its scope and role is changing with time. However, to enact its contemporary role, accounting carries out a series of activities. The important activities among them are constructing, recording, classifying, summarizing, reporting, interpreting and auditing.

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- The following systems of accounting are most popular among the organizations:
  - o Cash system
  - o Single Entry system
  - o Double Entry system
- The double entry system of accounting is governed by accounting equation that claims that the assets of a business are equal to its equities.
- A financial accounting system is designed to produce a set of financial statements, viz., profit and loss account and balance sheet. Consequently, a sound financial accounting system must provide forms and procedures that a business must use to process its accounting data through the accounting cycle. The accounting cycle represents a series of steps that an organization uses to record, classify, summarize and communicate financial events that occur during an accounting period.
- An accounting transaction is defined as a business event that brings a change in one or more components of the accounting equation.
- The daily record of business transactions is known as *journal*. It is a book of original entry in which all transactions are recorded in the form of *entries*. The transactions are recorded as and when they occur and in the order in which they occur.
- *Ledger* is an accounting book that contains accounts in a classified and summarized form. The term *account* means a record consisting of specific information. A *ledger account* is a form used to assemble information that shows the cumulative effect of all the transactions on the accounts specific item of asset, liability, owners' equity, revenue, or expense of the business.
- After posting from the Journal to the ledger accounts, the balances of the accounts are determined and are listed on a trial balance. A *trial balance* is a list of account balances taken from the ledger to test the mathematical accuracy of the ledger as indicated by an equality of debits and credits.
- Adjusting process consists largely of mechanical record-keeping techniques designed to meet the standards of accounting system. It asks for the recording of such items that have not yet been entered in the accounting system through the usual journalization of transactions. The adjusting entries are used to bring incorrect account balances to their correct amounts.
- From trial balance and adjusting entries, the financial statements can be prepared. Financial statements consist of Profit and loss account and Balance sheet.
- The year-end balance in each profit and loss related account must be zeroed out, and the net difference between these accounts must be transferred to profit and loss appropriation account at year-end so that these accounts are ready to receive the ensuing fiscal year's revenue and expenses without being intermingled with amounts from prior periods.
- Financial system comprises regulators, markets, institutions (players) and financial instruments (products).

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- Money market is that part of financial market in which high liquidity financial instruments with very short maturity period are traded. This is the market for securities with maturity ranging from overnight to less than one year. Money market includes instruments like treasury bills, repurchase agreement, money market mutual funds, call-money, negotiable certificate of deposit, intercorporate deposits, commercial papers, commercial bills, inter-bank participation certificate, bill rediscounting, banker's acceptance, etc.
- Capital market is the market wherein funds are borrowed and lent. The borrowing and lending may be done by dividing the total requirements in smaller portions called securities (shares, bonds etc.) or borrowing or lending the complete requirement in wholesale. Borrowing and lending other than securities includes bank loan.
- The securities market has two segments: primary market and secondary market. Primary market directly connects surplus funds with mostly long-term needs for the money, which usually gets invested in creating goods and services. This flow from surplus to the deficit is either direct from savers to the businesses or through intermediaries. The mismatch created by short-term surplus and long-term needs is addressed by the secondary market on which securities issued in primary market are traded.
- The secondary market is a market where investors exchange their investment for cash, without withdrawing money from the borrowers (companies). Financial securities bought in the primary market are traded in the secondary market. Therefore, sometimes secondary market is also called as 'after-market'.
- Market where stocks (rather their units i.e., shares) are traded is called stock market. In the debt market (often called as bonds market) debt securities are traded. Derivative markets are separate from stock market and debt markets. Futures contracts and options contracts are traded on derivative market.
- Spot market is one where purchase and sale of shares of bonds are affected on the spot (actually within pre-specified days; usually on 3rd day after transaction day i.e. T+3). Whereas, in derivative markets different types of instruments are traded, which derive their value from other underlying securities.
- Physical markets meet at a specified location for a specified days and time. These markets are also called *'auction market'* or *'brokers' market'*. On the auction market, securities of big listed companies were usually traded. Since the securities are traded over the counter of a dealer this market is known as *over-the-counter* (OTC) market.
- Financial markets need strong regulations. The regulators of Indian financial markets can be grouped in two, namely, independent regulators and part of government department or ministry.
- Many players collectively make the secondary markets relevant. These are exchange, investors, brokers or dealers, clearing houses, and depositories.

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- Some of the important institutions of the financial markets are commercial banks, cooperative banks, regional rural banks, Bank of International Settlement, investment banks, asset management firms, mutual funds, insurance companies, and developmental institutions.
- There are several instruments available in the market. They are designed to attract different and changing needs of savers and borrowers.
- Money market instruments have high liquidity and short maturity, ranging from overnight to less than one year. Large financial institutions, dealers and government participate in money market to meet their short-term cash needs. Some of the money market instruments are cash management bills, T bills, repurchase agreement, negotiable certificates of deposits, etc.
- Some of the capital market instruments include treasury bonds, equity shares, preference shares, debentures, bonds, etc.
- Derivative instruments include forward contracts, future contracts and option contracts.
- Mainly, there are five types of financial statements that every public company is required to present to the public.
  a) Income statement
  b) Balance sheet
  c) Cash flow statement
  d) Statement of changes in equity
  e) Notes to accounts

1.8 KEY TERMS

- **Journal:** It is a book of original entry in which all transactions are recorded in the form of entries.
- **Ledger:** It is an accounting book that contains accounts in a classified and summarized form.
- **Debentures:** These are unsecured debt instruments issued by companies to the public. They come in different varieties such as fixed or variable interest rate debentures, zero-coupon debentures, convertible debentures and many others.

1.9 SELF-ASSESSMENT QUESTIONS AND EXERCISES

Short Answer Questions

1. What are real and financial assets?
2. What are the popular systems of accounting?
3. Write a short note on trial balance.
4. Briefly mention the three steps involved in adjusting a ledger account.

5. Differentiate between spot markets and derivative markets.
6. State the important regulations relating to financial/securities market.
7. What are some of the important money market instruments?
8. What are the types of financial statements?

Long Answer Questions

1. Explain the current challenges in finance.
2. Examine the important activities carried out by accounting.
3. Discuss in detail the accounting process
4. Analyse the advantages of primary markets and secondary markets.
5. Discuss the important participants of the secondary markets.
6. Explain the role of various institutions in the financial market.

NOTES

1.10 FURTHER READINGS

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UNIT 2 FINANCIAL INFORMATION ANALYSIS FOR EXTERNAL DECISION MAKERS

Structure

2.0 INTRODUCTION

This unit will discuss the important elements of the financial statement, namely, the balance sheet and Profit & Loss Account. While the Balance Sheet is the summary of all the assets, liabilities and equities of a business enterprise or company, Profit & Loss Account shows the net profit or loss of a business for an accounting period. Cash Flow Statement provides a detailed explanation for the change in a firm's cash during a particular period by indicating the firm's sources and uses of cash during that period. This unit will also discuss the importance of financial statement analysis.

2.1 OBJECTIVES

After going through this unit, you will be able to:

- Discuss balance sheet and its content
- Explain the preparation of Profit & Loss Account
- Examine the concept of cash flow statement
- Understand the importance of financial statement analysis

2.2 BALANCE SHEET DEMYSTIFIED

Balance sheet is the summary of all the assets, liabilities and equities of a business enterprise or company. It is also known as the statement of financial position. According to Howard & Upton, 'The balance sheet is a statement which reports the property's value owned by the enterprise and the claims of the creditors and owners against these properties.'

According to L. C. Cropper, 'A balance sheet is a classified summary of the ledger balance remaining after closing all revenue items into the profit and loss account.'

According to Francis R. Stead, 'Balance sheet is a screen picture of the financial position of a going business at a certain moment.'

Thus, balance sheet is a statement that is prepared for a certain period of time, normally one year. It shows the true and fair picture of the financial position of a company. It shows all non-current (fixed) & current assets, liabilities and the share capital or equities of the business. It is the summary of the whole accounting records.

Form of Balance Sheet

Name of the company
Balance Sheet (As at 31st March)

Particulars	Note No.	Amount at the end of current reporting period	Amount at the end of previous reporting period
I. Equities & Liabilities:			
1. Share holders' funds-			
(a) Share capital		----	----
(b) Reserve & surplus		----	-----
(c) Money received against share warrants		----	----
		-----	----
2. Share application money pending allotment		---	---
3. Non-Current Liabilities-			
(a) Long term borrowings		---	---
(b) Deferred tax liabilities			
(c) Other long term liabilities		---	---
(d) Long term provisions		----	---
4. Current liabilities-			
(a) Short term borrowings		----	---
(b) Trade payables		----	---
(c) Other current liabilities		----	---
(d) Short term provisions		----	---
Total		----	----
II. Assets			
1. Non-Current assets:		---	----
(a) Fixed assets-		---	---
(i) Tangible assets		---	----
(ii) Intangible assets		---	----
(iii) Capital work-in-progress		--	---
		----	---
(iv) Intangible assets under development		---	---
		----	---
		---	---
(b) Non-current investments		---	---
(c) Deferred tax assets		---	---
(d) Long term loans & advances		---	---
(e) Other non-current assets		---	---
		----	---
2. Current Assets:		----	---
(a) Current investments		----	----
(b) Inventories (stocks)		----	----
(c) Trade Receivables		----	----
(d) Cash & Cash Equivalents		----	----
(e) Short term loans & Advances		---	---
(f) Other current assets		---	----
Total		----	----

Equity capital is the amount through which the business is started. A sole trader starts his business with his own capital. In case of partnership business, the capital is introduced by the partners. While in case of companies, it is known equity. Equity is the stock or any other security invested by the owners in the business. It is the owners' fund or the owners' investment in the company. The amount of capital is calculated by reducing the external liabilities from the total of assets.

A liability is the present obligation of the business enterprise arising from past events. This liability is payable when it becomes due. The liabilities are also of two types-current liabilities and non-current liabilities. Current liabilities are those liabilities which are payable within a period of accounting year normally one year as trade creditors, Bills payables, bank overdraft, short term loans etc., While non-current liabilities are those liabilities which are payable after one year from the reporting date as long term loans & debentures etc.

1. Share holders' funds

a. Share capital: It will specify each class of share capital.

- Authorized share capital, issued capital, paid up capital, subscribed but not fully paid capital.
- Face (at par) value per share.
- Number of shares by each shareholder holding more than 5% shares.
- Number and class of shares allotted as fully paid up by way of bonus shares.
- Amount received against share warrants is a part of share holders' funds. It will not be shown as liability.
- Preference share capital is shown as a part of equity share capital.
- Amount on calls unpaid.
- Amount of forfeited shares.

b. Reserve & surplus: Reserve & surplus will be classified as follows:

- Capital reserve
- Revaluation reserve
- Debenture redemption reserve
- Securities premium reserve
- Capital redemption reserve
- Proposed dividend is shown as liability. It is not a Reserve.
- Profits or losses are shown as deletions or additions in Reserve & Surplus.

Note: There is no provision in schedule iii of Companies Act, 2013 to prepare the P&L Appropriation A/c.

c. Amount received against share warrants: The promoters of the company and other persons are issued share warrants in the condition that the company, by converting these warrants on a fixed date and for a fixed amount, may issue shares. These are included in the capital employed by the company as shares but are not paid dividend.

2. Share application money pending allotment

If a company has received application money but on the date of balance sheet, the allotment is not completed then such amount received on application will be treated as liability. This amount is not included in the capital employed of the company.

3. Non-current liabilities

a. ***Long term borrowings:*** Long term borrowings such as bonds/Debentures are classified as secured & unsecured loans/borrowings along with the amounts, their rights, nature and restrictions.

b. ***Deferred tax liability:*** Taxable income is different from the accounting income. Taxable income is based on income tax rules while accounting income is calculated on the basis of accounting records. A deferred tax liability arises when accounting income is more than the taxable income. The amount of tax on taxable income is deposited in current tax a/c or as provision for taxation and the balance is transferred to deferred tax liability.

c. ***Other long term liabilities:*** Such liabilities are classified as (i) trade payables if these are for a period of more than one year. (ii) Other liability.

d. ***Long term provisions:*** These are classified as (i) provisions for the convenience of employees (ii) other provisions.

4. Current liabilities

a. **Short term borrowings:**

- Loans payable on demand–from banks & other parties
- Loans & advances from the related parties
- Other loans & advances

b. ***Trade payables:*** A payable is trade payable if the amount is due in respect of goods or services received by the business. The creditors within twelve months or within normal operating cycle are included in B/P. Operating cycle is the period starting from the date of acquisition or processing of materials till the realization of cash or cash equivalents.

c. ***Other current liabilities:*** These liabilities are classified as,

- Current maturity of long term loans;
- Accrued interest and interest payable;
- Income received in advance;
- Dividend not paid;
- Outstanding matured debentures & its accrued interest.

d. ***Short term provisions:*** Short term provisions include-provisions for employees' convenience and other provisions as provisions for taxations & proposed dividends.

Assets

Assets represent the utilization of economic resources. There are two types of assets-Current assets and Non-current Assets. Non-current Assets are purchased to attain the long term benefits by the business. They are purchased once, and the

benefits derived from them are for a long period as plant & machine, land & building, furniture etc. Current Assets are those assets which may be converted into cash within a period of 12 months from the reporting date as Debtors, inventory or stock, Bills Receivables, cash and bank balances. These assets may also be classified as tangible and intangible. Tangible assets are those assets which can be seen and touched as land, building, plant, furniture, machinery etc. while intangible assets are those assets which cannot be seen and touched as goodwill, patents and copyrights.

1. Non-current assets

Non-current assets are those assets which are used by the business for a period more than one year or for a long period. These are also known as long term assets. These include the following:

a. Fixed assets

- *Tangible assets:* Tangible assets include land, building, plant & machinery, vehicles, office furniture and assets on lease etc.
- *Intangible assets:* These include goodwill, trade mark, computer software, patents, intellectual property rights, licenses & special rights.
- *Capital work in progress:* It includes the cost of manufacturing of plant & machineries or assets the manufacturing of which is not completed.

b. Noncurrent investments: It is divided into trade investment & non trade investment and then it is classified.

- Investment in land & building,
- Investment in equity & preference shares,
- Investment in govt. or trust securities,
- Investment in bonds & debentures,
- Investment in mutual funds,
- Investment in partnership firm,
- Other non-current investments.

c. Deferred tax assets: It arises when the accounting income is less than the taxable income. The amount of tax on this difference (between accounting income & taxable income) is known as deferred tax assets. The income tax officers accept it when there is actual loss to the company. The provision of bad debts is a suitable example but it is accepted when there are actual bad debts.

d. Long term loan & advances: These include (i) capital advance, loans & advances to related parties, other loans & advances.

These may be classified as secured, unsecured and doubtful.

2. Current Assets

Current assets mean those assets which are converted into cash in one or less than one year. These are classified as,

a. Current investments: It is classified as,

- investment in equity or preference shares,
- investment in government bonds/debentures,
- investments in mutual funds,
- other investments.

b. Inventories: Inventories include,

- raw materials
- work-in-progress
- finished goods
- stock in trade
- stores & tools
- spare parts etc.
- methods of valuation of inventories should be stated.

c. Trade receivables: A receivable is the trade receivable if the amount is due in respect of goods or services provided by the business. The debtors exceeding six months are included in B/R.

d. Cash & cash equivalents: These include,

- cash balance or cash in hand,
- cash at bank & bank balance,
- margin money,
- securities against borrowings or guarantees.

e. Short term loans & advances:

- loans & advances to related parties
- other loans & advances

f. Other current assets: It includes

- Pre-paid expenses
- Interest accrued on investment etc.

Check Your Progress

1. What is a balance sheet?
2. What are non-current assets?

2.3 PROFIT AND LOSS A/C DEMYSTIFIED

Profit and loss account is now known as statement of profit and loss. It shows the net profit or loss of a business for an accounting period, normally one year.

According to Robert N. Anthony, 'The Accounting report that summarizes the revenue items and the difference between them (net income) for an Accounting period is called the income statement or the Profit & Loss Account or the Statement of Earnings or the Statement of operations.'

According to Harry G. Guthman, 'The statement of profit or loss is the condensed and classified record of the gains and losses causing changes in the owners' interest in the business for a period of time.'

According to Carter, 'A Profit & Loss Account is an account into which all gains and losses are collected in order to ascertain the excess of gains over the losses or vice versa.'

Profit and Loss Account or Income Statement is thus a statement or schedule that shows the income and expenditures of a business enterprise over a period of time and then gives the final figure or the clear picture representing the amount of profit or loss for the accounting period.

In new schedule iii of Companies Act, 2013, the provisions for preparation of Balance sheet & the Statement of Profit & Loss are the same as given in the existing schedule (vi).

Part- ii-form of statement of profit and loss

Name of the company ……..
Statement of Profit & Loss
(For the year ended 31st March,……..)

Particulars	Note No.	Amount at the end of current reporting/financial year	Amount at the end of previous financial year
(i) Revenue from operations		----	----
(ii) other income		---	---
Total revenue (i + ii)		----	---
Expenses:		---	---
Cost of materials consumed		----	---
Purchase of stock-in-trade		----	---
Changes in inventories of		----	---
finished goods,		-----	---
work in progress and stock in		---	---
trade		---	---
Employee benefits expenses		---	---
finance costs		-----	---
Depreciation and		---	---
amortization expenses		----	---
Other expenses		---	---
Total expenses		---	---
Profit before exceptional,		---	---
extra ordinary items		---	---
& tax		---	---
(iii-iv)		---	---
Exceptional items		---	---
Profit before extra-ordinary		---	---
items & tax (v-vi)		----	---
Extra ordinary items		----	---
Profit before tax (vii-viii)		----	---
Tax expenses:		----	---
Current tax		----	---
Deferred tax		----	---
Profit or (loss) for the period		----	---
From continuing operations		----	---
(ix-x)		----	---
Profit or (loss) from dis		----	---
continuing operations		----	---
Tax expenses of		----	---
discontinuing operations		----	---
Profit or (loss) from		----	---
discontinuing operations		----	---
(After tax) (xii-xiii)		----	---
Profit (loss) for the period		----	---
(xi + xiv)		----	---
Earnings per equity share:		----	---
Basic		----	---
Diluted		----	---

Income and Gains

According to International Accounting Standard Board, 'Income is an increase in economic benefits during the accounting period in the form of inflows or enhancements of assets or decrease of liabilities that result in increase in equity, other than those relating to contributions from equity participants.' It can be explained as a change in the surplus of a business enterprise which is a result of the business transactions which have taken place during the period. It excludes the changes in investment or changes in owners' equities. It may be operating income or/and non-operating income. Operating income is also known as earnings before interest & taxes or operating profit. It is generated by the business from the sale of goods & services, less operating expenses and depreciation or income arising out of ordinary business activities. Non-operating income is the income or profit earned by activities out of the core business activities, as income from dividend & gain on investment or foreign exchange etc. Income is calculated according to the accrual concept of accountancy.

Expenses & Losses

According to International Accounting Standard Board, 'Expenses are the decreases in economic benefits during the accounting period in the form of outflows or depletions of assets or incurrence of liabilities that result in decrease in equity, other than those relating to distributions to equity participants.' The expenses represent the usage of resources in the form of outflows as purchase of raw materials, wages, salaries, indirect expenses, cost of capital, depreciation and non-operating losses etc. Operating expenses are the expenses which are incurred daily to run the business effectively as office & administrative expenses, advertising & selling expenses etc. These expenses are calculated on the basis of accrual concept.

Basis of Preparation of the Statement of Profit and Loss

The statement of income is prepared on the basis of accruals system of accounting. It means that any income or revenue is recognized when it is earned. In the same way, expenses are recognized in the income statement when they are incurred. This statement has the following elements,

- **Revenue:** Revenues include the income which are earned by the principal activities of the business. If a business manufacture cars then the revenues from the sale of cars would be considered revenues. But if it earns interest on its bank deposits, this income would be called as other income.
- **Cost of sales:** It shows the cost of goods sold during an accounting period. In opening inventory, purchase of inventory is added and then closing balance of inventory is deducted to find out the cost of goods sold.
- **Other income:** When the income is earned from those activities which are not directly related to the company's main business, such income is known as other income as gain on disposal of fixed assets, interest on bank deposits and gain on exchange in translating a foreign currency bank account.
- **Distribution costs:** Distribution costs include the expenses that are incurred on delivering of goods from the factory site to the customers.

- **Administrative expenses:** The expenses incurred by the management to carry on the business effectively & efficiently as payment of salaries, legal charges, office rent.
- **Other expenses:** Any other expense which is not classified in a suitable way is included in other expenses.
- **Finance charge**: Finance charge includes the rate of interest on bank loans and debentures.
- **Income tax**: These expenses are recognized during the accounting period.

The performance of the business can be assessed in terms of change in sale revenue, change in gross profit margin operating profit and net profit margin.

Financial Statements Numericals

Numerical problems

Illustration 2.1:

Following were the balances of Obama Ltd. on 31st March, 2015

Dr.	₹ Cr.	₹
Opening inventories:		
Raw materials	10,000	——
Finished goods	25,000	
Purchase of materials	2,50,000	
Carriage inward	1,000	
Share capital	—	6,00,000
Goodwill	1,00,000	
Machinery	3,00,000	
Building	3,50,000	
Trade mark	10,000	
Under construction/development:		
(i) Building	50,000	
(ii) Patent	5,000	
Interest on bank loan	2,000	
Gross sales		5,90,000
Debentures secured		50,000
General reserve		20,000
Loan from bank – unsecured		20,000
Bank overdraft		10,000
Trade payables		15,000
Excise duties	5,000	
Security deposits with supplier	20,000	
Trade receivables	34,000	
Current investments	5,000	
Non-current investments	30,000	

Cash at bank	35,000	
Wages & salaries	50,000	
Establishment expenses	2,000	
Outstanding expenses	——	2,000
Receipts from discontinuing operations		20,000
Expenses on discontinuing operations	15,000	
Abnormal loss due to fire	27,500	
Pre-paid expenses	1,500	
Unclaimed dividend	——	1,000
	13,28,000	13,28,000

Additional informations:

(i) On 31st March, 2015, the inventories were as under

Raw materials- ₹ 20,000

Finished goods – ₹ 30,000

(ii) Charge depreciation-

On building 10%

On machinery 15%

(iii) The authorized capital of the company consists of 10,000 equity shares of Rest. 100 each of which 6,000 shares are issued & fully paid.

(iv) ₹ 5,000 dividend is proposed on share capital.

(v) Make a provision of ₹ 20,000 for taxation.

Solution:

Balance Sheet
(As at 31st March)

Particulars			Note No.	2014-15	2013-14
I.	**Equities & Liabilities:**				
(1)	Share holders' funds-				
	(a)	Share capital	1	6,00,000	-
	(b)	Reserve & Surplus	2	1,87,500	-
(2)	Non-current liabilities:				
	(a)	Long term borrowings	3	50,000	-
	(b)	Other long term liabilities	4	20,000	-
(3)	Current liabilities:				
	(a)	Short term borrowings	5	10,000	-
	(b)	Trade payables		15,000	-
	(c)	Other current liabilities	6	3,000	-
	(d)	Short term provisions	7	25,000	-
		Total		**9,10,500**	

Assets:

(1)	Non-Current Assets:			
	(a) Fixed assets-			
	(i) Tangible assets	8	5,70,000	-
	(i) Intangible Assets	9	1,10,000	-
	(ii) capital work in progress	10	50,000	-
	(iii) intangible assets under development	11	5,000	-
	(b) Non-current investments		30,000	-
	(c) Long term loans & advances	12	20,000	-
(2)	Current Assets :			
	(a) Current investments		5,000	-
	(b) Inventories	13	50,000	-
	(c) trade receivables		34,000	-
	(d) cash & cash equivalents		35,000	-
	(e) short term loans & advances		15,00	-
	Total		**910,500**	**-**

Notes to Accounts:

1.	Share capital:			
	Authorized capital-			
	10,000 equity shares of ₹ 100 each			=1,00,000
	Issued & paid up capital:			
	6,000 equity shares of ₹ 100 each			=6,00,000
2.	Reserve & surplus:			
	General Reserve		20,000	
	Current year profit	1,72,500		
	Less: proposed dividend	5,000	1,67,500	=1,87,500
3.	Long term borrowings: secured debentures		=50,000	
4.	Other long term liabilities:			
	Bank loan – unsecured			=20,000
5.	Short term borrowings:			
	Bank overdraft			=10,000
6.	Other current liabilities:			
	Outstanding exp.		2,000	
	Un-claimed dividend		1,000	=3,000
7.	Short term provisions:			
	Provisions for tax		20,000	
	Proposed dividend		5,000	=25,000
8.	Tangible assets:			
	Building	(3,50,000-35,000)	=3,15,000	
	Machinery	(3,00,000-45,000)	=2,55,000	=5,70,000

9.	Intangible assets:		
	Goodwill	100,000	
	Trade mark	10,000	= 1,10,000
10.	Capital work-in-progress:		
	Building under construction		= 50,000
11.	Intangible assets under development:		
	Patent under development		= 5,000
12.	Long term loans & advances:		
	Security deposits with suppliers = 20,000		
13.	Inventories:		
	Raw materials	20,000	
	Finished goods	30,000	= 50,000

Statement of Profit & Loss
(For the year ended 341st March, 2015)

Particulars		**Note No.**	**Amount 2014-15**	**Amount 2013-14**
i.	Revenue from operations:			
	Gross sales 5,90,000		5,85,000	-
	(–) excise duty 5,000			
ii.	Other income		.....	-
iii.	Total income (i + ii)		5,85,000	
iv.	Expenses:			
	Cost of materials consumed	1	2,41,000	-
	Purchase of stock-in-trade		-	
	Changes in inventories of finished goods, work-in-progress & stock -in-trade Employees'		(5000)	-
	benefits expenses: Wages & salary		50,000	-
	Finance costs : Int. on bank loan		2,000	
	Depreciation & amortization expenses	2	80,000	-
	Other expenses :			
	Establishment expenses		20,000	-
	Total expenses		3,70,000	-
v.	Profit before exceptional, extra ordinary items & tax		2,15,000	-
	(iii-iv)		.....	-
vi.	Exceptional items: loss from fire		(27500)	-
vii.	Profit before extra–ordinary items & tax		1,87,500	-
	(v-vi)			-
viii.	Extra-ordinary items			-
ix.	Profit before tax (vii–viii)		1,87,500	-
x.	Tax expenses : (1) current tax- Provision for tax		20,000	-
	(2) deferred tax		.....	-
xi.	Profit (loss) for the period from continuing operations (ix-x)		1,67,500	-

xii. Profit (loss) from discontinuing	.....	-
	5,000	-
xiii. Tax expenses of discontinuing operations	-	-
xiv. Profit (loss) from discontinuing operations (After tax) (xii- xiii)	5000	-
xv. Profit (loss) for the period (xi+xiv)	1,72,500	-
xvi. Earnings per equity share :		
(1) Basic (2) Diluted	2.875	-

Notes to Account:

1. Cost of materials consumed :

Opening stock	=	10,000
Purchase	=	2, 50,000
Carriage – in ward	=	1,000
	=	2,61,000
Less: closing inventories		20,000
	=	2,41,000

2. Depreciation :

On building @ 10%	=	35,000
On machinery @ 15%	=	45,000
	=	80,000

Illustration 2.2:

Saniya Ltd. shows the following balances at the end of its financial year 31st March, 2015:

Particulars	**Amount**	**Amount**
Salaries & bonus	1,25,000	
Directors' fees	2,500	
Administrative and selling expenses	1,40,000	
Int. paid on debentures	2,500	
Surplus of statement of P&L		18,000
Dividends received on investment (Gross ₹ 10,000)		7,000
Gross profit		4,85,000
Share capital:		
6,000 equity shares of Rest 100 each		6,00,000
5% Mortgage debentures		1,00,000
Provisions for taxations (of earlier year		
For which assessments are pending)		1,46,000
Trade payables		60,000
Advance against construction of building	80,500	
Building (cost- ₹ 4,00,000)	3,50,000	

Furniture & fixtures (cost- ₹ 10,000)	7,000	
Motor vehicles (cost – ₹ 40,000)	30,500	
Investments in fully paid equity shares of Companies (market value - ₹ 1,80,000)	2,00,000	
Investments in preference shares of companies (Unquoted- 50% paid-up)	40,000	
Inventories (at cost or market price whichever is lower)	2,25,000	
Discount on issue of debentures	2,000	
Trade receivables (unsecured & considered good) (90% have arisen on or after 01/10/2015)	2,00,000	
Cash in hand & at bank	11,000	
	14,16,000	14,16,000

Additional informations

(1) Provision for taxation on profit of current year is to be made at 25%.

(2) Directors of the company have decided to recommend dividend at 10% and also to transfer a sum of ₹ 20,000 to Debenture Redemption fund.

(3) Depreciation is charged in the following way—

On building @ 5%

On furniture & fixture @ 10%

On Motor Vehicles @ 20%

You are requested to prepare final Accounts of Saniya Ltd.

Solution:

Name of the Company Saniya Ltd
Balance Sheet
(As at 31st March, 2015)

Particulars	Note No.	Current year 2014-15	Previous year 2013-14
i. Equities & liabilities:			
(1) Share holders' funds-			
(a) Share capital	1	6,00,000	
(b) Reserve & Surplus	2	1,04,400	
(2) Share application money pending allotment		----	
(3) Non-current Liabilities:			
Long term borrowings –			
5% secured debentures		1,00,000	
(1) Current Liabilities:			
a. short term borrowings		----	
b. trade payables		60,000	
c. Other current liabilities:			
Proposed dividends 60,000			
Outstanding int. 2,500		62,500	
d. Short term provisions:			
Provision for taxations (1,46,000 + 48,800)		1,94,800	
		11,21,700	

ii. Assets :			
(1) Non – current assets :			
a. Fixed Assets-	3	3,63,200	
Tangible Assets	4	2,40,000	
b. Non-current investments			
c. Other non-current assets-		2,000	
Un amortized expenses			
(2) Current Assets:		----	
a. Current investments		2,25,000	
b. Inventories			
c. Trade Receivables (unsecured &		2,00,000	
considered good)		11,000	
d. Cash & cash equivalents			
e. Short term loans & advances-		80,500	
f. Advance against construction of		---	
building other current assets		----------	
Total		11,21,700	

Notes to Accounts:

1. Share capital :

Authorized capital: 6,000 equity shares of ₹ 100 each			6, 00,000
Issued & paid up capital: 6,000 equity shares of ₹ 100 each			6, 00,000

2. Reserve & Surplus :

Debenture Redemption fund			20,000
Balance of P&L (Prev. year)	18,000		
Profit of current year	1,46,400		
	1, 64,400		
Less (1) Debenture			
Redemption fund	20,000		
(2) Proposed dividend	60,000	80,000	84,400
			84,400
			1, 04,400

3. Tangible Assets :

	Cost	Depreciation	W. D. V.
Building	4,00,000	67,500	3,32,500
Furniture & fixtures	10,000	3,700	6,300
Motor vehicles	40,000	15,600	24,400
			3,63,200

4. Investments :

Equity shares of companies (Market value ₹ 1,80,000)		2,00,000	
Preference shares of companies	40,000		
	2,40,000		

NOTES

(2)

Statement of Profit & Loss
(For the year ended 31st march, 2015)

Particulars	Note No.	Amount	Amount
i. Revenue from operations		4,85,000	-----
ii. Other income :			
Dividend (10,000 – 3,000)		7,000	
iii. Total revenue (i+ii)		4,92,000	
iv. Expenses :			
Employees benefits expenses			
Finance cost:		1,25,000	
Int. on debentures (2500 + 2500)		5,000	
Depreciation & amortization expenses	1	24,300	
Other expenses	2	1,42,500	
Total expenses		2,96,800	
v. Profit before exceptional, extra-ordinary items & tax (iii–iv)		1,95,200	
vi. Exceptional Items		1,95,200	
vii. profit before extra – ordinary items & tax (v-vi)			
viii. extra ordinary items		1,95,000	
ix. profit before tax (vii-viii)			
x. Tax Expenses :		48,800	
(1) Current tax @ 25% on profit of 1,95,200			
(2) Deferred Tax		1,46,400	
xi. Profit for the period			

Notes to the Accounts:

1.	Depreciation on —	
	Building	17,500
	Furniture	700
	Motor vehicles	6,100
		24,300
2.	Other expenses:	
	Directors' fees	2,500
	Administrative & Selling exp.	1,40,000
		1,42,500

Check Your Progress

3. What do you mean by operating income?
4. What are operating expenses?

2.4 CASH FLOW STATEMENT DEMYSTIFIED

Cash flow is of vital importance to the health of a business. It is well said that "revenue is vanity, cash flow is sanity but cash is king". This means that it is better to have large inflows of revenue from sales but the most important focus for a business is cash flow.

A cash flow statement is statement of changes in cash position between the beginning and end of the period. It is a statement which summarizes the sources from which cash payments are made during a particular period of time, say months or a year. In other words, a cash flow statement shows the various sources of cash inflow and uses of cash outflow and uses of cash outflow during a period thus explaining the changes in cash position of the business.

A cash flow statement is not very much different form a funds flow statement. In fact, the main difference between funds flow statement and cash flow statement relates to meaning and concept of the term 'fund'. The term 'fund' as used in funds flow statement means net working capital, i.e., the difference between current assets and current liabilities. But in a cash flow statement the term 'fund' means cash fund as defined by AS-3.

Distinction between Funds Flow Statement and Cash Flow Statement

The main points of distinction between the two statements are as follows:

1. **Cash position and working capital position** A cash flow statement is mainly concerned with changes in cash position while a funds flow statement is concerned with changes in working capital. It should be understood that working capital is a wide term and includes cash besides other current assets, like debtors, bills receivable, stock in trade, etc. Thus, cash is only one of the constituents of the working capital.
2. **Usefulness in short-term financial analysis** For short-term financial analysis, cash flow statement is considered to be more useful to management as compared to funds flow statement. For example, if it is to be found whether a company will be able to meet its obligations maturing within one month, cash flow analysis will prove more realistic than funds flow analysis.
3. **Method of preparation** Techniques of preparing cash flow statement and funds flow statement are different. In funds flow statement, an increase in a current liability or decrease in a current asset result in decrease in net working capital and vice-versa. But in a cash flow statement, an increase in a current liability or decrease in a current asset (other than cash) might result in increase in cash and vice-versa.
4. **Schedule of changes in working capital** A funds flow statement is generally followed by a schedule of changes in working capital. But a cash flow statement is not followed by any other such statement.
5. **Opening and closing balances** In cash flow statement, the opening and closing balances of cash and cash equivalents are given. But a funds flow statement does not contain any opening and closing balances.
6. **Legal requirements** There is no legal requirement to prepare funds flow statement. But cash flow statement is to be prepared by every listed company as per AS-3, as required by SEBI.

Accounting Standard-3 (AS-3): Cash Flow Statement

The Institute of Chartered Accountants of India (ICAI) issued **AS-3 (Revised): Cash Flow Statement**, in March 1997. This standard supersedes **AS-3: Changes in Financial Position** which was issued in June 1981. It is in tune

with international trends because Cash Flow Statements have replaced Statement of Changes in Financial Position in almost every country.

This AS-3 has become mandatory w.e.f. 1-4-2001, for the following enterprises:

(*i*) Enterprises whose equity or debt securities are listed or going to be listed on a recognized stock exchange in India.

(*ii*) All other commercial, industrial and business reporting enterprises whose turnover for the accounting period exceeds ₹50 crores.

The companies in respect of which AS-3 is mandatory are required to comply with AS-3 under the Companies Act. This means that statutory auditors of such companies are required to give an assertion in respect of companies with AS-3.

Securities and Exchange Board of India (SEBI) requires that all listed companies should submit a Cash Flow Statement alongwith other financial results of the company, prepared as per accounting standard AS-3 issued by ICAI.

Definition of Cash

As per Accounting Standard (AS-3) issued by the Institute of Chartered Accountants of India, the term 'cash' includes:

1. Cash in hand
2. Demand deposits with banks
3. *Cash equivalents* These are short-term highly liquid investments that are readily convertible into known amounts of cash and which are subject to an insignificant risk of changes in value.

Meaning of Cash Inflow and Outflow

Cash flow means inflow and outflow of cash. An inflow, *i.e.*, source of cash increases the total cash available at the disposal of the firm while an outflow, *i.e.*, use of cash decreases it. The difference between cash inflows and cash outflows is known as net cash flow which can be either net cash inflow or net cash outflow.

It should be noted that cash flow statement deals with flow of cash fund but does not consider movement inter se cash, bank balance and cash equivalents. This is in line with funds flow statement which excludes movements between items that constitute working capital, *i.e.*, current assets and current liabilities.

Classification of Cash Flows

Accounting Standard (AS-3) requires that cash flow statement should report cash flow during the period classified by operating, investing and financing activities.

1. **Operating Activities:** Operating activities are the principal revenue activities of the enterprise. Cash flows from these activities result from transactions and other events that enter into the determination of net profit or loss. Examples of cash flow from operations are:

(*i*) Cash receipts from the sale of goods and the rendering of services usually forms a major share of cash inflow.

(*ii*) Cash receipts from royalties, fees, commission and other revenue.
(*iii*) Cash payment to suppliers for goods and services, such as payment of expenses, like lighting and power, rent and insurance.
(*iv*) Cash payment of wages and salaries to employees.
(*v*) Cash payments or refunds of income taxes unless they can be specifically identified with financing and investing activities.

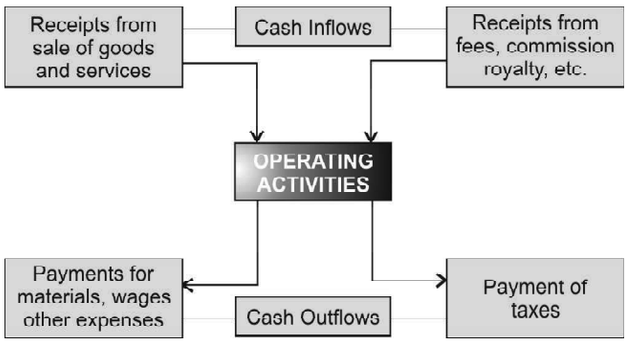

Fig. 2.1 *Cash Flows from Operating Activities*

2. **Investing Activities:** These are the acquisitions and disposal of long-term assets (such as plant, machinery, furniture, land and building) and other investments not included in cash equivalents. Examples of cash flow arising from investing activities are:

(*i*) Cash receipts from disposal of fixed assets.
(*ii*) Cash payments to acquire fixed assets.
(*iii*) Cash payments to acqurie shares/debentures of other enterprises.
(*iv*) Cash receipts from disposal of shares, debentures of other enterprises.
(*v*) Cash advances and loans made to third parties.
(*vi*) Cash receipts from repayment of advances and loans made to third parties.

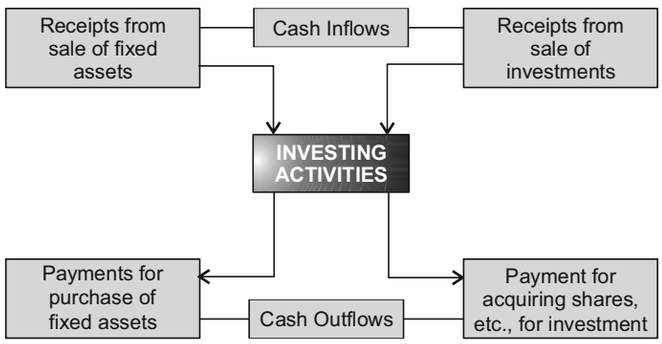

Fig. 2.2 *Cash Flows from Investing Activities*

3. **Financing Activities:** These are the activities that result in changes in the size and composition of the owner's capital and borrowings of the enterprise. Examples of cash flows arising from financing activities are:

(*i*) Cash receipts from issue of shares and debentures

(*ii*) Cash receipts from loans raised
(*iii*) Cash payment for redemption of preference shars and debentures
(*iv*) Cash-back on equity shares
(*v*) Payment of dividends on shares and interest on debentures, etc.

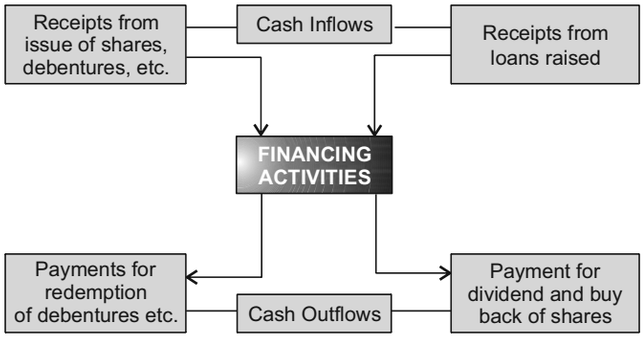

Fig. 2.3 *Cash Flows from Financing Activities*

Important Points for Students

1. Order followed for presenting the cash flow is to show operating activities, followed by investing activities, and then financing activities.
2. The net cash flow from an activity—operating, investing and financing can be positive or negative. Positive cash flow means net inflow, *i.e.*, receipts exceed payments. Negative cash flow means net outflow, *i.e.*, payments exceed receipts.
3. The sum of net inflows or outflows of all the activities results in an increase or decrease in cash balance, which is reconciled with the opening and closing balance of cash.

Treatment of Other Items

1. **Interest and Dividends:**

(*i*) In case of a financing enterprise, cash flows from interest paid and interest and dividend received should be treated as cash flows from operating activities. Dividends paid should be classified as cash flows from financing activities.

(*ii*) In the case of other enterprises, cash flows arising from interest and dividend paid should be classified as cash flows from financing activities while interest and dividend received should be classified as cash flows from investing activities.

Net profit is adjusted for non-operating expenses and incomes for calculating operating profits as shown below:

	Net profit	....
Add:	Non-operating expenses	....
Less:	Non-operating incomes	....
	Net operating profit	....

2. **Income Tax:** Cash flows arising from income tax should be classified as flows from operating activities unless they can be specifically identified with financing and investing activities. For example, capital gain tax on sale of land can be identified with investing activity and therefore in the cash flow statement, it should be shown as outflow from investing activities.

3. **Extraordinary items:** The cash flows associated with extraordinary items should be classified as arising from operating, investing or financing activities as appropriate and separately disclosed. For example, legal claim, cost of winning a law suit or lottery and receipt of claim from an insurance company are extraordinary items.

4. **Non-cash Transactions:** There are certain transactions which do not involve cash inflow or cash outflow. Although they do effect the capital and assets of an enterprise, they are excluded from cash flow statement for obvious reasons. Examples of non-cash transactions are:

(*i*) Acquisition of assets by issue of shares/debentures

(*ii*) Conversion of convertible debentures into shares

(*iii*) Acquisition of a fixed asset, say machinery, on credit, etc.

Preparation of A Cash Flow Statement

Preparation of cash flow statement is similar to that of funds flow statement. In fact, the basic difference arises from the definition of funds. In funds flow statement, fund means 'net working capital' while in cash flow statement it means 'cash'. AS-3 has not prescribed any specific format of cash flow statement but SEBI has approved the cash flow statement to be prepared in the following form.

Pro forma of Cash Flow Statement

	₹	₹
Cash Flows from Operating Activities		
Net profit before tax and extraordinary items	—	
Adjustment for:		
Depreciation	—	
Interest income	—	
Dividend income	—	
Interest expense	—	
Foreign exchange loss	—	
Operating profit before working capital changes	—	
Adjustment for changes in current assets and current liabilities	—	
Cash generated from or used in operations before tax	—	
Income tax paid	—	
Cash flow before extraordinary items	—	
Extraordinary items	—	
Net cash from (or used in) operating activities	—	
Cash Flows from Investing Activities		
Purchase of fixed assets	—	
Proceeds from sale of fixed assets	—	
Interest and dividend received	—	
Net cash from (or used in) investing activities		—
Cash Flows from Financing Activities		
Proceeds from issue of shares/debentures	—	
Proceeds from long-term borrowings	—	
Repayment of long-term borrowings	—	
Interest paid	—	
Dividends paid	—	
Net cash from (or used in) financing activities		—
Net increase (or Decrease) in cash and cash equivalents		—
Cash and cash equivalents at the beginning of the period		—
Cash and cash equivalents at the end of the period		—

NOTES

Calculation of Cash Flows from Operations or Operating Activities

There are two methods of calculating cash flows from operating activities:

(a) direct method; and (b) indirect method.

Direct Method Under this method, cash receipts from operating revenues and cash payments for operating expenses are calculated and shown in the cash flow statement. The difference between the total cash receipts and total cash payments as shown as the net cash flow from operating activities. Examples of usual cash receipts and payments resulting from operating activities are:

(*i*) Cash sales of goods and services
(*ii*) Cash received from debtors
(*iii*) Cash payment for purchase of inventories
(*iv*) Cash payment to creditors
(*v*) Cash payment for wages, salaries and other operating expenses
(*vi*) Cash payment of income tax, etc.

There are many items which appear in the Profit and Loss Account on accrual basis. Necessary adjustments are made to these items to convert them into cash based items.

Note: Direct method of determining cash flows from operating activities has not been used in this book to solve practical problems. The indirect method is more popular in actual practice and has been used in practical problems.

Indirect Method Under the indirect method, the net cash from operating activities is determined by making necessary adjustments in the net profit (or loss), as disclosed by Profit and Loss Account. Adjustments in net profit or loss are for the effects of:

(*a*) non-cash items like depreciation;
(*b*) changes during the period in inventories and operating receivables and payable;
(*c*) all other items for which cash effects are investing and financing cash flows.

The indirect method is also known as 'Reconciliation Method' as it involves a reconciliation of the net profit with net cash flows from operating activities.

The method of calculating cash from operating activities is as follows:

		₹
Net profit for the year		
Add:	Non-cash and non-operating expenses	
	— Depreciation	
	— Goodwill written off	
	— Prel. expenses written off	
	— Share discount written off	
	— Loss on sale of fixed assets, investments, etc.	
	— Provision for taxation	
Less:	Non-cash and non-operating incomes	
	Profit on sale of fixed assets, investments, etc.	
Net profit after adjustment for non-cash items		—
	Adjustments for changes in current operating assets (except cash and cash equivalents) and current operating liabilities (except bank overdraft)	

Add:	1. Increase in current liabilities	
	2. Decrease in current assets	
Less:	1. Increase in current asset	
	2. Decrease in current liability	
Less:	Income tax paid	
	Cash from operating activites	—

Illustration 2.3

Calculate cash from operating activities from the following:

	31 March	
	2011	*2012*
	₹	₹
Profit and Loss Account	60,000	65,000
Debtors	85,000	48,000
Bills Receivable (B/R)	40,000	81,000
General Reserve	1,72,000	2,07,000
Wages outstanding	26,000	8,000
Salaries prepaid	8,000	10,000
Goodwill	70,000	60,000

Solution:

Calculation of Cash from Operating Activities

			₹
Profit during the year (65,000 – 60,000)			5,000
Add:	Transfer to general reserve (2,07,000 – 1,72,000)	35,000	
	Goodwill written off (70,000 – 60,000)	10,000	45,000
			50,000
Add:	Decrease in debtors (C.A.) (85,000 – 48,000)		37,000
			87,000
Less:	Increase in B/R (C.A.) (81,000 – 40,000)	41,000	
	Increase in salaries prepaid (C.A) (10,000 – 8,000)	2,000	
	Decrease in wages outstanding (C.L.) (26,000 – 8,000)	18,000	61,000
	Cash from operating activities		26,000

C.A. = Current Assets; C.L. = Current Liabilities.

Illustration 2.4

From the following balances calculate cash from operations:

	31 December	
	2011	*2012*
₹		₹
Bills Receivable	50,000	47,000
Debtors	10,000	12,500
Bills Payable	20,000	25,000
Creditors	8,000	6,000
Outstanding Expenses	1,000	1,200
Prepaid Expenses	800	700
Accrued Income	600	750
Income received in advance	800	250
Profit made during the year	—	70,000

Solution:

Calculation of Cash from Operating Activities

			₹
	Profit made during the year		70,000
Add:	Decreases in current assets and increases in current liabilities:		
	Decrease in bills receivable (C.A.)	3,000	
	Increases in bills payable (C.L.)	5,000	
	Increase in outstanding expenses (C.L.)	200	
	Decrease in prepaid expenses (C.A.)	100	8,300
			78,300
Add:	Increase in current assets and decrease in current liabilities:		
	Increase in debtors (C.A.)	2,500	
	Decrease in creditors (C.L.)	2,000	
	Increase in accrued income (C.A.)	150	
	Decrease in income received in advance (C.L.)	550	5,200
	Cash from operating activities		73,100

C.A. = Current Assets; C.L. = Current Liabilities.

Calculation of Cash Flows from Investing Activities

Cash inflows and cash outflows from investing activities result from acquisition and disposal of long-term assets, non-operating current assets and investments. The net effect of cash inflows and outflows is determined and shown as cash flows from investing activities in the cash flow statement.

Calculation of Cash Flows from Financing Activities

These activities relate to issue of shares and debentures, redemption of preference shares and debentures, raising of loans and repayment of loans, etc. The net effect of inflows and outflows of cash relating to these financing activities is determined and shown in the cash flow statement under this head of Cash Flows from Financing Activities.

Illustration 2.5

Prepare a Cash Flow Statement on the basis of the information given in the Balance Sheets of P S Ltd.

Liabilities	*2011* ₹	*2012* ₹	*Assets*	*2011* ₹	*2012* ₹
Share Capital	2,00,000	2,50,000	Goodwill	10,000	2,000
12% Debentures	1,00,000	80,000	Land and Building	2,00,000	2,80,000
General Reserve	50,000	70,000	Machinery	1,00,000	1,30,000
Creditors	40,000	60,000	Debtors	40,000	60,000
Bills Payable	20,000	1,00,000	Stock	70,000	90,000
Outstanding Exp.	25,000	20,000	Cash	15,000	18,000
	4,35,000	5,80,000		4,35,000	5,80,000

Solution:

Cash Flow Statement for the year ending 2012

			₹
(*i*)	**Cash from Operating Activities**		
	Profit during the year tr. to general reserve (70,000 – 50,000)	20,000	
	Add: Goodwill written off (10,000 – 2,000)	8,000	
	Increase in creditors (C.L.)	20,000	
	Increase in bills payable (C.L.)	80,000	
		1,28,000	
	Less: Increase in debtors (C.A.)	(–) 20,000	
	Increase in stock (C.A.)	(–) 20,000	
	Decrease in outstanding exp. (C.L.)	(–) 5,000	
	Cash inflow from operating activities		83,000
(*ii*)	**Cash from Investing Activities**		
	Purchase of land and building	(–) 80,000	
	Purchase of machinery	(–) 30,000	
	Cash outflow from investing activities		(–)1,10,000
(*iii*)	**Cash from Financing Activities**		
	Issue of shares	50,000	
	Redemption of debentures	(–) 20,000	
	Cash inflow from financing activities		30,000
Net Increase in Cash			3,000
	Add: Cash balance in the beginning of the year		15,000
	Cash balance at the end of the year		18,000

Objectives and Uses of Cash Flow Statement

1. **Useful in cash planning** A cash flow statement proves very useful to management by providing a basis to evaluate the ability of a company to generate cash. A cash flow statement prepared on an estimated basis for the next accounting period enables the management to know how much cash can be generated internally and how much it should arrange from outside. Such estimated amounts are used for preparing cash budget.
2. **Assesses cash flow from operating activities** Cash flow statement provides information about cash generated from operating activities. It provides explanation for the difference net profit and cash from operations. Cash provided by operating activities is very important to assess the cash generated by internal sources.
3. **Payment of dividends** Decisions to pay dividends cannot be based on net profit only. Availability of profit in the form of cash is also important for dividend disbursement. Thus cash provided by operating activities assumes importance for declaration of dividend.
4. **Cash from investing and financing activities** Cash flow statement provides information not only about cash provided by operating activities but also by non-operating activities under two heads, namely, investing activities and financing activities. This helps to explain the overall liquidity position of the enterprise and its ability to meet its cash commitments.
5. **Explains reasons for surplus or shortage of cash** A business may have made profit and yet running short of cash. Similarly, a business may

NOTES

have suffered a loss and still has sufficient cash at the bank. A cash flow statement discloses reasons for such increases or decreases of cash balance.

Illustration 2.6

Calculate cash from operations from the following:

(*i*) Profit made during the year 2012 was ₹2,50,000 after considering the following items:

	₹
(*a*) Depreciation on fixed assets	10,000
(*b*) Amortization of goodwill	5,000
(*c*) Transfer to general reserve	7,000
(*d*) Profit on sales of land	3,000

(*ii*) The following is the position of current assets and current liabilities:

	2012 (₹)	*2011 (₹)*
Debtors	15,000	12,000
Creditors	10,000	15,000
Bills Receivable	10,000	8,000
Prepaid Expenses	6,000	4,000

Solution:

Calculation of Cash from Operations
for the year 2012

		₹	₹
	Net Profit for the year		2,50,000
Add:	Non-cash charges:		
	Depreciation on fixed assets	10,000	
	Goodwill written off	5,000	
	General Reserve	7,000	22,000
			2,72,000
Less:	Non-operating Incomes: Profit on sale of land		3,000
	Profit from operations		2,69,000
Add:	Decrease in Current Assets:		
	Bills Receivable	2,000	
	Prepaid Expenses	2,000	4,000
			2,73,000
Less:	Increase in Current Assets: Debtors	3,000	
	Decrease in Current Liabilities: Creditors	5,000	8,000
	Cash from operations		2,65,000

Illustration 2.7

The balance sheets of VXL Limited, as at 31 December, of two years, are given below:

Assets	*2012 (₹)*	*2011 (₹)*
Cash balances	60,000	50,000
Trade debtors	1,00,000	75,000
Inventory	1,20,000	1,40,000
Land	80,000	1,00,000
Plant and Machinery	2,50,000	2,00,000
Total	6,10,000	5,65,000

Liabilities and Capital		
Trade creditors	40,000	30,000
Debentures	90,000	1,50,000
Provision for depreciation on plant	80,000	60,000
Equity share capital	2,40,000	2,00,000
Retained earnings	1,60,000	1,25,000
Total	6,10,000	5,65,000

Cash dividends of ₹25,000 have been paid during the year.

You are required to prepare a cash flow statement on indirect basis.

Solution:

Cash Flow Statement
for the year ending 31-12-2012

			₹
(*i*)	**Cash flow from operating activities**		
	Net profit during the year (25,000 + 35,000)*		60,000
	Add: Depreciation (80,000 – 60,000)		20,000
	Net decrease in inventory (1,40,000 – 1,20,000)		20,000
	Net increase in creditors (40,000 – 30,000)		10,000
			1,10,000
	Less: Net increase in debtors (1,00,000 – 75,000)		25,000
	Net inflow from operating activities		85,000
(*ii*)	**Cash flow from investing activities**		
	Purchase from plant and machinery	(–) 50,000	
	Sale of land	20,000	
	Net Cash outflow from investing activities		(–)30,000
(*iii*)	**Cash flow from financing activities**		
	Issue of share capital (2,40,000 – 2,00,000)	40,000	
	Redemption of debentures (1,50,000 – 90,000)	(–) 60,000	
	Dividend paid	(–) 25,000	
	Net cash outflow from financing activities		(–) 45,000
	Net Increase in Cash (85,000 – 30,000 – 45,000)		10,000
	Add: Cash balance in the beginning		50,000
	Cash balance at the end		60,000

***Note:** Profit during the year = Dividend paid + Increase in retained earnings.

Illustration 2.8

The Balance Sheets of *X* Ltd, as on 31 March 2011 and 31 March 2012, were as follows:

		31 March 2011	*31 March 2012*
		₹	₹
Assets :			
	Land and Buildings	80,000	1,20,000
	Plant and Machinery	5,00,000	8,00,000
	Stock	1,00,000	75,000
	Sundry Debtors	1,40,000	1,50,000
	Prepaid Expenses	14,000	12,000
	Cash at Bank	16,000	18,000
		8,50,000	11,75,000
Liabilities and Capital:			
	Share Capital	5,00,000	7,00,000
	Profit and Loss Account	1,00,000	1,60,000
	General Reserve	50,000	70,000
	Sundry Creditors	1,63,000	2,00,000
	Bills Payable	30,000	40,000
	Outstanding Expenses	7,000	5,000
		8,50,000	11,75,000

Additional Information:

(*i*) ₹50,000 depreciation has been charged to plant and machinery during the year, 2012.

(*ii*) A piece of machinery was sold for ₹8,000 during 2012. It had cost ₹12,000, depreciation of ₹7,000 has been provided on it.

Prepare Cash Flow Statement from the above details.

Solution:

Working Notes:

Plant and Machinery Account

	₹		₹
To Balance b/d	5,00,000	By Cash—Sale	8,000
To Profit on sale	3,000	By Depreciation	50,000
To Cash (Purchase) (B.F.)	3,55,000	By Balance c/d	8,00,000
	8,58,000		8,58,000

Cash Flow Statement
for the year ending 31 March 2012

		₹	₹
(*i*)	**Cash Flow from Operating Activities**		
	Profit during the year (1,60,000 – 1,00,000	60,000	
Add:	Depreciation on machinery	50,000	
	General reserve (70,000 – 50,000)	20,000	
	Decrease in stock (C.A.)	25,000	
	Decrease in prepaid expenses (C.A)	2,000	
	Increase in creditors (C.L.)	37,000	
	Increase in bills payable (C.L.)	10,000	
			2,04,000
Less:	Gain on sale of machinery	(–) 3,000	
	Increase in debtors (C.A.)	(–) 10,000	
	Decrease in outstanding exp. (C.L.)	(–) 2,000	15,000
Cash inflow from operating activities			1,89,000
(*ii*)	**Cash Flow from Investing Activities**		
Add:	Sale of machinery	8,000	
Less:	Purchase of machinery	(–) 3,55,000	
Less:	Purchase of land and building	(–) 40,000	
Cash outflow from investing activities			(–) 3,87,000
(*iii*)	**Cash Flow from Financing Activities**		
	Issue of shares	2,00,000	
	Cash inflow from financing activities		2,00,000
	Net increase in cash		2,000
Add:	Cash balance in the beginning		16,000
	Cash balance at the end		18,000

Check Your Progress

5. What is a cash flow statement?
6. How does AS 3 require the cash flow statement to classify cash flow?

2.5 FINANCIAL STATEMENT ANALYSIS

Analysis of financial statements means to critically examine the composition of an item or amount appearing in the financial statements. In other words, analysis means breaking up of an amount into its elements so that a particular element may be correlated to another and significant relationship may be established between them and conclusions may be drawn on the data presented in financial statements. Such an analysis makes use of various analytical tools and techniques to data of financial statements so as to derive from them certain relationships that are significant and useful for decision making. In the words of John N Myers, '*Financial statement analysis is largely a study of the relationships 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.*'

Interpretation is determining the meaning and drawing inferences or conclusions with regard to the results of significant relationship between the items correlated.

Thus, financial statement analysis converts the mass of data into useful information which is always in scarce supply. It pinpoints the strengths and weaknesses of a business undertaking by use of various techniques, such as ratio analysis, comparative statements, etc. Such analysed information is used by management, bankers, creditors, investors and others to form judgement about the operating performance and financial position of the business. Thus financial statement analysis helps in evaluating a business performance according to some specific objectives.

Parties Interested in Financial Statement Analysis

Information contained in financial statements is useful to different categories of users of financial data. These are managers, shareholders, creditors, Government, auditors and other interested groups. Uses of financial data for each of these are briefly described below:

1. **Management** Management of a company is interested in its financial condition, profitability and progress. It uses a number of methods, tools and techniques available to it to analyse the financial data. Such analysis is used by the management to exercise control over the business and to make decisions to run it more efficiently.

2. **Shareholders** Shareholders are the suppliers of basic capital to run the business. Such capital is exposed to all the risks of ownership. Shareholders are interested in the profitability, dividends declared and market value of their holdings. The current earnings of the company determine both dividends and market value of the shares. In other words, shareholders mainly analyse the profitability and long-term solvency of the company.

3. **Creditors** Creditors include short-term creditors like bankers, trade creditors and also long-term credit grantors like debenture-holders and financial institutions, etc. All creditors are mainly interested in the short-term and long-term

NOTES

solvency of the company. They are also interested in the profitability because profit is viewed as the primary source for payment of interest on loans and debentures.

4. **Purchaser of Business** Any person interested in the purchase of a going concern analyses the financial statements to determine its real value. It makes an assessment of the financial and operating strengths and weaknesses of the business.

5. **Government** Financial statements are used by various government departments, like Income Tax, Sales Tax, Excise Duty, etc., to determine the tax liability of the company. On the basis of such financial statements of companies in different industries, the government determines tax policy, import-export policy and industry policy.

6. **Other Interested Groups** Financial statement analysis also serves the needs of many other user groups. For example, workers' trade unions analyse the financial statements to prepare ground for collective bargaining, to claim bonus, etc.

Lawyers also use financial statement analysis in furtherance of their investigative and legal work.

Researchers also get useful data from the analysis of financial statement to make comparative study of profitability of many companies.

Significance and Purposes of Financial Statement Analysis

Financial statement analysis performs the essential function of converting mass data into useful information. Such analysed financial information serves many and varied purposes, as described below:

1. **Judging Profitability** Profitability is a measure of the efficiency and success of a business enterprise. A company which earns profits at a higher rate is definitely considered a good company by the potential investors. The potential investors analyse the financial statements to judge the profitability and earning capacity of a company so as to decide whether to invest in a company or not.

2. **Judging Liquidity** Liquidity of a business refers to its ability to pay off its short-term liabilities, when they become due. Short-term creditors, like trade creditors and bankers, make an assessment of liquidity before granting credit to the company.

3. **Judging Solvency** Solvency refers to the ability of a company to meet its long-term debts. Long-term creditors, like debenture-holders and financial institutions, judge the solvency of a company before any lending decisions. They analyse company's profitability over a number of years and its ability to generate sufficient cash to be able to repay their claims.

4. **Judging the Efficiency of Management** Performance and efficiency of management of a company can be easily judged by analysing its financial statements. Profitability of a company is not the only measure of company's managerial efficiency. There are a number of other ways to judge the operational

efficiency of management. Financial analysis tells whether the resources of the business are being used in the most effective and efficient way.

5. **Inter-firm Comparison** A comparative study of financial and operating efficiency of different firms is possible only after proper analysis of their financial statements. For this purpose, it is also necessary that the financial statements are maintained on a uniform basis so that financial data of various firms are comparable.

6. **Forecasting and Budgeting** Financial analysis is the starting point for making plans by forecasting and preparing budgets. Analysis of the financial statements of the past years helps a great deal in forecasting for the future.

Limitations of Financial Statements

It is a general impression that financial statements are precise, exact and final. But sometimes these statements conceal some very important information. As such they suffer from certain limitations. These are discussed below:

1. **Effect of accounting concepts and conventions** Various concepts and conventions of accounting affect the values of assets and liabilities, as shown in the Balance Sheet. Similarly profit or loss disclosed by Profit and Loss Account is also affected by these concepts and conventions. For example, on account of the going concern concept and also the convention of conservatism, the balance sheet does not show current economic values of various assets and liabilities.

2. **Effect of personal judgements** The financial statements are influenced, to a certain extent, by the personal judgements of the accountant. For example, the amount of provision for bad and doubtful debts depends entirely on the judgement and past experience of the accountant. Similarly, an accountant has also to make a judgement about the method and rate of depreciation for fixed assets. There are numerous instances when an accountant has to exercise his personal judgement in which there is an element of subjectivity. The quality of the financial statements thus depends upon the competence and integrity of those who are responsible for preparing these statements.

3. **Recording only monetary transactions** Financial statements record only those transactions and events which can be expressed in terms of money. But there are many factors which are qualitative in nature and cannot be expressed in monetary terms. These non-monetary factors do not find any place in the financial statements. For example, efficiency and loyalty of workers, personal reputation and integrity of the managing director of the company, advertisement policy of the company, etc., are not capable of being expressed in money terms and thus find no place in financial statements even though they materially affect the profitability of a business.

4. **Historical in nature** Financial statements disclose data which is basically historical in nature, *i.e.,* it tells what has happened in the past. These statements do not give future projections.

5. **Ignores human resources** No business can prosper without an efficient work force. But financial statements do not include human resources which is a very important asset for a business.

6. **Ignores social costs** Apart from earning a fair return on investments, a business has certain social responsibilities. Financial statements do not make any attempt to show the social cost of its activities. Examples of social cost of a manufacturing company are air pollution, water pollution, occupational diseases, work injuries, etc.

Principal Tools of Analysis

In the analysis of financial statements, the analyst has available, a number of tools, from which he has to choose best suited for his specific purpose. The following are the principal tools of analysis of financial statements.

1. Comparative Financial Statements
2. Common-size Financial Statements
3. Trend Percentages
4. Ratio Analysis

Horizontal and Vertical Analysis

In horizontal analysis, financial date of two or more years of the company is presented horizontally in a number of columns in comparative form. *Comparative financial statements* and *trend percentages* are types of horizontal analysis.

Vertical analysis covers a period of only one year and analysis is made on the basis of one set of financial statements. *Common size financial statements* and *ratio analysis* are the techniques employed in vertical analysis.

Comparative Financial Statements

Comparison of financial statements is one of the important tools of horizontal analysis of financial statements. It has been seen that Balance Sheet and Profit and Loss Account are the two most important financial statements. Information contained in these financial statements for a particular year is extremely important and useful. However, such information becomes still more useful if it is compared with the data shown in the financial statements of the previous few years. Such comparison of financial statements is accomplished by setting up Balance Sheet and Profit and Loss Account of two or more years side by side and studying the changes that have occurred in the individual figures therein from year to year and over the years. Thus, comparison of financial statements means that the financial statements of a company for any year are compared with financial statements of the same company for earlier years. Comparative financial statements take the form of comparative balance sheets and comparative profit and loss accounts.

Comparative Balance Sheet

A comparative balance sheet has two columns for the data of the original balance sheets. A third column is prepared to show the increases and decreases in rupees in various assets and liabilities. A fourth column is generally added to show percentages of increases and decreases. Thus, there are generally total four columns in a comparative balance sheet.

Illustration 2.9

From the following information prepare a Comparative Balance Sheet.

	31 March 2011	*31 March 2012*
	₹	₹
Equity Share Capital	4,00,000	6,00,000
Debentures	2,00,000	3,25,000
Sundry Creditors	2,55,000	1,17,000
Bank Overdraft	7,000	10,000
Total Liabilities and Capital	8,62,000	10,52,000
Plant and Machinery	1,00,000	2,00,000
Land and Building	3,60,000	5,40,000
Investments	2,70,000	1,70,000
Sundry Debtors	1,00,000	88,000
Cash in hand	32,000	54,000
Total Assets	8,62,000	10,52,000

Solution:

Comparative Balance Sheet

Items	*31 March*		*Increase or Decrease*	
	2011	*2012*	*Absolute*	*%*
	₹	₹	₹	
Equity Share Capital	4,00,000	6,00,000	2,00,000	50
Debentures	2,00,000	3,25,000	1,25,000	62.25
Sundry creditors	2,55,000	1,17,000	(–) 1,38,000	(–) 54.12
Bank Overdraft	7,000	10,000	3,000	42.86
Total Liabilities and Capital	8,62,000	10,52,000	1,90,000	22.04
Plant and Machinery	1,00,000	2,00,000	1,00,000	100
Land and Building	3,60,000	5,40,000	1,80,000	50
Investments	2,70,000	1,70,000	(–) 1,00,000	(–) 37.04
Sundry Debtors	1,00,000	88,000	(–) 12,000	(–) 12
Cash in hand	32,000	54,000	22,000	40.74
Total Assets	8,62,000	10,52,000	1,90,000	22.04

Comparative Income Statement (or Profit and Loss Account)

An income statement shows the net profit or net loss resulting from the operation of a business for a definite period of time. A comparative income statement is prepared to show the net profit or loss for a number of years in comparative form. By comparing income statement for two or more years, it is possible to observe the progress of a business.

A comparative income statement contains the same columns as the comparative balance sheet and provides the same type of information.

Illustration 2.10

From the following information, prepare a comparative Income Statement.

	31-3-2011	31-3-2012
	₹	₹
Sales	10,00,000	8,00,000
Cost of Goods Sold	6,00,000	4,00,000
Adm. Selling and Distribution Expenses.	2,00,000	1,40,000
Other Incomes	40,000	20,000
Income Tax	1,20,000	1,40,000

Solution:

Comparative Income Statement

for two years 2011 and 2012

Particulars		Year 2011	Year 2012	Change Absolute	Change %
		₹	₹	₹	
	Sales	10,00,000	8,00,000	(–) 2,00,000	(–) 20.00
Less:	Cost of Goods Sold	6,00,000	4,00,000	(–) 2,00,000	(–) 33.33
	Gross Profit	4,00,000	4,00,000	Nil	Nil
Less:	Operating Expenses:				
	Adm., Selling and Dist. Exp.	2,00,000	1,40,000	(–) 60,000	(–) 30.00
	Net Operating Profit	2,00,000	2,60,000	60,000	30.00
	Other Incomes	40,000	20,000	(–) 20,000	50.00
	Net Profit before tax	2,40,000	2,80,000	40,000	16.67
Less:	Income Tax (50% of Net Profit)	1,20,000	1,40,000	20,000	16.67
	Net Profit after Income Tax	1,20,000	1,40,000	20,000	16.67

Common-size Financial Statements

Common size statement or common-size financial statement is a type of comparative financial statement in which each item of the financial statement is expressed as a percentage of the appropriate total. The appropriate total is taken as 100 per cent and each item is shown as a proportion of this 100 per cent. Such a statement is also known as *100 per cent Statement* or *Vertical analysis*. A common size statement may be prepared for balance sheet as well as income statement.

Common Size Balance Sheet

In common size balance sheet, each item of asset is shown as a percentage of total assets and each item of liability and capital is shown as a percentage of total liabilities and capital (which is the same as total assets). In other words, the total of the assets and also that of liabilities and capital is taken as 100 per cent and each item appearing on the assets side as well as liabilities side is shown as a proportion of the total of 100.

Illustration 2.11

With reference to Illustration 2.9, Common Size Balance Sheet is prepared as follows:

Common Size Balance Sheet

	31 March 2011		*31 March 2012*	
Particulars	₹	*% of Total*	₹	*% of Total*
Equity Share Capital	4,00,000	46.40	6,00,000	57.03
Debentures	2,00,000	23.20	3,25,000	30.89
Sundry Creditors	2,55,000	29.58	1,17,000	11.13
Bank Overdraft	7,000	0.82	10,000	0.95
Total Liabilities and Capital	8,62,000	100	10,52,000	100
Plant and Machinery	1,00,000	11.60	2,00,000	19.01
Land and Building	3,60,000	41.76	5,40,000	51.33
Investments	2,70,000	31.32	1,70,000	16.16
Sundry Debtors	1,00,000	11.60	88,000	8.37
Cash in hand	32,000	3.72	54,000	5.13
Total Assets	8,62,000	100	10,52,000	100

Procedure of Preparing Common Size Balance Sheet

Assume total of the balance sheet as 100 per cent. Then express each item in the balance sheet as a percentage of total of 100. For example, in the above Illustration, equity capital on 31 March 2011 is ₹4,00,000. Total of the balance sheet on this date is ₹8,62,000. We can now calculate percentage of equity capital in the total of 100 per cent as follows:

$$\text{Equity Capital} = \frac{4,00,000}{8,62,000} \times 100 = 46.40\%$$

Similarly calculation of other items in the balance sheet is made. For example:

$$\text{Debentures} = \frac{2,00,000}{8,62,000} \times 100 = 23.20\%$$

$$\text{Plant and Machinery} = \frac{1,00,000}{8,62,000} \times 100 = 11.60\%$$

As on 31 March 2012, each item is calculated as a percentage of ₹10,52,000.

For example:

$$\text{Equity Capital} = \frac{6,00,000}{10,52,000} \times 100 = 57.03\%$$

$$\text{Land and Building} = \frac{5,40,000}{10,52,000} \times 100 = 51.33\%$$

In this way each and every item is calculated.

Common Size Income Statement

This statement is similar to common size balance sheet. In the common size income statement, total sales figure is taken as 100 per cent and each item is then calculated as a percentage of sales.

Illustration 2.12

Use the data given in Illustration 2.10 to prepare a Common Size Income Statement.

Solution:

Common Size Income Statement

Particulars	*2011*		*2012*	
	₹	*% of Sales*	₹	*% of Sales*
Sales	10,00,000	100.00	8,00,000	100.00
Less: Cost of Goods sold	6,00,000	60.00	4,00,000	50.00
Gross Profit	4,00,000	40.00	4,00,000	50.00
Less: Operating Expenses	2,00,000	20.00	1,40,000	17.50
Net Operating Profit	2,00,000	20.00	2,60,000	32.50
Other Incomes	40,000	4.00	20,000	2.50
Net Profit before tax	2,40,000	24.00	2,80,000	35.00
Less: Income Tax (50% of net profit)	1,20,000	12.00	1,40,000	17.50
Net Profit after tax	1,20,000	12.00	1,40,000	17.50

Procedure of Preparing Common Size Income Statement

Total net sales figure is taken as 100% and then each item appearing in the income statement is taken as a percentage of sales. For example, in the above illustration, sales of ₹10,00,000 in the year 2011 are taken as 100 per cent. Then cost of sales is calculated as a percentage of sales as follows:

$$\frac{\text{Cost of goods sold}}{\text{sales}} \times 100 = \frac{6,00,000}{10,00,000} \times 100 = 60\%$$

$$\text{Gross Profit as a \% of sales} = \frac{4,00,000}{10,00,000} \times 100 = 40\%$$

Calculations for other items of the years 2011 and 2012 are similarly made.

Check Your Progress

7. What are the types of horizontal analysis?
8. What is a common size statement?

2.6 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Balance sheet is the summary of all the assets, liabilities and equities of a business enterprise or company. It is also known as the statement of financial position.

2. Non-current assets are those assets which are used by the business for a period more than one year or for a long period. These are also known as long term assets.
3. Operating income is also known as earnings before interest & taxes or operating profit. It is generated by the business from the sale of goods & services, less operating expenses and depreciation or income arising out of ordinary business activities.
4. Operating expenses are the expenses which are incurred daily to run the business effectively as office & administrative expenses, advertising & selling expenses etc.
5. A cash flow statement is statement of changes in cash position between the beginning and end of the period.
6. As 3 requires that cash flow statement should report cash flow during the period classified by operating, investing and financing activities.
7. Comparative financial statements and trend percentages are types of horizontal analysis.
8. Common the statement is a type of comparatise financial statement in worth each item of financial statement is expressed as a percentage of the appropriate total

2.7 SUMMARY

- Balance sheet is the summary of all the assets, liabilities and equities of a business enterprise or company. It is also known as the statement of financial position.
- A liability is the present obligation of the business enterprise arising from past events. This liability is payable when it becomes due. The liabilities are also of two types-current liabilities and non-current liabilities.
- Current liabilities are those liabilities which are payable within a period of accounting year normally one year as trade creditors, Bills payables, bank overdraft, short term loans etc., While non-current liabilities are those liabilities which are payable after one year from the reporting date as long term loans & debentures etc.
- Assets represent the utilization of economic resources. There are two types of assets-Current assets and Non-current Assets.
- Non-current Assets are purchased to attain the long term benefits by the business. They are purchased once, and the benefits derived from them are for a long period as plant & machine, land & building, furniture etc. Current Assets are those assets which may be converted into cash within a period of 12 months from the reporting date as Debtors, inventory or stock, Bills Receivables, cash and bank balances.

- Profit and loss account is now known as statement of profit and loss. It shows the net profit or loss of a business for an accounting period, normally one year.
- According to International Accounting Standard Board, 'Income is an increase in economic benefits during the accounting period in the form of inflows or enhancements of assets or decrease of liabilities that result in increase in equity, other than those relating to contributions from equity participants.'
- According to International Accounting Standard Board, 'Expenses are the decreases in economic benefits during the accounting period in the form of outflows or depletions of assets or incurrence of liabilities that result in decrease in equity, other than those relating to distributions to equity participants.'
- The statement of income is prepared on the basis of accruals system of accounting. It means that any income or revenue is recognized when it is earned. In the same way, expenses are recognized in the income statement when they are incurred.
- A cash flow statement is statement of changes in cash position between the beginning and end of the period.
  The companies in respect of which AS-3 is mandatory are required to comply with AS-3 under the Companies Act, 1956. This means that statutory auditors of such companies are required to give an assertion in respect of companies with AS-3.
- As per Accounting Standard (AS-3) issued by the Institute of Chartered Accountants of India, the term 'cash' includes:
  1. Cash in hand
  2. Demand deposits with banks
  3. *Cash equivalents* These are short-term highly liquid investments that are readily convertible into known amounts of cash and which are subject to an insignificant risk of changes in value.
- Accounting Standard (AS-3) requires that cash flow statement should report cash flow during the period classified by operating, investing and financing activities.
- There are two methods of calculating cash flows from operating activities: (a) direct method; and (b) indirect method.
- Analysis of financial statements means to critically examine the composition of an item or amount appearing in the financial statements. In other words, analysis means breaking up of an amount into its elements so that a particular element may be correlated to another and significant relationship may be established between them and conclusions may be drawn on the data presented in financial statements.
- Financial statement analysis converts the mass of data into useful information which is always in scarce supply. It pinpoints the strengths and weaknesses of a business undertaking by use of various techniques, such as ratio analysis,

comparative statements, etc.

- Information contained in financial statements is useful to different categories of users of financial data. These are managers, shareholders, creditors, Government, auditors and other interested groups.
- The following are the principal tools of analysis of financial statements.

  1. Comparative Financial Statements
  2. Common-size Financial Statements
  3. Trend Percentages
  4. Ratio Analysis

2.8 KEY TERMS

- **Balance sheet:** It is the summary of all the assets, liabilities and equities of a business enterprise or company. It is also known as the statement of financial position.
- **Liability:** It is the present obligation of the business enterprise arising from past events.
- **Comparative Financial Statement:** Any financial statement that reports the comparison of data for two or more consecutive accounting periods is known as comparative financial statement.

2.9 SELF-ASSESSMENT QUESTIONS AND EXERCISES

Short Answer Questions

1. Differentiate between current liabilities and non-current liabilities.
2. Briefly mention some of the non-current liabilities.
3. What are current assets?
4. What do you mean by non-operating income?
5. What are the major sources and uses of cash for a business?
6. Write a short note on financial statement analysis.
7. Briefly mention the six steps involved in financial statement analysis.

Long Answer Questions

1. Discuss the elements of Income Statement.
2. Examine the differences between cash flow statement and fund flow statement.
3. Discuss the advantages of cash flow statement.
4. Explain the major limitations of financial statements.

NOTES

2.10 FURTHER READING

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UNIT 3 FINANCIAL INFORMATION ANALYSIS FOR INTERNAL DECISION MAKERS

Structure

3.0 INTRODUCTION

To make optimum use of the output capacity, the manufacturing organizations are frequently confronted with the decision of additional output as long as they operate below their output capacity. Since this decision involves additional cost, therefore, the organizations need to analyse and understand the behaviour of additional costs before arriving at such a decision. Such an understanding is essential because every increase in the level of output would not increase profits rather would diminish the organization's marginal profit if the organization is already operating at the optimum level of its existing output capacity. However, such a decision would definitely prove financially sound if the organization has any unutilized output capacity. Consequently, the management needs to possess knowledge about the behaviour of costs as a result of a change in the level of output in order to arrive at an accurate decision. It is in this context an attempt has been made in this unit to identify and examine the impact of change in the level of output on cost and business result. This unit will discuss in detail the concept of marginal costing, cost-volume-profit analysis, standard costing, variance analysis and activity based costing.

3.1 OBJECTIVES

After going through this unit, you will be able to:

- Understand the concept of marginal costing
- Discuss in detail the cost-volume-profit analysis
- Understand the concept of standard costing
- Describe the meaning, significance and types of variance analysis
- Explain the outline of activity based costing

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3.2 ACCOUNTING FOR DECISION MAKING

In management accounting, decision making is defined as the course of choosing a partcular action from various alternatives available. The best decision is one that involves the most revenue or the least amount of cost. The task of management is to find the best alternative.

In this section, you will learn about the concept, advantages and limitations of marginal costing.

Cost Behaviour

The analysis of cost behaviour reveals that the cost of a product can be divided into two major categories:

- fixed cost; and
- variable cost

As per cost behaviour, fixed cost remains constant to a particular level of output whereas variable cost has the tendency to change proportionately with the volume of output. The example given below will clarify the concept further.

Example: Suba Company Limited sold 2,000 units @ ₹ 100 per unit during the year 2011–12 with the following details of production expenditure:

(i) Wages ₹ 20 per unit.

(ii) Rent of factory ₹ 5000 per annum.

(iii) Salary of executive ₹ 50,000 per annum.

(iv) Raw material required to produce one unit of finished product 2 kg @ ₹ 2 per kg.

In the above-mentioned example, the costs of raw material and wages must have changed proportionately with the change in the level of output, and therefore, they fall within the scope of variable costs whereas the rent of factory and salary of executive must have remained unchanged despite the change in output. In fact, they must have remained constant at every level of output and as such fall within the scope of fixed costs. On account of this reason, it is not logical to apportion fixed costs to production in case of any additional output. Marginal costing is the technique which deals with this phenomenon.

Marginal Cost

The cost of one additional unit of output is known as marginal cost. In other words, it refers to the cost that is incurred by a business to move from output level 'n' to 'n + 1'. According to terminology of cost accountancy of the Institute of Cost and Management Accountants, 1974, Marginal cost is the amount of any given volume of output by which aggregate costs are changed if the volume of output is increased by one unit. Blocker and Weltmore, 1972, defines marginal cost as the increase or decrease in total cost which results from production or selling additional or fewer units of a product or form a change in the method of production or distribution such as the use of improved machinery, addition or exclusion of a product or territory, or selection of an additional sales channel. Thus, marginal cost is the cost incurred by a business for the additional output.

Marginal Costing

Marginal costing is an accounting technique which ascertains marginal cost of additional output by differentiating between fixed and variable costs. This technique aims to charge only those costs to the cost of additional product that vary directly with sales volumes. Those costs would be direct material, direct labour and factory overhead expenses like supplies and some indirect labour and power. The cost of the additional product would not include fixed or non-variable expenses such as depreciation, factory insurance, taxes and supervisory salaries.

Marginal costing is defined by the National Association of Accountants, 1961, London, as a method which proposes that fixed expenses be classified as period expenses and be written off currently as is generally done with selling and administration expenses, and that only the variable costs become the basis of inventory value and profit determination.

According to the Institute of Cost and Management Accountants, marginal costing is the ascertainment of marginal costs and of the effect on profit of changes in volume or type of output by differentiating between fixed costs and variable costs. In this technique of costing only variable costs are charged to operations, process or products, leaving all indirect costs to be written off against profits in the period in which they arise.

Marginal costing is a costing technique that considers only the costs that vary directly with volume—direct materials, direct labour and variable factory overheads and ignores fixed cost in additional output decisions. Thus, the technique of marginal costing lies in

- differentiation between fixed and variable costs;
- ascertainment of marginal costs; and
- finding out effect on profit due to change in volume or type of output.

Characteristics of Marginal Costing

Marginal costing reveals the following four features:

- ***Method of Recording and Reporting*:** Marginal costing is a method of recording as well as reporting costs. Unlike differential cost analysis and break-even analysis which utilize traditional records, marginal costing requires a unique method of recording cost transactions as they originally take place.
- ***Separation of Costs into Fixed and Variable Elements*:** Under marginal costing, all types of operating costs (factory, selling and administrative) are separated into fixed and variable components and are recorded separately.
- ***Variable Costs Applied to Product*:** Variable cost elements are recognized as product costs, i.e., they are charged to the product at the appropriate movements and follow the product through the inventory accounts, and thus are treated as expenses when the product is sold. Variable distribution costs normally are chargeable to product at or near the moment of sale, and thus do no become part of the inventory values.
- ***Fixed Cost Written Off as Period Cost*:** Fixed costs (including fixed factory overheads) are handled as period costs, i.e., they are written off as

NOTES

expenses in the period in which they are incurred. They do not follow the inventories through the accounts but rather are treated in a way which is traditionally for selling and general administrative expenses.

From the above discussion, it is clear that marginal costing is not a system of cost ascertainment-like job, operating or process costing but is a technique to deal with the effect on profits as a result of changes in volume or type of output. It may be incorporated into the system of recording and collecting costs or it may be used as an analytical tool for studying and reporting the effects of changes in volume and type of output. Where it is incorporated into the system of recording and collecting costs, the stocks are valued at variable costs, and fixed costs are treated as period costs in profit statements.

Concept of Absorption Costing

Absorption costing is a system of costing that recognizes all costs including fixed ones as product costs, and therefore, considers all of them in ascertaining the cost of the product. Since the costing system does differentiate between variable and fixed costs, it charges the full costs to a product irrespective of the fact whether such costs are relevant to the product. Thus, absorption costing promotes the philosophy of charging all types of costs—fixed, variable, direct and indirect to processes, operations or products. Although this system of costing has been criticized by many scholars on the plea that it fails to report inventories of the business at a genuine value, yet it is preferred by many business firms even today.

Marginal Costing vs. Absorption Costing

The two major differences between marginal costing and absorption costing are summarized below:

- In marginal costing the product is charged only with those costs that are directly affected by changes in volume. Under the absorption costing method period costs (fixed costs) which are a function of time and, therefore, are not affected by volume changes, are also charged to the cost of production.
- Under the absorption costing method, inventories will normally be reported at a higher figure than the marginal costing method. This is due to the fact that fixed costs, under the absorption method, are deferred by being included in the cost of goods inventory. The element of fixed cost will not be reported as a deduction from revenue until the goods are sold and then it is shown as expense in the cost of goods sold in the income statement. Under the marginal cost method, no fixed costs are deferred; they are charged against revenue in the period in which they are incurred. Illustration 3.1 would clearly demonstrate the difference between these two methods.

Illustration 3.1: From the following data prepare statements of cost according to both absorption costing and marginal costing system:

Particulars	*Product X* (₹)	*Product Y* (₹)
Sales	15,000	40,000
Direct material	6,000	18,000
Direct labour	4,000	7,000
Factory overheads:		
Fixed	3,000	3,000
Variable	1,000	2,500
Administrative overheads:		
Fixed	500	1,000
Selling overheads:		
Fixed	1,000	1,500
Variable	500	1,500

Solution

Statement of Cost and Profit (Absorption Costing)

Particulars	*Product* X (₹)	*Product* Y (₹)	Total (₹)
Sales (A)	15,000	40,000	55,000
Less: Cost of Sales:			
Direct material	6,000	18,000	24,000
Direct labour	4,000	7,000	11,000
Factory overheads	4,000	5,500	9,500
Administrative overheads	500	1,000	1,500
Selling overheads	1,500	3,000	4,500
Total Cost (B)	16,000	34,500	50,500
Net Profit (A – B)	(–) 1,000	5,500	4,500

Statement of Cost (Marginal Costing)

Particulars	*Product* X (₹)	*Product* Y (₹)	Total (₹)
Sales (A)	15,000	40,000	55,000
Less: Cost of Sales:			
Direct material	6,000	18,000	24,000
Direct labour	4,000	7,000	11,000
Variable factory overheads	1,000	2,500	3,500
Variable selling overheads	500	1,500	2,000
Total (B)	11,500	29,000	40,500
Contribution (A – B)	3,500	11,000	14,500
Less: Fixed Cost (Factory, Administrative and Selling)	4,500	5,500	10,000
Net Profit	(–) 1,000	5,500	4,500

NOTES

Sometimes fixed costs are not traceable to different products, then the statement of cost will be prepared after contribution margin as under:

Statement of Cost (Marginal Costing)

Particulars	*Product* X (₹)	*Product* Y (₹)	Total (₹)
Sales (A)	15,000	40,000	55,000
Less: Cost of Sales:			
Direct material	6,000	18,000	24,000
Direct labour	4,000	7,000	11,000
Variable factory overheads	1,000	2,500	3,500
Variable selling overheads	500	1,500	2,000
Total (B)	11.500	29.000	40.500
Contribution (A – B)	3,500	11,000	14,500
Less: Fixed Cost			
(Factory Administrative and Selling)	–	–	10,000
Net Profit			4,500

Advantages and Disadvantages of Marginal Costing

According to the National Association of Accountants, marginal costing has the following advantages and disadvantages:

Advantages

- Cost–volume–profit relationship data required for profit planning purposes are readily obtained from the regular accounting statements. Hence, management does not have to work with two separate sets of data to relate one to the other.
- The profit for a period is not affected by changes in absorption of fixed expenses resulting from building or reducing inventory. Other things remaining equal (e.g., setting prices, costs, sales mix) profits move in the same direction as sales when marginal costing is in use.
- Manufacturing cost and income statements in the marginal cost form follow management's thinking more closely than does the absorption cost form for these statements. For this reason, management finds it easier to understand and to use marginal cost reports.
- The impact of fixed costs on profits is emphasized because the total amount of such cost for the period appears in the income statement.
- Marginal income figures facilitate relative appraisal of products, territories, classes of customers and other segments of the business without having the result obscured by allocation of joint fixed costs.
- Marginal costing ties in with such effective plans for cost control as standard costs and flexible budgets. In fact, flexible budget is an aspect of marginal costing and many companies thus use marginal costing methods for this purpose without recognizing them as such.
- Marginal cost constitutes a concept of inventory cost which corresponds closely with the current out-of-pocket expenditure necessary to manufacture the goods.

Disadvantages

- Difficulty may be encountered in distinguishing fixed costs. In particular, certain semi-variable costs may fall in a border-line area and more or less arbitrary classification may be considered necessary in order to arrive at a practical determination of fixed and variable components.
- Complete manufacturing cost is not determined in the process of costing production and supplementary allocation of fixed overheads on normal or some other volume base must be made to provide product costs for long-range pricing and other long-range policy decisions.
- Serious taxation problems may be encountered if a change is made from full cost to marginal cost for costing inventory and definite rulings are not available for guidance.

Contribution

Contribution which is recognized as a strategic tool for managerial decision making represents the difference between product revenue and variable cost of product. According to Bigg, 1973, contribution may be defined as the difference between sales value and the marginal cost of sales, and no net profit arises until the contribution equals the fixed overheads. When this level of output is achieved, the business is said to break-even as neither profit nor loss occurs. Production in excess of that necessary to break-even will result in a profit equivalent to the excess units multiplied by the 'contribution' per unit. Conversely, a loss is sustained if output is less than that required to break-even, amounting to the shortfall of units multiplied by the contribution. Thus, contribution is the difference between the marginal cost of the various products manufactured and their respective selling price. Since contribution represents the excess of sales over marginal cost (variable cost) of the goods sold, the resultant figure refers to the amount to meet fixed cost and expected profit of an organization. It can be calculated as under:

(i) Contribution = Sales – Variable Cost

OR

Contribution (per unit) = Selling price per unit – Variable cost per unit

(ii) Contribution = Fixed cost + Profit/loss

Example: Suppose total sales revenue is ₹ 50,000, variable cost is ₹ 20,000 and sale in terms of units is 1,000 then contribution will be:

$$\text{Contribution} = ₹\ 50{,}000 - ₹\ 20{,}000 = ₹\ 30{,}000$$

OR

$$\text{Contribution (per unit)} = 50 - 20 = ₹\ 30$$

Marginal Cost Equation

The analysis of marginal cost statement and the contribution mentioned above reveals that

(i) Sales – Marginal cost = Contribution (i)

(ii) Fixed cost + Profit = Contribution (ii)

NOTES

By combining the above two equation, we get fundamental marginal cost equation:

Sales – Marginal Cost = Fixed Cost ± Profit/Loss

or $S - V = F \pm P/L$

The marginal cost equation has practical utility in the sense that if the values of any three elements of the above equation are known, the fourth can be easily computed.

Illustration 3.2: Compute the amount of fixed cost from the information given below:

Sales	₹ 80,000
Variable cost	₹ 40,000
Profit	₹ 20,000

Solution: As per marginal cost equation

$$S - V = FC + P/L$$

substitute the value, we get:

₹ 80,000 – ₹ 40,000 = FC + ₹ 20,000

₹ 40,000 = FC + ₹ 20,000

(–) FC = ₹ 20,000 – ₹ 40,000

(–) FC = (–) ₹ 20,000

FC = ₹ 20,000

Profit/Volume Ratio (P/V Ratio)

The profit/volume ratio also known as 'contribution ratio' or 'marginal ratio' expresses the relationship between contribution and sales. In other words, it is the contribution per rupee of sales. The P/V ratio can be expressed as under:

$$\text{P/V ratio} = \frac{\text{Contribution}}{\text{Sales}}$$

or $\text{Sales} = \frac{\text{Contribution (FC+Profit)}}{\text{P / V ratio}}$ or Contribution = Sales × P/V ratio

Since contribution is equal to sales minus (–) variable cost and also represent the amount of fixed cost and profit expectations, therefore, P/V ratio can also be expressed as

(i) $\text{P/V ratio} = \frac{\text{Sales} - \text{Variable cost}}{\text{Sales}} = \frac{S - V}{S}$

(ii) $\text{P/V ratio} = \frac{\text{Fixed cost} + \text{Profit}}{\text{Sales}} = \frac{F + P}{S}$

As discussed earlier, the fixed cost remains constant in the short-term period, therefore, any increase in contribution after the recovery of fixed cost would result straightway in the increase of profit. Thus,

$$\text{P/V ratio} = \frac{\text{Change in profit or Contribution}}{\text{Change in sales}}$$

Illustration 3.3: Compute (i) P/V ratio, (ii) Fixed cost, and (iii) Sales volume to earn a profit of ₹ 5,000 from the following information:

Sales = ₹ 50,000

Profit = ₹ 5,000

Variable cost = 80%

Solution:

Sales = ₹ 50,000

Variable cost = 80%

or $\frac{80}{100} \times 50,000 = ₹40,000$

(i) $\text{P/V ratio} = \frac{S - V}{S} \times 100$

$= \frac{50,000 - 40,000}{50,000} \times 100 = 20\%$

(ii) Contribution = FC + P

10,000 = FC + 5,000

(–) FC = 5,000 – 10,000

(–) FC = (–) 5,000

FC = ₹ 5,000

(iii) $\text{Sales} = \frac{FC + P}{P/V \text{ ratio}} = \frac{50,000 - 5,000}{20} \times 100 = ₹50,000$

Proof:

Sales	=	₹ 50,000
Less: VC (80%)	=	₹ 40,000
Contribution	=	₹ 10,000
Less: FC	=	₹ 5,000
Profit	=	₹ 5,000

Illustration 3.4: Assuming that the cost structure and selling prices remain the same in period (i) and (ii), find out the P/V ratio

Periods	*Sales* (₹)	*Total Cost* (₹)
I	1,40,000	1,25,000
II	1,60,000	1,40,000

Solution

Periods	*Sales* (₹)	*Total Cost* (₹)	*Profit* (₹)
I	1,40,000	1,25,000	15,000
II	1,60,000	1,40,000	20,000

$\text{P/V ratio} = \frac{\text{Change in profit}}{\text{Change in sales}} \times 100 = \frac{5,000}{20,000} \times 100 = 25\%$

Managerial Application of Marginal Costing

Decision making is a regular phenomenon of any business. One of the important factors that influence managerial decisions is the relevant costs that the managers need to identify and analyse to take the right decisions. The decision criteria most often used for the purpose generally include cost minimization, profit maximization and contribution maximization. In this direction, marginal costing is recognized as an effective tool and as such managers prefer to use this technique in the following areas of managerial problems:

- pricing decision
- production expansion decision
- make or buy decision
- scarce resources decision
- sales mix decision

Pricing Decision

Pricing decision has been a serious challenge for the managers as the same is being considered an important contributor to the success of a firm's market strategy. The most recommended approaches for price determination are the interaction of supply and demand and the cost of production but both fail to provide a complete explanation of the problem. However, in actual practice the short-term and long-term views of pricing may well be different; the nature and degree of competition varies from period to period, and demand positions also do not remain constant, therefore, the use of a single criteria for price determination may not be effective. However, marginal costing is an useful tool to deal with a challenging decision. Consequently, managers often use this technique to determine the price of a product. However, the pricing decision becomes more complicated when a product is to be sold in more than one market.

Illustration 3.5: Electro Electronics Ltd., deals in electric goods and submits the following information in respect of the goods manufactured by it.

Selling price per unit	₹ 5.00
Variable cost per unit	₹ 2.00
Fixed overheads	₹ 75,000
Units produced	₹ 75,000

The company is expected to reduce the selling price in order to meet the competition. You are requested to calculate the level of output to maintain present level of profit if the proposed reduction in prices is 10 per cent and 20 per cent.

Solution:

Marginal Cost Statement

No. of Units 75,000

	Present Price (₹)	Price Reduction 10% (₹)	15% (₹)	20% (₹)
Sales	3,75,000	3,37,500	3,18,750	3,00,000
Less: Marginal cost	1,50,000	1,50,000	1,50,000	1,50,000
Contribution	2,25,000	1,87,500	1,68,750	1,50,000
Less: Fixed cost	75,000	75,000	75,000	75,000
Profit	1,50,000	1,12,500	93,750	75,000
Contribution per unit	3.00	2.50	2.25	2.00

Profit to be maintained ₹ 1,50,000
(Desired profit)

Contribution to be earned = Desired profit + Fixed cost

= ₹ 1,50,000 + ₹ 75,000 = ₹ 2,25,000

Number of units required to be sold at different levels of price reduction

$$= \frac{\text{Total contribution to be earned}}{\text{Contribution per unit}}$$

Hence

$$\text{At 10 per cent reduction} = \frac{₹\,2,25,000}{₹\,2.50} = 90,000 \text{ units}$$

$$\text{At 15 per cent reduction} = \frac{₹2,25,000}{₹2.25} = 1,00,000 \text{ units}$$

$$\text{At 20 per cent reduction} = \frac{₹2,25,000}{₹2.00} = 1,12,500 \text{ units}$$

Production Expansion Decision

The most common decision faced by managers in the growth of the business is to decide about the expansion of production. Opportunities to increase sales volume sometimes arise under circumstances that differ slightly from the normal marketing pattern. Most often business firms receive special order for the supply of bulk quantity of goods at a price below the market price of the firm's product. If this special transaction does not affect normal sales, the decision to accept or reject the order largely depends on whether the transaction results in the amount of contribution in excess of the incremental costs that it generates. Thus, the offer shall be normally accepted at any price above the marginal cost (variable cost) because the additional output will not require any additional amount of fixed cost. As said earlier, this would mean the amount of contribution from additional sales results in the generation of profit.

Illustration 3.6: Papee Private Limited receives a special order from Sabee Private Limited for supply of 50,000 units of a product that usually sells for ₹ 10 per unit. Sabee Pvt. Ltd. offers ₹ 9 per unit for this product. Papee Pvt. Ltd. incurs ₹ 6 per unit in variable costs to manufacture each item, plus ₹ 2 per unit for variable administrative cost. Total fixed manufacturing costs are ₹ 3,00,000. Other fixed cost amounts to ₹ 1,50,000 per year. Productivity capacity is 4,00,000 units annually and sales volume through normal sales outlets will be about 3,00,000 units of this year.

Write a short report on the advisability or otherwise of accepting the offer.

Solution:

Marginal Cost Statement

Particulars	*Per Unit* (₹)	*Current Year Capacity 3,00,000 Units* (₹)	*Proposed Additional Output 50,000 Units* (₹)	*Total Capacity 100% 4,00,000 Units* (₹)
Sales	10.00	30,00,000	4,50,000	40,00,000
Less: Marginal cost:				
Variable cost	6.00	18,00,000	3,00,000	24,00,000
Variable Admn. cost	2.00	6,00,000	1,00,000	8,00,000
	8.00	24,00,000	4,00,000	32,00,000
Contribution	2.00	6,00,000	50,000	8,00,000
Fixed cost		4,50,000		4,50,000
Profit/Loss		1,50,000	50,000	3,50,000

Comments

If the order is accepted, revenues will increase by ₹ 4,50,000 (₹ 9 × 50,000). The incremental costs will only be ₹ 4,00,000 (8 × 50,000) – the variable cost of producing the extra units. Therefore, the company will gain ₹ 50,000 (4,50,000 – ₹ 4,00,000) by accepting the special order.

Make or Buy Decisions

Companies frequently receive proposals from the manufacturers wherein they claim that they could supply products that are currently being manufactured within the company at a price below the company's own cost. This is a regular problem faced by management. This decision, from the financial point of view, requires accurate calculations that involve the concepts of differential costing and opportunity cost. This problem can be solved with the help of incremental analysis as is clear from Illustration 3.7.

llustration 3.7: In its manufacturing operations, Shabnum Co. Ltd., uses a component 'ESS' that can be purchased from a supplier for ₹ 20 per unit. The same component 'ESS' is manufactured by Shabnum Co. Ltd., at the following unit cost:

Direct material	₹ 5.00
Direct labour	₹ 6.00
Variable overheads (125% of Direct labour)	₹ 7.50
Fixed overhead (75% of Direct labour)	₹ 4.50
Total unit cost	₹ 23.00

Give your suggestion whether to make or buy this component.

Solution: If the component 'ESS' is purchased it will cost ₹ 20 per unit. However, the purchasing cost should not always be compared with the full cost of internal manufacture, which amounts to ₹ 23. For short run decision making purposes, fixed overheads will remain constant regardless of the alternative chosen. Therefore, the outside purchase price should be compared only with internal manufacturing costs that can be avoided if the outside purchase is made. These avoidable cost include:

Direct material	=	₹ 5.00
Direct labour	=	₹ 6.00
Variable overheads	=	₹ 7.50
Total avoidable costs (per unit)	=	₹ 18.50

Thus, total avoidable costs of ₹ 18.50 per unit is less than the ₹ 20 outside purchase price. Therefore, it is suggested that Shabnum Company Ltd. should continue to manufacture the components 'ESS'.

Scarce Resources Decisions

The manufacturers often face a situation in which certain factors of production are scarce which affects the normal volume of output of the business. In such a situation, the management not only needs to use resources as profitably as possible but also give priority to those products which are the most profitable ones. To attain this objective, managers must relate profitability with the scarce factor of production as they would help them to sell those products that yield the highest profit per unit of the scarce factor. In this connection incremental analysis can be helpful for them to allocate resources that are limited in quantity or in productivity. However, managers need to compare alternative courses of action in a way that takes into account the availability of the resources. The profitability of various alternatives under the conditions of scarce resources is worked out with the help of following ratio:

$$\text{Profitabillity} = \frac{\text{Contribution}}{\text{Key factor}}$$

Illustration 3.8: M/s MAS Limited manufactures three rubber products using the same rubber compound. The suppliers of the compound informed the company that the supply of the compound would be cut by 25 per cent. The information about cost of the three products is as under:

Cost Per Unit	A (₹)	B (₹)	C (₹)
Direct material	200	75	100
Direct wages	50	200	200
Variable overheads	100	400	400
Fixed overheads	300	125	150
Total cost	650	800	850
Selling price per unit	1,100	900	900
Units produced	4,000	1,500	1,000

You are required to advise the company on the priorities of the product when material is a limiting factor.

Solution: The priorities of the product can be fixed on the basis of Contribution–Material Cost Ratio:

Particulars	A (₹)	B (₹)	C (₹)
Selling Price per unit	1,100	900	900
Less: Variable cost:			
Direct material	200	75	100
Direct wages	50	200	200
Variable overheads	100	400	400
Marginal Cost	350	675	700
Contribution	750	225	200
Contribution/Material Cost ratio (%)	375	300	200

Production priority A, B, and C

If production capacity is limited for any commodity the priority will be limited to such commodity to the extent of the capacity.

Sales Mix Decision

A diversified company with its large product line can use marginal costing techniques to decide about appropriate sales mix.

Illustration 3.9: Diamond Pvt. Limited submits the following information of costs in respect of its two products.

Particular	Alfa Per Unit	Beta Per Unit
Direct material	₹ 25	₹ 30
Direct wages	₹ 15	₹ 20
Variable overheads	₹ 15	₹ 20
Fixed overheads	₹ 15,000 per annum	
Selling price	₹ 75	₹ 125

You are required to recommend the management the profitable sales mix from the below mentioned alternatives:

(a) 300 units of Alfa, and 200 units of Beta

(b) 600 units of Alfa

(c) 800 units of Beta

(d) 100 units of Alfa and 300 units of Beta

Solution

Marginal Cost Statement

Particulars	*Alfa* (₹)	*Beta* (₹)
Selling price per unit	75	125
Less: Variable cost:		
Direct Material	25	30
Direct Wages	15	20
Variable overheads	15	20
Marginal cost	55	70
Contribution	20	55

Statement of Sales Mixtures

Particulars	*Alfa* (₹)	*Beta* (₹)	*Total* (₹)
(a) 300 units of Alfa and 200 units of Beta			
Contribution:	6,000	11,000	17,000
Alfa: (300 × 20)			
Beta: (200 × 55)			
Less: Fixed overheads			15,000
Profit			2,000
(b) 600 units of Alfa			
Contribution (600 × 20)	12,000		12,000
Less: Fixed overheads			15,000
Profit			(–)3,000
(c) 800 units of Beta			
Contribution (800 × 55)		44,000	44,000
Less: Fixed overheads			15,000
Profit			29,000
(d) 100 units of Alfa and 300 units of Beta			
Contribution			
Alfa: (100 × 20)			
Beta: (300 × 55)	2,000	16,500	18,500
Less: Fixed cost			15,000
Profit			3,500

Check Your Progress

1. What is marginal cost?
2. Define absorption costing.

3.3 COST-VOLUME-PROFIT ANALYSIS

The application of break-even analysis requires the use of the concept of marginal contribution which represents the amount left after deducting variable costs from sales. Conceptually, contribution is the amount that is utilized to meet fixed cost and expected profit of the business. This brings to light an important fact that at break-even point total contribution will be exactly equal to total fixed cost as there

would no profit at this point. Thus, in a situation where total costs of the output consist of only variable costs, the break-even point would be at zero level of operation. In the same way, profits cannot be expected in a situation where total costs comprise only fixed ones until contribution (*i.e.,* the amount of sale (per unit) that exceeds per unit variable cost) exceeds such costs. The discussion clearly reveals that determination of break-even point requires segregation of total costs into variable and fixed costs.

Break-even analysis is not merely limited to seeking the break-even point. In a broader sense, break-even analysis refers to the study of relationship between cost, volume and profit at different levels of sales or production which in accounting terminology is known as *cost-volume-profit analysis*. Cost-volume-profit analysis as a planning tool analyses the inherent relationship between price, cost structure, volume and profit.

Belkaoni defines cost-volume-profit analysis as *an examination of cost and revenue behavioural patterns and their relationships with profit. The analysis separates costs into fixed and variable components and determines the levels of activity where costs and revenues are in equilibrium*.

According to Schmiedicke and Nagy, 1978, cost-volume-profit analysis is *an analytical technique which uses the degree of cost variability for measuring the effect of changes in volume on resulting profits. Such analysis assumes that the plant assets of the firm will remain the same in the short run, therefore, the established level of fixed cost will also remain unchanged during the period being studied*.

Cost-volume-profit analysis is *a mature model to study the inter-related relationship between costs, price and profit structure of a company. It is a formal profit planning approach based on established relationship between different factors affecting profit*. The usual starting point in such an analysis is the determination of the company's break-even point. Thus, break-even analysis forms just one component of the total system of cost-volume-profit analysis. However, it is often a key part, and it can give the manager many insights into the data with which he or she is working (Garrison, 1976).

Cost-volume-profit analysis provides the following important information for managerial decision making:

- Cost of production at various levels of operation;
- Volume or level of production/activity required to attain a particular objective;
- Profits expected/earned; and
- Variation between cost of production and sales revenue.

Break-even Computation

The two major approaches to compute break-even are:

- Mathematical approach
- Graphic approach

Mathematical Approach: Mathematically break-even can be computed by engaging the technique of unit contribution which is developed on the basis of marginal cost equation as discussed earlier. The equation can be stated as follows:

Sale = Variable cost + Fixed cost + Profit

Since at the break-even point profit is absent, therefore, the same equation for this purpose can be rewritten as follows:

Sales = Variable cost + Fixed cost

or Sales – Variable cost = Fixed cost

or Contribution = Fixed cost

The study of the above equation reveals that sales revenue of each unit leaves a certain amount in the shape of contribution margin to meet fixed costs. Thus, in order to work out the required number of units to break-even (where the amount of contribution will be sufficient to cover total fixed cost), the total fixed cost must be divided by the unit contribution. Accordingly, the break-even point can be calculated in terms of units by using the following equation:

$$\text{Break-even point (in terms of units)} = \frac{\text{Fixed cost}}{\text{Unit contribution margin}}$$

or $$BEP = \frac{FC}{SP - VC}$$

where

BEP = Break-even point

FC = Total fixed cost

SP = Selling price per unit

VC = Variable cost per unit

The break-even point can also be calculated in terms of rupees. Although the simplest way to calculate it is to multiply the break-even sales in unit by the selling price, yet the other approach to compute the break-even sales in terms of rupees is to use contribution margin ratio

In this approach the unit contribution margin as shown in above equation is replaced by the contribution margin ratio.

Accordingly, the break-even point in terms of rupees can be computed with the help of the equation as given under.

$$\text{BEP (in terms of rupees)} = \frac{FC}{CMR}$$

where

FC = Total fixed cost

CMR = Contribution margin ratio

In a situation where it is not possible to calculate contribution margin ratio as the selling price and variable cost per unit is not readily available, the break-even point in terms of rupees is computed with the help of Profit-volume ratio as shown below:

$$\text{BEP (in terms of rupees)} = \frac{\text{FC}}{\text{P/V ratio}}$$

where

NOTES

FC = Total fixed cost

P/V ratio = Profit/volume ratio

The following illustrations will clear the application of mathematical approach to break-even analysis.

Illustration 3.10: Calculate break-even point from the following information:

Fixed cost = ₹ 1,200
Variable cost = ₹ 5,000
Sales in rupees = ₹ 7,000
Sales in units = ₹ 1,000

Solution

$$\text{BEP (in units)} = \frac{\text{FC}}{\text{SP} - \text{VC}} = \frac{1,200}{7-5} = 600 \text{ units}$$

$$\text{BEP (in Rupees)} = \frac{\text{FC}}{\text{CMR}} = \frac{1,200}{0.285} = ₹\ 4,200$$

Working:

(i) Calculation of variable cost $= \frac{5,000}{1,000} = ₹\ 5.00$

(ii) Calculation of selling price (per cost) $= \frac{7,000}{1,000} = ₹\ 7.00$

(iii) Calculation of contribution margin ratio (CMR)

$$\text{CMR} = \frac{\text{SP} - \text{VC}}{\text{SP}} = \frac{7-5}{7} = 0.286$$

Illustration 3.11: Compute beak-even point from below given information:

Fixed cost = ₹ 3,600
Variable cost = ₹ 15,000
Sales = ₹ 21,000

Solution: The formula applied in the above-mentioned question for the calculation of break-even point cannot be used in this problem as it lacks the information on selling price per unit and variable cost per unit, therefore, the break-even point will be calculated with the help of P/V ratio. Thus

$$\text{BEP (in rupees)} = \frac{\text{FC}}{\text{P/V ratio}} = \frac{3,600}{28.57/100} = \frac{3,600}{28.57} \times 12,6$$

Working:

Calculation of profit/volume ratio

$$\text{P/V ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{6,000}{21,000} \times 100 = 28.57 \text{ per cent}$$

Graphic Approach to Break-even Analysis

The break-even analyis can also be demonstrated graphically which is commonly known as break-even chart. A break-even chart is a graphic approach to the study of the relationship of cost, revenue and profit. The graphic instead of mathematical approach is often used because it tends to be more easily understood by the people whose acquaintance with mathematics is minimal and it provides an immediate view of variable costs, fixed costs, and profit at any level of activity.

Information for constructing a break-even chart can be obtained from the income statement of the concern. However, the total cost i.e., fixed cost, variable cost, and semi-variable cost must be classified only into two categories of costs—Fixed cost and variable cost. A brief description of these costs is as follows:

1. **Fixed Cost:** Fixed costs are the costs which remain fixed for all practical purposes to a certain level of activity. Once that level of activity is increased, the fixed cost will also increase to a specific degree. Examples of such costs are cost of plant and machinery, salaries, rent etc. These costs are shown on the graph by means of a straight line.
2. **Variable Cost:** These costs vary in proportion to output. This means that they increase directly with the volume of production. Cost of material, wages, carriage etc. are some examples of variable cost. For graphic application, these costs will be aggregated with the fixed cost to show amount of total cost.
3. **Semi-variable Cost:** Semi-variable costs possess the characteristics of both fixed and variable costs. These costs demand special attention from the management in splitting them into fixed and variable costs.

The graphic demonstration of break-even analysis in Figure 3.1 is made with the help of Illustration 3.12.

Illustration 3.12

Output (kg)	*Fixed Cost* (₹)	*Variable Cost* (₹)	*Total Cost* (₹)	*Sales Revenue* (₹)
0	2,000	—	2,000	0
1,000	2,000	2,000	4,000	3,000
2,000	2,000	4,000	6,000	6,000
3,000	2,000	6,000	8,000	9,000
4,000	2,000	8,000	10,000	12,000
5,000	2,000	10,000	12,000	15,000
6,000	2,000	12,000	14,000	18,000

Compute break-even point from the information given above with the help of graphic approach.

Solution: The drawing of break-even chart involves the following steps:

1. Sales volume (output) in units is shown horizontally on the X-axis.
2. Revenue and costs are shown vertically on the Y-axis.

3. A fixed cost line is drawn parallel to the X-axis as shown in Figure 3.1. In this figure, CF represents total fixed costs, which remain constant at ₹ 2,000 overall levels of output.
4. Variable costs are plotted from the left hand side of the fixed cost line. If such costs are plotted from the zero level (point) on the graph as shown in Figure 3.2, they show only the variable cost of production. In Figure 3.2, OTVC represents total variable costs which are ₹ 2 per kg at all levels of output. By plotting variable cost from the fixed cost line as shown in Figure 3.3, such line represents total operating cost. In Figure 3.3, two functions composed of fixed cost of ₹ 2,000 and variable cost of ₹ 2 per kg are combined as is represented by the line CTC.
5. The total revenue/Sales are plotted from zero point at the left as shown in Figure 3.4. Total sales revenue is shown as OSR in this figure and is ₹ 3 per kg at all levels of output.
6. Total cost and total sales revenue functions are combined as shown in Figure 3.5 to produce a break-even chart.
7. The break-even point in chart occurs where total cost line intersects revenue/ sales line. In Figure 3.5, the intersection of total cost function, CTC and the total sales revenue function, OSR, occurs at point M, which establishes the break-even quantity.
8. Draw a perpendicular to the X-axis and Y-axis from the point of intersection of cost and sales line to determine break-even point in terms of units and rupees respectively. In Figure 3.5, MP1 and MP2 are the perpendiculars drawn form such intersection of cost and sales lines to Y-axis and X-axis respectively which determine break-even point at an output of 2,000 units and at a sales revenue of ₹ 6,000 respectively. Above break-even point, a firm will be profitable and below it firm will incur a loss.

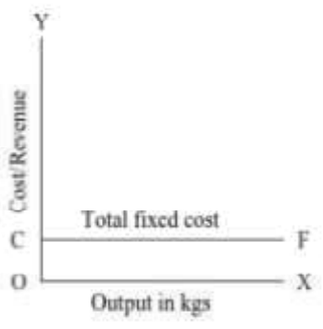


Fig. 3.1 *Total Fixed Cost*

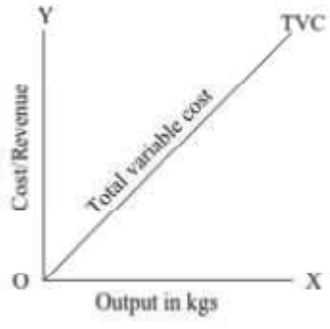


Fig. 3.2 *Total Variable Cost*

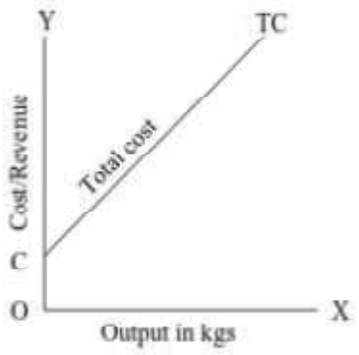


Fig. 3.3 *Total Operating Cost*

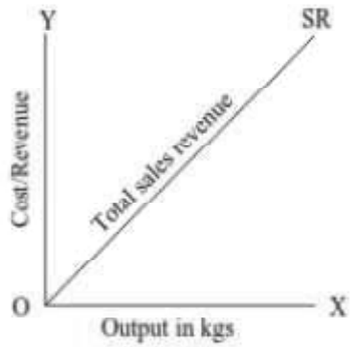


Fig. 3.4 *Total Sales Revenue*

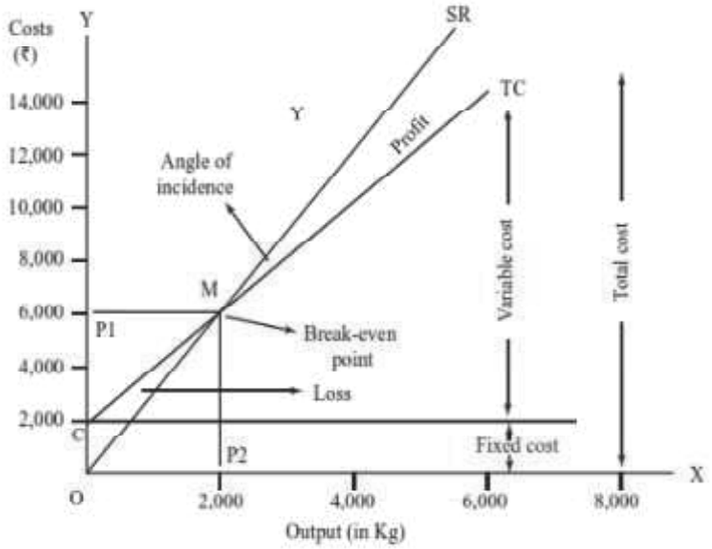


Fig. 3.5 *Total Cost and Sales Revenue Functions*

Analysis of the Chart

The three data lines show how sales revenue, total cost, and fixed cost vary with volume in units. The vertical distance between the total cost line and the variable cost line represents fixed costs and remains constant. The vertical distance between sales and total cost represents profit; when the sales line is below the total cost line, profit is negative, namely a loss. The vertical distance between the sales line and the variable cost line is the marginal contribution. Thus, the chart speedily shows sales revenue, costs, marginal contribution, and profit at different output levels.

Managerial Applications and Profit Planning

Break-even chart serves management as an effective tool in profit planning and other related decisions. The following areas of decision making are usually exposed to the application of break-even chart.

Budgeting

The effect of budgeted sales on profit can be easily estimated with the use of break-even chart. Such an analysis can be made for the entire business or for a part of it.

The Make-or-Buy Decision

Management is usually confronted with the problem decision of make- or-buy an item. This problem is solved to a large extent by break-even chart as is clear from Figure 3.6. Assume that product can be purchased for ₹ 3 per unit and the company has to incur a fixed cost of ₹ 2,000 and a variable cost of ₹ 2 per unit if it decides to make the item. Under such conditions, the break-even point, where the total cost of manufacturing equals the total cost of buying, is 2,000 units. Here management has to decide about make or buy an item on the basis of number of units required. Accordingly, if more than 2,000 units are required, it would be economical for the company to make the product. However, this decision is not a profitable one if number of units required is less than 2,000.

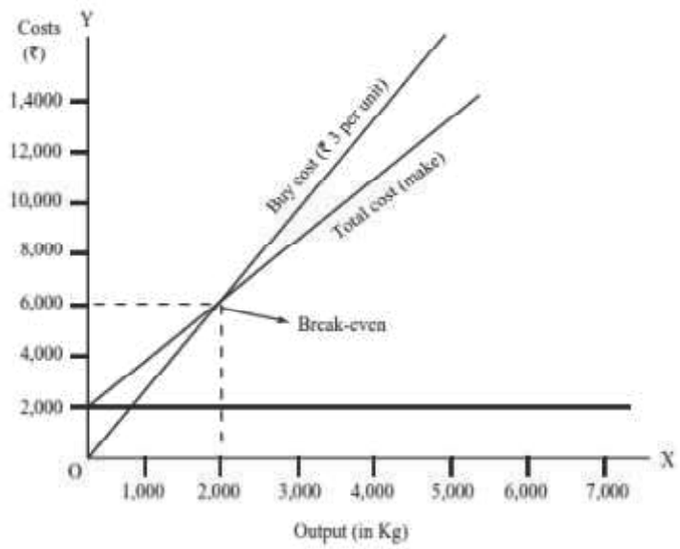


Fig. 3.6 *Problem of Make E-or-Buy*

The Pricing Decision

Break-even chart also helps management in pricing decision as it enables it to explore the effect of price alternatives on product profitability, as shown in Figure 3.7.

Illustration 3.13: ESS BEE Company submits the following information:

Fixed cost	₹ 6,000
Variable cost	₹ 1 per unit
Proposed selling price	₹ 2, ₹ 3, and ₹ 4 per unit

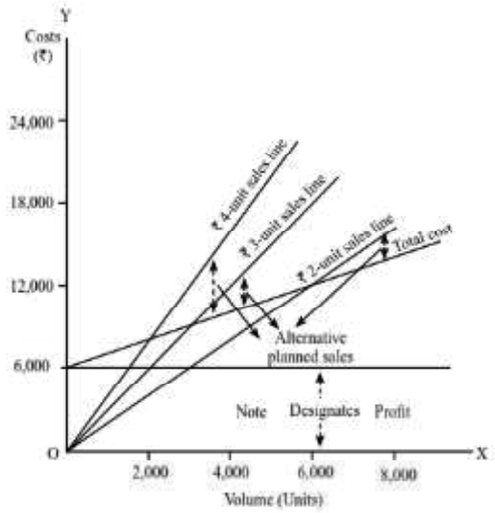


***Fig. 3.7** Effect of Price Alternatives on Product Profitability*

Estimated sales:

8,000 units @ ₹ 2 per unit

4,000 units @ ₹ 3 per unit

3,500 units @ ₹ 4 per unit

You are required to suggest a suitable pricing policy that can offer maximum profit to the company.

Solution: Let us determine the expected profit of the company under various alternatives with the help of a break-even chart (Figure. 3.7).

In Figure 3.7, at each volume level, the vertical distance between the sales line and the total cost line represents profit. The chart clearly reveals that expected profit is greatest at a selling price of ₹ 4 per unit, it is then ₹ 4,500. A price of either ₹ 3, or ₹ 2 per unit gives profit of only ₹ 2,000. However, the margin of safety is not equally favourable at ₹ 4 per unit. At this point the difference between planned sales and break-even sales (where the sales line intersects the total cost line) is 1,500 units, compared with 2,000 units at a price of ₹ 2. On the other hand, the margin of safety is only 1,000 units at a price of ₹ 3. On the whole a price of ₹ 4 is indicated.

Sales Mix Analysis

The study of cost-volume-profit can be made easily with the help of break-even chart. Such a study can cover the entire product mix of a company instead of being limited to a single product. Each product would require a separate chart. The aggregate study of all charts can give a clear profitability picture of the given sales mix. The process shall be repeated for each mix and then the comparison of various mixes can easily indicate the profitable sales mix.

Assumptions, Advantages and Limitations

In this section, let's learn about the assumptions, advantages and limitations of Break-Even Analysis.

Assumption Underlying Break-Even Analysis

Before the reader draws any conclusions with respect to the accuracy of or the desirability of the break-even chart, it is essential that he is acquainted with the assumptions which have been made in its construction. These assumptions may be stated as follows:

(i) The chart assumes that only one product is being sold or that the same mix of products is going to be sold at each volume level. If more than one product is sold, the cost per unit of product (variable and fixed) will undoubtedly vary and the unit sales price will also probably differ for various products. Therefore, the assumption of linear total cost and linear sales functions would hold true only if it is assumed that at each volume level the proportion of each product sold to the total remains constant. If it is possible to accurately determine the fixed and variable costs applicable to each product, separate charts might be prepared for each product sold. These charts could then be combined to estimate profits at any combined sales volume for the individual products.

(ii) The chart assumes that fixed costs remain constant throughout the range of volumes depicted on the base line.

(iii) The chart assumes that the variable costs will vary in direct proportion to changes in volume or will remain constant per unit. However, some semi-variable cost may increase at increasing rate or at decreasing rate and the assumptions of a constant variable rate per unit may not be valid over a wide range of volume change.

(iv) A constant unit sales price is another assumption which is reflected in the chart in Figure 3.5.

(v) Increase in costs (fixed or variable) due to increase in price rather than volume is not reflected in the chart.

Advantages of Break-Even Chart

Break-even chart is a valuable tool in the hands of management as it helps it in a number of ways. The important among them are mentioned below:

(i) Break-even chart presents a view of important business facts and results more clearly than financial statements.

(ii) It examines the inherent relationship between cost, revenue and profit in such a way as to help business executives in decision making.

(iii) It reveals business strength and profit earning capacity of a firm without much difficulty and effort. The study of margin of safety and angle of incidence helps in number of decision making areas such as:

(a) Expansion in level of activity,

(b) Cost reduction,

(c) Fixation of selling price; and

(d) Product substitution.

(iv) It helps cost control more effectively by analysing the relationship between fixed and variable cost.

(v) It can ascertain profit at different levels of activity.

(vi) The selection of most profitable product mix is possible by studying profitability of various products.

(vii) It measures effect of changes in profit factors.

Limitations of Break-Even Chart

Break-even chart suffers from following limitations:

(i) The first and foremost limitation of break-even chart is that it is based on number of assumptions which may not hold true in the actual practice. Fixed cost also increases beyond a specific level of activity. If the law of diminishing returns is applicable in the business, the assumption that variable costs do vary proportionally shall not prove effective. At the same time, sales revenue increases proportionally with volume of sales is not possible always.

(ii) It communicates a limited amount of information. The study of effect of change in fixed costs, variable costs and selling price requires drawing of number of charts.

(iii) A single break-even chart fails to explain effect of various product mixes in the profits.

(iv) It fails to take into consideration the important factors like plant capacity, production technology and methodology and capital employed which are very important for managerial decisions.

(v) It ignores the time gap between production and sales. The sales may vary because of various uncontrollable external factors which reduces the significance of the break-even chart as a management guide.

Margin of Safety

The amount by which the current volume of sales exceeds the break-even sales volume, either in units or rupees represents margin of safety. This is the difference between the total sales of a firm and the amount of sales at break-even point. It indicates the extent to which sales may decrease before the company suffers a loss. A margin of safety is calculated as follows:

$$M/S = S_A - S_B$$

where

M/S = Margin of safety

S_A = Actual volume of sales

S_B = Break-even volume of sales

Margin of safety may be expressed as a percentage based either on units or rupee value. For this purpose, the following formulas are used:

1. $M/S \text{ (in rupees)} = \frac{\text{Profit}}{\text{P/V Ratio}}$

2. $M/S \text{ (in units)} = \frac{\text{Profit}}{\text{Contribution per unit}}$

A high margin of safety is the sign of prosperity of the business. A low margin would indicate high fixed cost. Such a critical situation calls for:

(i) Increase in selling price;

(ii) Decrease in variable costs;

(iii) Replacement of existing product line by a more profitable line; and

(iv) Increase in volume of production.

Illustration 3.14: Compute margin of safety of Suba Limited from the information given below:

Selling price = ₹ 8 per unit

Variable cost = ₹ 5 per unit

Fixed cost = ₹ 45,000

Sales (current) = 25,000 units p.a.

Solution

(i) M/S (in rupees) = SA – SB

= ₹ 2,00,000 – ₹ 1,20,000 = ₹ 80,000

(ii) M/S (in units) = 25,000 units – 15,000 units = 10,000 units

OR

$$\text{(iii) M/S (in rupees)} = \frac{\text{Profit}}{\text{P/V Ratio}}$$

$$= \frac{30,000}{37.5} \times 100 = ₹\ 80,000$$

$$\text{(iv) M/S (in units)} = \frac{\text{Profit}}{\text{Contribution per unit}}$$

$$= \frac{30,000}{3} = ₹\ 10,000 \text{ units}$$

Working:

I. Marginal cost statement

Output: 25,000 units

Particulars	*Amount Per Unit* (₹)	*Total* (₹)
Sales	8	2,00,000
Less: Marginal cost	5	1,25,000
Contribution	3	75,000
Less: Fixed cost	–	45,000
Profit		30,000

II. Calculation of P/V ratio

$$\text{P/V ratio} = \frac{\text{Contribution}}{\text{Sale}} \times 100 = \frac{75,000}{2,00,000} \times 100 = 37.5 \text{ per cent}$$

III. Calculation of break-even point

$$\text{BEP (in units)} = \frac{\text{Fixed cost}}{\text{SP} - \text{VC}} = \frac{45,000}{8-5} = \frac{45,000}{3} = 15,000 \text{ units}$$

$$\text{BEP (in rupees)} = \frac{\text{FC}}{\text{CMR}}$$

$$\text{BEP} = \frac{45,000}{3/8\ *} = \frac{45,000}{3} \times 8 = ₹\,1,20,000$$

$$*\text{CMR} = \frac{\text{SP} - \text{VC}}{\text{SP}} = \frac{8-5}{8} = \frac{3}{8} = 0.375$$

Angle of Incidence

In break-even chart, where sales line intersects the total cost line that angle is known as angle of incidence. From managerial point, a large angle of incidence would mean high rate of profit. A narrow angle reveals high variable cost that results in low profits. Management always aims to maintain as large an angle as possible. Business experts suggest to study together margin of safety and angle of incidence for examining worth of a company.

Profit-Volume Graph

A profit-volume graph exhibits the relationship of profit to volume of sales. This graph is a simpler presentation of the facts illustrated in the break-even chart. However, it fails to show how cost vary with the change in the level of activity. Construction of profit graph (see Figure 3.8) is relatively easy and the procedure involves:

(i) Selecting a scale for sales on the X-axis.

(ii) Selecting a scale for profit or loss and fixed costs on the Y-axis.

(iii) Dividing the graph into two areas. One area reveals profit and the other loss. These areas as formed by the sales line which divides the graph horizontally.

(iv) On the vertical axis, the area below the sales line represents fixed costs and that above it represents profit.

(v) Points are plotted for the required fixed costs and for profits and a line is drawn to connect the two points.

Illustration 3.15: A company produces 200 units and sells them at ₹ 10 each unit. The marginal cost of production is ₹ 6 each and total fixed cost of the concern is ₹ 400 per annum. Construct a profit graph (Figure 3.8).

Solution

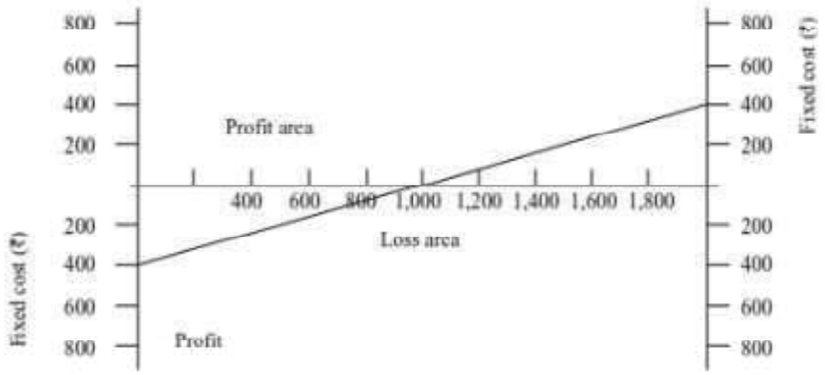


***Fig. 3.8** Profit Graph*

Arithmetical verification

Output (units)	200
Sales	(₹) 2,000
Less: Marginal cost	1,200
Contribution	800
Less: Fixed cost	400
Profit	400

$$\text{P/V ratio} = \text{C/S} \times 100 = \frac{800}{2,000} \times 100 = 40 \text{ per cent}$$

$$\text{Break even point} = \frac{\text{FC}}{\text{P/V ratio}} = \frac{400}{40\%} = ₹\,1,000$$

$$\text{Margin of safety} = \frac{\text{Profit}}{\text{P/V ratio}} = \frac{400}{40\%} = ₹\,1,000$$

Illustration 3.16: A factory manufacturing printing machines has the capacity to produce 600 machines per annum. The marginal (variable) cost of each machine is ₹ 300 and each machine is sold for ₹ 375. Fixed overheads are ₹ 30,000 per annum. Calculate the break-even point for output and sales.

Solution

$$\text{Break-even point (for output)} = \frac{\text{FC}}{\text{SP} - \text{VC}} = \frac{30,000}{375 - 300} = \frac{30,000}{75} = 400 \text{ machines}$$

$$\text{Break-even point (for sales)} = \frac{\text{FC}}{\text{CM}} = \frac{30,000}{0.20} = 1,50,000$$

NOTES

Working:

Calculation of Contribution Margin (CM)

$$CM = \frac{SP - VC}{SP} = \frac{375 - 300}{375} = \frac{75}{375} = 0.20$$

Illustration 3.17: From the following information calculate the break-even point and the turnover required to earn a profit of ₹ 60,000.

Fixed overheads	= ₹ 42,000
Variable cost	= ₹ 4 per unit
Selling price	= ₹ 10 per unit

If the company is earning a profit of ₹ 60,000 express the margin of safety available to it.

Solution

(A) Calculation of break-even point

(i) $BEP \text{ (in units)} = \frac{FC}{SP - VC} = \frac{42,000}{6} = 7,000 \text{ units}$

(ii) $BEP \text{ (in rupees)} = \frac{FC}{CM^*} = \frac{42,000}{0.60} = ₹ 70,000$

*Calculation of contribution margin

$$CM = \frac{SP - VC}{SP} = \frac{10 - 4}{10} = \frac{6}{10} = 0.60$$

(B) Calculation of turnover required to earn a profit of ₹ 60,000

(i) $\text{Desired turnover (output)} = \frac{\text{Fixed cost + Desired profit}}{SP - VC}$

$$= \frac{₹ 42,000 + ₹ 60,000}{10 - 4} = \frac{1,02,000}{6} = 17,000 \text{ units}$$

(ii) $\text{Desired turnover} = \frac{FC + \text{Desired profit}}{CM}$

$$= \frac{₹ 42,000 + ₹ 60,000}{0.60} = \frac{1,02,000}{0.60} = 1,70,000$$

(C) Calculation of margin of safety when the profit is ₹ 60,000

M/S (in units) = $S_A - S_B$ = 17,000 – 7,000= 10,000 units

M/S (in rupees) = $S_A - S_B$ = 1,70,000 – 70,000 = ₹ 1,00,000

Illustration 3.18: A company budgets a production of 3,00,000 units at a variable cost of ₹ 10 each. The fixed costs are ₹ 15,00,000. The selling price is fixed to yield 20 per cent profit on cost. You are required to calculate:

(a) P/V ratio and

(b) Break-even point

Solution

(a) Calculation of P/V ratio

$$\text{P/V ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{24,00,000\ **}{54,00,000\ *} \times 100 = 44.44 \text{ per cent}$$

*Calculation of sales

Fixed cost	₹ 15,00,000
Variable cost	30,00,000
Total cost	45,00,000
Profit (20 per cent on cost)	9,00,000
Sales	₹ 54,00,000

**Calculation of contribution

Contribution = Sales – Variable cost = 54,00,000 – 30,00,000 = ₹ 24,00,000

(b) Calculation of break-even point

$$\text{BEP (in units)} = \frac{FC}{SP - VC} = \frac{15,00,000}{18 - 10} = \frac{15,00,000}{8} = 1,87,500 \text{ units}$$

$$\text{BEP (in rupees)} = \frac{FC}{CM\ *} = \frac{15,00,000}{0.4444} = ₹\ 33,75,000 \text{ (app.)}$$

*Calculation of contribution margin

$$CM = \frac{SP - VC}{SP} = \frac{18 - 10}{18} = 8/18 = 0.4444$$

Illustration 3.19: Calculate

(i) The amount of fixed expenses

(ii) The number of units to break-even

(iii) The amount of sales to earn a profit of ₹ 5,00,000

(iv) The profit with sales of ₹ 10,00,000

The company's sales turnover and profit during two periods were as follows:

	Sales (₹)	*Profit* (₹)
Period I	20,00,000	2,00,000
Period II	30,00,000	4,00,000

Solution

	Sales (₹)	*Profit* (₹)
Period I	20,00,000	2,00,000
Period II	30,00,000	4,00,000
Change in Period II over Period I	10,00,000	2,00,000

(i) $$\text{P/V ratio} = \frac{\text{Change in profits}}{\text{Change in sales}} \times 100 = \frac{₹\ 20,00,000}{₹\ 10,00,000} \times 100 = 20 \text{ per cent}$$

(ii) Calculation of fixed cost

Fixed cost = Contribution – Profit

Since contribution is equal to P/V ratio of sales, therefore, the above equation can be rewritten as:

Fixed Cost = (P/V ratio × sales) – Profit

= (20 per cent × ₹ 30,00,000) – ₹ 4,00,000

= ₹ 6,00,000 – ₹ 4,00,000 = ₹ 2,00,000

(iii) Calculation of break-even point

$$\text{BEP (in rupees)} = \frac{\text{Fixed cost}}{\text{P/V ratio}} = \frac{₹\ 2,00,000}{20 \text{ per cent}} = ₹\ 10,00,000$$

(iv) Calculation of desired amount of sales to earn a profit of ₹ 5,00,000

$$\text{Desired Sales} = \frac{\text{Fixed cost} + \text{Desired profit}}{\text{P/V ratio}}$$

$$= \frac{₹\ 2,00,000 + ₹\ 5,00,000}{20 \text{ per cent}} = \frac{₹\ 7,00,000}{20 \text{ per cent}} = ₹\ 35,00,000$$

Verification

Sales		₹ 35,00,000
Less: Marginal cost of sales (80 per cent)	₹ 28,00,000	
Contribution (20 per cent)		₹ 7,00,000
Less: Fixed cost		₹ 2,00,000
Profit		₹ 5,00,000

(v) Calculation of profit with sales of ₹ 10,00,000

Profit = Contribution – Fixed cost

Since contribution is equal to P/V ratio of sales, therefore, the above equation can be rewritten as:

Profit = (P/V ratio × sales) – Fixed cost

(20 per cent × ₹ 10,00,000) – ₹ 2,00,000

= ₹ 2,00,000 – ₹ 2,00,000 = 0

Illustration 3.20: S.V. Ltd., a multi-product company, furnishes you the following data relating to the year 2006.

Particulars	*First Half of the Year* (₹)	*Second Half of the Year* (₹)
Sales	45,000	50,000
Total costs	40,000	43,000

Assuming that there is no change in price and variable costs and that the fixed expenses are incurred equally in the two half year periods, calculate for the year:

(i) The profit-volume ratio

(ii) Fixed expenses

(iii) Break-even sales (C.A. Inter, adapted)

Solution: The present problem is almost similar to that of the Illustration 3.16. However, the difference between the two is that in the present problem the details of sales and total costs are given whereas in the Illustration 3.15 the details of sales and profits were given. The present problem can be made similar to the Illustration 3.15 in the following manner:

Position of Sales and Profits of S.V. Ltd. for 2006

Particulars	*Sales* (₹)	*Total Costs* (₹)	*Profits* (₹)
First half	45,000	40,000	5,000
Second half	50,000	43,000	7,000
Difference	5,000	3,000	2,000

Now for the calculation of the P/V ratio, fixed cost and break-even sales, the same procedure will be used as was employed in the case of Illustration 3.15.

I. Calculation of P/V ratio:

$$\text{P/V ratio} = \frac{\text{Change in profit}}{\text{Change in sales}} = \frac{₹\ 2,000}{₹\ 5,000} \times 100 = 40 \text{ per cent}$$

II. Calculation of Fixed cost

Sales = Fixed cost + Variable cost + Profit

₹ 50,000 = Fixed cost + 60 per cent of ₹ 50,000 + ₹ 7,000

₹ 50,000 = Fixed cost + ₹ 30,000 + ₹ 7,000

₹ 50,000 = Fixed cost + ₹ 37,000

₹ 50,000 – ₹ 37,000 = Fixed cost

₹ 13,000* = Fixed cost

*Since for the calculation of fixed cost, the data used relates to the second half of the year, therefore, the fixed cost of ₹ 13,000 as calculated above relates to six months only. Accordingly the fixed cost for the whole year will be ₹ 26,000 (₹ 13,000 + ₹ 13,000)

III. Calculation of break-even point

$$\text{BEP (in rupees)} = \frac{₹\ 26,000}{40 \text{ per cent}} = ₹\ 65,000$$

Illustration 3.21: The Disco Beat Company sells records for ₹ 20 each. The cost expected are as follows:

Variable manufacturing cost	₹ 8 per record
Variable selling cost	₹ 4 per record

Fixed manufacturing costs	₹ 60,000
Fixed selling costs	₹ 20,000
Tax rate	40 per cent

(i) Using a contribution-margin format prepare an income statement (after tax) if 2,00,000 records were sold in 2006.

(ii) Compute the break-even point in rupees.

(iii) If 2,00,000 records were sold, determine the margin of safety ratio.

(iv) Determine the number of records that must be sold in order to generate an after tax net income of ₹ 80,000.

(*M.Com, 1994*)

Solution

(i)

Marginal Cost Statement

A.	Sales	20	40,00,000
B.	Marginal cost:		
	Variable manufacturing cost	8	16,00,000
	Variable selling cost	4	8,00,000
	Total (B)	12	24,00,000
C.	Contribution (A – B)	8	16,00,000
D.	Fixed cost:		
	Fixed manufacturing cost		60,000
	Fixed selling cost		20,000
	Total (D)		80,000
	Profit before tax (C – D)		15,20,000
	Less: Tax 40 per cent		6,08,000
	Profit after tax		9,12,000

(ii) Break-even point (in rupees) = FC/CM

$$= \frac{₹\ 80,000}{8/20\ *} = ₹\ 2,00,000$$

*CM = SP – VC/SP = 20 – 12/20 = 8/20

(iii) Margin of safety ratio $= \frac{\text{Actual sales} - \text{Break-even sales}}{\text{Actual sales}}$

$$= \frac{2,00,000 - 10,000\ **}{2,00,000} = \frac{1,90,000}{2,00,000} = 0.95$$

** Break-even point $= \frac{₹\ 80,000}{₹\ 8} = 10,000$ units

(iv) Desired net income $= \frac{FC + \frac{\text{Desired profit after tax}}{1 - \text{Tax rate}}}{SP - VC}$

$$= \frac{₹\ 80,000 + \frac{₹\ 80,000}{1 - 0.40}}{20 - 12} = \frac{₹\ 80,000 + \frac{₹\ 80,000}{+ 0.60}}{8}$$

$$= \frac{₹\ 80,000 + 1,33,333}{8} = \frac{2,13,333}{8} = 26,667 \text{ units}$$

Check Your Progress

3. What are the two major approaches to compute break-even?
4. What is a break-even chart?

3.4 STANDARD COSTING

Although it might appear that standard and estimated costs are the same, some dissimilarity exists. An *estimated cost* is determined on basis of the average past performance and, therefore, can be regarded as a reasonable assessment of what a cost 'will be'. On the other hand, *standard cost* is the cost that would be incurred under the most efficient operating conditions and is forecast before the manufacturing process begins. Thus, it is a carefully predetermined cost used as a performance criteria—a measure what a cost should be. A *budgeted cost* is viewed as future cost (prediction, estimate, forecast) that is formally combined into an integrated plan of action.

It is the standard cost per unit of the budgeted quantity to be produced during a particular period.

Concept of Standard Costing

Standard costing is an important accounting-oriented tool which attempts to keep the cost at a minimum level by planning and controlling costs of each unit produced. Under this system, the cost of each unit is predetermined on some scientific basis and arrangements are made for costs not to exceed the predetermined standard.

In the words of Bigg (1975) standard costing is a system of costing where *a comparison is made of the actual cost with a pre-arranged standard and the cost of any deviations (called variances) is analysed by causes. This method permits management to investigate the reasons for these variances and to take suitable corrective action. It is, therefore, a system of cost control as well as cost ascertainment*.

According to the Chartered Institute of Management Accountants, London, *Standard costing is the preparation and use of standard costs, their comparison with actual costs and the analysis of variances to their causes and points of incidence*.

Brown and Howard state, *Standard costing is a technique of cost accounting which compares the 'standard cost' of each product or service with the actual cost, to determine the efficiency of the operation, so that any remedial action may be taken immediately*.

Standard costing is *a system which attempts to predetermine costs with an aim to measure the efficiency of production. It calls for the determination of standard costs and their application to managerial problems particularly those problems relating to product costs and departmental cost control*. Thus, under standard costing system predetermined costs are carefully computed which are then compared with actual cost to aid in cost control.

Accordingly, standard costing system involves the following steps:

- Determination of standard cost for each element of cost—direct material, direct labour and overhead;
- Recording of both standard and actual costs in appropriate books of accounts;
- Computation of variance between standard cost and actual cost;
- Analysis and investigation of the variances; and
- Feed correction and suggested modifications where required.

The standard cost of a product consists of:

- **Quantitative facts:** Standard quantity of the given material, standard labour hours for specified operations and standard machine hours for the stated machines to be used;
- **Price factors:** Standard cost per rupee and per hour by which the standard quantities are converted to the standard product cost.

The quantitative factors are based on *engineered specifications* tempered by experience, and vice versa, whereas prices used are typically those which are expected to be representative of actual prices during the period for which the standards are established.

For control purposes, various actual activities of a period such as quantity of each type of material used, labour hours worked and machine hours involved, as well as units of goods produced are multiplied by appropriate unit standard cost to establish standard cost totals for work performance by job or process and by department. The actual costs of these activities are then compared with the standard costs and the resulting variances are examined so as to:

- Aid the interpretation of financial results for the period;
- Fix the responsibility for non-standard performance; and
- Focus attention on areas in which cost improvement should be sought.

Standard Costing Vs. Historical Costing

Standard costing differs from historical costing on a number of grounds. However, the main differences are as under:

- Standard costing acts as a controlling device that does not only determine the cost of the given activity in advance but also aims to keep actual costs within the predetermined standard whereas historical costing fails to exercise any control over costs, as under this system, costs are the actual costs.
- Standard costing is a forward-looking tool whereas historical costing is a backward-looking device as it relates to the past by analysing the already incurred costs.
- The scope of standard costing starts well before the start of actual production whereas the application of historical costing begins after the production takes place.
- Installation of the standard costing system requires intelligence, technical skill and expertise on the part of the management whereas the historical costing system can be installed with ordinary capabilities.

- Standard costing system cannot operate effectively without a budgetary control system which is not true in case of historical costing.

Standard Costing Vs. Budgetary Control

NOTES

Although in both the systems standards are predetermined with which actual results are compared to measure the business performance, yet they differ with each other on many issues. The main differences are summarized below:

- Budgetary control is wider in scope as compared to standard costing. Budgetary control covers all aspects of the business, for example, production, purchase, sales, finance, incomes, expenditure, etc. On the other hand, standard costing technique is limited only to production and production cost.
- Budgetary controls is employed to formulate business policies whereas standard costing helps management in cost ascertainment and fixation of selling price and at the same time attempts to keep the costs at minimum level.
- The partial introduction of budgetary control in any organization can easily be done. For example, the management would be interested to apply the budgeting system in the important areas of business like capital projects, research and development, etc. It can do it without much difficulty, however, partial installation of the standard costing system will not be of any use to the business.
- The preparation of budgets are mostly governed by past experience and at the most by the projection of the financial information as disclosed by various financial costing. Standard costing system is based on technical estimates.
- The budgeting system is less rigid as compared to the system of standard costing. Budgets fix limits whereas targets are fixed in standard costing.
- Standard costing cannot exist without effective budgeting system but a budgetary control can be operational without standard costing system.
- Under standard costing system, the analysis of variances is made according to their originating causes which is not true in case of variance analysis in budgetary control.
- An effective standard costing system involves standardization of products which is not necessarily required for budgetary control.

Advantages and Limitations of Standard Costing

The standard costing technique, if properly implemented, would result in the following benefits:

- Prices can be determined in anticipation of the actual production as standard costs for various inputs are already available.
- The standard costing system makes possible to determine and compare the efficiency of various operations.
- It eliminates wastages by detecting variances and suggesting corrective measures for them.
- It ensures better control as the performance criteria is known to workers, and naturally, they take more interest in work to achieve the standard.

- It brings about an improvement in production methods as it requires a continuous detailed examination of all important functions of the concern. It also results in reduction of costs.
- It provides continual incentives for management to keep costs and performance in tune with predetermined objective. The comparison between actual costs and predetermined standards is much more effective than a comparison between current actual costs and actual costs of prior period.
- Under standard costing system, variances are determined normally at the end of the month, or even on weekly basis to allow for more timely action in correcting inefficiencies.
- Standard costing system involves less clerical efforts than other costing systems because actual costs are recorded and accumulated by cost centre rather than by job.
- Standard costing system makes possible for the management to pay more attention to weak areas that require control as it follows the principle of management by exception.

Limitations of Standard Costing

The following are the limitations attached to standard costing:

- Fixation of standard is not possible for every type of work or operation.
- Wrong standards may result in wastage of time, money and energy.
- Fixation of standards is a time-consuming process as the standards fixed need to be reviewed from time to time; otherwise they lose importance for the purpose.
- Determination of actual cost is necessary for certain purposes, for example, preparation of cash budget, reconciliation of cost and financial accounts, etc.
- Despite the above limitations, a standard costing system is absolutely essential for efficient control. Standards must be fixed and implemented properly.

The Standard Costing System

The standard costing system is designed to furnish management with a measure that will help it in making decisions regarding the efficiency of operations. A sound standard costing system consists of six main activities, viz.,

- Establishment of cost centre;
- Determination of the quality of standard;
- Organization of standard costing;
- Setting of standards;
- Actual cost accumulation; and
- Analysis of variance.

Establishment of Cost Centre

The standard costing system begins with the establishment of the cost centre which is usually a process, or an operation, or an item of equipment. It is a unit of activity within the factory to which costs may be practically and equitably assigned. Performance is assessed by comparing the actual cost with the performance standard which shows the costs the centre should have incurred given their actual activity.

Determination of Quality of Standard

Standards may be broadly classified into four types: ideal, normal, basis and attainable.

Ideal Standards: They are set at the level of maximum efficiency, representing conditions that can seldom be attained. Such a standard fails to pay any attention to normal materials spoilage and idle labour time. This type of standard can be used as the standard of perfection rather than a standard for the measurement of practical results because conditions that satisfy ideal standards are extremely rare. Over any extended period of time, it would be impossible for the actual activities to equal the ideal standard. On this plea such standards are also called theoretical standards. The setting of such standards may motivate employees to increase their output to the maximum but if the standards are still not attained their morale may be seriously affected. However, ideal standards are more effective for direct material costs and usage. The application of ideal standard makes variance accounts less significant for control purposes.

Normal Standards: They can be achieved by efficient working and management. They allow for normal workers performing in normal settings. Such standards are set after taking into consideration the conditions that are expected to prevail over a long period of time sufficient to reflect the effects of seasonal and cyclical fluctuations. These standards are of great significance for manufacturing overhead expenses.

Basic Standards: Also called long-range standards, they provide a measuring scale for performance over a long period of time. Such standards are not influenced by any change in material prices and labour rates and, therefore, remain unchanged for a number of years. Basic standards are useful for such items of expenditure that are fixed in nature. In the present dynamic business such standards are of no practical utility.

Attainable Standards: They are based on past performance and can be achieved with reasonable effort. Perhaps the standards should be somewhat lower than what can be achieved by earnest effort. Such standards are set as closely as possible to that level which represents anticipated conditions. They allow for usual production problems such as down time for maintenance, employee errors, or occasional inventory shortages. These standards are more realistic and satisfactory and thus represent desirable performance. Attainable standards are particularly useful in setting price standards for material and labour.

Organization of Standard Costing

The practices of standard setting vary from firm to firm. Management should take sufficient care in setting standards because the efficiency of a standard costing system largely depends upon the accuracy and reliability of the standards. In the past, the job of standard setting was the responsibility of the cost accountant. However, keeping in view the dynamic conditions of the present business, it requires the combined thinking and expertise of all persons who are responsible for fixing prices and quantities of inputs. Against this background, almost in every big organization, at present, this function is discharged by a *standard committee* consisting of representatives from various concerned departments of the organization. The said committee establishes and monitors standards for various costs and activities and is also responsible for changing and updating the standards when required. In determining the reliable standards, the committee must analyse and investigate all such variables and factors that have direct bearing on the workers' performance. The important among them are:

- employee's attitude;
- organizational structure;
- government regulations;
- performance feedback; and
- labour–management relations.

Setting of Standards

One of the important components of the standard costing system is the setting of standards for the evaluation of actual results. It includes detailed estimates of material quantities and prices, labour quantities and prices, and overhead quantities and rates. These details serve as the benchmarks of efficiency against which actual quantities and costs are compared. Accordingly, standards are needed to be fixed for each and every element of cost, viz.,

- direct material;
- direct labour; and
- overheads.

Direct Material Standard: It represents the amount of material cost to be incurred for producing a unit of output. The material cost is always affected by the price and quantity of material. Accordingly, the management has to set standards both for material quantity and for material price.

The quantity of raw material items required to manufacture a unit of output is the *material quantity standard*. Thus, it is a process that determines the quantity of material that should be priced to produce each unit it is manufactured. In calculating the raw material required to be included in the standard, consideration must be given to manufacturing scrap, normal material wastage, spoilage, etc. *Material price standard* is pre-determined price to be paid for obtaining the raw material for the output. A standard price is set for each class of material to be purchased. These standards should take into consideration economic order

quantities, volume discounts, inbound transportation and expected short range pricing trends.

Direct Labour Standards: Just as it is necessary to set standards for material to fix upon a unit cost that may be used in all cases, regardless of fluctuations both in prices and in the amount of material used, it is also essential to fix direct labour standards to determine a unit labour cost which will remain fixed in spite of different rates of pay and different periods of time required to do the task.

Direct labour standard represents the amount of labour cost to be charged to total output cost. It is computed by multiplying standard labour rate by standard labour time. Thus, direct labour standard requires setting of two standards, viz., *labour time standard* and *labour rate standard*.

The standard time required to perform each labour operation that enters into production for producing a product is known as *labour time standard*. Such standards are often established from work measurements and time-and-motion studies. Due consideration should also be given to the incentives offered to the labours in setting these standards. The setting of labour time standard requires a considerable amount of professional measurement. Based on a certain amount of subjectivity, these standards are often less certain and more sensitive to variation than material standards.

Labour rate standard is the predetermined labour rate to be charged to the output cost for services rendered by a labour on the output job. The fixation of such a standard requires careful attention to the company's wage payment method. Standard labour rates are often the result of collective bargaining agreement and union contracts. The management has to identify the class of labours suitable for each operation and accordingly has to fix rates for each group. Thus, the standard wage rate is usually a composite of many wage rates assuming a specific mix of employee skills.

Overhead Standards: Overhead standards are set for variable and fixed overheads. According to the Chartered Institute of Management Accountants, London, a variable overhead is a cost which tends to vary directly with the volume of output whereas fixed overhead is a cost which tends to be unaffected by variance in volume of output. Such standards are set after careful study of cost–volume analysis. The separation of factory overhead costs into fixed and variable components allows not only the prediction of costs but also a detailed examination of how costs behave relative to volume. This provides an opportunity to management to study the cost structure in relation to volumes of output.

Actual Cost Accumulation

The establishment of standards is followed by the accumulation of actual costs which are then compared with standards in performance reports. For accumulating actual manufacturing cost, firms use either a job order system or a process cost system. The application of standard costing gets much information from the cost data than is possible with just actual costs. A sound system of standard costing will help the management determine the type of required cost data and report such data.

Analysis of Variances

A variance represents the difference between an actual cost and its corresponding standard costs of material, labour and overheads. The variance is the measure of inefficiencies or efficiencies. The objectives of variance analysis are to:

- indicate whether costs are being kept under control.
- locate any apparent deficiency in cost control efforts.
- facilitate the identification of the probable causes of deviation from standard.
- assign responsibility for deviations that may have occurred.

We will discuss the significance of variance alalysis in the next section.

Revision of Standards

A serious problem faced by the firms is to determine when standards should be revised. The setting up of standard for costing is an operation that requires careful investigation and calculation. Consequently standards are not altered except when conditions on which such standards are based undergo considerable change. Usually changes in product specification, apparent permanent changes in material prices, changes in methods of using labour, changes in labour rates, etc. are situations that require revision of standards. Thus change in standards is subject to a change in the conditions upon which they are based. However, some experts feel that revision of standards should be a continuous process. According to them the unrevised standards may fail to evaluate performance properly. Therefore, management must revise standards whenever quantity or price changes significantly so that they correspond to current conditions.

Typically, changes in price standards are more pronounced in present-day business than changes in quantity standards. At present, almost every business firm bears the consequences of inflation, therefore, the price standard must be adjusted accordingly. Such adjustments should be made by using price index number.

Quantity standards must be revised whenever there are improvements or changes in production procedure and/or mixes. Accordingly, it is quite usual for firms to freeze quantity standards for longer periods.

Often the standards are not entered in the accounting records but are used as statistical supplements in arriving at information for control purposes. However, when a standard cost system is tied in with the accounting system, any change in the standard demands re-costing of finished goods inventory and work-in-progress inventory.

Check Your Progress

5. What is standard costing?
6. Mention any two merits of standard costing.
7. What is labour time standard?

3.5 VARIANCE ANALYSIS

Variance is the difference between actual costs and standard costs during an accounting period. It refers to variation of actual results with planned results.

Variance analysis is a systematic process which analyses and interprets the variances. It refers to the breaking down of total variances into different components. Normally, variances can take two forms, viz.,

- *Favourable variances*—when actual costs are less than the standard costs; and
- *Unfavourable variances*—when actual costs exceed the standard costs.

Sometimes actual results are just equal to planned results; the situation is known as *zero variance*.

A systematic analysis of variances would help managers to improve performance by continuing activities that result in favourable variances and modifying other activities to eliminate or reduce unfavourable variances.

Thus, it helps in monitoring and improving a firm's performance. In making variance evaluation, the management often employs the principles of exception. The management pays less attention on such variances that indicate insignificant deviations and concentrates upon those that demand detailed investigation and corrective action.

Significance

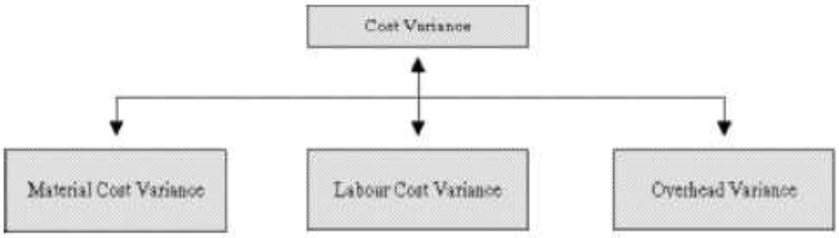
The following are the some of the points reflecting the significance of variance analysis:

- It is beneficial for making comparisons between budgeted and actuals therefore helps in future planning and setting business goals.
- It helps in identifying reasons for variance and therefore helps in taking corrective action.
- Difference sub-divisions helps in finding out detailed relationships between variances.
- It helps in assigning responsibility for every variance.
- It is beneficial for the cost control and cost reduction process.
- It reveals the degree of inefficiency.
- It helps in communicating the unfavourable variances to the management.
- It assists with proper profit planning.
- It helps in creating a cost-conscious environment for employees to work accordingly.

Types of Variances

Variances are computed for all the three basic cost elements of manufacturing—direct material, direct labour and manufacturing overheads. Thus, there are three types of variances, viz.,:

- direct material variance;
- director labour variance; and
- overhead variance.

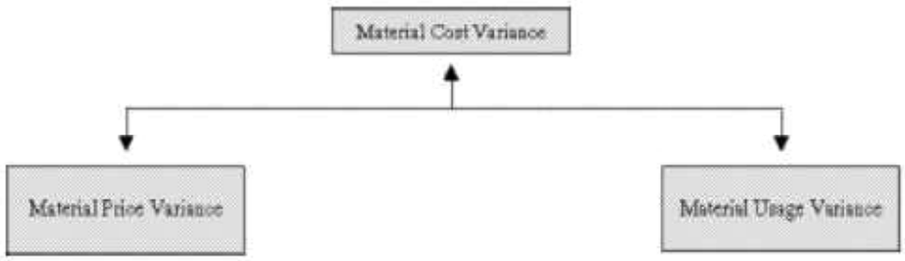


Let's discuss each of these variances in the following sections.

3.5.1 Direct Material Variance

As discussed earlier, standards may be established for the cost of obtaining materials and for the quantities to be used in production. Accordingly, actual costs can be compared against these standards and variances can be computed. With the result, basically there can be only two types of material variances viz.,

- price variance; and
- usage variance



Material Cost Variance (MCV): Material cost variance represents the difference between the actual costs and the standard costs of material for a specified output. The actual cost is computed by multiplying actual price with the actual quantity of material. In the same way standard cost is computed by multiplying the standard price with the standard quantity of material. Cost analysts can also develop other variances of material cost to meet specialized purposes of management. However, such variances may either be related to price, quantity or to the combination of price and quantity. Material cost variance can be expressed in abbreviated form as shown below:

$$MCV = (SP \times SQ) - (AP \times AQ)$$

where

SP = Standard price

SQ = Standard quantity

AP = Actual price

AQ = Actual quantity

Note: Standard quantity should be taken for actual output.

Illustration 3.22: Compute material cost variance for a output of 200 units from the information given below:

Standard quantity	= 3 kg. per unit of output
Standard price	= ₹ 2 per kg.
Actual quantity consumed	= 550 kg.
Actual price	= ₹ 3 per kg.

Solution

Material cost variance = (Total standard cost – Total actual cost)

$$MCV = (SP \times SQ) - (AP \times AQ)$$
$$= (2 \times 600) - (3 \times 550)$$
$$= 1,200 - 1,650$$
$$= ₹ 450 \text{ unfavourable.}$$

Material Price Variance (MPV): The material price variance attempts to measure the variance between the actual cost of material and the standard cost expected to be paid for the material. It reflects the actual unit of material above or below the standard unit cost, multiplied by the actual quantity of material used. Management sets price for each class of material. A systematic and scientific purchasing function will attain the standard price. The payment of lower prices by the purchasing department for a given quantity would result in a favourable material price variance and thereby maintain the required standard; whereas purchasing department will fail to meet the standard if it pays higher prices that will reflect an unfavourable material price variance. The material price variance is computed as follows:

Material price variance = (Standard price – Actual price) × Actual quantity

or $MPV = (SP - AP) \times AQ$

Illustration 3.23: Calculate material price variance from the information as given in Illustration 3.22

Solution

Material price variance = (Standard price – Actual price) × Actual quantity

$$MPV = (2 - 3) \times 550$$
$$= 1 \times 550$$
$$= ₹ 550 \text{ unfavourable.}$$

Material Usage Variance (MUV): Material usage variance is the deviation caused due to difference in the standard and actual quantities used. It indicates the actual quantity of direct material used above or below the standard price. The material usage variance is computed with the help of following formula:

Material usage variance = (Standard quantity – Actual quantity) × Standard price

or $MUV = (SQ - AQ) \times SP$

This variance can also be calculated as follows:

Material usage variance = (Standard price of standard quantity – Standard price of actual quantity)

or $MUV = (SPSQ - SPAQ)$

Illustration 3.24: With the help of information given in Illustration 3.22, calculate material usage variance.

Solution

Material usage variance = (Standard quantity – Actual quantity) × Standard price

MUV = (600 – 550) × 2

= 50 × 2

= ₹ 100 favourable

or MUV = (Standard price of standard quantity – Standard price of actual quantity)

= 1,200 – 1,100

= ₹ 100 favourable

Illustration 3.25: Suba, an engineering industrial enterprise manufactured 100 items of product 'EXX'. Compute material cost variances from the information given below:

Standard quantity	2 kg per item
Standard price	₹ 5 per kg
Actual quantity	3 kg per item
Actual price	₹ 4 per kg

Solution

Material Cost Variance = (Standard cost – Actual cost)

MCV = (SQ × SP) – (AQ × AP)

= (200 × 5) – (300 × 4) = 1,000 – 1,200

= – ₹ 200 unfavourable

Material price variance = (Standard price – Actual price) × Actual quantity

MPV = (5 – 4) × 300 = 1 × 300

= ₹ 300 favourable

Material usage variance = (Standard quantity – Actual quantity) × Standard price

MUV = (200 – 300) × 5 = 100 × 5

= ₹ 500 unfavourable

Verification

MCV = MPV + MUV

₹ 200 (U) = ₹ 300 (F) + ₹ 500 (U)

₹ 200 (U) = ₹ 200 (U)

NOTES

The total material cost variance can also be analysed graphically as shown in Figure 3.9.

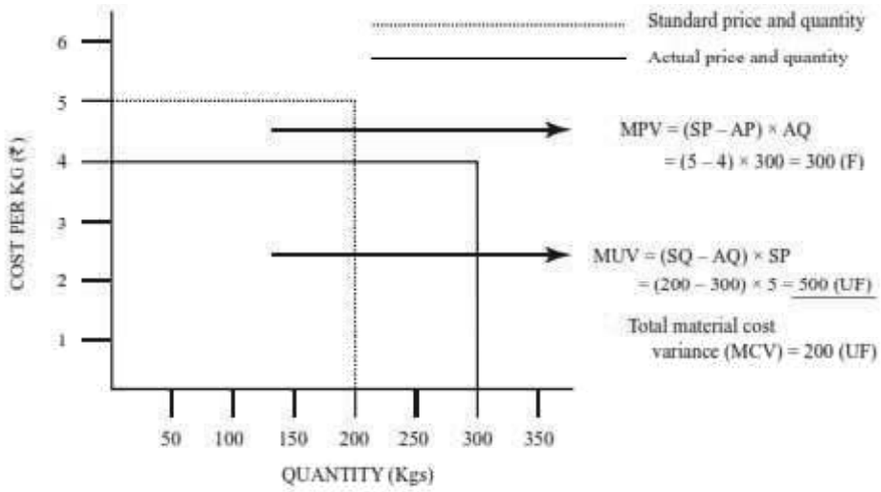


Fig. 3.9 *Total Material Cost Variance*

The Management can analyse material price and usage variances and then investigate them by asking:

- Why has excess material been used? (MUV = 500UF)
- What is the difference between actual and standard costs for the material? (MPV = 300F)

Sub-variances of Material Usage Variance: Material usage can be further sub-divided into:

- material mix variance;
- material revised usage variance; and
- material yield variance.

Material Mix Variance: When the manufacturing of the product requires input of more than one type of raw material, then raw materials are mixed together in standard proportions. The standard proportion is impossible to maintain when there is temporary shortage of any type of material because the said material is to be substituted by available material. As a consequence, the standard mix of material has to be changed. Since different materials have different costs, the cost of an actual (*i.e.,* non-standard) mix will vary from the standard cost of the standard mix which gives rise to a direct material mix variance.

According to the Chartered Institute of Management Accountants, London, material mix variance is *that portion of the direct material usage variance which is due to the difference between the standard and actual composition of the mixture*. This variance can be expressed by the following formulas:

- Material mix variance = (standard cost of standard mix – standard cost of actual mix)
- Material mix variance = (revised standard mix of actual input – actual mix) × Standard price
- The revised standard mix is computed with the help of following formula:

$$\text{Revised standard mix} = \frac{\text{Standard quantity of a particular material}}{\text{Total standard quantity}} \times \text{Total actual quantity}$$

Note: If total weight of standard mix and total weight of actual mix is same, the Revised standard quantity mix is not required to be calculated.

Illustration 3.26: Compute material mix variance from the information given below:

Material	*Standard*			*Actual*		
	Quantity (kg)	*Price (₹)*	*Value (₹)*	*Quantity (kg)*	*Price (₹)*	*Value (₹)*
X	60	4	240	50	3	150
Y	40	2	80	40	3	120
Z	30	3	90	40	4	160
	130		410	130		430

Solution

The computation of material mix variance requires, revised standard quantity which is calculated as under:

$$\text{Revised standard quantity} = \frac{\text{Standard quantity of a particular material}}{\text{Total standard quantity}} \times \text{Total actual quantity}$$

$$\text{Material X} = \frac{60}{130} \times 130 = 60 \text{ kg}$$

$$\text{Material Y} = \frac{40}{130} \times 130 = 40 \text{ kg}$$

$$\text{Material Z} = \frac{30}{130} \times 130 = 30 \text{kg}$$

The above results clearly reveal that the revised standard mix is equal to the standard mix. Under such a situation formula for the calculation of material mix is the same as for calculating material usage variance.

Material mix variance (MMV) = (SQ – AQ) × SP

For material X = (60 – 50) × 4 = ₹ 40 (F)

For material Y = (40 – 40) × 2 = 0

For material Z = (30 – 40) × 3 = ₹ 30 (UF)

₹ 10 (F)

Thus, we found that difference in material mix is the only cause responsible for material usage variance. However, when standard weight and actual weight of material mix varies, the quantity variance shall be due to mix accompanied by other reasons. Under such a situation Material Usage Variance (MUV) would be equal to Material Mix Variance (MMV) and Material Revised Usage Variance (MRUV). Material Revised Usage Variance is computed as follows:

Material revised usage variance = (Standard quantity – Revised standard quantity) × Standard price

(MRUV) = (SQ – RSQ) × SP

The variance will be favourable if standard quantity is greater than revised standard quantity and vice versa.

Note: Normally material revised usage variance is calculated only when question is silent about the output because under such a situation it is not possible to calculate material yield variance. Otherwise Material revised usage variance is not usually calculated.

Illustration 3.27: Calculate (a) Material usage variance (b) Material mix variance and (c) Material revised usage variance from the following information:

Material	Standard			Actual		
	Quantity (kg)	Price (₹)	Value (₹)	Quantity (kg)	Price (₹)	Value (₹)
EXX	70	5	350	80	4	320
YA	30	6	180	40	7	280
	100		530	120		600

Solution

Material usage variance (MUV)	= (SQ – AQ) × SP		
For material EXX	= (70 – 80) × 5	=	50 (UF)
For material YA	= (30 – 40) × 6	=	60 (UF)
Total MUV		=	110 (UF)
Material mix variance (MMV)	= (RSQ – AQ) × SP		
For material EXX	= (84 – 80) × 5	=	20 (F)
For material YA	= (36 – 40) × 6	=	24 (UF)
Total MMV		=	4 (UF)
Material revised usage variance (MRUV)	= (SQ – RSQ) × SP		
For material EXX	= (70 – 84) × 5	=	60 (UF)
For material YA	= (30 – 36) × 6	=	36 (UF)
Total MUV		=	106 (UF)

Verification

Material usage variance = Material mix variance + Material revised usage variance

110 (UF) = 4(UF) + 106 (UF)

110 (UF) = 110 (UF)

Material Yield Variance: According to the Chartered Institute of Management Accountants, London, Material yield variance is *that portion of direct material usage variance which is due to the difference between the standard yield specified and the actual yield obtained.* It may be due to low quality of material, mishandling of materials, inefficient production systems, etc. If the actual output is less than the standard output, the variance is treated adverse and vice versa. Material yield variance is the only variance which is calculated on the basis of output whereas the rest are calculated on the basis of input.

Material yield variance has the same numerical results as material revised usage variance. Thus, they represent the two sides of the same coin because MYV represents the difference between the standard output and the actual output and is calculated on the basis of actual output whereas MRUV is calculated on the basis of input.

Material yield variance is calculated with the help of the following formula:

Material yield variance (MYV) = (Standard yield – Actual yield) × Standard rate

or MYV = Standard loss of actual mix – Actual loss of actual mix × Standard cost per unit

Illustration 3.28: Super Max Co. Ltd. which has adopted standard costing furnishes the following information:

Material	Standard			Actual		
	Quantity (kg)	Price (₹)	Value (₹)	Quantity (kg)	Price (₹)	Value (₹)
X	60	5	300	55	6	330
Y	40	4	160	45	4	180
	100		460	100		510
Loss	10		—	20		—
	90		460	80		510

Calculate the material yield variance.

Solution

Material yield variance (MYV) = (Standard yield – Actual yield) × Standard rate

$$MYV = (90 - 80) \times 5.11$$

$$= 10 \times 5.11$$

$$= 51.11 \text{ unfavourable}$$

As mentioned earlier, Material yield variance can also be calculated on the basis of standard loss and actual loss like:

or MYV = (Standard loss of actual mix – Actual loss of actual mix) × Standard cost per unit

MYV = (10 – 20) × 5.11 = 51.11 unfavourable

Working:

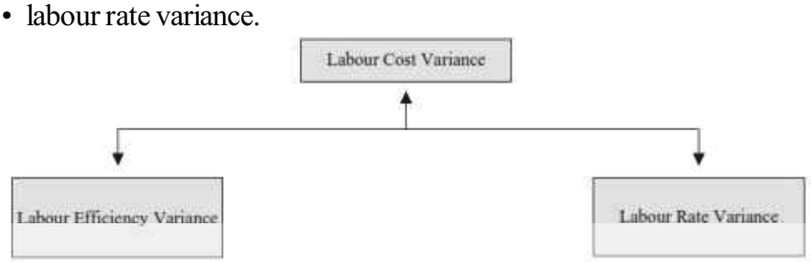
Calculation of standard rate:

1. $$\text{Standard rate} = \frac{\text{Standared cost of standard mix}}{\text{Net standard output}} = \frac{460}{90} = ₹\ 5.11$$

3.5.2 Labour Variances

Labour variances are determined by comparing predetermined labour standards with the actual cost of productive labour. Such variances are calculated in the same way as material variances. Labour variances fall into the following three categories:

- labour cost variance;
- labour efficiency variance; and
- labour rate variance.



Labour Cost Variance: Labour cost variance represents the difference between standard labour cost specified for the activity and the actual labour cost paid for the activity. This can be expressed in an abbreviated form as follows:

Labour cost variance (LCV) = (standard labour cost – actual labour cost)

OR LCV = (SH × SR) – (AH × AR)

where,

SH = standard hour

SR = standard rate

AH = actual hour

AR = actual rate

Illustration 3.29: EX YA engaged 75 workers at an average rate of ₹ 3 per day. The work was completed within 4 days. The standard cost set for the specified work amounts to ₹ 850. Compute labour cost variance.

Solution

Labour cost variance (LCV) = (850) – (75 × 4 × 3)

= (850 – 900)

= ₹ 50 unfavourable

Labour Efficiency Variance: Labour efficiency has direct effect on labour cost. Labour efficiency variance indicates the number of actual direct labour (in terms of hours) worked above or below the standard for the actual level of production at standard price. The labour quantity variance is measured in much the same way as the material quantity variance. Such a variance is caused by using more or less labour than the standard for the output produced. If time consumed on actual work is less than standard, labour has been used efficiently and accordingly labour efficiency variance is favourable. In the same way, labour efficiency variance is unfavourable when actual time consumed is more than the standard labour time. Labour efficiency variance can be determined by applying the following formula:

Labour efficiency variance (LEV) = (Standard hours – Actual hours) × Standard rate per hour

Illustration 3.30: EXX Company sets 30 hours at a wage rate of ₹ 4 per hour for a given task. The given task was completed within 7 days with 4 hours of daily work. Compute labour efficiency variance.

Solution

Labour efficiency variance = (30 – 28) × 4

= 2 × 4

= ₹ 8 favourable

Labour Rate Variance: Labour rate variance represents the average of the actual hourly rate paid above or below the standard hourly rate, multiplied by the actual number of hours worked. Such variance is often created by transferring workers with high pay rates to jobs that call for low standard rates or by authorizing overtime work at premium pay. The labour rate variance may be expressed as a formula:

Labour rate variance (LRV)

= Standard wage rate per hour – Actual wage rate per hour × Actual hours worked

Illustration 3.31: TEE Co. Ltd. sets five hours as labour time standard for processing one unit of product 'EX' at a standard direct labour rate of ₹ 5 per hour. During the month of May, the company used 6,000 actual direct labour hours at ₹ 4 per hour to process 1,000 units of product EX. Compute labour cost variances.

Solution

$$\begin{aligned}
\text{Labour cost variance (LCV)} &= (SH \times SR) - (AH \times AR) \\
&= (5{,}000 \times 5) - (6{,}000 \times 4) \\
&= 25{,}000 - 24{,}000 \\
&= ₹\ 1{,}000\ (F) \\
\text{Labour efficiency variance (LEV)} &= (SH - AH) \times SR \\
&= (5{,}000 - 6{,}000) \times 5 \\
&= ₹\ 5{,}000\ (UF) \\
\text{Labour rate variance (LRV)} &= (SR - AR) \times AH \\
&= (5 - 4) \times 6{,}000 \\
&= ₹\ 6{,}000\ (F)
\end{aligned}$$

Verification

$$\begin{aligned}
LCV &= LEV + LRV \\
₹\ 1{,}000\ (F) &= ₹\ 5{,}000\ (UF) + ₹\ 6{,}000\ (F) \\
₹\ 1{,}000(F) &= ₹\ 1{,}000\ (F)
\end{aligned}$$

The above labour cost variance can be analysed graphically as shown in Figure 3.10.

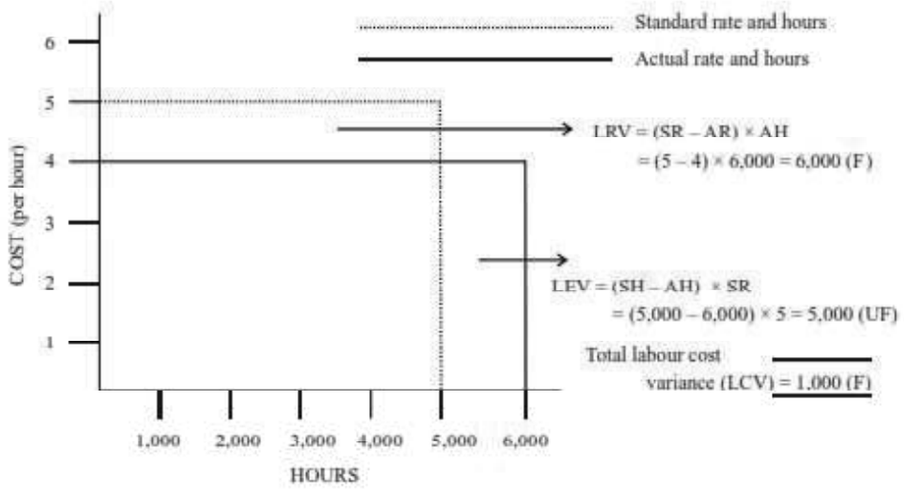


Fig. 3.10 *Labour cost Variance*

Idle Time Variance: Management must consider idle time while calculating labour cost variance. Idle time represents the amount of period for which workers would not work due to abnormal happenings like machine breakdowns, power failure, lockouts, etc. Idle time must be separated from actual working hours otherwise workers may be blamed for an adverse efficiency variance which has, in fact, nothing to do with them. Thus, idle time variance should be segregated from labour efficiency variance. Idle time variance is computed as under:

Idle time variance = Idle hours × Standard hourly rate

Example: If in Illustration 3.31, 6,000 actual hours include 500 hours of idle time then an adverse idle variance would arise and is calculated as follows:

Idle time variance = Idle hours × Standard hourly rate
= 500 × 5
= ₹ 2,500 adverse

This would increase the efficiency variance by a similar amount, *i.e.,* from 5,000 (UF) to 2,500 (UF) because the efficiency variance shall not be calculated on the basis of 5,500 hours, *i.e.,* the actual time worked on the job.

Labour efficiency variance = (5,000 – 5,500) × 5
= ₹ 2,500 (UF)

Under such a situation labour cost variance would be equal to labour rate variance, labour efficiency variance and labour idle time variance. Thus:

LCV = LRV + LEV + LITV
= 6,000 (F) + 2,500 (UF) + 2,500 (UF)
= ₹ 1,000 (F)

Labour Mix Variance (LMV): Like material mix variance, labour mix variance is possible where more than one type of labour is used for the job. Labour mix variance represents the variance due to the change in standard and actual labour force composition. This variance is calculated with the help of following formula:

Labour mix variance = (Revised standard hours – Actual hours) × Standard rate

LMV = (RSH – AH) × SR

Thus, labour mix variance compares actual hours with revised standard hours and is calculated as under:

$$\text{Revised standard hour} = \frac{\text{Standard hour of particular grade}}{\text{Total standard hour}} \times \text{Total actual hour}$$

Like material mix variance, if actual and standard hours of the labour mix are same, then labour efficiency variance can be the result of difference in labour mix only. However, when standard and actual hours of labour mix vary, labour efficiency variance shall be due to mix as well as due to reasons other than mix. The formula used for calculating labour mix variance when standard and actual hours for the labour mix are same, is as under:

Labour mix variance = (Standard cost of standard labour mix – Standard cost of actual labour mix)

Illustration 3.32: Calculate Labour mix variance from the following:

Material	Standard			Actual		
	Hours	Rate (₹)	Amount (₹)	Hours	Rate (₹)	Amount (₹)
Men	600	3	1,800	550	4	2,200
Women	800	2	1,600	850	1.50	1,275
	1,400		3,400	1,400		3,475

Solution

In this illustration total standard and actual hours are the same, therefore, for the calculation of Labour mix variance, the following formula will be more appropriate:

Labour mix variance = Standard cost of standard mix – Standard cost of actual mix

Thus,

$$\begin{aligned} \text{LMV} &= (\text{SR} \times \text{SH}) - (\text{SR} \times \text{AH}) \\ \text{For men} &= (3 \times 600) - (3 \times 550) \\ &= 1{,}800 - 1{,}650 \\ &= ₹\ 150\ (\text{F}) \\ \text{For women} &= (2 \times 800) - (2 \times 850) \\ &= 1{,}600 - 1{,}700 \\ &= ₹\ 100\ (\text{A}) \\ \text{LMV} &= 150\ (\text{F}) + 100\ (\text{A}) \\ &= ₹\ 50(\text{F}) \end{aligned}$$

Thus, from the above results, it is clear that labour mix variance is only due to change in mix, therefore, labour mix variance is also equal to labour efficiency variance in this illustration which also amounts to 50(F) as calculated under:

$$\begin{aligned} \text{Labour efficiency variance (LEV)} &= (\text{SH} - \text{AH}) \times \text{SR} \\ \text{For men} &= (600 - 550) \times 3 = 150\ (\text{F}) \\ \text{For women} &= (800 - 850) \times 2 = 100\ (\text{UF}) \\ \text{LEV} &= 50\ (\text{F}) \end{aligned}$$

Illustration 3.33: Compute Labour mix variance from the information given below:

Material	Standard			Actual		
	Hours	Rate (₹)	Amount (₹)	Hours	Rate (₹)	Amount (₹)
Skilled	75	4	300	80	5	400
Unskilled	50	3	150	70	2	140
	125		450	150		540

Solution

In this illustration, standard and actual labour mix differs, therefore, the standard labour mix is to be revised in the computation of labour mix variance and accordingly the following formula will be used for the purpose:

NOTES

Labour mix variance = (Revised labour hours – Actual hours) × Standard rate

For skilled workers = (90* – 80) × 4

= 10 × 4 = ₹ 40 (F)

For unskilled workers = (60* – 70) × 3

= 10 × 3 = ₹ 30 (UF)

Total LMV = ₹ 40 (F) + ₹ 30 (UF)

= ₹ 10 (F)

**Calculation of revised standard hours*

$$\text{RSH} = \frac{\text{Standard hour of the particular category}}{\text{Total standard hour}} \times \text{Total actual hour}$$

For skilled workers = 75/125 × 150 = 90 hours

For unskilled workers = 50/25 × 150 = 60 hours

Labour efficiency variance in the above problem is the result of labour mix variance and labour revised efficiency variance. In order to verify the same, we have to calculate labour efficiency variance and labour revised efficiency variance from it. But before we may do so, let us have first some discussion on labour revised efficiency variance.

Labour Revised Efficiency Variance (LREV): Labour revised efficiency variance represents the deviation between the standard labour hours specified for the activity achieved and the labour time spent for the same. The formula for such a variance will be:

Labour revised efficiency variance = (Standard hour – Revised standard hours) × Standard rate

Labour revised efficiency variance is favourable if the revised standard hours (RSH) are less than standard hours (SH) and vice versa.

Illustration 3.34: From Illustration 3.33, cited above, let us now calculate labour efficiency variance and labour revised efficiency variance in order to check that LEV = LMV + LREV

Solution

Labour efficiency variance (LEV)	= (SH – AH) × SR	
For skilled workers	= (75 – 80) × 4	= ₹ 20 UF
For unskilled workers	= (50 – 70) × 3	= ₹ 60 UF
LEV		= ₹ 80 UF
Labour revised efficiency variance (LREV)	= (SH – RSH) × SR	
For skilled workers	= (75 – 90) × 4	= ₹ 60 UF
For unskilled workers	= (50 – 60) × 3	= ₹ 30 UF
LREV	=	₹ 90 UF

NOTES

Verification

LEV	= LMV + LREV
₹ 80 (UF)	= ₹ 10 (F)* + ₹ 90 (UF)

* Labour mix variance is already calculated in Illustration 3.33.

Labour Yield Variance (LYV): It represents that portion of labour efficiency variance which is due to difference between the standard output and the actual output. If the actual labour output is higher as compared to the relative standard, then variance would be favourable and vice versa. The labour yield variance is always equal to revised efficiency variance because the former is calculated on the basis of output while the latter is calculated on the basis of input. The formula for its computation is as follows:

Labour yield variance = Standard output for actual mix – Actual output × Standard cost per unit

Illustration 3.35: In a manufacturing concern, the standard time fixed for a unit is 7 hours. A standard wage rate of ₹ 20 per hour has been fixed. During the month 600 units were produced against a standard output of 750 units. Calculate labour yield variance.

Solution

Labour yield variance = (Standard yield – Actual yield) × Standard cost per unit

= (750 – 600) × 140*

= 150 × 140

₹ 21.000 unfavourable

** Calculation of standard cost per unit:*

Standard cost per unit = Standard hours per unit × Standard rate per unit

= 7 × 20 = ₹ 140

3.5.3 Overhead Variance

Overhead costs are indirect costs of material, labour and other overhead that contain both fixed and variable components. The analysis of overhead variance is somewhat difficult than direct cost variances. The purpose of overhead variance analysis is to see whether the price paid and the quantity used for indirect elements of cost vary or not as compared to specified standard figures. Thus, overhead variance represent the difference between the amount of overhead applied to production during the period and the amount of actual overhead cost incurred during the period. It is the difference between the standard overhead and the actual overhead assigned to the products. The total overhead variance is computed as followed:

Overhead cost variance = (Applied overhead* – Actual overhead)

* The applied overhead for the period is computed as follows:

Applied overhead = Standard hour per unit of output × Standard overhead rate per hour × Actual output

OR Standard overhead cost per unit × Actual output

Illustration 3.36: From the information given below compute overhead cost variance:

Fixed overheads:	
Budgeted	₹ 3,000
Actual	₹ 3,000
Variable overheads:	
Budgeted	₹ 1,500
Actual	₹ 3,000
Output	
Budgeted	3,000 units
Actual	2,500 units

Solution

Overhead cost variance = (Applied overhead* – Actual overhead)
= (₹ 3,750 – ₹ 6,000)
= ₹ 2,250 (unfavourable)

* *Calculation of applied overheads*

Applied overhead = (Standard overhead costs per unit** × Actual output)
= (₹ 1.50 × 2,500)
= ₹ 3,750

$$**\text{Standard overhead cost per unit} = \frac{\text{Budgeted overheads}}{\text{Budgeted output}}$$

$$= = \frac{4,500}{3,000}$$

= ₹ 150 per unit

Classification of Overhead Variance: The two major classes of overhead variance can be:

(i) Variable overhead variance; and

(ii) Fixed overhead variance.

Variable Overhead Variance (VOV): Variable overhead variance represents the difference between actual variable overheads and the specified variable overheads. Such variance may arise due to any change in manufacturing, administration, selling and distribution overheads. The variable overhead is fairly straight forward as it will vary more or less directly with output. Symbolically,

Variable overhead variance = Standard variable overhead* – Actual variable overhead

NOTES

* Standard variable overhead = Actual output × Standard variable overhead rate**

** Standard variable overhead rate = Budgeting variable overhead ÷ Standard output specified

Variable overhead variance can be further divided into two categories viz.,

(a) ***Variable overhead expenditure variance (VOEXV)*** It is the difference between actual variable overhead expenditure and the standard variable overheads for the actual hours of operation. In formula form the variable overhead expenditure variance is:

Variable overhead expenditure variance = (Standard variable overhead – Actual variable overhead)

(b) ***Variable overhead efficiency variance (VOEFV):*** The variable overhead efficiency variance reveals the difference in variable overhead cost as a result of using more or fewer hours than set for the manufacture of the products. It measures the cost impact upon variable overheads caused by the labour efficiency. Thus, it does not result from the saving or improper use of overhead or favourable or unfavourable overhead prices. Variable overhead efficiency variance may be expressed as a formula:

$$\text{Variable overhead efficiency variance} = \left[\text{Standard labour hours for actual unit produced} - \text{Actual labour hours worked}\right] \times \text{Standard variable overhead rate per hour}$$

Illustration 3.37: Operating and accounting figures for the month of March 1990 with respect to variable overheads are:

Budgeted output	14,000 units
Actual output	12,000 units
Budgeted hours	25,000
Actual hours	30,000
Budgeted variable overheads	₹ 7,000
Actual variable overhead	₹ 9,000

Compute variable overhead variances.

Solution

Variable overhead variance (VOC) = (Standard variable overhead – Actual variable overhead)

VOV = (SVO – AVO)

= (6,000 – 9,000)

= ₹ 3,000 unfavourable.

Variable overhead expenditure variance = (Standard variable overhead – Actual variable overhead)

(VOEXV) = (SVO – AVO)

= ₹ 8,400 – ₹ 9,000

= ₹ 600 unfavourable

NOTES

$$\text{Variable overhead efficiency variance (VOFCV)} = \left[\text{Standard labour hours for actual unit produced} - \text{Actual labour hours worked}\right] \times \text{Standard variable over head rate per hour}$$

= (SVOH – AVOH) = (21,429 – 30,000) × 0.28 hour
= 8,571 × 0.28 hour = 2,400 unfavourable

Verification

VOC = VOEXV + VOEFV
₹ 3,000 (UF) = ₹ 600 (UF) + 2,400 (UF)
₹ 3,000 (UF) = ₹ 3,000 (UF)

Fixed Overhead Variance (FOV): Fixed overhead variance represents the amount of variation between the fixed overheads for specified production and actual fixed overheads. Such variances would speak of over- or under-recovery of fixed overhead. The variances are probably the most difficult ones to appreciate and they have the largest number of any of the variance. This can be computed by applying the following formula:

Fixed Overhead Variance (FOV) = (Standard fixed overheads*
– Actual fixed overheads)

FOV = (SFO – AFO)

* To be calculated for actual production.

Variance will be favourable if actual fixed overhead are less than the standard fixed overheads and it will be unfavourable or adverse if actual fixed overheads are more than the standard fixed overheads.

Fixed overhead variance can be further divided into two sub-variances viz.,

- expenditure variance; and
- capacity/volume variance.

Fixed Overhead Expenditure (or spending) Variance (FOEV): Expenditure variance represents the amount of difference between the budgeted and actual totals for fixed overhead costs. Price differentials and composition changes in fixed overhead items are the major reason for such a variance. It is calculated as follows:

Fixed overhead expenditure variance (FOEPV) = Total budget fixed overhead –
Total actual fixed overhead

FOEPV = (BFO – AFO)

If the AFO is less than the BFO on actual production, the variance is favourable and vice versa.

Fixed Overhead Volume Variance (FOVV): The second variance developed in connection with fixed overhead is the volume variance. This variance represents the amount of difference between overheads absorbed on actual output and those on budgeted output. The under-or over-absorption of fixed overheads reflects that the concern did not operate at normal capacity. The major reasons for this variance are poor scheduling of production, improper use of labour, strikes, lockouts, power failures, etc. Volume variance is measured by multiplying the budgeted fixed overhead rate by the difference between the budgeted output and actual output. Thus,

Fixed overhead volume variance (FOVV) = (Standard output – Actual output) × Standard rate per unit

$$FOVV = (SOP - AOP) \times SR$$

When the actual output is less than the standard output, the variance will be favourable and vice versa.

Illustration 3.38: From the following data calculate fixed overhead variances:

Budgeted fixed overhead	₹ 10,000
Actual fixed overheads	₹ 10,200
Budget output	5,000 units
Actual output	5,200 units
Budgeted hours	10,400 hours
Actual hours	10,050 hours

Solution

Fixed overhead variance (FOV)	=	(SFO – AFO)
FOV	=	₹10,400* – 10,200
	=	₹ 200 favourable
Fixed overhead expenditure variance (FOEXV)	=	(BFO – AFO)
FOEXV	=	₹10,000 – 10,200
	=	₹ 200 unfavourable
Fixed overhead volume variance (FOVV)	=	(SOP – AOP) × SR
FOVV	=	(5,000 – 5,200) × 2**
	=	200 × 2
	=	₹ 400 favourable

Verification

FOV	=	FOEXV + FOVV
₹ 200 (F)	=	₹ 200 (UF) + ₹ 400 (F)
₹ 200 (F)	=	₹ 200 (F)

Working:

$$*\text{Standard fixed overhead for actual production} = \frac{\text{Budgeted fixed overhead}}{\text{Budgeted output}} \times \text{Actual output}$$

$$= \frac{₹\,10,000}{5,000} \times 5,200$$

$$= ₹\,10,400$$

$$**\text{Standard rate per unit} = \frac{\text{Budgeted overhead}}{\text{Budgeted units}} = \frac{₹\,10,000}{5,000} = ₹\,2.00$$

Advance Variances: Fixed overhead volume variance can be further sub-divided into the following two variances:

Capacity Variance: This variance indicates whether the volume of production was more or less than normal. It represents the amount of variance that occurs because the actual activity level was different from the budgeted level. Capacity variance is similar to volume variance as both attempts to measure the actual activity. However, the difference between these two variances lies in the fact that the former measures actual activity with inputs and the latter measures actual activity in terms of outputs. The formula for computing this variance is:

Capacity variance (FOCV) = (Budgeted units – Standard units*)
× Standard overhead rate

$$FOCV = (BU \times SU) \times SR$$

* Standard units means budgeted quantity to be produced during the actual hours worked. In other words it means production at standard rate during actual hours.

If the budgeted units are less than standard units, the variance is favourable and vice versa.

Efficiency Variance: Efficiency variance reveals the difference in fixed overhead cost as a result of using more or fewer hours than planned for the production volume. Such variance may be caused by efficient or inefficient use of the labour, machine, etc. This variance is computed by multiplying the budgeted fixed overhead rate by the difference between the actual and standard hours for actual production. Thus,

Efficiency variance (FOEFV) = (Standard units – Actual units)
× Standard overhead rate

$$FOEFV = (SU - AU) \times SR$$

If standard units are less than the actual units, the variance will be favourable and vice versa.

Illustration 3.39: Calculate sub-variances of fixed overhead volume variance from the cost data as given in Illustration 3.38.

Solution: In Illustration 3.38 the fixed overhead volume variance has been computed to ₹ 400 favourable which will be now verified by its sub-variances—capacity variance and efficiency variance.

Capacity variance (FOCV) = (BU – SU) × SR

FOCV = (5,000 – 4,832*) × 2 = 168 × 2 = ₹ 336 (unfavourable)

Efficiency variance (FOEFV) = (SU – AU) × SR

FOEFV = (4,832 – 5,200) × 2 = ₹ 736 favourable

Verification

FO volume variance = FO Capacity variance + FO efficiency variance

₹ 400 (F) = ₹ 336 (UF) + ₹ 736 (F)

₹ 400 (F) = ₹ 400 (F)

Working:

$$*\text{Standard units (SU)} = \frac{\text{Budgeted units}}{\text{Budgeted hours}} \times \text{Actual hour} = \frac{5,00}{10,400} \times 10,050 = 4,832 \text{ units}$$

In addition to the above discussed sub-variances of volume variance, one more variance known as *'Calendar variance'* (discussed below) is also sometimes calculated. This variance is calculated when the days actually worked differs from the budgeted days.

Calendar Variance: Calendar variance represents that portion of volume variance which arises due to the difference between actual number of working days and the number of working days in the budget. It is favourable if the actual working days are less than budgeted working days. This variance can be expressed as follows:

Calendar variance (FOCLV) = Budgeted units – Revised budgeted units × Standard overhead rate.

$$FOCLV = (BR - RBU)^* \times SR$$

where

BU = budgeted quantity

BH = budgeted hours

AH = actual hours

*RBU = (BU/BH) × AH

Note: With the incorporation of calendar variance in the volume variances, the formula for capacity variance also changes and stands as:

$$\text{Capacity variance} = (SU - RBU) \times SR$$

3.5.4 Practical Problems

Problem 3.1: Compute material cost variance from the following cost data:

Standard quantity per product	= 4 units
Standard price per unit of raw material	= ₹ 3
Actual quantity for the total output	= 18,000 units
Actual price per unit	= ₹ 4
Output	= 5,000 units

Solution

Material cost variance = (Standard cost – Actual cost)

MCV = (SP × SQ) – (AQ × AQ)

= (3 × 20,000) – (4 × 18,000)

= 60,000 – 72,000

= ₹ 12,000 unfavourable

Material price variance = (Standard price – Actual price) × Actual quantity

MPV = (SP – AP) × AQ

= (3 – 4) × 18,000

= 1 × 18,000

= ₹ 18,000 unfavourable

Material quantity variance = (Standard quantity – Actual quantity) × Standard price

MQV = (SQ – AQ) × SP

= (20,000 – 18,000) × 3

= 2,000 × 3 = ₹ 6,000 favourable

Verification

MCV = MPV + MQV

₹ 12,000 (UF) = ₹ 18,000 (UF) + ₹ 6,000 (F)

Problem 3.2: Super ESS Ltd., is engaged in the manufacturing of an articles using two grades of materials TUFF and SOFT. The following data are available from the company accounts:

Standard mixture:

Material TUFF 100 kg at ₹ 10 per kg

Material SOFT 150 kg at ₹ 20 per kg

Actual Mixture:

Material TUFF 120 kg at ₹ 12 per kg

Material SOFT 130 kg at ₹ 18 per kg

Calculate different material variances.

Solution

Material cost variance	= (SQ × SP) – (AQ × AP)		
Material TUFF	= (100 × 10) – (120 × 12)	=	440 (UF)
Material SOFT	= (150 × 20) – (130 × 18)	=	660 (F)
Total (MCV)	=		₹ 220 (F)
Material price variance	= (SP – AP) × (AQ)		
Material TUFF	= (10 – 12) × 120	=	240 (UF)
Material SOFT	= (20 – 18) × 130	=	260 (F)
Total (MPV)		=	₹ 20 (F)
Material usage variance	= (SQ – AQ) × SP)		
Material TUFF	= (100 – 120) × 10	=	200 (UF)
Material SOFT	= (150 – 130) × 20	=	400 (F)
Total (MUV)		=	₹ 200 (F)

Verification

Material cost variance = Material price variance + Material usage variance

₹ 220 (F) = ₹ 20 (F) + 200 (F)

Material mix variance*	= (RSQ1 – AQ) × SP		
Material TUFF	= (100 – 120) × 10	=	200 (UF)
Material SOFT	= (150 – 130) × 20	=	400 (F)
Total (MMV)	=		₹ 200

NOTES

Working:

1. Calculation of revised standard quantity:

$$\text{Material TUFF} = \frac{100}{250} \times 250 = 100 \text{ units}$$

$$\text{Material SOFT} = \frac{150}{250} \times 250 = 100 \text{ units}$$

* In this illustration actual total quantity of material is 250 kg and also the total standard quantity to be used is 250 kg. But the actual composition of mix is different from that of standard mix. Therefore, it is obvious that the material usage variance is only due to material mix variance in this illustration. Accordingly material usage variance is equal to material mix variance and both amounts to ₹ 200 favourable.

Problem 3.3: A contract job was scheduled to be completed in 40 days by engaging 60 workers at an average wage rate of ₹ 60 per day. The work was completed in 55 days. 70 workers actually worked for all days on the job. The total wages paid for the job was ₹ 1,92,500. The workers did not work for 5 days due to shortage of raw material. Calculate appropriate labour variances.

Solution

Labour cost variance = (SH × SR) – (AH × AR)
= (2,400 × 60) – (3,850 × 50)
= 1,44,000 – 1,92,500
= ₹ 48,500 (UF)

Labour rate variance = (SR – AR) × AH
= (60 – 50) × 3,850
= 10 × 3,850
= ₹ 38,500 (F)

Labour efficiency variance = (SH – AH) × SR
= (2,400 – 3,500) × 60
= 1,100 × 60
= ₹ 66,000 (UF)

Idle time variance = Idle hours × Standard hourly rate
= 350 × 60
= ₹ 21,000 (UF)

Verification

LCV = LRV + LEV + LITV

₹ 48,500 (UF) = ₹ 38,500 (F) = ₹ 66,000 (UF) + ₹ 21,000 (UF)

Problem 3.4: The standard labour composition and the actual labour composition engaged in 10 weeks for a job are as under:

Category of Workers	Standard		Actual	
	No. of Workers	Weekly Wage Rate Workers (₹)	No. of Workers	Weekly Wage Rate Per Workers (₹)
Grade A	40	80	50	70
Grade B	50	70	60	75
Grade C	30	50	10	60

The work is actually completed in 12 weeks. Calculate labour variances.

Solution

Labour cost variance = (SH × SR) – (AH ´ AR)

Grade A = (400* × 80) – (600** × 70) = 10,000 (UF)

Grade B = (500 × 70) – (720 × 75) = 19,000 (UF)

Grade C = (300 × 50) – (120 × 60) = 7,800 (UF)

Total (LCV) = ₹ 21,200 (UF)

Labour rate variance = (SR – AR) × AH

Grade A = (80 – 70) × 600 = 6,000 (F)

Grade B = (70 – 75) × 720 = 3,600 (UF)

Grade C = (50 – 60) × 120 = 1,200 (UF)

Total (LRV) = ₹ 1,200 (F)

Labour efficiency variance = (SH – AH) × SR

Grade A = (400 – 600) × 80 = 16,000 (UF)

Grade B = (500 – 720) × 70 = 15,400 (UF)

Grade C = (300 – 120) × 50 = 9,000 (F)

Total (LEV) = ₹ 22,400 (UF)

Labour mix variance = (RSH – AH) × SR

Grade A = (480 – 600) × 80 = 9,600 (UF)

Grade B = (600 – 720) × 70 = 8,400 (UF)

Grade C = (360 – 120) × 50 = 12,000 (F)

Total (LMV) = ₹ 6,000 (UF)

Labour revised efficiency variance = (SH – RSH) × SR

Grade A = (400 – 480) × 80 = 6,400 (UF)

Grade B = (500 – 600) × 70 = 7,000 (UF)

Grade C = (300 – 360) × 50 = 3,000 (UF)

Total (LREV) = ₹ 16,400 (UF)

NOTES

Verification

LCV = LRV + LEV

₹ 21,200 (UF) = 1,200 (F) + ₹ 22,400 (UF)

LEV = LMV = LREV

₹ 22,400 (UF) = ₹ 6,000 (UF) + ₹ 16,400 (UF)

Working:

Calculation of revised standard hours

$$\text{Grad A} = \frac{400}{1,200} \times 1,440 = 480$$

$$\text{Grad B} = \frac{500}{1,200} \times 1,440 = 600$$

$$\text{Grad C} = \frac{300}{1,200} \times 1,440 = 360$$

Problem 3.5: Compute labour variance from the following data:

Actual variance overhead	₹ 9,000
Budgeted variance overhead	₹ 6,000
Budget output	15,000 units
Actual output	12,000 units
Budgeted hours	30,000
Actual hours	36,000

Solution

Variable overhead variance (VOC) = (SVO – AVO)
= (4,8001 – 9,000)
= ₹ 4,200 unfavourable

Variable overhead expenditure variance (VOEXV) = (SVO – AVO)
= (7,2002 – 9,000)
= ₹ 1,800 unfavourable

Variable overhead efficiency variance (VOEFV) = (SVOH – AVOH)
= (24,0003–36,000) × 0.20
= 2,400 unfavourable

Verification

VOC = VOEXV + VOEFV

4,200 (UF) = 1,800 (UF) + 2,400 (UF)

4,200 (UF) = 4,200 UF

Working:

1. Standard variable overhead (SVO)= Actual output × Standard variable overhead rate

$= ₹\ 12,000 \times 0.40^{*}$

$= ₹\ 4,800$

$$*\text{Standard variable overhead rate} = \frac{\text{Budgeted variable overhead}}{\text{Standard output}}$$

$$= \frac{₹6,000}{₹15,000}$$

$= ₹\ 0.40$

2. Standard variable overhead= Actual hours × Standard variable overhead per hour

$- 36,000 \times 0.20^{**}$

$= ₹\ 7,200$

$$**\text{Standard variable overhead per hour} = \frac{\text{Budgeted variable overhead}}{\text{Budgeted hours}}$$

$$- \frac{₹6,000}{₹30,000}$$

$= ₹\ 0.20$

3. $$\text{Standard labour hours for actual units produced} = \frac{\text{Budgeted hours}}{\text{Budgeted output}} \times \text{Actual output}$$

$$= \frac{30,000}{15,000} \times 12,000$$

$= 24,000$ hours

Problem 3.6: Standard hours for manufacturing two products M and N are 15 hours per unit and 20 hours per unit respectively. Both products require identical kind of labour and the standard wage rate per hour is ₹ 5. In a year 10,000 units of M and 15,000 units of N were manufactured. The total labour hours actually worked were 4,50,500 and the actual wage bill came to ₹ 23,00,000. This included 12,000 hours paid for @ ₹ 7 per hour and 9,400 hours paid for @ ₹ 7.50 per hour, the balance having been paid at ₹ 5 per hour. You are required to compute the labour variances.

(ICWA, Inter)

Solution

Labour cost variance = (Standard cost – Actual cost)

LCV = ₹ 22,50,000 – ₹ 23,00,000

= ₹ 50,000 (UF)

Labour efficiency variance = (Standard hours – Actual hours) × Standard rate

= (4,50,000 – 4,50,500) × 5

= ₹ 2,500 (UF)

Labour rate variance = (Standard rate – Actual rate) × Actual hours

= [(5 – 7) × 12,000] + [5 – 7.50) × 9,400] +

[(5 – 5) × 4,29,100]

= ₹ 47,500 (UF)

Working:

1. *Calculation of standard cost*

Standard cost	=	(Standard hour × Standard rate)
For product M	=	1,50,000 × 5 = 7,50,000
For product N	=	3,00,000 × 5 = 15,00,000
		Total = ₹ 22,50,000

Problem 3.7: The following data is available in connection with the fixed overheads of a factory:

Budgeted fixed overhead for January	₹ 1,00,000
Budgeted output for January	50,000 units
Standard time for 1 unit	5 hours
Actual hours worked	2,55,000
Actual fixed overheads for the month	₹ 1,10,000
Unit produced during the month	52,000

Calculate fixed overhead variance for the month. (*M.Com., Madurai*)

Solution

Fixed overhead variance (FOVO) = (Standard fixed overhead – Actual Fixed overheads)

= (1,04,0001 – 1,10,000)

= ₹ 6,000 (UF)

Fixed overhead expenditure variance (FOEXV) =

(Total Budgeted Fixed overhead – Total Actual Fixed overheads)

= (1,00,000 – 1,10,000)

= ₹ 10,000 (UF)

Fixed overhead volume variance (FOVV) =

(Standard output – Actual output) × Standard rate per unit

= (50,000 – 52,000) × 22

= ₹ 4,000 (F)

Verification

FOV = FOEXV + FOVV

₹ 6,000 (UF) = ₹ 10,000 (UF) + 4,000 (F)

₹ 6,000 (UF) = ₹ 6,000 (UF)

Working:

1. Standard fixed overheads for actual production $= \frac{\text{Budgeted fixed overheads}}{\text{Budgeted output}} \times \text{Actual output}$

$$= \frac{1,00,000}{50,000} \times 52,000$$

$$= ₹\ 1,04,000$$

2. Standard rate per unit $= \frac{\text{Budgeted overheads}}{\text{Budgeted units}}$

$$= \frac{₹1,00,000}{50,000}$$

$$= ₹\ 2.00$$

Check Your Progress

8. What is labour efficiency variance?
9. What are the sub-categories of variable overhead variance?

3.6 ACTIVITY BASED COSTING

Activity-based costing which is one of the hottest topics in the area of cost management accounting provides detailed costing information and thereby helps firms to take the right decisions. ABC is an approach to cost assignment which traces costs from activities to product. Cooper and Kaplan, (1993) who developed this new approach in costing capture the essence of ABC observing that *activity-based costing segregates the expenses of indirect and support resources by activities. It then assigns those expenses based on the drivers of the activities, rather than by some arbitrary percentage allocations*.

After the initial attempt of Cooper and Kaplan, a number of attempts were and are being made by professional bodies and authors to sketch the nature and scope of activity-based costing.

Popular Definitions of Activity-Based Costing

Garrison and Noreen (2000): Activity-based costing is a costing method that is designed to provide managers with cost information for strategic and other decisions that potentially affect capacity and therefore fixed costs.

CIMA (2003): Activity-based costing is a cost attribution to cost units on the basis of benefits received from indirect activities, e.g., ordering, setting up, assuring quality.

Needles Jr and Grosson (2002): Activity-based costing is a method of assigning costs that calculates a more accurate product cost by identifying all of an organization's major operating activities.

CAMI (1991): Activity-based costing is the collection of financial and operation performance information tracing the significant activities of the firm to product costs.

Hilton (2000): An activity-based costing (ABC) system assigns overhead costs to products or services produced using a two-stage process that focuses on activities.

According to author M.A. Sahaf, activity-based costing is a method of allocating overhead to a firm's major operating activities technically called activity cost pools and it then assigns activity costs to products by means of a cost driver that it considered the cause of the cost. The basic philosophy of activity-based costing is that the activities which are involved in the creation of a product or service incur costs and therefore, there exists a close relationship between such activities and products. Considering the significance of such a relation, activity based costing suggests to categorize all indirect costs by activity and then trace the indirect costs to those activities and finally assigning activity costs to products on the basis of cost driver. Since activity-based costing recommends the allocation of overheads to products and services on the basis of cost drivers, therefore, the major difference between traditional costing and activity-based costing is that the former traces the costs to the product whereas the latter traces them first to activities and then to products from activity cost pool.

Designing an Activity-Based Costing

Activity-based costing is a flexible system designed to help a firm not only to collect detailed cost information but also to make better informed decisions. Since such a system has to meet a firm's requirements in a variety of different ways, therefore, its design has to vary from organization to organization. However, for a successful implementation of ABC, a firm needs to follow a process as shown in Figure 3.11.

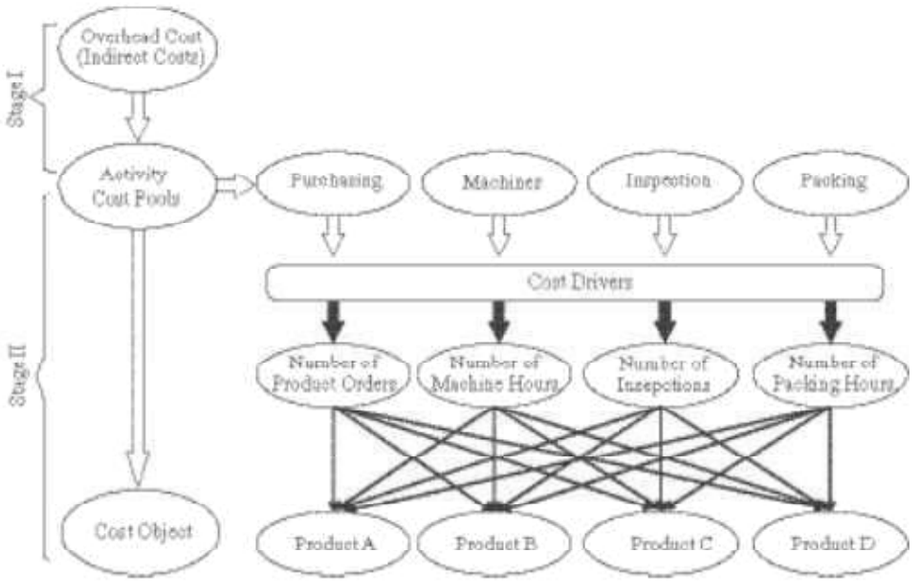


Fig. 3.11 *Diagrammatic Representation of Activity - Based Costing*

Activity-Based Costing Terminology

- **Activity Cost Pool:** An activity cost pool refers to grouping of overhead costs assigned to a firm's major operating activities. Such activities can be in the form of any transaction, action, event or work sequence that result in the production of a product or service.
- **Cost Driver:** A cost driver is any activity or event/factor that causes cost to be incurred.
- **Cost Object:** Any item for which cost measurement is made, e.g., a product or a service.
- **Cost Hierarchy:** A framework that firms use for classifying activities on the basis of the level at which their costs are incurred.
- **Bill Activities:** A list of activities and related costs that firms use for computing the costs assigned to activities and the product unit cost.

The analysis of Figure 3.11 clearly reveals that the process of activity-based costing comprises the following steps:

- Identification and estimation of overhead costs;
- Identification and classification of a firm's major activities that are involved in the manufacturing of specific products;
- Grouping of overhead costs to a firm's major activities technically called activity cost pools;
- Identification of a cost driver and computation of overhead rate per cost driver; and
- Allocation of costs of each activity cost pool to various cost objects—products and service on the basis of cost driver rate.

The above five steps of activity-based costing process can conveniently be divided into two major stages. In stage one, an attempt is made to assign overhead costs to activity cost pools and in the second stage, such overhead costs are allocated from each activity cost pool to each cost object on the basis of cost drivers. Thus, the essence of activity-based costing system largely depends on the formation of activity cost pools (identifying and classifying activities) and selection of cost drivers.

Identifying and Classifying Activities

The designing of activity-based costing system starts with an analysis of the activities that will form the foundation of such a system. In fact, such a study attempts to identify all such resource-consuming activities that are responsible for the creation of a firm's product or service. For this purpose, a firm's activity-based costing implementation team has to use a framework called *cost hierarchy* that helps it to classify activities according to the level at which their costs are incurred. As per this framework, activities can be classified into the following four different categories as identified by Cooper (1990):

- ***Unit-level activities*** refer to such primary activities that are performed for each unit of production. In fact, the costs of such activities tend to increase

in proportion to the number of units produced. The use of indirect materials/ consumables are best examples of unit-level activities as they are strongly correlated to the number of units produced.

- ***Batch-level activities*** involve activities performed each time a batch of products is produced. Thus, such activities are driven by the number of batches of units produced rather than the number of units produced. The activities like material ordering for every batch of production or resetting of machines needed for each different batch of production are examples of batch-level activities.
- ***Product-level activities*** are performed to support an entire product line but are not always performed every time a new unit or batch of products is produced. In fact, such activities are driven by the creation of a new product line and its maintenance, for example, redesigning of installation process.
- ***Facility-level activities*** are required to support a facility's general manufacturing process. Such costs cover the maintenance of buildings and facilities, for example, plant maintenance, property taxes and insurance.

The above framework suggests that the management has to be careful in grouping together activities at the appropriate level. Every precaution must be taken to avoid grouping of activities falling within the scope of different levels. Batch-level activities should not be combined with unit-level activities or product-level activities with batch-level activities and so on (Garrison and Noreen, 2000). For an effective classification, grouping of activities should be driven by the correlation that exists between the activities within a level. This grouping of activities will give birth to 'activity cost pools'—a collection of costs that are to be allocated to cost objects.

Since cost drivers measure the number of activities undertaken by a firm to produce a product or generate a service, therefore, such drivers are used as the bases to relate the overheads collected in the cost pools to the cost objects. Thus, firms need to be careful in identifying and using such drivers for each activity of activity- based system. Generally, it is believed that a separate cost driver is called for each such activity that generates an indirect product cost. However, some experts are of the opinion that the selection of cost driver shall be governed by cost hierarchy— the unit-level, the batch-level, the product-level and the facility-level. Accordingly, the number of units like direct labour hours or cost of raw materials is used as cost drivers for unit-level activities. In the same way, the number of batches such as the number of purchase orders or machine resetting time for new batches serves the cost drivers for batch-level activities. Cost drivers for product-level activities will be like the number of design hours or the number of hours for redesigning the installation process. The choice of cost drivers for facility-level activities is influenced by the measures that fall within the scope of maintenance of building and facilities and accordingly a number of machine breakdowns and maintenance schedule are used cost drivers for facility-level activities. The main activities and cost drivers for the purpose of activity-based activities as suggested by Innes and Mitchell are presented in Table 3.1.

Table 4.3 *Activities and Cost Drivers*

Main Activities	*Main Cost Drivers*
Customer order processing	order value; order source (new/old customers); order source (customer location)
Material handling	number of material transactions; volume of material receipts; volume of material orders
Inspection	inspection plans; number of problem suppliers; gauge usage; lack of good quality
Production control	engineering changes; supplies performance, number of parts operational; make versus buy policy; number of machines change; order board changes
Production	number to be supervised; shift pattern; industrial relations issues; flow of product from assembly; volume of service parts/kit packing
Maintenance	number of machine breakdowns; maintenance schedule; capital expenditure; activity levels
Systems	number of systems operational; number of system devices; adequacy of existing systems
Control quality	inspection plans
Financial accounting	number of accounting transactions; number of times accounts produced; volume of activity; coordinated shipping process
Management accounting	accuracy of feeder systems; management requirements; corporate requirements; activity levels
Personnel	recruitment activity; industrial relations climate; training requirements

Significance of Activity-Based Costing

Although activity-based costing does not change the amount of overhead costs yet it helps firms to allocate those costs in a more accurate manner. In fact, activity-based costing helps a firm to identify and eliminate non-value-added activities and thereby reduce costs. It is against this backdrop many accounting experts believe that activity- based costing has tremendous potential to offer a firm strategic opportunities in a competitive market by helping it to emerge as a low-cost producer or seller (Maher11, 1997). Since activity-based costing helps managers to understand where their actions can most likely contribute maximum to their firm's profits, such an analysis can easily serve as profit planning tool for the firms. However, activity-based costing can be of strategic importance particularly in pricing decisions by estimating accurate product costs for such organizations where manufacturing operations involve large amounts of factor overheads. In fact the accurate tracing of indirect costs has always been a challenge for the organization with a high percentage of indirect product costs. In addition, the accurate estimation of indirect costs would also help firms in decisions like make or buy a product component and product elimination.

To summarize, activity-based costing is particularly useful to organizations for product costing where:

- a large percentage of product costs are indirect;
- products and services use overhead activities in different ways;
- product lines are not only numerous but diversified as well;
- product lines constitute multiple products; and
- product lines vary both in volume and manufacturing complexity.

Limitations of Activity-Based Costing: Despite strategic significance of activity-based costing, it suffers from the following limitations:

- Smaller organizations cannot afford to install activity-based costing system as it is costly to implement.
- Since activity-based costing calls for identifying multiple activities and applying numerous cost drivers, the firms find this system of costing not only costly but also complex.
- Most organizations find it difficult to identify the accurate and exact relationship between the cost of the activity and the cost driver which is the prerequisite for the success of any activity-based costing system.
- Activity-based costing fails to provide an adequate response to the problems associated with facility-level costs. Since such costs are fixed with respect to the number of products, therefore, they are to be allocated by means of some arbitrary volume-based cost driver. Thus, an arbitrary element enters into the product cost.

Check Your Progress

10. What is an activity cost pool?
11. Mention any two limitations of activity based costing.

3.7 ANSWERS TO 'CHECK YOUR PROGRESS'

1. The cost of one additional unit of output is known as marginal cost. In other words, it refers to the cost that is incurred by a business to move from output level 'n' to 'n + 1'.
2. Absorption costing is a system of costing that recognizes all costs including fixed ones as product costs, and therefore, considers all of them in ascertaining the cost of the product.
3. The two major approaches to compute break-even are:
   - Mathematical approach
   - Graphic approach
4. A break-even chart is a graphic approach to the study of the relationship of cost, revenue and profit.
5. Standard costing is an important accounting-oriented tool which attempts to keep the cost at a minimum level by planning and controlling costs of each unit produced. Under this system, the cost of each unit is predetermined on some scientific basis and arrangements are made for costs not to exceed the predetermined standard.
6. The standard costing technique, if properly implemented, would result in the following benefits:
   - Prices can be determined in anticipation of the actual production as standard costs for various inputs are already available.

- The standard costing system makes possible to determine and compare the efficiency of various operations.

7. The standard time required to perform each labour operation that enters into production for producing a product is known as *labour time standard*.
8. Labour efficiency variance indicates the number of actual direct labour (in terms of hours) worked above or below the standard for the actual level of production at standard price.
9. Variable overhead variance can be divided into two categories viz., variable overhead expenditure variance and variable overhead efficiency variance.
10. An activity cost pool refers to grouping of overhead costs assigned to a firm's major operating activities. Such activities can be in the form of any transaction, action, event or work sequence that result in the production of a product or service.
11. Activity based costing suffers from the following limitations:
    - Smaller organizations cannot afford to install activity-based costing system as it is costly to implement.
    - Since activity-based costing calls for identifying multiple activities and applying numerous cost drivers, the firms find this system of costing not only costly but also complex.

3.8 SUMMARY

- The analysis of cost behaviour reveals that the cost of a product can be divided into two major categories:
  - o fixed cost; and
  - o variable cost
- The cost of one additional unit of output is known as marginal cost. In other words, it refers to the cost that is incurred by a business to move from output level 'n' to 'n + 1'.
- Marginal costing is an accounting technique which ascertains marginal cost of additional output by differentiating between fixed and variable costs. This technique aims to charge only those costs to the cost of additional product that vary directly with sales volumes.
- Absorption costing is a system of costing that recognizes all costs including fixed ones as product costs, and therefore, considers all of them in ascertaining the cost of the product.
- The profit/volume ratio also known as 'contribution ratio' or 'marginal ratio' expresses the relationship between contribution and sales. In other words, it is the contribution per rupee of sales.
- Decision making is a regular phenomenon of any business. One of the important factors that influence managerial decisions is the relevant costs that the managers need to identify and analyse to take the right decisions.

The decision criteria most often used for the purpose generally include cost minimization, profit maximization and contribution maximization.

- Marginal costing is recognized as an effective tool and as such managers prefer to use this technique in the following areas of managerial problems:
  - o pricing decision
  - o production expansion decision
  - o make or buy decision
  - o scarce resources decision
  - o sales mix decision
- Cost-volume-profit analysis as a planning tool analyses the inherent relationship between price, cost structure, volume and profit.
- Belkaoni defines cost-volume-profit analysis as an examination of cost and revenue behavioural patterns and their relationships with profit. The analysis separates costs into fixed and variable components and determines the levels of activity where costs and revenues are in equilibrium.
- The two major approaches to compute break-even are:
  - o Mathematical approach
  - o Graphic approach
- Mathematically break-even can be computed by engaging the technique of unit contribution which is developed on the basis of marginal cost equation.
- The break-even analyis can also be demonstrated graphically which is commonly known as break-even chart. A break-even chart is a graphic approach to the study of the relationship of cost, revenue and profit. The graphic instead of mathematical approach is often used because it tends to be more easily understood by the people whose acquaintance with mathematics is minimal and it provides an immediate view of variable costs, fixed costs, and profit at any level of activity.
- Although it might appear that standard and estimated costs are the same, some dissimilarities exist. An *estimated cost* is determined on basis of the average past performance and, therefore, can be regarded as a reasonable assessment of what a cost 'will be'. On the other hand, *standard cost* is the cost that would be incurred under the most efficient operating conditions and is forecast before the manufacturing process begins.
- The standard costing system is designed to furnish management with a measure that will help it in making decisions regarding the efficiency of operations. A sound standard costing system consists of six main activities, viz.,
  - o Establishment of cost centre;
  - o Determination of the quality of standard;
  - o Organization of standard costing;
  - o Setting of standards;

- Actual cost accumulation; and
- Analysis of variance.

- The practices of standard setting vary from firm to firm. Management should take sufficient care in setting standards because the efficiency of a standard costing system largely depends upon the accuracy and reliability of the standards.
- One of the important components of the standard costing system is the setting of standards for the evaluation of actual results. It includes detailed estimates of material quantities and prices, labour quantities and prices, and overhead quantities and rates. These details serve as the benchmarks of efficiency against which actual quantities and costs are compared.
- The establishment of standards is followed by the accumulation of actual costs which are then compared with standards in performance reports. For accumulating actual manufacturing cost, firms use either a job order system or a process cost system.
- *Variance* is the difference between actual costs and standard costs during an accounting period. It refers to variation of actual results with planned results.
- Variance analysis is a systematic process which analyses and interprets the variances. It refers to the breaking down of total variances into different components.
- There are three types of variances, viz.,:
  - direct material variance;
  - director labour variance; and
  - overhead variance.
- Material cost variance represents the difference between the actual costs and the standard costs of material for a specified output.
- The material price variance attempts to measure the variance between the actual cost of material and the standard cost expected to be paid for the material.
- Material usage variance is deviation caused from the standard due to difference in quantities used. It indicates the actual quantity of direct materials used above or below. Material mix variance is that portion of the direct material usage variance which is due to the difference between the standard and actual composition of the mixture.
- Material Yield Variance is that portion of direct material usage variance which is due to the difference between the standard yield specified and the actual yield obtained.
- Labour cost variance represents the difference between standard labour cost specified for the activity and the actual labour cost paid for the activity.
- Labour efficiency variance indicates the number of actual direct labour hours worked above or below the standard for the actual level of production at standard price.

- Labour rate variance represents the average of the actual hourly rates paid above or below.
- Labour revised efficiency variance represents the deviation between the standard labour hours specified for the activity achieved and the labour time spent for the same.
- Labour Yield Variance represents that potion of labour efficiency variance which is due to difference between the standard output and the actual output.
- Overhead variance represent the difference between the amount of overhead applied to production during the period and the amount of actual overhead cost incurred during the period.
- Variable overhead variance represents the difference between actual variable overheads and the specified variable overheads.
- Variable overhead expenditure variance is the difference between actual variable overhead expenditure and the standard variable overheads for the actual hours of operation.
- The Variable Overhead Efficiency Variance reveals the difference in variable overhead cost as a result of using more or fewer hours than set for the manufacture of the products.
- Fixed overhead variance represents the amount of variation between the standard fixed overheads for specified production and actual fixed overheads.
- Fixed overhead expenditure represents the amount of difference between the budgeted and actual totals for fixed overhead costs.
- Fixed overhead volume variance represents the amount of difference between overheads absorbed on actual output and those on budgeted output.
- Capacity variance indicates that the volume of production was more or less than normal.
- Efficiency Variance reveals the difference in fixed overhead cost as a result of using more or fewer hours than planned for the production volume.
- Activity-based costing is a costing method that is designed to provide managers with cost information for strategic and other decisions that potentially affect capacity and therefore fixed costs
- The essence of activity-based costing system largely depends on the formation of activity cost pools (identifying and classifying activities) and selection of cost drivers.
- Although activity-based costing does not change the amount of overhead costs yet it helps firms to allocate those costs in a more accurate manner. In fact, activity based costing helps a firm to identify and eliminate non-value-added activities and thereby reduce costs.

3.9 KEY TERMS

- **Marginal Cost:** The cost of one additional unit of output is known as marginal cost.

- **Variance analysis:** It is a systematic process which analyses and interprets the variances.
- **Material variances**: It is difference between the standards set for cost of obtaining materials and for the quantities to be used in production and the actual costs incurred.
- **Activity based costing:** It is a method of allocating overhead to a firm's major operating activities and it then assigns activity costs to products by means of a cost driver that it considered the cause of the cost.

3.10 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short Answer Questions

1. Define marginal costing.
2. Differentiate between marginal costing and absorption costing.
3. Write a short note on the managerial application of marginal costing.
4. Define cost-volume-profit analysis.
5. List the advantages of a break-even chart.
6. Differentiate between standard costing and historical costing.
7. What are the objectives of variance analysis?
8. Write a short note on overhead variance.

Long Answer Questions

1. Examine the features of marginal costing.
2. Analyse the advantages and disadvantages of marginal costing.
3. Explain the differences between standard costing and budgetary control.
4. Discuss the advantages and disadvantages of activity based costing.

3.11 FURTHER READING

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UNIT 4 FINANCIAL DECISIONS

Structure

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4.0 INTRODUCTION

Investment appraisal is crucial for the success of a business as it determines the profit potential of each investment. Many techniques have been developed for the evaluation of capital projects. These techniques can be classified into two general categories: non-discounted cash flow methods and discounted cash flow methods. Capital structure of a company refers to the composition or make-up of its capitalization and it includes all long-term capital resources viz. loans, reserves, shares and bonds. Determination of an optimum capital structure is significant for a company. An appropriate mix of debt and equity should be there in capital structure. This unit will also discuss the importance of dividend decisions and its theories.

4.1 OBJECTIVES

After going through this unit, you will be able to:

- Understand the basic concepts relating to investment appraisal
- Discuss in detail the investment appraisal methods
- Explain the process of determining capital structure
- Examine dividend policies and theories

4.2 INVESTMENT APPRAISAL: BASIC CONCEPTS

Investment decisions are not only recognized as being most critical for the success of business but also subject to a systematic evaluation process technically referred to as capital budgeting. Capital budgeting refers to the practice of allocating money,

NOTES

on a regular basis, to be used for acquiring capital assets. It is a decision making process used by firms to analyse the purchase of major fixed assets which may include both tangible assets like building, machinery, plant and equipment and intangible assets like technology, patents and trademarks. Commenting on the nature and scope of capital budgeting, Bierman and Smidt (2006), state that capital budgeting is *a many-sided activity that includes searching for new and more profitable investment proposals, investigating engineering and marketing considerations to predict the consequences of accepting the investment, and making economic analyses to determine the profit potential of each investment proposal*. Thus, capital budgeting is concerned with the process of planning and controlling major expenditure on projects with lives extending beyond one year.

Capital budgeting is *a process of long-range planning expenditure for acquiring such assets which not only require significant investment but also generate cash flows beyond one year. It is investment decision making that aims to evaluate the financial desirability of a project with the help of cash flows rather than net income as advocated by accrual accounting.* Capital budgeting is primarily the planning and control of expenditure for capital assets, such as:

- replacement of existing assets to meet growing demands of the changing environment in general and competition in particular;
- acquisition of new equipment, building or facilities with the aim to expand existing operations;
- developing new types of production methods and technologies like automating production system;
- responding to some change in legal, operating and safety environment; and
- developing the firm's commercial websites.

Exhibit 4.1 *Popular Definitions on Capital Budgeting*

Weston and Brigham (1969): Capital budgeting involves the entire process of planning expenditures whose returns are expected to extend beyond one year. The choice of one year is arbitrary, of course, but is a cut-off point for distinguishing among the various kinds of expenditures.

John J. Hampton (1980): Capital budgeting describes the firm's formal planning process for the acquisition and investment of capital and results in a capital budget that is the firm's formal plan for the expenditure of money to purchase fixed assets.

G.C. Philippatos (1973): Capital budgeting is concerned with the allocation of the firm's scare financial resources among the available market opportunities. The consideration of investment opportunities involves the comparison of the expected future stream of earnings from a project, with the immediate and subsequent stream of expenditures for it.

Sidney Davidson and Others (1983): It is the process of choosing investment projects for an enterprise by considering the present value of cash flows and deciding how to raise the funds required by the investment.

Importance

Although the high quantum of investment accompanied by higher risk in capital projects are generally advocated as the basic reasons for the application of the capital budgeting process, yet *Moore* and *Jaedicke* (1980), state that capital investment decisions call for increased attention of the firms because:

- substantial sums of money are usually invested in capital projects;
- the resources that are invested in a project are often committed for a long period of time;
- it may be difficult to reverse the effects of a poor decision;
- the success or failure of the company may depend upon a single or relatively few investment decisions;
- plans must be made well into an uncertain future.

4.2.1 Steps in Capital Budgeting Process

A systematic process of capital budgeting consists of the following five steps (see Figure 4.1):

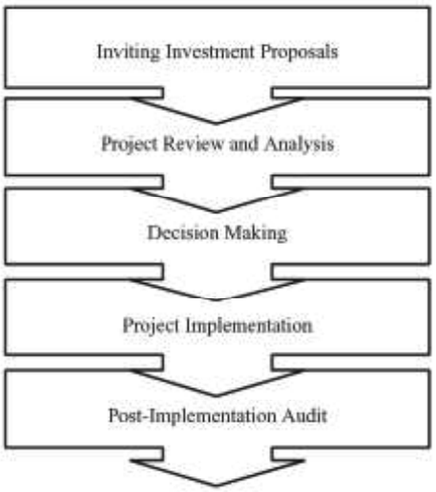

***Fig. 4.1** Process of Capital Budgeting*

Inviting Investment Proposals

The capital budgeting process begins with invitation of proposals from various departments of the organization. The step, in fact, provides organizations the opportunities for investment. Project proposals need to be designed in tune with a firm's strategic plan to ensure a perfect match between corporate objectives and intended outcome of the proposals. In fact, investment opportunities created by the project proposals must contribute to a firm's corporate goals. Such a contribution would help the organization to assess the strategic significance of the investment. To have sufficient and effective project proposals, a firm must encourage, appreciate and reward the departments to submit project proposals that are effective both strategically and profitably.

Project Review and Analysis

This step involves preliminary project screening and financial and commercial viability of the projects. The number of project proposals received from the departments is usually much higher than a firm's available resources for investment. Due to limited resources, it is not possible for a firm to consider all identified projects for investment. Consequently, a firm needs to devise some criterion that would help a firm in identifying the most viable proposals for investment. The criterion generally used for this purpose is based on quantitative measures which are highly influenced

NOTES

by the evaluators' judgements based on their intuitive feeling and experience. Once the project qualifies the preliminary screening process, it is subject to financial analysis which examines the potential of an investment in contributing to the performance of a firm. The techniques used for such an analysis have been discussed in the next unit. However, the financial analysis involves quantitative analysis to predict future cash flows from the projects. The process of forecasting cash flows is considered crucial for investment decision making process.

Decision Making

The third step in the process will be decision making. On the basis of the nature and scope of capital projects, a firm may have to deal with the following three types of decisions:

- **Mutually Exclusive Project Decision:** In many business situations, a firm needs to choose one appropriate alternative among two or more alternatives associated with a capital project. For example, a university may have to choose between conventional and e-admission systems for enrolling the students in its MBA programme with different cost structures and resources. The decision of the university to admit students for the programme through one system would eliminate the use of the other system. Both the systems may be effective and efficient in their own ways but the university can't accept both. The university needs to choose one that in its opinion is the most efficient and effective. Such situations fall within the scope of *mutually exclusive projects* where a firm has to choose one of the several alternatives projects. In case of such projects, the firms need to rank projects in terms of their defined criteria for the purpose so that the most appropriate project is identified and selected.
- **Independent Project Decision:** It may not be uncommon for firms to find such situations where the choice of one project does not eliminate the possibility of acceptance of another; as such projects do not compete with each other. Such projects are technically referred to as *independent projects*. For example, a university may be considering proposals to establish its campuses in all different states of northern India. It could choose to establish campuses either in all the states of northern India, or to some states, or to none. Such projects, in fact advocate the philosophy of the *accept-reject approach* to making decisions. The decision makers would accept all proposals that could meet their objectives and reject the ones that fail to do so.
- **Capital Rationing Decision:** Although independent projects are not mutually exclusive, yet firms may have to rank them for the purpose of capital rationing. Generally, firms have more proposals for capital investments than they actually can finance. Consequently, they have to rank the capital investment proposals with an aim to identify the most profitable ones that can be actually financed from available resources. The process used for the purpose, technically referred to as **capital rationing,** actually ranks the projects on the basis of predetermined rate of return. The process of capital rationing involves the following two steps:
  - o Ranking of proposals from highest to lowest priority; and

- Selection of cut-off point. Proposals above the cut-off are taken up while as below it, are rejected. The selection of cut-off point is an important decision which is taken after due consideration to the number of factors like the goals of the firm and available financial resource.

Project Implementation

The implementation of the project may call for the active participation of various functional departments of a firm. A firm must monitor implementation of the project constantly with an aim not only to identify operational problems but also to suggest solutions for such problems.

Post-Implementation Audit

The last step in the capital budgeting process involving evaluation of the performance of the project after its implementation. This step helps a firm not only to assess the success of project implementation but also to help future planning and strategy.

Format of Capital Building

A specimen of capital budget is given as under:

	_____ *Co. Ltd.*	
Date		Proposal No.....
To Capital Expenditure Committee		
From		Division/Section
	Request to the Committee	**(₹)**
1. *Introduction:*		
2. *Need/Importance of the project:*		
3. *Duration of the project:*		
4. *Timing:*		
(a) Commencement		
(b) Completion		
5. *Proposed expenditure:*		
(a) Cost of assets	₹ xxxxxxxx	
(b) Freight and delivery charges	₹ xxxxxxxx	
(c) Cost of installation	₹ xxxxxxxx	
(d) Misc. expenses	₹ xxxxxxxx	
Total Cost		xxxxx
6. *Increase in earnings (estimated):*		xxx
7. *Scheduled profitability:*		
(a) Internal rate of return		
(b) Payback period		
(c) Discounted payback period		
(d) Accounting rate of return		
8. *Remarks of capital expenditure committee:*		
No		
Dated		Chairman of the Committee

NOTES

Objectives of Capital Budgeting Programmes

The main objectives of a capital budgeting programme are summarized below:

- Evaluate the relative worth of capital projects and rank them in order of preferences;
- Ensure efficient control over large investments and expenditures;
- Provide for cash needs for meeting capital project programmes;
- Analyse the impact of capital expenditure on profitability of the enterprise;
- Facilitate long-range planning; and
- Fix priorities on expenditure by using the techniques of capital rationing at the time of shortage of capital, and thereby, make optimum use of available resources.

4.2.2 Kinds of Proposals

Capital budgeting process includes several different proposals. It differs from firm to firm. However, the most common ones are:

- expansion;
- replacement;
- choice of equipment; and
- buy or lease.

Expansion: The question of expansion may include whether to build or purchase a new plant, or build or buy a new factory. This decision is concerned with the estimation of cost which will be incurred and the receipts which will be earned from a specific project if undertaken.

Replacement: Replacement programmes are essential for the overall growth and development of a company because rapid technological change has become a permanent feature of corporate life. To remain effective in a changing business environment, the firms have to introduce new capital equipments. Consequently, firms have to look for competitive advantages through a systematic approach to the replacement programme. However, little attention is paid by the management to replacement decisions as indicated by various research studies conducted in this area.

The management has to evaluate profitability of replacement investment. Such an evaluation should be based on an in-depth study of all cost and savings involved. The study must be carefully made so that no factor is overlooked. Firms often use same evaluation process for replacement decisions which they use for expansion decisions. This is not a healthy sign because the analysis of these two decisions differs with each other.

The analysis of replacement decision differs from expansion decision in the sense that in the latter emphasis is on calculation of costs and estimation of earnings over a number of years to come whereas in the former the problem is to be decided whether to replace a machine at present or at a future date.

Choice of Equipment: It is concerned with decision of purchase of specific items of equipment in order to produce a new product. The rate of return on investment will govern the purchase of equipment.

Buy-or-lease: A choice is made whether to purchase or lease the required equipment or building. In case of leased asset, a series of payments are made after every specific period in the shape of rent. Thus, payments are spread over a series of annual rental payments. Since the firm has to make payments in installments, it has practically very less immediate financial burden. However, the amount of rent over the life of the asset may exceed its cost price. This is the only serious limitation to this system. In case of purchased assets, a huge initial capital is required, which eliminates the initial payment at specific intervals of time. Number of techniques are used to decide about buy-or-lease facility. The most valuable and commonly used among them is discounted cash flow analysis. The resultant net cash inflow will differ not only in total amount but also in their distribution over time, and by discounting these inflows at an appropriate interest rate, management can discern whether it is profitable to buy or lease. The present worth of the inflows resulting from leasing and buying are compared and the higher present worth will indicate the preferable course, at least from the financial viewpoint. If the present worth of inflows is about the same for buy-or-lease, management can put financial considerations aside and make its choice on the basis of factors such as greater flexibility and freedom from responsibility achieved through renting, or better control and the possibility of a capital gain achieved through buying (Arustein, 1976).

A pivotal factor in buy-or-lease is the interest rate at which the future inflows are discounted. In essence, this should be the rate at which the company can or does borrow long-term funds. Some experts argue that cash inflows in buy-or-lease analysis should be discounted at the minimum rate of return expected by the company.

Leasing has become a commonly accepted method of obtaining practically any type of equipment used by the firms. Unfortunately there is no easy rule of thumb which can be applied to determine when a leasing arrangement might make economic sense. Each leasing transaction must be evaluated in the light of the company's financial condition and the terms of the lease. The advantages attributed to leasing rather than buying equipment are numerous, often redundant, and usually unclear. However, the advantages of convenience often attributed to leasing are purely subjective and cannot by themselves be scrutinized through quantitative analysis. This does not mean that subjective arguments in favour of leasing are meaningless, but rather that a potential lessee should accurately quantify what it costs to obtain the convenience of lease financing or what is saved by sacrificing the prestige of equipment ownership.

4.2.3 Appraisal Methods

Corporate investment decisions involve the application of a suitable technique for the financial evaluation of investment proposals. The basic approach in any technique for the evaluation of capital project involves comparison of costs and benefits associated with the investment plan. Some methods define costs and benefits in terms of accounting profits and some others consider cash flows in cost-benefit analysis. The firm has to select the right method of evaluation, from among many available ones.

Various methods of evaluation of the capital budget have been in practice defined by needs and situations. Some methods, which aim at measuring

NOTES

shareholder wealth creation, have evolved over a period through academic contributions by many authors and researchers. The list of various methods and their variants are:

1. Accounting Method: Accounting Rate of Return (ARR)
2. Cash flow Methods
   (a) Non-discounted Methods: Pay Back Period, Reciprocal of PBP, Life PBP, Modified Payback Period
   (b) Discounted Cash flow methods: Net present value method, Discounted PBP, Profitability Index, Uniform Annual Series, Net terminal Value, Share Price Appreciation Rate, Internal Rate of Return, Terminal Rate of Return
   (c) Special Discounted Methods: Economic Rate of Return, Social Rate Return

Check Your Progress

1. Define capital budgeting.
2. What are the two steps involved in the process of capital rationing?

4.3 INVESTMENT APPRAISAL: METHODS AND CONSIDERATIONS

Many different techniques have been developed to help executives in the evaluation of capital projects. Such techniques range from those that represent rough approximations to those that are relatively precise. Some techniques take the time value of money into account while others ignore it in the process of evaluation. The methods that do not take the time value of money into account are simple to use because they do not involve present value computation. Accordingly, evaluation techniques can be broadly classified into two general categories, namely:

- Non-discounted cash flow methods
  - o payback
  - o payback reciprocal and
  - o accounting rate of return.
- Discounted cash flow methods
  - o net present value
  - o internal rate of return and
  - o profitability index.

I. Non-discounted Cash Flow Method

In this section, you will learn about non-discounted cash flow method.

Payback and Payback Reciprocal Method

Payback method which is not only one of the oldest methods but also most popular method of evaluating investment proposals involves the calculation of the span of

time required to recover initial cash investment. In fact, it determines the payback period which is the length of time that elapses before total cumulative cash inflows (after tax before depreciation) from the project equal the initial cash outlays for the project. The formula for the payback period is as under:

$$\text{Payback period} = \frac{\text{Cost of investment}}{\text{Annual cash inflows}}$$

Thus, the computation of payback period requires information like initial cost of the project (investment) and net cash inflows from the investment. The net cash inflows represent the amount of profit after tax but before depreciation.

Assume that investment (project cost) of ₹ 4,00,000 is expected to produce annual returns (cash inflows) of ₹ 50,000 for ten years. No salvage recovery is expected from the investment at the end of the ten years. The initial investment will be recovered in eight years, as calculated below:

$$\text{Payback period} = \frac{\text{Investment (Cost of project)}}{\text{Annual cash inflows}}$$

$$= \frac{4,00,000}{50,000} = 8 \text{ years}$$

In the above example, cash inflows were evenly distributed over time. However, with non-uniform cash inflows, the computation of the payback period is somewhat different though the concept is the same. The example given below will clear the concept and calculation of payback period when the cash inflows are unevenly distributed over time.

***Example*:** Suppose a firm has two projects to be considered by it. Each involves an initial investment of ₹ 40,000. The annual cash inflow expected from investment *Y* and *Z* are shown in the table tiven below.

Years	*Net Cash Flows from Investment*	
	Y (₹)	*Z* (₹)
1	4,000	20,000
2	6,000	18,000
3	10,000	12,000
4	12,000	10,000
5	12,000	8,000
6	15,000	6,000
7	20,000	5,000

The table reveals that project *Y* gives a return of ₹ 32,000 in the first four years which is ₹ 8,000 short of the original investment. From the cash inflows of the fifth year, only ₹ 8,000 are needed to recover the investment. Therefore, ₹ 32,000 from the first four years plus 8,000/12,000 from the fifth year is required. The payback period is 4 years and 8 months for the project *Y*. In the same way, the payback period for the project *Z* can be computed. In this project the first 2 years can yield net cash inflows of ₹ 38,000 which is deficit by ₹ 2,000 from the original investment. In the third year, out of cash inflows of ₹ 12,000, first ₹ 2,000

NOTES

are required to recover initial investment. Therefore, ₹ 38,000 form the first two years plus 2,000/12,000 from the third year are required. Thus, the payback period is 2 years and 2 months for the project *Z*.

In the above-mentioned examples, the projects were without the salvage value and therefore, there was no scope for salvage value in the computation of payback period. However, if the project is with salvage value and the same is considered in the determination of payback period, the process is known as *bailout*. Bailout is a method of determining the length of time that will be required for cash inflows and salvage value of the project to recoup the funds invested in a proposed project. This concept is based on the logic that a proposed project has a salvage value at the expiry of the project and, therefore, a due consideration must be given to this value in the evaluation of capital projects. In fact, it is an extension of the payback method.

The payback method suggests the ranking of projects according to the length of time they take to pay back their initial costs. In fact, the management decides beforehand the maximum payback period, *i.e*., *'cut-off period'*, beyond which a project is rejected. *Cut-off period* denoted the risk tolerance level in the firm. A project with a short payback period involves less risk than the one with a longer payback. Therefore, management always prefers to accept projects with quick payback because the short payback period in relation to the economic life would also indicate high profitability of a project. However, it is not always true because sometimes projects with shorter payback periods may be less profitable as compared to longer payback projects.

Another glaring weakness of the payback period as a device for evaluating investment is that it fails to consider whether the cash inflows are unevenly distributed over time. This method also does not take into account the time value of money. This lapse can be bridged by an improved method of payback technique—'*Discounted payback method*' which recognizes the time period required to equate cumulated present value of cash inflows with the present value of cash outflows in the evaluation of capital projects. It considers the amount of time required to convert the net present value of a project from negative to positive rather than the time required to recover the actual investment of the project. The period where the net present value of the project's cash flows amounts to zero is known as the *break-even period*. The period up to break-even period is the *'discounted payback period'*. The break-even period becomes the evaluation criterion for the selection of the projects. The projects with shorter discounted payback period are preferred.

Further, no consideration is given to cash inflows after the payback date under payback method. As a result, it hammers capital projects that yield small cash inflows in their early years and heavy cash inflows in their later years. However, to overcome this, drawback experts have developed a special device known as '*post payback profitability index*' which is a ratio between post payback profits and investment. The project with higher ratio is considered commercially more viable. Another limitation of the payback period method is to decide about cut-off period. Most of these criticism stem from the emphasis that the payback method places on liquidity rather than profitability; this character is its primary weakness (Rosell and Frasure, 1980).

Nevertheless, the utter simplicity of the payback period method makes it attractive to many persons, particularly non-financial people.

Payback Reciprocal: This method attempts to estimate the internal rate of return. The payback reciprocals are calculated by dividing annual cash inflow by the amount of investment. This method is considered suitable only if the life of the project is at least twice the payback period. To be more accurate, the payback reciprocal should be used only for such projects that generate uniform cash inflows. This is because non-uniform cash flows may cause the payback reciprocal to be a very poor estimate of the internal rate of return which is used as measuring yard for the evaluation of the project under this method.

Accounting Rate of Return

Accounting rate of return method also known as the *financial statement method, the book value method, the unadjusted rate of return method* is consistent with the accounting measurements of income by using accounting records. It is based on the traditional concepts of accounting income and return on investment. Under this method, the evaluation of the project is done on the basis of rate of return. The rate of return on investment may be computed by several different methods yielding somewhat different results. The most common among them are:

- *Average rate of return on original investment:* This method is perhaps the simplest and most common method used by small firms. In this method, the average rate of return is simply calculated by dividing average earnings after depreciation and tax from the investment by total investment.

$$\text{Average rate of return (ARR)} = \frac{\text{Average annual earnings}}{\text{Total investment}} \times 100$$

Illustration 4.1: A project which costs ₹ 1,20,000 is expected to yield total earnings after depreciation and tax of ₹ 60,000 over 3 years. The scrap value of the project after 3 years has been calculated as ₹ 20,000. Calculate the average rate of return on the investment.

Solution

$$\text{Average earning (after depreciation and tax)} = \frac{60,000}{3}$$

$$= ₹\ 20,000$$

$$\text{Total investment in the project} = ₹\ 1,20,000 - 20,000 \text{ (Scrap value)}$$

$$= ₹\ 1,00,000$$

$$\text{Average rate of return} = \frac{\text{Average annual earnings}}{\text{Total investment}} \times 100$$

$$= \frac{20,000}{1,00,000} \times 100$$

$$= 20\%$$

- *Average rate of return on average investment:* In this method, instead of original investment, average investment is used for determining rate of return on investment. The philosophy for the use of average investment is

NOTES

that as time passes and assets depreciate, the book value of the projects declines. Therefore, the amount of investment for determining rate of return should be average investment which is obtained by adding the beginning and ending value and diving the same by two. Thus,

$$\text{Average rate of return} = \frac{\text{Average annual earnings}}{\text{Total investment}} \times 100$$

Illustration 4.2: Calculate average rate of return on average investment by using the data given in Illustration 4.1:

$$\text{Average rate of return} = \frac{20,000}{70,000} \times 100$$

$$= 29\% \text{ App.}$$

Working:

Calculation of average investment:

$$= \frac{\text{Original investment} + \text{Scrap value}}{2}$$

$$= \frac{1,20,000 + 20,000}{2}$$

$$= \frac{1,40,000}{2} = ₹\ 70,000$$

The results of the above two illustrations, clearly reveal that there is significant variation in the accounting rate of return with the change in the investment base. However, this does not mean that one method is superior to the other. Each investment base is suitable for a particular business decision. Therefore, management should use the investment base which it finds most appropriate for the purpose. Firms prefer to use rate of return method for evaluating capital projects as they find required data readily available from financial statements for evaluation. Further, this technique considers entire earnings of a project rather than earning up to the payback period. At the same time, the accounting rate of return is easy to operate and simple to understand because executives find it closely parallel to the traditional concepts of income analysis and investment return. However, the accounting rate of return method is weak in that it fails to consider the time value of money by treating each future rupee of income as equivalent to the rupee invested or earned presently. Another weakness of this method is that no consideration is given to cash inflows that may be associated with a project.

II. Discounted Cash Flow (Time-adjusted) Method

The discounted cash flows method deals with actual cash flow instead of the accounting concept of income. It recognizes the time value of money and claims that a rupee in hand today possesses more worth than a rupee to be received in future. The amount of money to be received in the future is not equivalent to the same amount of money held at the present time because of the difference in time. The difference in the value of two amounts of the two different periods represents the interests, which is the cost of money to the borrower and a return to the lender.

On this plea the discounted cash flow method discounts money due in the future to compensate for the interest it could earn if it were available today instead. The discounted value is called the present worth. This concept is obviously significant for evaluation of capital project by ensuring that the amount of investment is not more than the present value of the future cash receipts. This is done by discounting future cash receipts to present value.

The discounted cash flow model is based on the following assumption:

- The cash inflows from a project occur at the end of each period;
- The cost of capital—cost of funds obtained from investors—is determinable; and
- The rate of interest used is relevant for the life of the project. This would also mean that the cash inflows can be reinvested at the discounting rate.

The major techniques of discounted cash flow method have been discussed below:

The Net Present Value Method

The net present value method attempts to discount the cash flows of a project to their present value using a pre-determined discount rate representing the cost of capital. This method aims to find the net present value of the project which represents the difference between the present value of cash inflows and the present value of cash outflows. If the present value of the cash inflows exceeds the present value of cash outflows the result is termed positive which indicates that the project earns more than the minimum acceptable rate of interest. The result is negative if the present value of cash outflows is greater than the present value of cash inflows because it would mean that the rate of return is less than the minimum acceptable rate. The net present value method involves the following steps:

(i) Estimation of project's cash inflows and outflows over the entire economic life of the project;

(ii) Discounting the cash flows to the present value by using the firm's cost of capital;

(iii) Calculating the net present value of the project by deducting the present value of cash outflows from the present value of cash inflows; and

(iv) The proposed project is accepted if the net present value of the project is positive and, otherwise, rejected. However, the mutually exclusive projects with positive net present value should be ranked in order of net present values—the higher the net present value, the higher the ranking.

The present value of a future amount of money can be computed by multiplying the future amount by the present value of ₹ 1. The present value of ₹ 1 can be computed with the use of following mathematical formula:

$$\text{Present value of } ₹\,1 = \frac{1}{(1+r)^n}$$

where r = interest rate or discount rate

n = number of years

NOTES

Assume, for example, that ₹ 120 is to be received two years later with compound interest at 20 per cent.

The present value of ₹ 120 will be:

Present value of ₹ 1 at the end of 2nd year at 20 per cent discount rate:

$$= \frac{1}{(1+20/100)^2}$$

$$= \frac{1}{(1.20)^2}$$

$$= \frac{1}{1.44}$$

$$= ₹\ 0.6944$$

Present value of ₹ 120 at the end of 2nd year at 20 per cent discount rate

$$= ₹\ 0.6944 \times ₹\ 120$$

$$= ₹\ 83.333$$

Thus, the present value of ₹ 120 at the expiry of two years at an interest rate of 20 per cent will be ₹ 83.333. In other words it means we have to invest ₹ 83.333 in order to receive ₹ 120 after 2 years at a interest rate of 20 per cent.

Often business executives have to compute the present value of a series of cash inflows to be received at periodic intervals in the future. For example ₹ 5,000 is to be received at the end of each year of six years with a compound interest of 10 per cent. Under such a situation the present value of six annual return is to be computed as shown below:

End of Year	*Present Value of Annual Returns*	$\left[\frac{1}{(1+r)^n} F^*\right]$
1	$\frac{1}{(1+10/100)^1} \times 5,000$	– ₹ 4,545
2	$\frac{1}{(1.10)^2} \times 5,000$	= ₹ 4,132
3	$\frac{1}{(1.10)^3} \times 5,000$	= ₹ 3,756
4	$\frac{1}{(1.10)^4} \times 5,000$	= ₹ 3,415
5	$\frac{1}{(1.10)^5} \times 5,000$	– ₹ 3,105
6	$\frac{1}{(1.10)^6} \times 5,000$	= ₹ 2,822
Present value of ₹ 5,000 received at the end of each year for 6 years (Total ₹ 30,000)		= ₹ 21,775

On the basis of above working, the following equation can be developed to compute the present value for all the cash inflows generated out of an investment:

$$PV = \frac{F1}{(1+r)^1} + \frac{F2}{(1+r)^2} + \frac{F3}{(1+r)^3} + \ldots \frac{Fn}{(1+r)^n}$$

where PV = Present value

F1, F2 and so on = Future cash inflow

r = Rate of interest

n = Expected life of the project.

Thus, the present value of annual returns in case of above example can also be computed as under:

$$PV = \frac{F1}{(1+r)^1} + \frac{F2}{(1+r)^2} + \frac{F3}{(1+r)^3} + \ldots \frac{Fn}{(1+r)^n}$$

$$= \left[\frac{5,000}{\left[1+\frac{10}{100}\right]^1} + \frac{5,000}{\left[1+\frac{10}{100}\right]^2} + \frac{5,000}{\left[1+\frac{10}{100}\right]^3} + \frac{5,000}{\left[1+\frac{10}{100}\right]^4} + \frac{5,000}{\left[1+\frac{10}{100}\right]^5} + \frac{5,000}{\left[1+\frac{10}{100}\right]^6}\right]$$

$$= \left[\frac{5,000}{1.10} + \frac{5,000}{1.21} + \frac{5,000}{1.331} + \frac{5,000}{1.4641} + \frac{5,000}{1.61051} + \frac{5,000}{1.771561}\right]$$

$$= (4,545 + 4,132 + 3,756 + 3,415 + 3,105 + 2,822)$$

$$= ₹\ 21,775.$$

On the same basis the net present value can be computed with the use of the following formula:

$$NPV = \frac{F1}{(1+r)^1} + \frac{F2}{(1+r)^2} + \frac{F3}{(1+r)^3} + \ldots \frac{Fn}{(1+r)^n} - I$$

where

NPV = Net present value

F1, F2..... = Future cash inflow

r = Rate of interest

n = Expected life of the project

I = Initial cost of the investment

The above-given mathematical formula can only be applied to such decisions where all cash outflows of the project take place in the initial period. In case of the investment where cash outflows is spread over more than one year, the cash outflows are to be converted to present value along with cash inflows. Accordingly, net present value model for conventional investment as given above is to be modified as shown below to have scope for non-conventional investment decisions.

$$NPV = \frac{F0}{(1+r)^0} + \frac{F1}{(1+r)^1} + \frac{F2}{(1+r)^2} + \frac{F3}{(1+r)^3} + \ldots \frac{Fn}{(1+r)^n} - I_0 + \frac{I_1}{(1+r)^1} + \frac{I_2}{(1+r)^2} + \frac{I_3}{(1+r)^3} + \ldots \frac{I_n}{(1+r)^n}$$

where

I_0, I_1, I_2 and so on = Cash outflows from zero period to nth period.

The present values of the cash flows can also be obtained more simply by consulting present value tables that show the present worth of a future rupee for given time periods and specified interest rate.

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Illustration 4.3 Super Ess Ltd., is considering two mutually exclusive projects with an investment of ₹ 40,000 each. The details about the projects are given below:

Years	Earnings before Depreciation after Taxation (Cash Flows)	
	Project EMM (₹)	Project BEE (₹)
1	4,000	20,000
2	5,000	18,000
3	8,000	15,000
4	10,000	12,000
5	12,000	10,000
6	15,000	8,000
7	20,000	5,000

Management has decided to earn 10 per cent return on its investments. You are required to calculate present value of the two projects and suggest which of the two projects you consider is financially preferable.

Solution

Statement Showing Net Present Value (NPV) of EMM and BEE Projects

Year	Project EMM			Project BEE		
	Cash Flows (₹)	PV of ₹ 1 (10%)	PV of Cash Flows (₹)	Cash Flows (₹)	PV of ₹ 1 (10%)	PV of Cash Flows (₹)
1	4,000	0.91	3,640	20,000	0.91	18,200
2	5,000	0.83	4,150	18,000	0.83	14,940
3	8,000	0.75	6,000	15,000	0.75	11,250
4	10,000	0.68	6,800	12,000	0.68	8,160
5	12,000	0.62	7,440	10,000	0.62	6,200
6	15,000	0.56	8,400	8,000	0.56	4,480
7	20,000	0.51	10,200	5,000	0.51	2,550
Present value of cash inflows			46,630			65,780
Less: Cost of project:			40,000			40,000
Net present value			6,630			25,780

Comment

Above statement shows that project BEE is with highest net present value of ₹ 25,780 and therefore, must be preferred over project EMM which has net present value of ₹ 6,630 only. It means that the value of the firm will increase by ₹ 25,780 if it invests in project BEE but by only ₹ 6,630 if it invests in project EMM.

Treatment of Project Salvage/Scrap Value in the Computation of NPV: Often capital projects when disposed of on their expiry realise some cash inflow in the shape of salvage value or scrap value. Such a value of the project is considered cash inflow for the project and is added with the cash inflows as generated by the project during its active life and, therefore, enters into computation of net present value of the project. Thus, salvage value of the project becomes a part of the n^{th} year cash inflow. Even the estimated salvage value of the project enters in the computation of the net present value of the project.

Illustration 4.4: National Company Ltd., is faced with the problem of choosing between two mutually exclusive projects with a cost of ₹ 45,000 each and requests you to advise them on the profitability of the projects. The cash inflows for the estimated life of the projects are expected to be as follows:

Years	Cash Inflows	
	Project-A (₹)	Project-B (₹)
1	4,000	12,000
2	12,000	16,000
3	16,000	20,000
4	24,000	12,000
5	16,000	8,000

The company's rate of return is 10 per cent. Both the projects have a five-year life. Project A has a scrap value of ₹ 8,000 and Project B has ₹ 5,000 scrap value.

Solution

Statement Showing Net Present Value (NPV) of A and B Projects

Year	Project A			Project B		
	Cash Flows (₹)	PV of ₹ 1 (10%)	PV of Cash Flows (₹)	Cash Flows (₹)	PV of ₹ 1 (10%)	PV of Cash Flows (₹)
1	4,000	0.91	3,640	12,000	0.91	10,920
2	12,000	0.83	9,960	16,000	0.83	13,280
3	16,000	0.75	12,000	20,000	0.75	15,000
4	24,000	0.68	16,320	12,000	0.68	8,160
5	24,000*	0.62	14,880	13,000*	0.62	8,060
Present value of cash inflows			56,800			55,420
Less: Cost of project			45,000			45,000
Net present value			11,800			10,420

Comment

According to the above analysis, the National Company Ltd., should invest in Project A. Although both projects exceed the minimum rate-of-return objective, but the net present value of ₹ 11,800 from the Project A is more than the net present value of ₹ 10,420 from the Project B. Therefore, the Project A promises slightly more than Project B in terms of addition to the value of the company.

Internal Rate of Return (IRR) Method

The second discounted cash flow technique of investment appraisal is the Internal Rate of Return method. It is also known as the *discounted rate of return method, the adjusted rate of return method, investors method*, and *time-adjusted rate of return method*. This method attempts to determine the rate of interest which when applied to the future income stream will exactly equate the present value of that stream to the present value of the investment. Such a rate of interest is technically known as *Internal Rate of Return*. Thus, the internal rate of return is the discount

NOTES

rate that equated the present value of net benefits from the project with the cost of the project. In simple words, the internal rate of return is that discount rate which will cause the net present value of the project to be equal to zero. This rate is also known as the "break-even" rate. The formula for calculating the internal rate of return is:

$$NPV = \frac{F1}{(1+r)^1} + \frac{F2}{(1+r)^2} + \frac{F3}{(1+r)^3} + \ldots \frac{Fn}{(1+r)^n} - I = 0$$

where

F1, F2 and so on = Future cash inflow

r = Rate of interest

n = Expected life of the project

I = Initial cost of investment

Under this method, the value of 'r'— internal rate of return is unknown which is determined internally. It is with this philosophy that this technique is known as internal rate of return method.

When the internal rate of return for the project is determined, it is compared with the company's predetermined rate of return to measure the profitability of the project. The project that produces an internal rate of return greater than the company's predetermined rate of return (usually the cost of capital) is selected and is normally rejected in other cases. Where the method is used to choose between mutually exclusive projects, the project that produces the higher rate of return is selected.

The computation of the internal rate of return requires the same basic data which is used for the computation of net present value. There is no organised system for calculating the internal rate of return. It is found by trial and error. The present value of the cash flows from an investment must be computed at some arbitrarily selected interest rate. Where the present value of cash inflows so computed is equal to investment cost that rate is selected. Normally the rate of return ranges between 10 per cent to 15 per cent, therefore, 10 per cent is a good start point for most of the problems.

Business experts have developed a systematic procedure for determining the internal rate of return wherein a factor technically known as "*factor of the time-adjusted rate of return*" is computed by dividing initial investment by annual cash flow *i.e.*,

$$\text{Present value factor} = \frac{\text{Initial investment}}{\text{Annual cash inflows}}$$

The factor so computed shows present value of ₹ 1 received annually over ₹n' years and thus helps executives to determine the internal rate of return of the particular project from the present value annuity tables. The method can be well understood from the following illustration.

Illustration 4.5: Super Group Company Ltd. is considering a project that costs ₹ 22,600 has a life of 10 years. The project is expected to yield an annual cash flow of ₹ 4,000. Calculate internal rate of return.

Solution

$$\text{Present value factor} = \frac{\text{Initial investment}}{\text{Annual cash inflows}}$$

$$= \frac{₹\ 22,600}{4,000}$$

$$= 5.65$$

The above analysis reveals that a factor of 5.65 will equate cash inflow series of ₹ 4,000 with an initial investment of ₹ 22,600. To find internal rate of return we will now consult present value annuity tables. We can easily that at 12 per cent rate of return for a period of 10 years, the present value is 5.650 which is exactly the figure of the factor we have computed. Therefore, 12 per cent rate of return is the internal rate of return for the present problem.

The above-explained systematic procedure used for determining the internal rate of return is applicable only for such investment decision where annual cash flows from the investments are uniform over the entire life of the project. The investment projects with non-uniform annual cash flows are not within the scope of the present value factor system and as such it is not possible to use annuity tables to find internal rate of return. Therefore, in such investments, the internal rate of return is determined by hit and trial.

Illustration 4.6: Ordinary Company Ltd. is considering purchase of modern plant. Two types of plants —TEE and SEE are available in the market costing ₹ 4,25,070 and ₹ 3,18,030 respectively. The plants are mutually exclusive. The profits before charging depreciation but after payment of income tax are as follows:

Years	*Cash Inflows*	
	Plant TEE (₹)	*Plant SEE* (₹)
1	90,000	70,000
2	1,20,000	1,00,000
3	1,80,000	1,30,000
4	90,000	90,000
5	60,000	60,000

Calculate the internal rate of return and comment on the profitability of the project.

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Solution

Statement Showing Internal Rate of Return for Plant—TEE

Year	Cash Flows (₹)	Trail I		Trail II		Trail III	
		Present Value Factor at 8%	PV of Cash Flows (₹)	Present Value Factor at 10%	PV of Cash Flows (₹)	Present Value Factor at 9%	PV of Cash Flows (₹)
1	90,000	0.926	83,340	0.909	81,810	0.917	82,530
2	1,20,000	0.857	1,02,840	0.826	99,120	0.841	1,00,920
3	1,80,000	0.794	1,42,920	0.751	1,35,180	0.772	1,38,960
4	90,000	0.735	66,150	0.683	61,470	0.708	63,720
5	60,000	0.681	40,860	0.621	37,260	0.649	38,940
Present Value of cash inflows			4,36,110		4,14,840		4,25,070
Less: Cost of plant			4,25,070		4,25,070		4,25,070
Net present value			11,040		(–) 10,230		0

Statement Showing Internal Rate of Return for Plant—SEE

Year	Cash Flows (₹)	Trail I		Trail II		Trail III	
		Present Value Factor at 11%	PV of Cash Flows (₹)	Present Value Factor at 12%	PV of Cash Flows (₹)	Present Value Factor at 13%	PV of Cash Flows (₹)
1	70,000	0.900	63,000	0.892	62,440	0.885	61,950
2	1,00,000	0.811	81,100	0.797	79,700	0.783	78,300
3	1,30,000	0.731	95,030	0.711	92,430	0.693	90,090
4	90,000	0.658	59,220	0.635	57,150	0.613	55,170
5	60,000	0.593	35,580	0.567	34,020	0.542	32,520
Present Value of cash inflows			3,33,930		3,25,740		3,18,030
Less: Cost of plant			3,18,030		3,18,030		3,18,030
Net present value			15,900		7,710		0

Comments

The above result clearly shows that project TEE has an internal rate of return at 9 per cent whereas the internal rate of return for project SEE is 13 per cent. Therefore, it will be profitable for the company to purchase plant SEE.

Illustration 4.7: A company has to make a choice between two investments—Project A and B, the immediate capital outlays being ₹ 1,35,000 and ₹ 1,13,180 respectively. They have an estimated life of 5 years and 4 years respectively with no salvage value. The company's required rate of return is 10 per cent. The anticipated net cash inflows for the projects over the successive years are as follows:

Years	Net Cash Inflows	
	Project-A (₹)	Project-B (₹)
1	20,000	25,000
2	30,000	30,000
3	45,000	40,000
4	55,000	65,000
5	40,000	–

Calculate Internal Rate of Return of the projects. Which project would you recommend and why?

Solution

Statement Showing Internal Rate of Return of Project-A

Year	Cash Flows (₹)	Trail I		Trail II		Trail III	
		Present Value Factor at 10%	PV of Cash Flows (₹)	Present Value Factor at 11%	PV of Cash Flows (₹)	Present Value Factor at 12%	PV of Cash Flows (₹)
1	20,000	0.909	18,180	0.901	18,020	0.893	17,860
2	30,000	0.826	24,780	0.812	24,360	0.797	23,910
3	45,000	0.751	33,795	0.731	32,895	0.712	32,040
4	55,000	0.683	37,565	0.659	36,245	0.635	34,925
5	40,000	0.621	24,840	0.593	23,720	0.567	22,680
Present Value of cash inflows			1,39,160		1,35,240		1,31,415
Less: Cost of plant			1,35,000		1,35,000		1,35,000
Net present value			4,160		240		(–) 3,585

The analysis of the above statement reveals that at 10 per cent discounting rate the net present value of the project amounts to ₹ 4,160. In the second attempt a higher discounting rate *i.e.*, 11 per cent was used in order to reduce the amount of net present value which reached to a figure of ₹ 240. In the third attempt 12 per cent discounting rate was tested to equate the net benefits and cost of the project, it resulted in a negative net present value of ₹ 3,585. The comparative study of the result indicates that 11 per cent rate of return is the rate that approximately equates the present value of inflows and outflows. To bring more accuracy in the results the statistical technique of interpolation can be used. Thus, internal rate of return is computated as 11.06 per cent.

Statement Showing Internal Rate of Return of Project-B

Year	Cash Flows (₹)	Trail I		Trail II		Trail III	
		Present Value Factor at 10%	PV of Cash Flows (₹)	Present Value Factor at 12%	PV of Cash Flows (₹)	Present Value Factor at 13%	PV of Cash Flows (₹)
1	25,000	0.909	22,725	0.893	22,325	0.885	22,125
2	30,000	0.826	24,780	0.797	23,910	0.783	23,490
3	40,000	0.751	30,040	0.712	28,480	0.693	27,720
4	65,000	0.683	44,395	0.635	41,275	0.613	39,845
Present Value of cash inflows			1,21,940		1,15,990		1,13,180
Less: Cost of plant			1,13,180		1,13,180		1,13,180
Net present value			8,760		2,810		–

The above computation indicates that at discount rate of 13 per cent, the present value of cash inflow is equal to the cost of project, therefore, this rate is the internal rate of return for Project B.

NOTES

Both the projects satisfy the company's selection criteria *i.e.*, minimum rate of return of 10 per cent. However, Project B will be preferred over a Project A as its internal rate of return (13 per cent) is higher than the internal rate of return of Project A which is 11.06 per cent.

The NPV and IRR Methods Compared: Both methods make use of discounted cash flows and both consider amount and time of the cash flow arising from a project. Therefore, there is much similarity between these two techniques. But at the same time they differ with each other on certain grounds. The important among them are:

(i) Under net present value method discounting factor *i.e.*, interest rate of the cash flow is known whereas such rate is worked out in case of internal rate of return.

(ii) The market rate of interest is used as basis for determining cost of capital which is mostly discounting factor under net present value method. On the other hand, the discounting factor and the market rate of interest are not so closely associated.

(iii) A project may have more than one IRR which is not possible in case of NPV.

Profitability Index

Profitability index represents the ratio between present value of cash inflows and present value of cash outflows of a project. Thus,

$$\text{Profitability index} = \frac{\text{Present value of cash inflows}}{\text{Present value of cash outflows}}$$

This ratio provides a common measure for investments of different magnitude by expressing the present value of projects per rupee of investment. If the ratio is one or more than one the result is termed as positive and the project is considered desirable. The project is considered undesirable under a reverse result. The higher the profitability index, the more desirable the project. Thus, it also helps executives in the ranking of competing projects particularly when investment cost differs significantly.

Illustration 4.8: A project requires initial investment of ₹ 85,000 and is expected to give cash flow of ₹ 18,000, ₹ 25,000, ₹ 10,000, ₹ 25,000 and ₹ 30,000 for five years. The project has a salvage value of ₹ 10,000. The company's target rate of return is 10 per cent. Calculate the profitability of the project by using profitability index method.

Solution

Statement Showing Net Present Value

Year	*Cash Flows (₹)*	*Present Value Factor at 10%*	*Present Value of Cash Flows (₹)*
1	18,000	0.909	16,362
2	25,000	0.826	20,650
3	10,000	0.751	7,510
4	25,000	0.683	17,075
5	40,000	0.621	24,840
Present value of cash flows			86,437

Note: Cash flow of the last year includes salvage value of ₹ 10,000.

$$\text{Profitability index} = \frac{\text{Present value of cash inflows}}{\text{Present value of cash outflows}}$$

$$= \frac{86,437}{85,000}$$

$$= 1.016$$

The profitability index is 1.016 which means net present value is positive. Therefore, project is desirable.

Check Your Progress

3. What do you mean by bailout?
4. What is the breakeven period?
5. What is the profitability index?

4.4 THE FINANCING MIX OR CAPITAL STRUCTURE DECISION

Funds are required in order to run a business smoothly and successfully. Finance plays an important role right from the inception of business to its winding up. Both inadequacy and excess funds are bad for a business. So it is significant to correctly estimate the capital requirements of a business. Not only estimation of total requirement of capital is important but determination of capital structure is also very important. As per Gerestenberg, 'capital structure of a company refers to the composition or make-up of its capitalization and it includes all long-term capital resources viz. loans, reserves, shares and bonds.' So, it can be concluded that capital structure is the combination of debt and equity securities and termed as the permanent sources of financing.

The terms financial structure, capital structure and capitalization are different and should not be mixed up. Financial structure is composed of a specific proportion of short-term debt, long-term debt and shareholder's funds. In other terms, financial structure means all the financial resources used by a firm. The term capitalization is a quantitative concept which tells us about the total amount of securities or capital issued by a company, whereas the term capital structure is the qualitative aspect which tells us about the proportion of various securities in the securities issued. A company can raise money by issuing debentures, equity shares and preference shares and capital structure defines the respective proportion of each of these securities. Capitalization defines the total amount of all these sources. Following example makes this difference more clear:

Illustration 4.9

Calculate the capitalization, capital structure and financial structure of the company from the following information:

Equity share capital	₹15,00,000
Preference share capital	₹10,00,000
Retained earnings	₹8,00.000
Long term loans	₹11,00,000
Debentures	₹6,00,000
Current liabilities	₹5,00,000

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Solution:

1) Capitalization is the addition of equity share capital, preference share capital, long term loans and debentures. 15,00,000 + 10,00,000 + 11,00,000 + 6,00,000 = 42,00,000.

2) Capital structure is ₹42,00,000 and is calculated as follows:

Source	Amount	Proportion
Equity Share Capital	₹15,00,000	35.72
Preference Share Capital	₹10,00,000	23.81
Long Term Loans	₹11,00,000	26.19
Debentures	₹6,00,000	14.28
	42,00,000	100

Some authors are in favor of including retained earnings in the capital structure. In that case, capital structure is ₹ 50,00,000.

Source	Amount	Proportion
Equity Share Capital	₹15,00,000	30
Preference Share Capital	₹10,00,000	20
Long Term Loans	₹11,00,000	22
Debentures	₹6,00,000	12
Retained Earnings	₹8,00,000	16
	50,00,000	100

3) Financial structure includes all the sources, long as well as short sources of capital.

Source	Amount	Proportion
Equity Share Capital	₹15,00,000	27.27
Preference Share Capital	₹10,00,000	18.18
Long Term Loans	₹11,00,000	20
Debentures	₹6,00,000	10.91
Retained Earnings	₹8,00,000	14.55
Current Liabilities	₹5,00,000	9
	55,00,000	100

Types or Forms of Capital Structure

Capital structure of a company can be any of the following:

- Equity share
- Equity and preference shares
- Equity shares and debentures
- Equity, preference and debentures

Financing a firm's assets is a significant decision in every business. There should be a proper mix of debt and equity in financing all the assets. When a firm uses long term, fixed interest bearing financial sources (preference and debt) in capital structure along with the equity shares then, such concept is called financial leverage or trading on equity. Long term fixed interest bearing sources of finance

are used by firms in order to increase their earnings to the equity shareholders. Interest payment is tax deductible which increases earnings available to the shareholders but this does not increase the earning of the firm (profit) which is possible due to the efficiency of the operation of the firm. The impact of using long term fixed interest bearing sources can be understood by the following examples:

Illustration 4.10

John Ltd has 20000 equity shares of ₹100 each in its capital structure at present. The board of directors are planning to raise further ₹ 30,00000 to finance its expansion program. It has following three options available to finance their requirement:

- They can raise 30000 equity of Rs100 each.
- Issue 30000 debentures of ₹100 each and having 6% interest rate.
- Issue of 30000 8% preference shares of ₹100 each

Its current earnings before interest and taxes is ₹10,00000. Determine earnings per share in all the three options and suggest which option is best for the company. Assume 50% corporate tax rate.

Solution:

	Option 1	Option 2	Option 3
EBIT	1000000	1000000	1000000
less: Interest	-	180000	-
Earning after interest but before tax	1000000	820000	1000000
Less: Tax 50%	500000	500000	500000
Earnings after tax (EAT)	500000	320000	500000
Less: preferential dividend	-	-	240000
Earnings available for the equity shares	500000	320000	260000
No of equity shares	50000	20000	20000
EPS	10	16	13

EPS is earnings available to equity shares divided by numbers of equity shares. As EPS is highest in second option and lowest in first option so, John Ltd should raise funds by issuing 30000 6% debentures of ₹100 each in order to finance its expansion plan. By doing so, they can raise earnings of the equity shareholder without diluting their control on the business.

Illustration 4.11

XYZ ltd has ₹ 6,00,000 equity shares at ₹100 each in its existing capital. The company has some modernization plans and wants to raise ₹4,00000. It has the following alternatives available:

- All equity shares
- Equity shares of ₹2,00,000 and debentures ₹2,00,000 (₹100 per debenture, 10% rate of interest)
- All debentures at 10% rate of interest
- ₹ 2,00,000 from equity shares and ₹2,00,000 by issuing 8% preference shares of ₹100.

NOTES

XYZ's earnings before interest and taxes are ₹ 2,00,000 and assume corporate taxes 50%. Calculate EPS and suggest which source of financing the company should opt for.

Solution:

	Plan 1	Plan 2	Plan 3	Plan 4
EBIT	200000	200000	200000	200000
less: Interest	-	20000	40000	-
Earning after interest but before tax	200000	180000	160000	200000
Less: Tax 50%	100000	90000	80000	100000
Earnings after tax (EAT)	100000	90000	80000	100000
Less: preferential dividend	-	-	-	16000
Earnings available for the equity shares	100000	90000	80000	84000
No of equity shares	10000	8000	6000	8000
EPS	10	11.25	13.33	10.5

Above calculation shows that EPS is maximum in plan 3 which is all debt plan. So, the XYZ company should finance its expansion plan through raising debt. After plan 3, plan 2 gives the second highest EPS.

Financial breakeven point

This concept is important in designing capital structure. Financial breakeven point is that level of earnings before interest and taxes (EBIT) which is equal to the fixed financial charges (interest and preference dividend). At this level of EBIT, earnings per shares are equal to zero. If the EBIT is less than the financial breakeven point then EPS should be negative, therefore fixed interest bearing sources should be reduced in the capital structure. So, companies always try to maintain their EBIT beyond financial breakeven point to earn returns for the equity shareholders. Financial breakeven point is calculated by using following formulas:

1) When capital structure has equity shares and debt only.

   Financial breakeven point is equal to the interest payable on the debt.

2) When Capital structure has equity shares, preference shares and debt only.

Financial breakeven point = Interest + (Dividend on preference shares/ (1-t))

Suppose, fixed interest for a company is ₹30,000 and preference dividend is ₹10,000 (assume tax rate is 50%) then, financial breakeven point is :

$$= 30000 + \frac{10000}{1-.5}$$

$$= 50000$$

So, ₹50,000 is the financial breakeven point for the company.

Point of indifference

This point refers to that level of EBIT where earnings per shares of two financial plans are equal. It means two financial plans give same earning per shares. Following formula is used to calculate the level of EBIT.

$$\frac{(X - Int_1)(1-t) - PD)}{S_1} = \frac{(X - Int_2)(1-t) - PD)}{S_2}$$

X = breakeven level of EBIT

T = tax rate

S_1 = number of equity shares in alternative 1

S_2 = number of equity shares in alternative 2

Int_1 = interest payable under alternative 1

Int_2 = interest payable under alternative 2

Illustration 4.12

Beta company has a new project of diversification which needs a capital outlay of ₹600 lacs which can be raised by issuing equity share capital of ₹100 each or by issuing equity shares of ₹400 lacs at ₹100 per shares and ₹200 lacs loan can be raised having interest rate of 15%. Assume tax rate as 50%. Calculate indifference point in these two alternatives of financing.

Solution:

Indifference level of EBIT by using above mentioned formula:

$$\frac{(X - 0)(1 - .5) - 0)}{600} = \frac{(X - 30)(1 - .5) - 0)}{400}$$

By solving above equation for X, we will get X = 90. So, 90 lacs is the level of EBIT where these two alternative financing plans give equal level of earnings per shares.

4.4.1 Capital Structure and Asset Structure Match

Capital structure of a company refers to the composition or make-up of its capitalization and it includes all long-term capital resources viz. loans, reserves, shares and bonds. So, it can be said that capital structure is the combination of debt and equity securities and termed as the permanent sources of financing. Capital structure of a company can be any of these, equity share, equity and preference shares, equity shares and debentures and equity, preference and debentures. Financing a firm's assets is a significant decision in every business and there should be a proper mix of debt and equity in financing all the assets.

Asset structure is defined as the proportion of capital invested in each type of asset i.e. short-term assets like inventory, debtors, cash balance, marketable securities and so on, and long term assets like land and building, plant and machinery, furniture, fixture and so on. A proper match should be made between the source of finance and type of asset. Short-term assets should be financed by the short term sources of finance and long term assets should be financed by the long term sources of finance. Thus, there must be a proper match of asset and its source of finance. Some companies follow proper matching of short-term asset with short term source of finance (long-term asset and long-term source of finance) and some other companies use aggressive and conservative approach to finance their asset structure. So we can say that asset structure financing can be of three types: matching, conservative and aggressive. If company finances long term asset

NOTES

with short term source of finance then they are using aggressive approach of financing and if company uses long term source of finance to finance their short term assets then they are using conservative approach of asset financing. So a proper consideration should be given to the capital structure mix and asset structure mix.

The capital structure decision process is depicted in the following diagram:

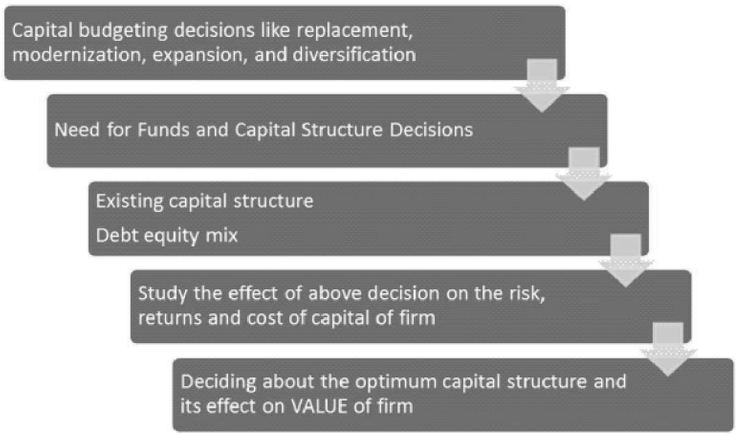

Fig. 4.2 *Capital Structure Decision Process*

Liquidity, Solvency, and Flexibility

Let us dicuss these terms.

Liquidity: It means the firm's ability to cover its financial obligation in a timely manner. In other words, we can say that the firm has enough financial resources to pay its short term financial obligations. Lack of liquidity leads to bankruptcy because when company borrows more than its capacity and fails to pay interest charges on it, then the lender clutches the asset of the company and endangers its existence. Thus, study of cash flows of the company is of most significance to the company in designing capital structure. Sometimes, it may be possible that the company is earning good profits but it is out of cash or does not have sufficient cash to pay its fixed interest charges. There may be several reasons for this insufficiency of cash such as higher level of inventory, high receivables, more investment in fixed assets etc. Cash flow analysis gives some advantages over the EBIT-EPS analysis. These are, 1) This analysis concentrates on the solvency of the company in adverse circumstances, 2) This analysis takes into consideration changes in balance sheet and other cash flows not depicted in the profit and loss account. 3) It also gives a brief about the financial resources inventory which a company has at a particular point of time. 4) It evaluates the financial distress of the company.

Liquidity can be measured through the cash flows from the operations, cash conversion period, cash conversion efficiency of the firm. Cash conversion period is the conversion of raw material to cash from sales. Sequence of which is shown in the following diagram:

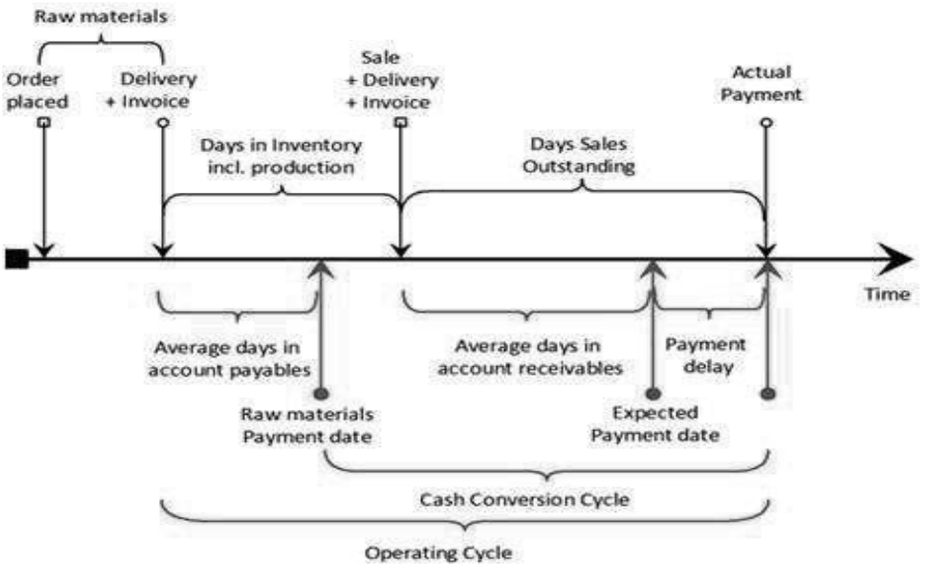

Fig. 4.3 *Sequence of Cash Conversion Period*

Companies use various methods in assessing their liquidity positions in order to do cash flows analysis. Some of which are discussed below:

- **Ratio of Fixed charges to net cash inflow:** This ratio is calculated to find out the coverage of fixed interest charges including principal to net cash inflows. Greater the ratio, more the amount of debt that company can use in its capital structure as company has multiple time cash inflows to pay its fixed interest charges.
- **Cash budget:** This is another method to study the cash flows of a company. Companies used to prepare their cash budget which show whether cash inflows are sufficient to cover their fixed obligations or not. The basic purpose of preparing cash budget is to find out the deviation of expected cash flows and actual cash flows. All this information can be used to find out the insolvency limit tolerable to the top management. Hence, it can be stated that cash flow analysis is important for the liquidity study of the company in designing its capital structure.
- **Various ratios:** One can assess company's liquidity position by calculating various ratios like current ratios, liquidity ratios, inventory turnover ratios and so on.

So, liquidity concept is related to the amount of cash which firm should keep with it for the uninterrupted operation of the business and avoid cost of distress.

Solvency: The ability of a firm to meet its long-term financial obligation is termed as solvency. Liquidity, as stated above, is a firm's ability to pay its short term financial obligation. On the other hand, solvency is related to the firm's ability to repay its long term financial obligations. Solvency of a firm is vital for the survival of the business. Illiquid firms may also lead to the bankruptcy even if they are solvent. Solvency is an accounting concept in which we compare firms' assets to the liabilities so that a proper match should be made between these two. Solvency

NOTES

of a firm can be checked by various ratios like debt-equity ratio, fixed cost coverage ratio, debt to asset and so on.

Flexibility: It refers to the firm's ability to adjust its capital structure as per the requirements of the funds. If a firm needs more funds then it must be in a position to raise more funds, only then the company will be in a position to repay its loan. Therefore, it is essential for firms to pick up the financial plan in which such types of adjustments are possible. So, a proper forecast of such changes should be made before designing the capital structure. This flexibility is also known as 'financial slack' which includes unused debt capacity, excess liquid assets, unutilized line of credit and access to various untapped sources of funds. Higher the debt capacity of the firm, higher is the unused debt capacity. If a firm relies more on debt financing at present, then if it needs more debt in future it has to pay more interest rate because its debt capacity has already been used to its fullest. In that case, the firm has to issue equity shares but the cost will also be very high as by using more debt in capital structure, firm has already increased its financial risk which again causes higher cost of equity. Thus, in order to safeguard its operating flexibility, firms are advised to issue equity shares in their initial stages of business and use debt financing at later stages of business. There should be flexibility in raising debts as well as in their repayments. To maintain such flexibility, firms generally incorporate call provision in their agreement which means that the firm can call the lender and repay them their principal amount. To get a desired level of flexibility in the capital structure, managers have to study a risk return trade off and match cost of early repayments of loan with its benefits.

Value Impact and Risk Consideration

Capital structure decisions have direct impact on the overall valuation of the firms. If firms are successfully able to decide about their optimum capital structure then they can have maximum value. While deciding about the optimum capital structure firms also take into consideration the risk factor associated with it.

Basically, risk can be divided into two parts, one is business risk and other one is financial risk. Business risk or operating risk is associated with the variability in the EBIT (earnings before interest and taxes). This variability is due to the external and internal factors of the business. Business risk is an unavoidable risk as business environment is given to the firms. But if firms are in a position to predict this type of risk with accuracy, they can avoid such risk. Variability in sales is due to two components: variability in sales and variability in expenses. Variability in sales is due to the general economic conditions, reasons belong to some particular industry, availability of raw materials, competitors, shift of consumer preference and so on.

Financial risk is related to the financial leverage of the firm. Greater use of debt in the capital structure of a firm causes more variability in the EPS (earnings per share). But if a firm decides not to use debt in capital structure, then financial risk can be avoided.

In finance, we have various theories to design an optimum capital structure. These theories describe the relationship of overall cost of capital, value of firm and leverage in capital structure. A brief description of these theories is as follows:

NOTES

Assumptions of Capital Structure

- First assumption of capital structure is that there are only two sources of finance i.e. debt and equity. Here, debt is a riskless long term debt (perpetual or irredeemable debt).
- Firm/Company has perpetual life.
- Business risk (variation in earnings due to variations in sales) and financial risk (increase of risk by using more debt in the capital structure) of the firms remain constant.
- Dividend payout is 100 per cent. This means there are no retained earnings.
- There is no growth in the earnings before interest and tax (EBIT). So, growth (g) is zero.
- There is absence of corporate tax.
- Investment decisions of the firm are constant which means firm has fixed level of fixed assets.
- Total financing of the firm remains constant. Firm is allowed to make changes in the proportion of debt and equity within the prescribed limit of total financing but it cannot change the total financing.
- Earnings of the firm remain constant. Market participants have similar level of expectations from the firm which leads to the constant level of earnings of the firm.

On the basis of these assumptions, following section of the capital structure is explained.

Different formulas are used to explain various theories of capital structure.

S or E	Total Market value of the equity
D or B	Total market value for debt
I	Interest payments
V	Total value of the firm which is the sum of S or E and D or B.
NI	It is the net income of the firm which is available for the equity shareholders.

Following formulas will be used in following section:

$$Cost\ of\ Debt\ (ki) = \frac{I}{DorB}$$

Value of debt = I /ki $Cost\ of\ Equity\ shares\ (k_s) = \frac{D1}{P0} + g$ Here, D1 is dividend, P0 is current market price and g is growth rate. As per the above assumptions, retained earnings are zero. So, the growth rate is zero. Therefore, D1 = E1 and g=0. E1 is the earnings per share.

$$k_s = \frac{E_1}{P_0} + 0 \text{ or } \frac{\text{Net income available for equity holders}}{\text{Total Market value of equity shares}}\ k_o = \frac{EBIT}{V} \text{ or}$$

$$ko = k_d \left(\frac{D}{V}\right) + k_s \left(\frac{E}{V}\right)$$

$$ke = k_o + (k_o - k_i)D/E$$

NOTES

Capital Structure Planning and Policy

Some companies do formal planning for designing their capital structure while some do not plan for their capital structure and just raise funds. These companies can achieve success in short run. However, they are not successful in long run. They have to pay the price for not planning their capital structure properly. Moreover, by raising funds in an unplanned way they cannot get the advantage associated with the use of debt. Thus, due to the advantages of planning capital structure companies usually plan their funds and take advantages of using debt in capital structure. Hypothetically, a financial manager should plan an optimum capital structure for the company. The optimum capital structure is that mix of debt and equity where market value of the firm is at its maximum level and its overall cost of capital is at its minimum level. However, in practice, it is very difficult to find out the optimum capital structure and sometimes it is even impossible. Various factors affect the capital structure determination. These factors are different for different industries and even different for the two companies in the same industry. All these factors are complex, psychological and quantitative in nature and do not always follow theory as capital market is not perfect. Therefore, chief finance officer of a company always set a target capital structure instead of the optimum capital structure.

Before deciding about the capital structure of a company, financial manager has to study various elements of the capital structure. These are:

Capital mix: It is important to determine the proportion of debt and equity. For this purpose, financial managers study the debt ratios, debt-service coverage ratios and fund flow statement to analyze the capital mix of the company.

Maturity and priority: Financial manager tries to find a match in the asset structure and debt used in financing of these assets.

Next is to study about the financial market segment which company is going to strike for raising funds. After the above study, financial manager uses FRICT analysis (flexibility, risk, income, control and timing) for designing a target capital structure.

Determinants of Optimum Capital Structure

Determination of an optimum capital structure is significant for a company. An appropriate mix of debt and equity should be there in capital structure. The major benefit of using debt in capital structure is tax advantages but its biggest disadvantage is financial distress which includes all the problems from small liquidity crisis to the bankruptcy of the company. Further, the increase in the leverage or using more debt in capital structure leads to more financial distress. So a proper care should be taken while designing capital structure. Following are the few factors which should be kept in mind while deciding about the capital structure:

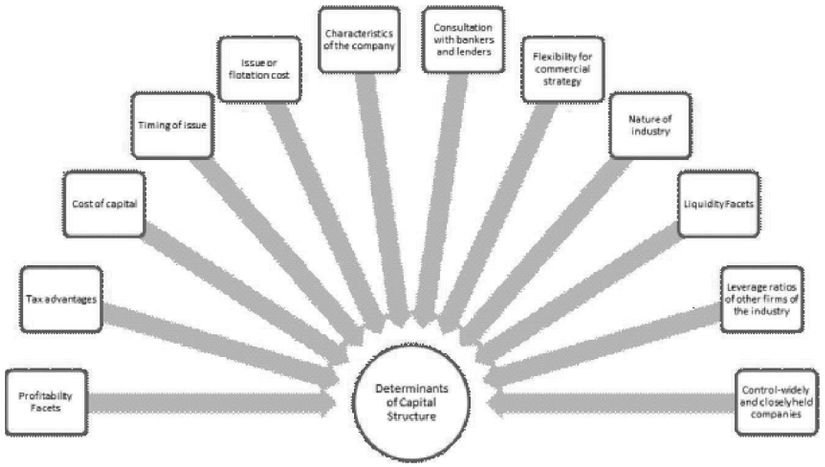

***Fig. 4.4** Determinants of Capital Structure*

1. Tax advantages

Companies can avail tax advantages by using more debt in capital structure and generate more returns on the equity portion of capital.

2. Cost of capital

Different sources of finance have different cost of capital. Foremost objective of a firm is to keep its overall cost of capital at minimum level. Among all types of financing sources (debt equity and preference shares), debt is the cheapest source of finance as interest is tax deductible.

3. Profitability facets

It includes study of EBIT-EPS analysis of the company. At various levels of earnings before interest and taxes (EBIT) have different earnings per shares (EPS) and the ultimate objective of a business is to give maximum returns to the equity shareholders. Through EBIT-EPS analysis one can get a complete idea about the level of earnings that a firm should achieve to give maximum returns. Under this analysis, a comparison of various alternatives of financing plans is conducted under various assumptions of EBIT. A firm has different options to finance their funds requirements. It can go for all equity scheme, all debt scheme or a mix of debt/ equity/ preference shares. The financing plan selected by firm depends on the level of earnings available to the equity shareholders i.e. EPS. A plan which gives maximum EPS should be selected.

Illustration 4.13

XYZ ltd has ₹ 6,00,000 equity shares at ₹100 each in its existing capital. Company has some modernization plans and it wants to raise ₹4,00,000. It has following alternatives available :

- All equity shares
- Equity shares of ₹2,00,000 and debentures ₹2,00,000 (₹100 per debenture, 10% rate of interest)
- All debentures at 10% rate of interest
- ₹ 2,00,000 from equity shares and ₹2,00,000 by issuing 8% preference shares of ₹100.

NOTES

XYZ's earnings before interest and taxes are ₹ 2,00,000 and assume corporate taxes 50%. Calculate EPS and select the best source of financing that the company should opt for.

Now assume that there are following predictions available for the EBIT estimation:

1. ₹ 80,000 (8% of the total investment i.e. ₹10,00,000)
2. ₹ 1,40,000 (14% of the total investment i.e. ₹10,00,000)
3. ₹ 2,40,000 (22% of the total investment i.e. ₹10,00,000)
4. ₹2,80,000 (25% of the total investment i.e. ₹10,00,000)

The EBIT-EPS analysis in the above EBIT expectations is shown in Table 4.1.

Table 4.1 *EBIT-EPS Analysis at Different Levels of EBIT*

1) When EBIT is Rs.80,000				
	Plan 1	Plan 2	Plan 3	Plan 4
EBIT	80000	80000	80000	80000
less: Interest	-	20000	40000	-
Earning after interest but befor tax	80000	60000	40000	80000
Less: Tax 50%	40000	30000	20000	40000
Earnings after tax (EAT)	40000	30000	20000	40000
Less: preferential dividend	-	-	-	16000
Earnings available for the equity shares	40000	30000	20000	24000
No of equity shares	10000	8000	6000	8000
EPS	4	3.75	3.333333	3
2) When EBIT is Rs.1,40,000				
EBIT	140000	140000	140000	140000
less: Interest	-	20000	40000	-
Earning after interest but before tax	140000	120000	100000	140000
Less: Tax 50%	70000	60000	50000	70000
Earnings after tax (EAT)	70000	60000	50000	70000
Less: preferential dividend	-	-	-	16000
Earnings available for the equity shares	70000	60000	50000	54000
No of equity shares	10000	8000	6000	8000
EPS	7	7.5	8.333333	6.75
3) When EBIT is Rs.2,20,000				
EBIT	220000	220000	220000	220000
less: Interest	-	20000	40000	-
Earning after interest but before tax	220000	200000	180000	220000
Less: Tax 50%	110000	100000	90000	110000
Earnings after tax (EAT)	110000	100000	90000	110000
Less: preferential dividend	-	-	-	16000
Earnings available for the equity shares	110000	100000	90000	94000
No of equity shares	10000	8000	6000	8000
EPS	11	12.5	15	11.75
4) When EBIT is Rs.2,50,000				
EBIT	250000	250000	250000	250000
less: Interest	-	20000	40000	-
Earning after interest but before tax	250000	230000	210000	250000
Less: Tax 50%	125000	115000	105000	125000
Earnings after tax (EAT)	125000	115000	105000	125000
Less: preferential dividend	-	-	-	16000
Earnings available for the equity shares	125000	115000	105000	109000
No of equity shares	10000	8000	6000	8000
EPS	12.5	14.375	17.5	13.625

The above table gives a complete analysis of EBIT-EPS. One can compare all the financing plans at different levels of EBIT and select the best option available to the company. By studying the level of EPS, one can make a proper mix of equity, debt and preference securities in the capital structure. In Plan 3, an increase in EBIT (₹80,000 to ₹ 2,50,000) results more than increase in the EPS (3.33 to 17.5). So it's better to go for debenture issue if the business conditions are favorable and EBIT is going to increase as proved in the above case. Thus with the help of EBIT-EPS analysis companies can draft their capital structure as per the requirement and prevailing business conditions.

Another tool to design capital structure is study of indifference point (as discussed above) which tells us about the breakeven point of two financing plans.

4. Liquidity facet

EBIT-EPS analysis is a measure to test the earnings per share at various levels of earnings. But this analysis is not complete as it does not tell us about the firm's ability to pay fixed charges because payment of fixed interest charges depends on the cash flows available to meet such charges. Therefore, in addition to the profitability analysis cash flow analysis is also significant to design capital structure.

Gordon Donaldson suggested a technique to study cash flows of a company when recession prevails. Generally, firms meet their fixed obligations in terms of interest and principal. But during adverse conditions, companies are not able to meet this obligation and are exposed to the risk of bankruptcy of risk of financial distress. Therefore, it is important to study cash flows very carefully when there are chances of prevailing recession conditions.

Following example makes this process clear that how one can study cash flows during recession.

Illustration 4.14

Suppose Beta Ltd is planning its capital structure. Current debt equity ratio of beta is 20 debt and 80 % equity shares. The company is planning to raise further debt but is confused that whether it should maintain its existing proportion of debt and equity, raise more debt or raise less debt. Beta Ltd is strong in its business and has wide variety of products, Therefore, it is less affected by the business cycle. Following table shows its cash flows and sales forecast for four years:

Now, let us suppose that recession is going to prevail in the economy and it is expected that the sales of the company will be reduced by at least 10% and selling prices will be decreased by 3%. To have better understanding all the expenses should be cover under three headings:

- Operating (sales revenue and cash operating expenses)
- Non-operating (capital outlays and change in working capital)
- Financial flows (lease rentals payments, interest payments, payments of debt, taxes and dividends)

NOTES

Sales	117	122	112	128
Profit after tax (PAT)	6	8	7	7
Sources of funds				
Operations	22	23	23	23
Working Capital	3	(0.6)	3	(1.2)
total	**25**	**22.4**	**26**	**21.8**
Use of funds				
Plant and machinery	(5.9)	(7)	(10)	(12)
Taxes	(4)	(4.5)	(5)	(6)
Lease rentals payments	(1.8)	(2.4)	(2.5)	(2)
Interest payments	(1.9)	(2)	(2)	(2)
Repayment of debts	(1.6)	(1.6)	(1.5)	(1.5)
Dividends	(2.8)	(2.8)	(2.8)	(3)
Others payments	(1)	(0.7)	(1.2)	(0.5)
Total	**(19)**	**(21)**	**(25)**	**(27)**
Balance cash available	6	1.4	1	(5.2)

So by using above categories and information of sales and selling price one can easily estimate the amount of cash inflows and have better understanding of the use of debt in capital structure. Hence it can be stated that cash flow analysis is important for the liquidity study of the company in designing its capital structure.

5. Control

Another consideration in designing capital structure is the control of shareholders. Lenders do not have direct influence on the control of company but they can put some restriction on the use of funds, cash requirements and other activities of the management through the agreement of lending. If company defaults in the payment of interest or repayment of loan amount only then lender can take some legal action against the company. But lender cannot participate in the function of a company. Likewise, in case of preference shares, they do not have any direct influence on the decision making. They do not have voting rights as equity shareholders have. So if management is ready to dilute existing equity shareholder's control then they will go for equity financing and if management wants to retain the existing equity shareholders control then they will go for debt or preference shares financing.

Largely held companies and closely held companies

When the company is promoted by the entrepreneurs then they believe in more control over the management of company. In closely held company, control is important consideration in designing capital structure. In such cases, few shareholders or a group of shareholders purchase all the new issued securities to retain the control of the company with them. For such companies, raising money

through IPO is very difficult as they think that their control will be reduced. IPO issue is very hectic process for such companies as every person wants to retain control. Such companies rely on the preference shares of debt instruments to raise further money. Moreover, if closely held companies can guarantee a wide distribution of shares then they need not to worry about the dilution of control.

In case of widely held company, the companies can issue right share to avoid the dilution of control of existing shareholders. But if existing shareholders are ready to dilute their control then they can go for new issue. Even for widely held companies control is not a big issue and many of the investors are not interested in the management of the company. These shareholders are not interested in attending meetings, dividend payments and operations. If these shareholders are not satisfied with the performance of a company, they simply sell their shares. Thus, the best way to control the shareholders is to give them best returns.

6. Leverage ratios of other firms of the industry

Industry norms for the proportion of debt and equity in the capital structure is yet another factor which affects the capital structure design. Sometimes other firms in the industry do not use appropriate debt-equity mix but this comparison of debt-equity mix of the company's capital structure with that of industry will give an idea about the soundness of the capital structure. It also works as a red signal for the company's management that there must be something wrong with the debt-equity mix of the company.

7. Nature of industry

Another important factor which affects the capital structure decision is the nature of the industry. The level of financial leverage a firm should opt depends on the nature of industry in which that firm is working. If industry sale is affected by the business cycles and fluctuates more, then firm should have less financial leverage because they already have high level of operating leverage. Firm which has seasonal demands (like firms producing refrigeration, television, machine tools and so on) should have conservative financial policy and rely more on equity financing then on debt. Demand for these products is flexible which causes fluctuations in their sales and makes them more risky. Contrary to this, firms which have inelastic demands (e.g. non-durable consumer goods, items of habitual use (tobacco products), inexpensive items etc.) can rely more on debt financing as their demand and sales are stable.

Companies having severe competition should rely more on equity financing than on debt financing. Public utility companies (electricity, gas, water supply etc.) do not have severe competition so they can rely more on debt financing in their capital structure as their sales are more stable and predictable.

Stages of life cycle of the industry also have influence on the capital structure designing. If the industry is in its initial stage then firm should rely more on equity financing not on debt. But when it comes to the growth stage then debt financing can be used with the equity as in this stage firm needs more cash and sales and profits both are increasing in a very fast manner. Thus, at this stage firms are in a position to repay their debts and meeting fixed liabilities.

NOTES

8. Retain manoeuvrability or flexibility for commercial strategy

As discussed, flexibility. Flexibility should be rest in mind while determining the capital structure. Flexibility refers to the firm's ability to adjust its capital structure as per the requirements of the funds.

9. Consultation with bankers and lenders

Another way to design capital structure and proportion of various securities in the overall capital is to seek out the opinion of bankers, investment analysts, investment bankers and various lenders. These experienced investment analysts have expertise and have excess to the information available in the capital market and can give fair opinion to the company regarding their capital structure designing. Similarly, opinion of the prospective investors and lenders play a significant role in designing capital structure. Thus, their opinion regarding the types of securities which they can buy is awfully helpful to the financial manager in planning capital structure.

10. Timing of issue

Timing of the public issue is an important element in designing capital structure. Public issue for funds should be made at a time when capital market, financial market and overall economy are in better condition. Various government policies are also important in this regard. Two basic policies, monetary and fiscal policy are of most importance. To boost economy in the recession, government follows a cheaper policy and to curb inflation it follows a dearer policy. If the financial manager feels that the debt is going to be costly, then they will avail debt in the present scenario. If there are expectations of decrease in interest rates then company can postpone its debt requirements to get the benefits of decrease in interest rates. But if the company is already using a high level of debt then it cannot raise more debt due to increased cost of borrowing and restrictions imposed by the existing lenders.

11. Characteristics of the company

The credit standing and size of the company are other important factors in designing capital structure. In case of small and large companies, financial manager's choice of sources of finance is limited. Because in case of small firms they have to rely more on the owner's equity as their borrowing capacity is less. Moreover, small firms are more risky than the large firms from investors' point of view. Consequently, small firms do not have swift access to the different types of securities and are in fragile bargaining position which leads to limited sources of raising funds. Firms enjoying large credit standing among investors are in a better position to raise funds and that is as per their choice.

11. Tax planning

Tax planning is another factor which affects the capital structure planning. Interest on debt is tax deductible but the dividend company has to pay dividend taxes. Thus, while designing its capital structure financial manager gives due consideration to the tax payment of the company in different alternatives.

12. Issue or flotation cost

When funds are externally raised, the companies have to pay flotation cost or issue cost. Generally, cost of flotation for debt is less than the cost of flotation for equity. Because of this reason companies go for debt instead of equity shares. Cost of raising debt is also less in comparison to the commercial paper or public debt. So economies of scale are high for the debt source having high fixed costs. This is the reason why companies go for the debt instruments. The issue cost will decline as companies go for large amount of debt. Therefore, issue cost or cost of flotation is another major consideration in designing the capital structure.

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Check Your Progress

6. Mention the differences between capitalization and capital structure.
7. What does lack of liquidity lead to?
8. Differentiate between liquidity and solvency.

4.5 PAYOUT OR DIVIDEND DECISIONS

Dividend policy is only a problem for those firms with positive earnings. It is both a problem and an opportunity for such firms. It is an opportunity because by the way of distributing dividends they can satisfy the shareholders. It is a problem as well, since no solid theory has yet been developed with which optimal dividend policy can be defined.

Profit-making firms face a dilemma because they have to decide whether to give returns in cash to the shareholders, or to use the funds earned by them for further investment. Substantial cut in dividend rate, even out of the need for investment could drop the share price which is an indicator of shareholders' wealth. Investors would like to sell not only because they would not be receiving dividends, but also because of the strong perception that dividend reveals something about future earnings. Cash dividend may be viewed as a signal of future stream of dividend to investors. Contrary to that when firms concurrently pay dividends and raise capital through security issues to stockholders, there are reasons to believe that a reduction in dividend payment could lead to an increase in share value.

Therefore, whether to pay dividends or retain profits is a dilemma. If dividends give immediate cash flow to the shareholders directly from the company, the retention of money deployed in a profitable manner would increase the share price and offer the capital gain, which is usually either not taxed or taxed at lower rate and that too after the indexation only when shares are sold.

This is not only a 'to-pay or not-to-pay' dilemma but the right decision would create better shareholder value, especially when shareholder expectation and company policy perfectly match with each other.

The reasons for a dividend dilemma are briefly summarized as below:

1. Shareholders expect adequate and regular dividends and also expect the company to retain money for future profits.

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2. If dividends give immediate cash to the investors, a possibility of capital gain expected from the retention of profits (rather than payment of dividends) is sometimes valued more.
3. Retained profit is less expensive ownership money because it involves no issue expenditure. Readers know that less expensive funds create better value.
4. Investors pay tax at the personal income tax rates on the dividend income whereas capital gain tax is usually low. The burden of either income tax or capital gain tax depends on the tax law of the nation as well as the income level of an investor.

Most companies try to balance between the payment and retention of profits and attempt to create shareholder value.

4.5.1 Dividend Policy Alternatives

The dividend is paid in cash as per the legal requirements of the Companies Act, 1956 (now the new Companies Act 2013). Dividend policy is expected to keep 'shareholders' confidence' as its focal point. Shareholder confidence is built through a consistency in dividend payment. The choice of dividend policy affects the value of the enterprise. A company may like to follow any of the following policies:

- **Fixed-rate dividend policy**

When a company keeps the dividends per share constant every year, it is called a 'fixed rate dividend policy'. If profit is less, then the company would draw funds from the accumulated profits but would pay a constant rate of dividends. Shareholders get a kind of assurance about the rate of dividend, though the company's plan for reinvestment based growth would depend on the amount it is able to reinvest after paying the fixed rate.

- **Fixed-plus-extra dividend policy**

Investors want a guarantee as well as more money if more profit is earned by the company. Also, it is very common for the shareholders to expect last dividend as the minimum for the coming year also. Therefore, some companies adopt a dividend policy that almost guarantee a fixed percentage of dividends (which is usually lower) and pay extra dividends depending on the profits. The carefully charted communication would make the shareholders realize that extra dividends cannot be for ever, or it can be variable. For example, through the action and communication a company may pay a fixed dividend of ₹5 per share and ₹1 extra in the year 2014.

- **Step-up-dividend-rate policy**

This is essentially a fixed-rate dividend policy but when the company sees an opportunity for permanently increasing the dividend rate, it would do so and keep the new rate constant for some time before increasing it further. Growth companies are more likely to adopt this policy. Growth brings more profits enabling the company to pay more. Many companies adopt this policy, which readers would know from the study of dividend history of any company like Microsoft.

- **Stable dividend payout policy**

In this policy companies predetermine the portion of profit that it would like to use for the payment of dividends and would plough back the rest. As a result the dividend rate fluctuates in proportion to and in the direction of profit changes.

Illustration 4.15 : Calculating the dividend per share

For example, a company follows a policy of 30% pay-out policy. It earned the following profits in the last three years:

2017: ₹10,00,000

2018: ₹20,00,000

2019: ₹12,00,000

If the company has 1,00,000 shares outstanding, calculate for each of the above years the amount of dividend and the dividend per share.

Solution: 2017: 10,00,000 × 0.30 = 3,00,000 Total dividends;

DPS: 3,00,000 ÷ 1,00,000 = ₹3.00

2018: 20,00,000 × 0.30 = 6,00,000 Total dividends;

DPS: 6,00,000 ÷ 1,00,000 = ₹6.00

2019: 12,00,000 × 0.30 = 3,60,000 Total dividends;

DPS: 3,60,000 ÷ 1,00,000 = ₹3.60

Thus, in the stable dividend pay-out policy the dividends as well as retained profits would vary depending on the profits.

- **Residual dividend policy**

Companies which consider dividend decision as a part of the financing policy would like to follow the residual dividend policy. In this policy, the companies first determine the investment needs, and retain the profit accordingly. If net profit is lesser than investment requirement, no dividend is paid. In the absence of any investment opportunity, entire profit will be distributed. The dividend rate would be too fickle.

Illustration 4.16: Dividends in residual dividend policy

A company follows a residual dividend policy and pays dividends only if it has a surplus profit after meeting its retention requirement. The company has projected the profits and its requirements for the retention of profits as follows over the next three years:

Year	Expected Profits	Retention Required
2015	₹50,00,000	₹38,00,000
2016	₹75,00,000	₹75,00,000
2017	₹90,00,000	₹60,00,000

If the company has 150,000 outstanding shares, calculate the amount of projected dividend and dividend per share for these three years.

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Solution:

Year (1)	Expected Profits (2)	Retention Required (3)	Projected Dividends (4 = 2 - 3)	Projected DPS (5 = 4 ÷ number of shares)
2015	₹50,00,000	₹38,00,000	₹12,00,000	12,00,000 ÷ 1,50,000 = ₹8.00
2016	₹75,00,000	₹75,00,000	Zero	Zero
2017	₹90,00,000	₹60,00,000	₹30,00,000	30,00,000 ÷ 1,50,000 = ₹20.00

Research shows that past dividend rate and industry dividend rate influence the dividend decision of a company and hence the dividend pay-out fluctuates. Most companies desired to pay a stable dividend rate yet half of them were unable to stick to the policy. A negative correlation between profit ratio and pay-out ratio is also found by some researches. All these findings prove that companies try to maintain the dividend rate, and are ready to step it up only if they are sure of being able to maintain it later on. In case of a lean profit period, companies do not hesitate to go for a higher pay-out, if they can maintain the dividend rate; and when they are forced to reduce the rate, the reduction is kept to the minimum. Once again, it proves the theory that dividend is a 'primary and active' decision variable.

4.5.2 Investors and Dividend Policy

Any dividend policy that is adopted by a company has some definite implications. These are also called as hypothesis.

- **Signalling/Information content effect hypothesis**

The announcement of dividends and dividend history is sending signals to the market and investors, who derive some inferences from it. Dividend decisions reveal some implied information therefore it is also called as 'information content effect'. Merton Miller and Kevin Rock suggested that dividend announcements convey tacit information to investors regarding the firm's future prospects. Findings of some researches show that increase in dividends increases the share price and reduction in dividends reduces the share price largely due to an interpretation of tacit information or signal that such changes in dividend announcements send to the market. In an asymmetric information situation the managerial knows more than the shareholders and therefore, shareholders read signals from the managerial actions.

- **Clientele effect hypothesis**

The clientele effect hypothesis is based on the belief that managerial decisions need not be taken keeping in mind the profile of the shareholders but independent of it. This hypothesis believes that depending on the managerial decisions the shareholders of suitable profile will gravitate around the company. Clientele effect is another term for 'shareholder preference'. Investors invest with different purposes. Some invest in growth firm for capital gain, knowing that dividend will not be paid for a long time. Some others invest in firms that pay good dividends and provide a predictable income stream. Their choice is affected by their incomegroup, tax rates and attitude towards the risk. However, some researchers have observed that purpose of shareholding has a very little influence over the dividend decision variable. This could be due to two reasons: (i) there are no means in the hands of the company to know the purpose of shareholding and (ii) the share prices are being dominated by speculators in absence of any large

shareholding groups having active trading into the shares. This has also led to the thinking that clientele effect can be created by the company through its dividend policy. If a company wants to have more small investors, it would pay constant dividends. Dividend policy that creates an opportunity for the capital gain is more likely to attract large investors.

- **Free cash flow hypothesis**

Free cash flow hypothesis is based on the assumption that everything else being equal, a company that pays dividends from cash flows that cannot be reinvested in positive net present value projects, have higher values than companies that retain free cash flows. This implies the 'need for funds' concept. If a firm has free cash flow and no profitable projects, it is advisable to pay more dividends and vice-a-versa.

4.5.3 Dividend Theories: Walter, Gordon and MM Hypothesis

There are various theories regarding relationship between dividend distribution and value of firm. All these theories can be grouped as relevance and irrelevance theories. Proponents of relevance theories claim that dividend distribution is relevant to the value of firms i.e., there is a relationship between payment of dividend and its market value whereas proponents of irrelevance theories claim that dividend distribution does not affect the value of the firm i.e., relationship between payment of dividend and its market value does not exist.

Relevance Theory: Walter's Model

Walter theory of dividend policy is considered as a relevance theory because it states that the dividend policy always affects the value of firm. Research paper of Prof. James E. Walter with the subject 'Dividend policy: its influence on the value of enterprise' was published in Journal of Finance in 1963. His research and proposed model clearly shows the relevance of dividend distribution for the valuation of firm or market price of shares. He showed the relationship between cost of capital k and rate of return r, contributing positively in the value of firm.

This model is based on the following assumptions:

- **Infinite time**: Life of a business/firm is infinite and business will last for a very long time.
- **No change in proportion of dividend and retained earnings**: (EPS and DIV remain constant). Once decisions related to the DIV and EPS have been made by the company, these decisions will be constant afterwards.
- **Total internal financing**: Firm finances its funds requirement from its retained earnings only. Firm does not issue new equity or fresh debt.
- **Constant rate of return and cost of capital:** Rate of return (r) on the firm's investment remains constant. Similarly, cost of capital for the business/ firm (k) also remains constant.
- **100% payout or retention**: Firms either distribute 100% of their earnings or they retain 100%.

As per this model, market price of a share is the sum of present value of the infinite stream of the constant dividend and present value of the infinite stream of capital gain which is presented in the following equation.

$$P = \left(\frac{Div}{k}\right) + \frac{r/k}{k}\ (EPS - Div)$$

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Here, P is market price of share, Div is dividend per share, EPS is earnings per share, r is rate of return and k is cost of capital or capitalization rate.

In the above mentioned equation, first part is the discounted value of all future dividend payments and second part of the equation is present value of capital gain. In nut shell, we can say that the value of a share is dependent upon the present value of all future streams of dividend and present value of all future capital gains. The above equation can be re-written as follows:

$$P = \frac{Div + \left(r/k\right)(EPS - Div)}{k}$$

This theory can be explained further with the help of following example. Three types of firms are discussed here. Growth firm, where r > k, normal firm where, r = k and declining firm, where r < k. In all these three situations, (growth, normal and declining firm) dividend policy has different impact on the market price of the shares.

Growth Firm (r > k)	Normal Firm (r = k)	Declining Firm (r < k)
r = 20%	r = 10%	r = 5%
k = 10%	k = 10%	k = 10%
EPS = Rs.10	**Dividend Payout Ratio 50%**	
$P = \left(\frac{5}{0.10}\right) + \frac{0.20/0.10}{0.10}\ (10 - 5)$	$P = \left(\frac{5}{0.10}\right) + \frac{0.10/0.10}{0.10}\ (10 - 5)$	$P = \left(\frac{5}{0.10}\right) + \frac{0.05/0.10}{0.10}\ (10 - 5)$
P = 150	**P = 100**	**P = 75**

Now, we will consider different dividend payout ratios and see their impact on the market price of shares. In the following table, we have assumed different dividend payout ratios to see the effect of change in dividend payout ratio,

Growth Firm (r>k)	Normal Firm (r=k)	Declining Firm (r<k)
1) Dividend payout is 20%		
$P = \left(\frac{2}{0.10}\right) + \frac{0.20/0.10}{0.10}\ (10 - 2)$	$P = \left(\frac{2}{0.10}\right) + \frac{0.10/0.10}{0.10}\ (10 - 2)$	$P = \left(\frac{2}{0.10}\right) + \frac{0.05/0.10}{0.10}\ (10 - 2)$
P = 180	**P = 100**	**P = 60**
2) Dividend payout is 80%		
$P = \left(\frac{8}{0.10}\right) + \frac{0.20/0.10}{0.10}\ (10 - 8)$	$P = \left(\frac{8}{0.10}\right) + \frac{0.10/0.10}{0.10}\ (10 - 8)$	$P = \left(\frac{8}{0.10}\right) + \frac{0.05/0.10}{0.10}\ (10 - 8)$
P = 120	**P = 100**	**P = 90**
3) Dividend payout is 100%		
$P = \left(\frac{10}{0.10}\right) + \frac{0.20/0.10}{0.10}\ (10 - 10)$	$P = \left(\frac{10}{0.10}\right) + \frac{0.10/0.10}{0.10}\ (10 - 10)$	$P = \left(\frac{10}{0.10}\right) + \frac{0.05/0.10}{0.10}\ (10 - 10)$
P = 100	**P = 100**	**P = 100**

Summary table of dividend payout ratio and Market price of share

Dividend Policy	Growth Firm (r>k)	Normal Firm (r=k)	Declining Firm (r<k)
Dividend payout is 20%	180	100	60
Dividend Payout Ratio 50%	150	100	75
Dividend payout is 80%	120	100	90
Dividend payout is 100%	100	100	100

In the above table, it is clear that in case of growth firm as firm is increasing its payout ratio its market prices goes down. The reason for this is that firm has more growth opportunities than its investors which is clear from the relationship between cost of capital and rate of return. In case of normal firm, market price of share is irrespective of the dividend payout ratio. The reason for this is that both firm and investors have similar opportunities of investments. In case of declining firm, market price of share increases with the increase in dividend payout ratio

Summary of Results

• Growth Firm: Internal Rate More Than Opportunity Cost of Capital (r > k)	• For a growth firm optimum dividend policy is to retain 100% earnings
• Normal Firms: Internal Rate Equals Opportunity Cost of Capital (r = k)	• For a normal firm optimum dividend policy has no effect on the value of firm.
• Declining Firms: Internal Rate Less Than Opportunity Cost of Capital (r < k)	• For a declining firm optimum dividend policy is to distribute 100% earnings as dividend

Criticism of Walter's Model

- Rate of returns does not remain constant.
- Assumptions related to the external financing cannot be considered appropriate as firm uses both external and internal financing.
- Cost of capital does not remain constant.

Dividend Relevance: Gordon's Model

Gordon's model is also based on relevance theory but he has given some more justification for it. This model was developed by Myron J Gordon in his work entitled 'The investment, financing and valuation of corporations'. This model is based on some assumptions discussed as follows:

Assumptions:

- Firm uses only equity source of financing to finance its investment requirements.
- Cost of capital (k) and rate of return (r) remains constant in this theory too.
- No external financing and no taxes.
- Rate of retention remains constant once decided.

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- Cost of capital (k) is greater than growth rate (g). This is the most important assumption of this model. If cost of capital (k) is not greater than growth rate (g) then it is very difficult to calculate the market price of the share.

As per this model, market price of a share is equal to the present value (PV) of infinite stream of dividends on that shares. This is called dividend capitalization technique of calculating market price of a share. The equation for dividend capitalization model is as follows:

$$P_0 = \frac{Div_1}{(1+k)} + \frac{Div_2}{(1+k)^2} + \frac{Div_3}{(1+k)^3} + \cdots + \frac{Div_\infty}{(1+k)^\infty} = \sum_{t=1}^{\infty} \frac{Div_t}{(1+k)^t}$$

Dividend is expected to grow in future when company retains its earnings.

$$Div_t = (1-b)EPS_t$$

Dividend is the multiplication of (1-retention ratio) i.e. payout ratio and earnings per share. In all the equity firms, it is assumed that total earnings are reinvested/ retained so that the growth rate, g = br per period. Here, b is retention ratio and r is rate of return. When growth in dividend is incorporated in the above equation of P0, then the equation becomes,

$$P_0 = \frac{Div(1+g)}{(1+k)} + \frac{Div(1+g)^2}{(1+k)^2} + \frac{Div(1+g)^3}{(1+k)^3} + \cdots + \frac{Div(1+g)^\infty}{(1+k)^\infty} = \sum_{t=1}^{\infty} \frac{Div\,(1+g)^t}{(1+k)^t}$$

After solving above equation it will become,

$$P_0 = \frac{Div_1}{k-g}$$

or

$$\boldsymbol{P_0 = \frac{EPS_1(1-b)}{k-br}}$$

In the above equation, it is clearly depicted that there is a relationship in cost of capital, rate of return, earnings per share, retention ratio and market price of the firm. This relationship will be clearer by the following example:

Growth Firm (r > k)	Normal Firm (r = k)	Declining Firm (r < k)
r = 20%	r = 10%	r = 5%
k = 10%	k = 10%	k = 10%
EPS = Rs.10		
Retention Ratio (b) =80% Payout ratio = 20%		
$\boldsymbol{P_0 = \frac{EPS_1(1-b)}{k-br}}$		
$\boldsymbol{P_0 = \frac{10(1-0.80)}{0.10-(0.80x\ 0.20)}}$ In this case, cost of capital k is not greater then g=br=0.16. so in such case this model is not applicable. This is in consensus with the assumption of this model that k>g.	$\boldsymbol{P_0 = \frac{10(1-0.80)}{0.10-(0.80x\ 0.10)}}$ **P_0 = 100**	$\boldsymbol{P_0 = \frac{10(1-0.80)}{0.10-(0.80x\ 0.05)}}$ **P_0 = 33.33**

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Let us take different retention and payout ratio to understand it better.

Growth Firm (r>k)	Normal Firm (r=k)	Declining Firm (r<k)
1) Retention Ratio (b) = 100% Payout ratio = 0%		
$P_0 = \frac{10(1-1)}{0.10-(1x\ 0.20)}$	$P_0 = \frac{10(1-1)}{0.10-(1x\ 0.10)}$	$P_0 = \frac{10(1-1)}{0.10-(1x\ 0.05)}$
P = indeterminate	P = 100	P = indeterminate
2) Retention Ratio (b) = 60% Payout ratio = 40%		
$P_0 = \frac{10(1-0.60)}{0.10-(0.60x\ 0.20)}$	$P_0 = \frac{10(1-0.60)}{0.10-(0.60x\ 0.10)}$	$P_0 = \frac{10(1-0.60)}{0.10-(0.60x\ 0.05)}$
In this case too k is less than g.	P = 100	P = 57.15
3) Retention Ratio (b) = 40% Payout ratio = 60%		
$P_0 = \frac{10(1-0.40)}{0.10-(0.40x\ 0.20)}$	$P_0 = \frac{10(1-0.40)}{0.10-(0.40x\ 0.10)}$	$P_0 = \frac{10(1-0.40)}{0.10-(0.40x\ 0.05)}$
P = 300	P = 100	P = 75
3) Retention Ratio (b) = 10% Payout ratio = 90%		
$P_0 = \frac{10(1-0.10)}{0.10-(0.10x\ 0.20)}$	$P_0 = \frac{10(1-0.10)}{0.10-(0.10x\ 0.10)}$	$P_0 = \frac{10(1-0.10)}{0.10-(0.10x\ 0.05)}$
P = 112.50	P = 100	P = 94.75

Summary table of dividend payout ratio and Market price of share

Dividend Policy	Growth Firm (r>k)	Normal Firm (r=k)	Declining Firm (r<k)
Retention Ratio (b) = 100%	- Here k<g	100	-
Retention Ratio (b) = 80%	- Here k<g	100	33.33
Retention Ratio (b) = 60%	- Here k<g	100	57.15
Retention Ratio (b) = 40%	300	100	75
Retention Ratio (b) = 10%	112.50	100	94.75

Thus, it is clear from the above table that a growth firm should retain more, a declining firm should distribute more to have more market prices of the shares. In case of normal firm market price is indifferent towards the market price.

üGrowth Firm: Internal rate is more than the opportunity cost of capital (r > k)

- Retains 100% earnings.
- Normal Firms: Internal rate is equal to the opportunity cost of capital (r = k)
- No effect on the value of firm.
- Declining Firms: Internal rate is less than the opportunity cost of capital (r < k)
- Distributes 100% earnings as dividend

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Criticism of Gordon's Model

- Rate of returns does not remain constant.
- Assumptions related to the external financing. Firm uses both external and internal types of financing.
- Cost of capital does not remain constant.

Dividends and Uncertainty: The Bird-in-the-hand argument

In uncertain situations, dividend payment affects the value of firm. In this case, 'the bird-in-the-hand argument' plays important role. As per this argument, near profits are much more desirable than distant profits.

Dividend Irrelevance: The Miller–Modigliani (MM) Hypothesis

The Miller-Modigliani theory is irrelevant theory as it claims that dividend policy of a firm does not affect the value of a firm. M-M gives an argument to support its view that the value of firm is the function of its earning which is dependent upon the investment policy not on its dividend policy. As per this theory, the value of a firm is dependent on earnings of the firm which is also dependent upon the investment decisions and investment policy of the firm. Thus, value of firm is not dependent on the dividend decisions of a firm rather it is dependent on the investment decisions which also influence the dividend decisions.

The nitty-gritty of MM hypothesis is that shareholders do not depend on the dividend for attaining cash. In the absence of flotation cost, transaction cost, taxes on the dividend and capital gain (assumption of MM hypothesis) less restriction on selling shares, investors can generate cash by selling their shares. As a result, high payout firms need not grasp higher price for their shares.

This theory is also dependent on some assumptions. A brief explanation of these assumptions is as follows:

- An assumption of perfect capital market in which investors behave rationally, there are large number of buyers and sellers, fair price of the product, free flow of information, no transaction cost and no flotation cost.
- Risk of uncertainty does not exist as per this theory. Investor can forecast future earnings and dividend with accuracy.
- Firm has fixed investment policy.
- Taxes do not exist on dividend and capital gain too.

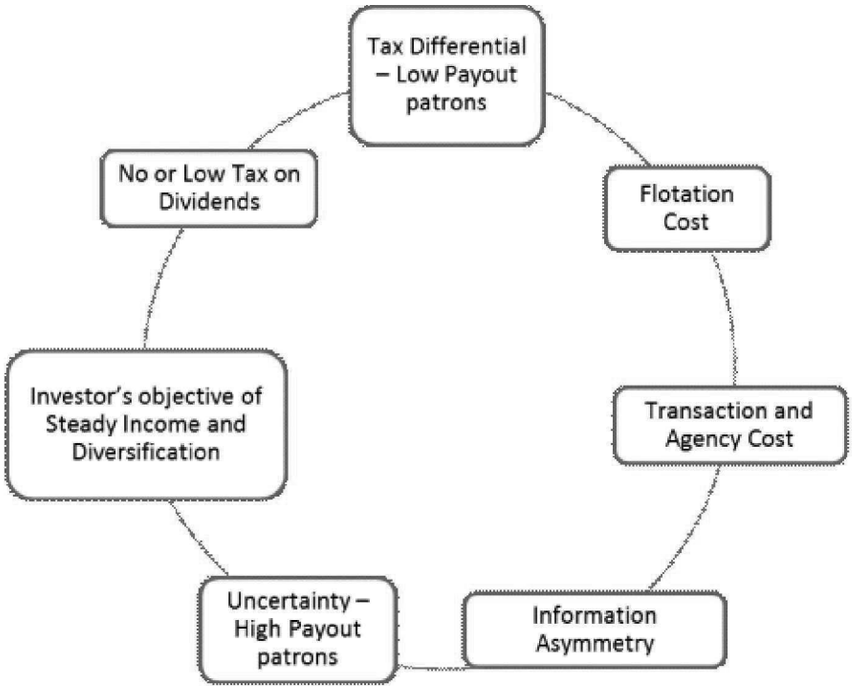

Fig. 4.5 *MM Hypothesis*

We know that the rate of return of a share includes two components, one is dividend and other one is capital gain. Therefore, return on a share r includes following:

$$r = \frac{Dividends\ and\ capital\ gain\ (losses)}{Share\ Price}$$

$$r = \frac{Div_1 + (P_1 - P_0)}{P_0}$$

As per the assumptions of MM theory, r will be equal for all shares. If it is not then investor will sell low return yielding shares and buy high return yielding shares. This buying and selling will make return on all these shares equal. MM valuation model can be re-written as follows:

$$r = \frac{Div_1 + (P_1 - P_0)}{P_0}$$

or

$$P_0 = \frac{Div_1 + P_1)}{1+k} \text{ (As r = k)}$$

$$V = nP_0 = \frac{n(Div_1 + P_1)}{(1+k)}$$

Now, let us suppose that firm sells m number of new shares at price P1. We can also adjust thus in the above equation at time 0,

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$$V = nP_0 = \frac{nDiv_1 + nP_1 + mP_1 - mP_1)}{(1+k)}$$

$$V = nP_0 = \frac{nDiv_1 + (n+m)P_1 - mP_1}{(1+k)}$$

Above equation makes it clear that in such situations firm can issue new shares and pay dividend too unlike earlier two models of dividend. As per this model, dividend and investment policies are not mystified. The investment projects of a firm can be financed through its retained earnings or new issue of shares. New issue of shares will be calculated as follows:

$$mP_1 = Invst_1 - (NP_1 - nDiv_1)$$

Here, Invest1 is the amount of new investment by the firm, NP is net profit of the firm and is the total amount of dividend distributed on existing shares. Now, putting this equation in the above equation,

$$V = nP_0 = \frac{nDiv_1 + (n+m)P_1 - (Invst_1 - (NP_1 - nDiv_1))}{(1+k)}$$

$$V = nP_0 = \frac{\cancel{nDiv_1} + (n+m)P_1 - Invst_1 + NP_1 \cancel{- nDiv_1}}{(1+k)}$$

$$V = nP_0 = \frac{(n+m)P_1 - Invst_1 + NP_1}{(1+k)}$$

Illustration 4.17

Mani Ltd. has 200000 outstanding shares of ₹ 100 each currently. The firm has a net profit of ₹ 45,00,000 and wants to make new investment of ₹ 35,00,000 during the year. The firm is also thinking of declaring a dividend of ₹ 10 per share. The firm's opportunity cost of capital

is 10%. Calculate the price of the share at the end of the year a) when company pays dividend b) when company does not pay dividend.

Solution:

$$P_0 = \frac{\mathrm{Div}_1 + \mathrm{P}_1)}{1 + \mathrm{k}}$$

By solving this equation for P1.

$$P_1 = P_0(1+k) - Div_1$$

When dividend is paid:

$$P_1 = 100(1 + 0.10) - 10 = 100$$

When dividend is not paid:

$$P_1 = 100(1 + 0.10) - 0 = 110$$

It is clear from the above calculation that in both the cases i.e., when dividend is paid or when dividend is not paid overall situation of the investor of Mani ltd will remain same.

The number of new shares issued by the company,

$$mP_1 = Invst_1 - (NP_1 - nDiv_1)$$

$$m105 = 3500000 - (450000 - (200000x10))$$

$$m105 = 1000000$$

$$m = 9524\ shares$$

Check Your Progress

9. What is fixed rate dividend policy?
10. What is clientele effect hypothesis based on?

4.6 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Capital budgeting is a process of long-range planning expenditure for acquiring such assets which not only require significant investment but also generate cash flows beyond one year. It is investment decision making that aims to evaluate the financial desirability of a project with the help of cash flows rather than net income as advocated by accrual accounting.
2. The process of capital rationing involves the following two steps:
   - o Ranking of proposals from highest to lowest priority; and
   - o Selection of cut-off point. Proposals above the cut-off are taken up while as below it, are rejected. The selection of cut-off point is an important decision which is taken after due consideration to the number of factors like the goals of the firm and available financial resource.
3. Bailout is a method of determining the length of time that will be required for cash inflows and salvage value of the project to recoup the funds invested in a proposed project.
4. The period where the net present value of the project's cash flows amounts to zero is known as the breakeven period.
5. Profitability index represents the ratio between present value of cash inflows and present value of cash outflows of a project.
6. The term capitalization is a quantitative concept which tells us about the total amount of securities or capital issued by a company, whereas the term capital structure is the qualitative aspect which tells us about the proportion of various securities in the securities issued.
7. Lack of liquidity leads to bankruptcy because when company borrows more than its capacity and fails to pay interest charges on it, the lender clutches the asset of the company and endangers its existence.

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8. Liquidity is a firm's ability to pay its short term financial obligation. On the other hand, solvency is related to the firm's ability to repay its long term financial obligations.
9. When a company keeps the dividends per share constant every year, it is called a 'fixed rate dividend policy'.
10. The clientele effect hypothesis is based on the belief that managerial decisions need not be taken keeping in mind the profile of the shareholders but independent of it.

4.7 SUMMARY

- Capital budgeting refers to the practice of allocating money, on a regular basis, to be used for acquiring capital assets. It is a decision making process used by firms to analyse the purchase of major fixed assets which may include both tangible assets like building, machinery, plant and equipment and intangible assets like technology, patents and trademarks.
- Capital budgeting is a process of long-range planning expenditure for acquiring such assets which not only require significant investment but also generate cash flows beyond one year. It is investment decision making that aims to evaluate the financial desirability of a project with the help of cash flows rather than net income as advocated by accrual accounting.
- A systematic process of capital budgeting consists of the following five steps:
  - Inviting investment proposals
  - Project review and analysis
  - Decision making
  - Project implementation
  - Post-implementation audit
- Capital budgeting process includes several different proposals. It differs from firm to firm. However, the most common ones are:
  - expansion;
  - replacement;
  - choice of equipment; and
  - buy or lease.
- Corporate investment decisions involve the application of a suitable technique for the financial evaluation of investment proposals. The basic approach in any technique for the evaluation of capital project involves comparison of costs and benefits associated with the investment plan.
- Evaluation techniques can be broadly classified into two general categories, namely, non-discounted cash flow methods and discounted cash flow methods.
- Payback method which is not only one of the oldest methods but also most popular method of evaluating investment proposals involves the calculation

of the span of time required to recover initial cash investment.

- Payback method determines the payback period which is the length of time that elapses before total cumulative cash inflows (after tax before depreciation) from the project equal the initial cash outlays for the project.
- Bailout is a method of determining the length of time that will be required for cash inflows and salvage value of the project to recoup the funds invested in a proposed project.
- The payback method suggests the ranking of projects according to the length of time they take to pay back their initial costs. In fact, the management decides beforehand the maximum payback period, *i.e.*, *'cut-off period'*, beyond which a project is rejected.
- The period where the net present value of the project's cash flows amounts to zero is known as the *breakeven period*. The period up to break-even period is the *'discounted payback period'*. The break-even period becomes the evaluation criterion for the selection of the projects.
- Payback Reciprocal method attempts to estimate the internal rate of return. The payback reciprocals are calculated by dividing annual cash inflow by the amount of investment. This method is considered suitable only if the life of the project is atleast twice the payback period.
- Accounting rate of return method also known as the *financial statement method, the book value method, the unadjusted rate of return method* is consistent with the accounting measurements of income by using accounting records. It is based on the traditional concepts of accounting income and return on investment. Under this method, the evaluation of the project is done on the basis of rate of return.
- The discounted cash flows method deals with actual cash flow instead of the accounting concept of income.
- The net present value method attempts to discount the cash flows of a project to their present value using a pre-determined discount rate representing the cost of capital. This method aims to find the net present value of the project which represents the difference between the present value of cash inflows and the present value of cash outflows.
- The second discounted cash flow technique of investment appraisal is the Internal Rate of Return method. It is also known as the *discounted rate of return method, the adjusted rate of return method, investors method*, and *time-adjusted rate of return method*. This method attempts to determine the rate of interest which when applied to the future income stream will exactly equate the present value of that stream to the present value of the investment.
- Profitability index represents the ratio between present value of cash inflows and present value of cash outflows of a project.
- Capital structure is the combination of debt and equity securities and termed as the permanent sources of financing. Financial structure is composed of a specific proportion of short-term debt, long-term debt and shareholder's

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funds. The term capitalization is a quantitative concept which tells us about the total amount of securities or capital issued by a company, whereas the term capital structure is the qualitative aspect which tells us about the proportion of various securities in the securities issued.

- Capital structure of a company can be any of the following:
  - o Equity share
  - o Equity and preference shares
  - o Equity shares and debentures
  - o Equity, preference and debentures
- Financial breakeven point is that level of earnings before interest and taxes (EBIT) which is equal to the fixed financial charges (interest and preference dividend). At this level of EBIT, earnings per shares are equal to zero. If the EBIT is less than the financial breakeven point then EPS should be negative, therefore fixed interest bearing sources should be reduced in the capital structure.
- Capital structure of a company refers to the composition or make-up of its capitalization and it includes all long-term capital resources viz. loans, reserves, shares and bonds.
- Asset structure is defined as the proportion of capital invested in each type of asset i.e. short-term assets like inventory, debtors, cash balance, marketable securities and so on, and long term assets like land and building, plant and machinery, furniture, fixture and so on.
- Liquidity means the firm's ability to cover its financial obligation in a timely manner.
- The ability of a firm to meet its long-term financial obligation is termed as solvency.
- Flexibility refers to the firm's ability to adjust its capital structure as per the requirements of the funds. If a firm needs more funds then it must be in a position to raise more funds, only then the company will be in a position to repay its loan.
- Basically, risk can be divided into two parts: business risk and financial risk. Business risk or operating risk is associated with the variability in the EBIT (earnings before interest and taxes). Financial risk is related to the financial leverage of the firm. Greater use of debt in the capital structure of a firm causes more variability in the EPS (earnings per share).
- Determination of an optimum capital structure is significant for a company. An appropriate mix of debt and equity should be there in capital structure. Some of the factors which should be kept in mind while deciding about the capital structure are tax advantages, cost of capital, profitability facets, liquidity facets, leverage ratio of other firms of the industry, nature of the industry, etc.
- Dividend policy is only a problem for those firms with positive earnings. It is both a problem and an opportunity for such firms. It is an opportunity because

by the way of distributing dividends they can satisfy the shareholders. It is a problem as well, since no solid theory has yet been developed with which optimal dividend policy can be defined.

- The dividend is paid in cash as per the legal requirements of the Companies Act, 1956 (now the new Companies Act 2013). Dividend policy is expected to keep 'shareholders' confidence' as its focal point. Shareholder confidence is built through a consistency in dividend payment.
- Any dividend policy that is adopted by a company has some definite implications. These are also called as hypothesis.
- They are various theories regarding relationship between dividend distribution and value of firm. All these theories can be grouped as relevance and irrelevance theories.

4.8 KEY TERMS

- **Capital budgeting:** It is a process of long-range planning expenditure for acquiring such assets which not only require significant investment but also generate cash flows beyond one year.
- **Breakeven Period:** The period where the net present value of the project's cash flows amounts to zero is known as the *breakeven period*.
- **Capital structure:** It is the combination of debt and equity securities and termed as the permanent sources of financing.
- **Financial structure:** It is composed of a specific proportion of short-term debt, long-term debt and shareholder's funds.
- **Liquidity:** It means the firm's ability to cover its financial obligation in a timely manner.
- **Solvency:** The ability of a firm to meet its long-term financial obligation is termed as solvency.

4.9 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short Answer Questions

1. What are the main objectives of capital budgeting programmes?
2. What are the various methods used for evaluation of the capital budget?
3. Briefly mention the limitations of the payback method.
4. Write a short note on the payback reciprocal method.
5. What are the weaknesses of the Accounting Rate of Return method?
6. Briefly mention the steps involved in the net present value method.
7. Write a short note on financial breakeven point.
8. What do you mean by solvency?

9. Differentiate between business risk and financial risk.
10. Write a short note on dividend irrelevance theory.
11. What is free cash flow hypothesis?

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Long Answer Questions

1. Examine the five steps of the capital budgeting process.
2. Discuss in detail the non-discounted cash flow method.
3. Analyse the concept of liquidity, solvency and flexibility.
4. Discuss the importance of optimum capital structure in a company.
5. Explain the factors which should be kept in mind while deciding about the capital structure.
6. Discuss in detail the dividend relevance theory.

4.10 FURTHER READING

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UNIT 5 OPERATING DECISIONS

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Structure

5.0 INTRODUCTION

Budgets are used by organizations to plan and control all aspects of producing and/or selling commodities or services. Different authorities classify budgets differently. Some classify it on the basis of functions, while others classify it on the basis of activity levels. This unit will discuss the importance of budgetary control. The unit will also discuss the concept of working capital and the factors that affect it. Working capital must keep circulating in the business. Less as well as high working capital has a negative impact on the business. There is a need to maintain liquid assets by focusing on cash management and account receivables management.

5.1 OBJECTIVES

After going through this unit, you will be able to:

- Understand the importance of budgetary control
- Explain the concept of working capital
- Discuss the need for management of liquid assets

5.2 BUDGETS AS A BASIS OF PLANNING AND CONTROL

Budget is generally recognized as a plan of action to be pursued by an organization during a defined period of time in order to achieve its objectives. It is a statement of anticipated results expressed either in financial or non-financial terms. According to Williamson (2003) *A budget is a formal plan of action expressed in monetary and other quantitative terms*. Gordon and Shillinglow (1974) state, *Budget is a pre-determined detailed plan of action developed and distributed as a guide*

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to current operations and as a partial basis for the subsequent evaluation of performance.

CIMA (1991) defines: *A budget is a financial or quantitative statement prepared prior to a definite period of time of the policy to be pursued during that for the purpose of attaining a given objective*.

Sizer (1979) explains: *Budgets are financial and/or quantitative statements prepared and approved prior to a defined period of time of the policy to be pursued during that period for the purpose of attaining given objective*.

A *budget is a detailed schedule of the proposed combinations of the various factors of production which the management deems to be the most profitable for the defined period. It may be a forecast of sales, production costs, distribution costs, and administrative and financial expenses–and, therefore, of profit or loss*. It serves as a road map for executives and makes them aware when the company is straying from its planned route.

Concept of Budgetary Control

Commercial organizations always aim to attain the highest volume of sales at the minimum cost in order to maximize their profits. To attain this objective, organizations need to realize that planning and control of activities become essential absolutely. It is, in fact, the system of budgetary control that provides the organizations with the framework which helps them to achieve this objective.

Budgetary control is a systematic process designed to plan and control the major activities of a firm's business through budgets prepared in advance with an objective to ensure effective use of resources. In the words of Batty (1978), *Budgetary control is a system which uses budgets as a means of planning and controlling all aspects of producing and/or selling commodities or services*. According to Scott (1970), *it is the system of management control and accounting in which all operations are precasted and so far as possible planned ahead and the actual results compared with the forecasted and planned ones*.

CIMA (1991) defines budgetary control as the establishment of budgets relating to the responsibilities of executives to the requirements of a policy and the continuous comparison of actual with budgeted results, either to secure by individual action the objective of that policy or to provide a basis for its revision.

In the opinion of Brown and Howard (1975), *Budgetary control is a system of controlling costs which includes the preparation of budgets, coordinating the departments and establishing responsibilities, comparing actual performance with the budgeted and acting upon results to achieve maximum profitability*.

Budgetary control is a process of managing an organization in accordance with an approved budget in order to keep total expenditure within authorized limits. It is designed to assist the management in deciding the future course of action and to develop the basis for evaluating the efficiency of operations. Thus, a budgetary control consists of:

- Preparation of budgets for major activities of the business;
- Measurement and comparison of actual results with budgeted targets;

- Computation of deviation, if any; and
- Revision of budget, if required.

Thus, budgetary control requires preparation and designing of the budgets revealing clearly the financial responsibilities of executives in relation to the requirements of the overall policy of the company followed by a continuous comparison of actual business results with budgeted results to secure the objectives of the policy. If the principles of budgeting are carried out in a proper manner, the company can be assured that it will efficiently use all of its resources and achieve the most favourable results possible in the long run.

Objectives of Budgetary Control

The main objectives of budgetary control are as under:

- To provide useful, accurate and reliable information to enable managers formulate future business policies
- To help the organizations in exercising control over costs by preparing separate budgets for each department To evaluate the results of various policies and facilitate supervision over the various factors of production
- To eliminate the danger of over capitalization and under capitalization by determining the total capital requirements of a business firm with the help of production budget and working capital estimates
- To locate deficiencies in production system by preparing separate production capable of ascertaining the efficiency of production
- To promote research and development activities of an organization as budgetary control policies and programmes are usually based on past experience

Advantages and Limitations of Budgetary Control

Budgetary control is perhaps the most useful tool used by the management for planning and controlling major activities of the business. However, the system of budgetary control in itself does not ensure good planning or control but it helps executives to plan ahead and exercise control over people and operating events. In fact, such a system not only provides information on probable future business results but also the resources like money, men, materials and facilities required to achieve such results. The most notable benefits derived from the system of budgetary control are as follows:

- Through its disciplined approach, it coordinates the planning of all functional executives towards the common profit making goal.
- Motivates executives to think ahead by impressing upon them to formalize their planning efforts.
- Provides managers an opportunity for self-evaluation by offering them goals and objectives against which they can evaluate their performance without any difficulty. Such an arrangement makes each member of the organization clear about his role and contribution in attaining organizational goals.

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- Enables an organization to predetermine the benefits and costs of the projects under various alternative operating conditions. Such a comparative analysis helps it to evaluate the most appropriate allocation of resources.
- Provides a framework that specifies measurable periodic objectives for each phase of planning.
- Helps managers to identify expected operation problems from business activities but also provides them the basis for solving these problems or avoiding them before they occur.
- Make employees of the organization conscious of the needs to conserve business resources.
- Maximize benefits of decentralization.
- Makes it obligatory for the enterprise to maintain adequate financial records that can be associated with the budget.
- Serves as an excellent vehicle and effective communication system for the exchange of ideas and coordination of plans among various levels of management.
- Reveals budgets prepared for efficient and effective use of resources.
- Increases participation of employees in the preparation and execution of budgets thereby boosting the morale among them which in turn contributes to the output.
- Helps a company meet market competition efficiently by keeping the cost at the minimum level.

Limitations of Budgetary Control

Despite the benefits mentioned earlier, budgetary control suffers from serious limitations. Management must keep such limitations in mind while using the tool of budgetary control. The major limitations of budgetary control system are summarized below:

- Since budget estimates are based on approximations and personal judgements, therefore, they are always doubtful. In fact, the quality of budgets is always associated with the intelligence, skills and experience of the budget persons.
- The premises of the budgetary control system change rapidly with the change in business conditions. As a result, business executives face a lot of difficulties in the execution of budgets.
- The success of budgetary control largely depends on its execution which in turn depends on the cooperation and participation of all levels of management. Every member of the organization must direct his efforts to achieve the objectives of the budget. Any lapse in their coordination or cooperation may result in poor performance.
- The installation of budgetary control system is a costly affair, and therefore, small organizations may not afford it. Even financially sound enterprises must adopt this system only after analysing properly its cost and benefits.

- Budget targets sometimes are considered as pressure tactics which lower the morale of the employees.
- The formulation of the budgets is a time-consuming process as a good amount of time is wasted in their preparation, evaluation and revision.
- There is an old saying to the effect that 'a man is usually down or what he isn't upon'. Often executives do not realize the utility of the budgetary control system.
- Under budgetary control system every budget centre tries to achieve its objectives without taking into consideration the objectives of other budget centres and overall objectives of the budgetary control system. This creates conflict among various units of the organization which ultimately interrupts the efficiency of the system.

Essential Characteristics of a Good Budgetary Control

A good budgetary control must possess the following characteristics:

- There must be a common authority to enjoy the rights and privileges as well as to fulfil the obligation. Actual users must be consulted before actually allocating different resources.
- The supervisory staff must be held responsible for all the functions of the business and proper utilization of all the resources of the business.
- Independence of action must be ensured for the administration in those matters for which they are accountable. In such matters, they must be consulted and their views should be given due weightage.
- One who gives orders must also provide facilities for the execution of those orders.
- There must be test checking of the work at regular intervals and the results must be compared with the targets. Shortcomings must be ascertained and measures should be suggested to overcome them.
- There must be some system for rewarding better results and penalizing poor results. Incentives for better work must be provided. Inefficiency must not be condoned.

Requirements for Budgetary Control

The prerequisites for good budgetary control are essentially the same as for sound business management. For effective budgetary control, the firms need to:

- develop the statement of objectives and policies to guide management in reaching its business goals;
- build up a sound plan for the organization with clearly defined responsibilities and authorities for each management and supervisory position;
- establish a clear understanding of cost behaviour and product cost structure;
- develop a plan of operations over a given period of time to achieve objectives efficiently and effectively;
- provide for measurement of performance through timely comparative control reports;

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- take necessary action in the execution of plans to set right unsatisfactory performance;
- revise the budgets when required.

The concept of budgetary control formalizes the process implied in these requirements by incorporating the above steps into a comprehensive financial plan or budget. It should be obvious that the financial plan or budget is not just a forecast or a summary of the business results a year ahead. It is instead a plan of operation. The plan must be based on good operating practices and soundly conceived management strategy. It should have a certain extent of flexibility, a 'stretch' in it. This means that operating men should incorporate in the budget performance, goals that are attainable by hard work and dedicated effort. An easy test of whether or not a business budget has been built on good planning and control concept is to check these points:

- Sales and production requirements should be defined in terms of quantities by products.
- The variable and total costs of producing each product should be identified on a predetermined basis in the budget.
- Budgeted costs and expenses should be stated for each responsibility centre.
- The degree of capacity utilization of major equipments and facilities should be clearly defined in the budget plan.
- All departmental budgets should be based on the same volumes of product and service requirements and should meet an acceptable profit goal.

If an organization's budgetary control system does not meet these tests, functional executive need to discuss the lapses with the budget personnel to seek improvements in the system.

Classification and Preparation of Budgets

Different authorities have given different classifications of budgets. Some classify them on the basis of functions involved, period covered, nature of transactions while others classify them according to activity levels. Accordingly, the following classifications are given:

Budgets according to activity levels:

- Fixed budget
- Flexible budget

Classification on the basis of nature of transactions:

- Operating budget
- Capital budget

Period classification:

- Long-term budget
- Short-term budget

Functional classification:

- Master budget
- Subsidiary budget

However, classification on the basis of functions is more popular and common almost in every business concern.

Check Your Progress

1. What is a budget?
2. Define budgetary control.

5.3 INTRODUCTION TO WORKING CAPITAL

The term 'working capital' has also attracted a few debatable interpretations. According to some authors (Kenneth, 1938; Baker and Mallet, 1949; Meed, 1933) working capital is nothing but the total current assets. They advocate that current assets should be considered as working capital because it is the current assets which help to earn profits. Financing aspects should not be mixed up with working capital. Working capital is required for operational purpose, so total current assets are more meaningful. How much capital is employed in supporting operations is a different issue. This kind of opinion continued till the fifties (Meed, 1933; Bogen, 1957).

The meaning of working capital has now changed to 'excess of current assets over current liabilities (Guthmann, 1964).'Bombay Stock Exchange Official Directory as well as the Annual Survey of Industries also subscribe to this concept of working capital. It is also known as '*quantitative concept' of working capital* (Husband and Dockery, 1957). The main argument is that what matters in the long run is the surplus of current assets over current liabilities and not the absolute amount of current assets. It is useful in assessing financial position of the enterprises and also helpful to the investors and creditors to judge financial soundness and margin of safety. It is a dependable source to meet contingencies since the firm has no obligation to return this amount.

Though the difference of opinion regarding the two concepts of working capital still persist, reconciliation between the two has been attempted by calling the first concept (working capital means total current assets) '*gross working capital'* and the second one '*net working capital'* (Kuchhal, 1985). The debate is more of an academic nature. In practice the concept of 'net working capital' is used when the purpose is to find out the financial position and the concept of 'gross working capital' is used while judging the operating effectiveness of working capital. More often, when reference is made to the terms 'working capital' it means net working capital.

Working Capital Approaches

Working capital concepts can be explained through three approaches for understanding the working capital (primarily the current assets). These three approaches are:

- Working capital cycle approach
- Pipeline approach, and
- Cash tank approach

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Each of these approaches explains the circulating or flowing nature of the working capital.

Working capital cycle approach

The components of gross working capital are depicted in a cyclical form as in Figure 5.1.

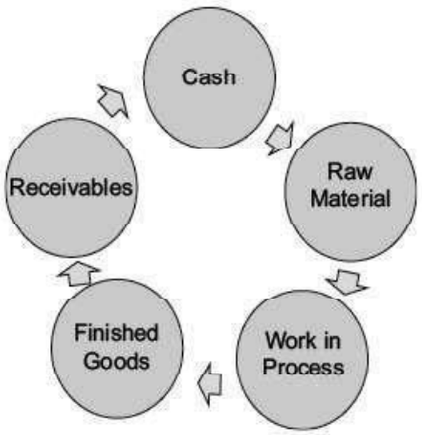

Fig. 5.1 *Cycle of Current Assets Components*

Figure 5.1 explains the circulatory nature of current assets, wherein the initial cash is used to purchase raw materials, which becomes the work-in-process when processing begins. After processing, the same turns into finished goods, which become receivables on being sold on credit. When collected the receivables turn back into cash, and thus the cycle goes on.

Net working capital cycle: The working capital cycle shown in Figure 5.1 is actually the gross working capital cycle or the current asset cycle. Each next form of a current asset item is attained through spending more money in carrying out appropriate value-addition activity on it. These additional expenses also have some unpaid portion too, which are payables, but not recognised in the gross working capital cycle. Figure 5.1 can be improvised to include various payables that come naturally with any business operation, and we get Figure 5.2, that depicts the net working capital cycle.

The difference between the current assets and current liabilities constitutes the 'net working capital', which is also often called just the 'working capital'. The depiction of net working capital can be done by juxtaposition of the cycle of current assets and that of current liabilities. Figure 5.2 depicts in its centre the current assets cycle, which is the same as in Figure 5.1 and on its periphery, various payables to form the net working capital cycle.

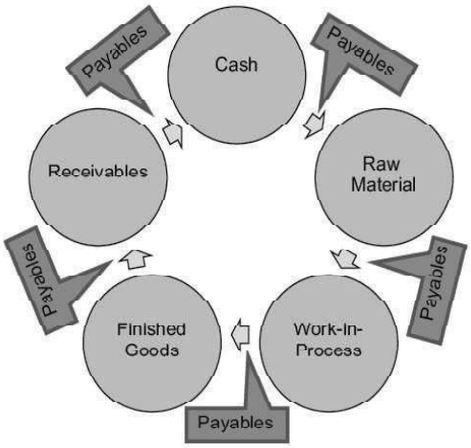

Fig. 5.2 *Net Working Capital Cycles*

This net working capital can be positive, indicating the net investment made by the company in bridging the gap between current assets and current liabilities. While the finance made available by the payables is cost free and as a part of prudent business customs, the conscious financing of net working capital has some cost, as they are funded through external sources.

Net working capital can also be negative. When current liabilities are more than current assets, working capital would be negative. Depending upon the business and when the accounts are closed, working capital can be either negative or positive and only coincidentally can be exactly zero.

Pipeline approach

Working capital is like water flowing in a pipeline or blood flowing in the blood vessels. The diagrammatical presentation of pipeline approach of working capital is shown in Figure 5.3.

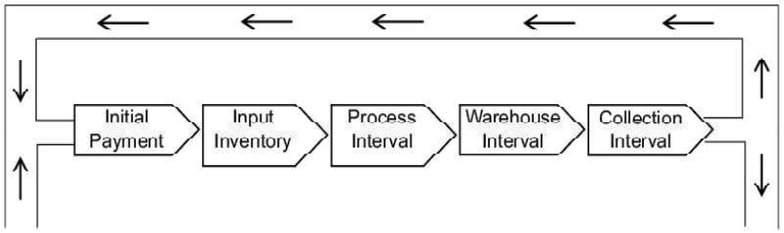

Fig. 5.3 *Pipeline Approach of Working Capital*

The pipeline explains cash flowing from the left side bottom into the business processes with initial payments for purchases, which gets into the inventory to go into processes. The produced goods remain in warehouse and then in receivables. These are all called intervals after which cash is turned back into cash. While this flow goes on some cash enters into the pipeline and also flows out of it through non-operating decisions of the firm. The examples of non-operating decisions that create cash flow include dividend payments, issue of capital, retirement of capital, use of cash for investment in fixed assets, etc.

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Cash tank approach

The cash tank theory or approach explains the pipeline theory in somewhat more details. The diagrammatic representation of cash tank method is given in Figure 5.4.

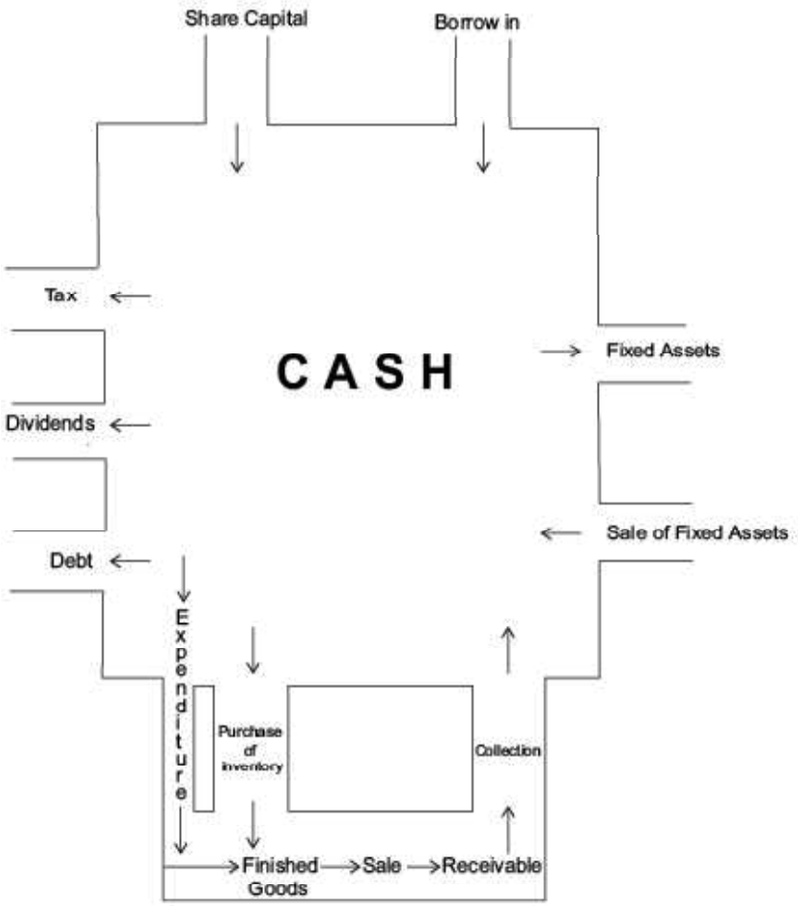

Fig. 5.4 *Cash Tank: A Treasury Approach for Working Capital Management*

The cash-tank shown in Figure 5.4 is self-explanatory. A cash-tank of a firm is like the heart which is pumping working capital for its effective circulation. Overflowing as well as dried up tank both cause disturbances in routines. Veins and arteries are spread throughout the organization. They pass through every department and individual before the cash goes back to the tank. The amount of cash which goes back to the tank should be greater than the amount which was pumped out. The firm must earn profit and more importantly it must collect money from debtors. The extra cash so generated should be used efficiently rather than allowing the same to remain in the cash tank. The extra cash can be initially used for short-term investments like marketable securities and then for long term growth, i.e., for further investments in fixed assets. If extra fat is allowed to circulate in veins and arteries, cholesterol is formed which proves fatal at times.

The **working capital cycle approach** begins with the given cash on hand. It does not illustrate the sources of cash and implies that once the cash gets into the cycle there is no further infusion of cash nor takeout of cash from the cycle. The **net working capital cycle** explains the current liabilities along with the cycle

of current asset. The **pipeline approach** considers the inflow into the pipeline as well as outflow of cash from the pipeline, but does not narrate the sources of inflow and applications of outflow. The **cash tank approach** is more comprehensive as it shows the sources and uses of funds that affect the flow of cash in the operations.

5.3.1 Components of Working Capital

The components of working capital are discussed in two parts, namely components of current assets and components of current liabilities after which the calculation of working capital is briefly explained in Table 5.1.

Components of Current Assets

A firm has to keep cash on hand with a view to meet its expenses. First, a firm has to buy raw materials using this cash. Some more cash is injected to convert the raw materials into semi-finished goods and then into finished goods. The finished goods are converted into receivables when some more spending of money results into the sales of the finished goods. If sales are on credit, additional expenses would be required to make collections and when collected the receivables get converted into the cash. Now the cash is again available for purchase of raw materials. These components and their cycle are depicted in Figure 5.1 on cycle of current asset components.

Components of Current Liabilities

At every stage of the current asset cycle someone is financing a part of the investment needed for the current assets. For example,

- Raw material is purchased on credit and thus, the suppliers finance the investments in raw material inventory for the credit period extended by them.
- When the raw material is processed to get work-in-process and finally finished goods, several value adding expenses are not paid immediately and they remain unpaid for some time. For example, workers and other employees are paid after the month gets over, electricity bill is paid after a lapse of time, and so is true about all other expenses associated with value adding processes.
- Efforts and expenses are incurred in converting the finished goods in to receivables. Some of these expenses associated with warehousing, marketing and selling are not paid immediately as per the terms of payment with these parties.
- Though payment terms are well spelt out in the credit sales, firms do incur expenses in collecting money from them. They may be in the form of discounts, phone calls and bank commissions for realization of cheques deposited. Phone bills are paid after the cycle of bill, which remain as unpaid for some time and finance some part of the assets.

Thus, almost every party that is involved in the operations of the business directly or indirectly finance to an extent part of business activity. They have to be paid when due and therefore, these constitute the 'current liabilities', which acts as an automatic financing of current assets by virtue of business practices of every

business. Figure 5.2 of net working capital cycle depicts these current liability components on the periphery of it.

Calculation of Net Working Capital

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The working capital components and calculations are shown in Table 5.1.

Table 5.1 *Calculation of Working Capital*

	Inventory • Raw Materials • Work-in-progress • Finished Goods • Spares and Parts
+	Receivables • Sundry Debtors (accounts receivables) • Other Receivables
=	Total Current Assets (Gross Working Capital)
-	Current Liabilities • Accounts Payables • Other Liabilities (payables) • Provision for Tax
=	(Net) Working Capital

Table 5.1 gives the calculations of net working capital using the components depicted in Figures 5.1 and 5.2.

5.3.2 Importance of Working Capital

Working capital's role in the business can be compared with the functions of blood in a body. Working capital must keep circulating in the business. Inadequate working capital is like a low blood pressure, which may deprive various organs of much needed oxygen and various business activities may suffer adversely. Less working capital might disturb the payment schedule, affect the dividend policy adversely, opportunities of low price or quantity discount or cash discount may not be grabbed.

High blood pressure is equally bad for a body and so is true for working capital in the business. Excessive working capital means capital is unproductively tied up, which is counter-productive and that reduces the profitability of the business. It also results in extra and unnecessary costs like interest, wastage, bad-debts and other undesirable expenses. High working capital pulls down investment turnover ratio, reducing the return on investment and reduced shareholders' profit. If the situation of excessive working capital continues for some time it might mislead the dividend and investment decisions. This could be suicidal.

Working capital investment has duel impact of the profitability ratios also. Look at Example 5.1.

Example 5.1: Profit effect of working capital investment

A company has extracted the following data from the budget that is prepared for the next year:

	Original
Fixed Assets	7,00,000
Working Capital	3,00,000
Net Assets	10,00,000
Debt (0.15)	5,00,000
Equity	5,00,000
Net Worth	10,00,000
Sales	6,00,000
Operating Expenses	4,00,000
Interest Expense	75,000
Profit Before Tax	1,25,000
Tax (0.35)	43,750
Profit After Tax	81,250

It was decided immediately after preparing the above budget that the working capital can be reduced by ₹100,000 through various measures without affecting sales and operations. The funds released with the reduction in working capital will be used for repaying the debt.

Reconstruct the given numbers with the change in the working capital. Also calculate the profits and profitability ratios before and after the change effected in the working capital.

Solution: The reconstructed selected budgeted data is as below:

	Original	Revised
Fixed Assets	7,00,000	7,00,000
Working Capital	3,00,000	2,00,000
Net Assets	10,00,000	9,00,000
Debt (0.15)	5,00,000	4,00,000
Equity	5,00,000	5,00,000
Net Worth	10,00,000	9,00,000
Sales	6,00,000	6,00,000
Operating Expenses	4,00,000	4,00,000
Interest Expense	75,000	60,000
Profit Before Tax	1,25,000	1,40,000
Tax (0.35)	43,750	49,000
Profit After Tax	81,250	91,000

The amount of ₹100,000 released from the reduction in working capital is used for the reduction in the debt. As a result interest expense has declined and net asset and net worth have declined. The profitability ratios before and after the reduction in working capital are as below:

Profitability Ratio	Formula	Original	Revised
Profit Margin	$\frac{\text{Profit After Tax}}{\text{Sales}}$	$\frac{81,250}{6,00,000} = 13.54\%$	$\frac{91,000}{6,00,000} = 15.17\%$
Return on Net Assets	$\frac{\text{Profit After Tax}}{\text{Net Assets}}$	$\frac{81,250}{10,00,000} = 8.13\%$	$\frac{91,000}{9,00,000} = 10.11\%$
Return on Equity	$\frac{\text{Profit After Tax}}{\text{Equity}}$	$\frac{81,250}{5,00,000} = 16.25\%$	$\frac{91,000}{5,00,000} = 18.20\%$

NOTES

Thus, all profitability ratios have increased as a result of control of working capital. Profit after tax has increased and along with the net assets. Return on net asset ratio has dual effect on the profitability.

Some useful numbers about the working capital of non-government non-finance public limited companies in the years 2009–10, 2010–11 and 2011–12 were as given in Table 5.2.

Table 5.2 *Selected Financial Ratios of the Select 3,041 Public Limited Companies, 2009–10 to 2011–12*

(Per cent)

Selected Financial Ratios		2009–10	2010–11	2011–12
1	Current assets to current liabilities*	1.3	1.4	1.4
2	Quick assets to current liabilities	65.0	64.0	63.0
3	Current assets to total net assets	45.5	48.0	49.4
4	Sundry creditors to current assets	24.6	23.4	22.9
5	Sundry creditors to net working capital	99.8	83.5	83.0
6	Inventories to sales	16.5	17.0	16.4
7	Sundry debtors to sales	15.6	15.8	16.4

* Actual ratio of current assets to current liabilities.

Current assets represented 49.4 per cent of net assets in the year 2011–12, which shows increasing trend in the current ratio to the net assets over the previous two years. This large percentage of investment must draw attention of management for efficient management them. Inventory is 16.4 per cent of sales whereas receivables (sundry creditors) are at 22.9 per cent of current assets, enough justification why efficient management of inventory and receivables is vital. However, almost one-fourth of the current assets are financed by sundry creditors.

This is enough to prove the importance of working capital management. Working capital management function becomes all the more crucial because:

(a) Working capital should not be that high which may reduce the profitability in terms of return on investment.

(b) It should not be that low which may either hinder operational activity or result in a liquidity crisis.

(c) No standard is available which may suggest a fair level of working capital.

(d) The components of working capital are such that can never be controlled by one man or one department.

5.3.3 Ideal Level of Working Capital

While in case of profits more the merrier, in case of working capital 'not a penny more not a penny less' is desirable. That means not a single extra penny should be invested in the working capital, at the same time even a penny less is not good. Just the right amount of investment is advocated. The right amount is determined by several unique factors at any given point in time.

If storage time is zero, production cycle time is zero, and sales are against only cash then there is no inventory and no receivables on the balance sheet. If management uses the surplus cash efficiently then a firm is not even required to have

a cash balance on hand, making a zero current asset situation. If the business also enjoys credit from suppliers and for other expenses then the presence of current liabilities will give a negative working capital, which means cost free short-term cash flow for the business.

However, more often working capital is positive. It is therefore, necessary to understand what is a 'not a penny more not a penny less' level of working capital for a business. The factors responsible for current assets and current liabilities determine the *ideal* level of working capital. Let us therefore, discuss the factors responsible for working capital in the next section.

Factors Influencing the Working Capital Level

Several factors are responsible for the presence of working capital of a firm. Most important of them can be grouped in three categories namely, (a) external factors, (b) firm specific situation and (c) firm's policy. The factors under these categories are briefly discussed now.

(a) External factors

Any firm is subject to the external environment, and required to adjust its working capital in the context of those factors.

- **Vagaries in supply of raw materials:** Supply of some raw materials may be uncertain, especially agricultural produce like cotton for textile mills. The supply and the prices of these products are very uncertain, creating constant imbalances between the supply and demand. If a firm decides to buy the annual requirement during the season, the inventory investment would be very high. Alternatively, a firm may decide to buy options and future contracts, at a premium, for a delivery at a different time, at a predetermined price, it would pay some premium or price for such contracts. This is possible only if option and future markets exist in the product category.
- **Business customs:** Business custom is an essential parameter that determines the working capital. A firm operating in a product market with scarce supply is likely to ask for cash payment on sales implying fewer current assets. Likewise, if the bought out items are in an over-supply situation a buying firm can negotiate longer terms of credit from the vendors and suppliers to enjoy more credit and have more current liabilities.
- **Nature of business:** Some firms are current asset intensive. At any given point of time a trading firm has a large amount of merchandise on hand whereas a service oriented firm is more likely to operate with little working capital.
- **Seasonality:** Most businesses are subject to seasonal ups and down in sales revenue and also working capital. They observe the inventory pattern that is very low at the end of the season, and piling up to the maximum just before the start of the season. The seasonality pattern may vary from product to product, but it remains part of every business.
- **Position of business cycle:** As seasonality is within the year, over a long period every market observes a business cycle, which expands and contracts

NOTES

over the time. This cycle of expansion and contraction cycle has intermediate phases of peak and trough. The working capital level will be different in every phase of the business cycle, depending upon how well these phases are predicted and managed.

- **Price levels:** Inventory value, receivables and creditors are the functions of quantity and price. Even if the quantity level remains the same the value may increase if the prices increase. Therefore, in an inflationary environment funds are increasingly tied up in the working capital.
- **Shifts in demand of product:** Shift in demand of product is a common experience of businesses. Those who do not timely sense the shift in demand are likely to acquire raw material and also produce the goods, which would get sold slowly. This will increase the level of inventory as they become slow or non-moving inventory.

(b) Firm-specific situation

Each firm has to recognise its own situation and frame its working capital norms and policies accordingly.

- **Size of the firm:** Small firms are more likely to have more working capital needs as compared to the size of operations than the larger firms. This may be generally true as smaller firms are at a disadvantage in purchase-item market as well as end-product market due to their weak bargaining powers.
- **Age of the firm:** Older firms enjoy more credibility than the newer and younger firms. Credibility allows the firm to enjoy credit on purchases and are also able to do business on competitive credit terms to sell their goods and services.
- **Creditworthiness:** Firms who are able to build good credit are likely to enjoy working capital advantage. Their payment terms are favourable. Firms build their creditworthiness through timely payment of dues and of course with good operating results and financial health. Management competence and ethical behaviour also help in building creditworthiness.
- **Stage in product life cycle:** A firm with a matured product is likely to have the least working capital. During the introduction, growth and decline phases the working capital investment is expected to be higher.
- **Production cycle time:** Production cycle time ties up the input resources for that much time along with the expenses incurred at different stages of production. Shorter the production cycle time lesser the work-in-process and semi-finished goods. Production time is partly the result of choice of technology and partly the result of the level of efficiency in planning the production.
- **Production processes:** The layout of the production processes and balance among all the processes have effect on the level of semi-finished inventory and work-in-process. Complexity and imbalance in the processes build up the inventory of semi-finished goods.

- **Synchronization between production and sales:** An environment where there is perfect synchronization between the sales and production would ensue in the least finished goods inventory, whereas a lack of coordination may result into either stock-out situation or excessive inventory of finished goods.
- **Synchronization between purchase and production:** A well-synchronized purchase and production functions reduce the raw material inventory and also the chance of production outage due to non-availability of raw material.
- **Operating efficiency:** Higher degree of operating efficiency means lower cost of production and lower wastage, which would mean a smaller inventory of semi-finished and finished goods.

(c) Firm's policies

Several business policies individually and collectively affect the level of working capital. Important of them are briefly outlined below:

- **Purchase policies:** Raw material inventory level is determined by all policies related to materials. For example, a firm buying locally will naturally have less inventory as compared to a firm that buys nationally and internationally. This is because of the lead time needed for the replenishment of stock. Buying from wholesaler *vs.* retailers, the ordering quantity, ordering level, point of inspection for incoming goods, inspection policy and several factors related to materials have a significant impact on the investments in raw materials.
- **Credit policy and collection efficiency:** Credit is a policy. A firm that follows a tight credit policy will have less receivable, if collection is also efficient. Lax collection efforts cause increase in receivables.
- **Distribution network:** A firm selling goods to the sole-selling agent will have much less inventory of finished goods inventory as compared to those who also own retail stores. The length of the distribution network and efficiency in distribution jointly determine the inventory of finished goods.
- **Production policies:** Producing in anticipation of demand is a less favourable policy for working capital management as compared to producing against demand. This may be the business policy to an extent depending upon the business practices and the firm's situation.
- **Dividend policy:** A firm paying liberal dividend is likely to have less cash on hand, though this would be true depending upon the source of cash flow used for the dividend payments and also the efficiency in cash management.
- **Depreciation policy:** Depreciation is an expense and a part of it gets into the value of semi-finished and finished goods inventory. A depreciation policy that charges higher amount of depreciation (written down value method) earlier would report a higher value of inventory in the initial period and less towards the end of depreciable life of the assets. For this reason, valuation of inventory of new firms is more likely to be higher than that of established firms.

NOTES

5.3.4 Functions for Working Capital Management

A balanced flow of working capital is desirable for the smooth operation of a business. Managerial tasks involved in the management of working capital can be divided into four areas as follows:

(a) **Planning:** Estimating the working capital requirement for a plan period.

(b) **Monitoring and control:** Establishing certain norms and policies of working capital and also designing a proper information system to ensure proper feedback for better control.

(c) **Organizational system:** Building an organization system for better coordination of people having influence on working capital.

(d) **Financing:** Financing the working capital keeping in view its impact on profitability and liquidity.

The agility of company management on these functions is very essential for the successful management of working capital.

Planning for the Working Capital Requirement

Planning is important, especially for the working capital because the working capital level is fluctuating from time to time, though a steadily increasing level is experienced over the long period.

Since, no standards regarding the size of working capital are available for the planning of the working capital, one needs to understand the planning in two phases namely,

(a) Understanding the determinants of working capital and their influence, and based on that

(b) Estimating the working capital requirement using the suitable method(s).

The understanding of the factors responsible for the working capital, discussed earlier, is essential because those factors are unique for each company. The benchmarks must be developed against those benchmarks rather than from competing companies or industry average.

Estimating the Working Capital Requirement Including Operating Cycle Method

Many factors affecting working capital show unstable behaviour over even a narrow span of time. That poses a major challenge to the finance manager's predictive powers. Working capital, therefore, cannot be estimated based on benchmarking with other competing firms. The concept and some methods for estimating the working capital of any business are suggested as follows:

Planning and control techniques include the following:

(i) Conventional methods like:

- o Ratio analysis
- o Fund flow analysis

(ii) Advanced methods like:

- o Element-wise analysis
- o Statistical methods
- o Operations research methods, and
- o Operating cycle approach

NOTES

(i) Conventional methods

Conventional techniques for determining and monitoring the working capital use accounting techniques like ratio analysis and fund flow analysis. Here, some useful ratios have been discussed.

(a) **Ratio analysis:** Conventionally, the ratios are established some association between the working capital with either sales or assets. Thus, we get two sets of working capital ratios.

Some balance sheet ratios are,

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

$$\text{Quick Ratio} = \frac{\text{Current Assets-inventory}}{\text{Currrent Liabilities}}$$

$$\text{CA to TA} = \frac{\text{Current Assets}}{\text{Total Assets}}$$

$$\text{WC to TA Ratio} = \frac{\text{Working capital}}{\text{Total Assets}}$$

$$\text{Inventory to CA} = \frac{\text{Inventory}}{\text{Current Assets}}$$

$$\text{Receivables to CA} = \frac{\text{Receivables}}{\text{Current Assets}}$$

Likewise, cash, inventory and receivables can be compared with the net working capital or with total assets too. Sometimes net assets numbers are used instead of total assets. In these balance sheet ratios of working capital we are looking for a reasonable structure of current asset items with another item of balance sheet, may it be the working capital, current assets, total assets or net assets.

These ratios suffer with several limitations. Deriving requirement of working capital from the total assets or total working capital is not justified as they are not the drivers of working capital items.

Some sales based ratios are,

$$\text{WC to Sales} = \frac{\text{Working capital}}{\text{Sales}}$$

$$\text{CA to Sales} = \frac{\text{Current Assets}}{\text{Sales}}$$

$$\text{Cash to Sales} = \frac{\text{Cash}}{\text{Sales}}$$

NOTES

$$\text{Inventory to Sales} = \frac{\text{Inventory}}{\text{Sales}}$$

$$\text{Receivables to Sales} = \frac{\text{Receivables}}{\text{Sales}}$$

$$\text{Payables to Sales} = \frac{\text{Payables}}{\text{Sales}}$$

These are also called *turnover ratios*. Sales based estimate of working capital is also less reliable because sales can be a determinant of receivables but not for other current asset items. However, sales based ratios are better than asset based ratios.

Firms use some standards to estimate the working capital requirements, and also used the same standards for monitoring the working capital efficiency. Let us take an example.

Example 5.2: Estimating working capital based on ratios

A firm has developed the following standards for the working capital:

- Total net working capital 20 per cent of sales.
- Current ratio: 3
- Inventory turnover ratio:: 8
- Receivables turnover ratio: 6
- Remaining cash on hand and in bank

If the budgeted sales is ₹1 crore, calculate:

(a) Net working capital

(b) Current assets

(c) Current liabilities

(d) Inventory

(e) Receivables and

(f) Cash on hand

Solution:

(a) Net working capital = 0.2 × 1,00,00,000 = ₹20,00,000

(b) Current assets:

- Current asset is thrice the current liabilities. This may happen when the difference between the current assets and current liability (working capital) is two times the current liabilities. Means Re. 1 current liabilities; ₹3 current assets and ₹2 net working capital.
- Therefore, the current asset must be ₹30,00,000 (current liabilities ₹10,00,000 and net working capital ₹20,00,000)

(c) Current liabilities:₹10,00,000

(d) Inventory: Sales ÷ Inventory turnover ratio = 8. Therefore, 1,00,00,000 ÷ 8 = ₹12,50,000 inventory

(e) Receivables: Sales ÷ Receivables turnover ratio = 7.5. Therefore, 1,00,00,000 ÷ 6 = ₹16,66,667

(f) Cash on hand: 30,00,000 – 12,50,000 – 16,66,667 = ₹83,833

This may be the efficient level of working capital provided the standards used are based on the best internal benchmarking against the policies.

(b) **Funds flow analysis:** Cash-to-cash cycle alone would not be sufficient to explain the phenomena related to working capital. There are many cracks and manholes through which the cash would flow in and out. Capital servicing, tax payment, purchase of fixed assets, retirement of some assets, issue of capital and acceptance of loan immediately affects the circulation of cash. Cash-to-cash cycle can be understood in its entirety only if fund flow analysis is made. Fund flow analysis explains the flow of funds from and to all the directions and throws light on from where the funds have been obtained and where they have been applied. Fund flow analysis is not useful in planning of the working capital, but it helps to have a better control which is very useful.

(ii) Non-conventional or advanced methods

Non-conventional techniques adopt a more logical approach for forecasting the working capital. Element-wise analysis, use of statistical methods, operations research methods and operating cycle approach are common under this category.

(a) **Element-wise analysis:** Various components of working capital may have an association with different factors. For example, raw materials with consumption cost or production rate, finished goods with cost of production and receivables with sales. It is advisable to take each component, and estimate them separately based on their respective relationship with relevant items of profit and loss account or balancesheet. This is a refinement over the ratio approach. The element-wise analysis is used in the operating cycle approach for the forecast of working capital.

(b) **Statistical methods:** If a perfect linear relationship is assumed between working capital and some other items of financial statements, then management's ability to manage current assets is denied (Ramamurthy, 1976). This is the limitation of ratio analysis. Statistical methods are theoretically the best methods and they can be more effective in working capital projection. A firm can study the correlation of each working capital component with various financial and non-financial factors. Multiple regression analysis can also be considered to understand changes in working capital with changes in more than one factor simultaneously. Estimate of driving factors can provide lead in planning of each component. Such study must be repeated at a frequent interval of time because of fast changing environment.

(c) **Operations research method:** Many researchers have attempted OR based estimates of working capital planning because optimum working capital exists with several conflicting objectives and constraints. Optimization techniques like linear programming and goal programming are among the

NOTES

few which can be mentioned as important tools for planning of the working capital.

(d) **Operating cycle approach:** Conventional methods do not take into account ever-changing form of working capital components. All components are inter-dependent and hence a cyclical process develops. Cash, after it is converted into raw material, work-in-process, finished goods and receivables, is again turning into the cash. This has been depicted in Figure 5.1. Cash input and cash output do not equate with each other, because of profit or loss, and also because of collection rate. Operating cycle method considers all the forms of cash collectively and gives a single criterion for estimating and controlling working capital. Operating cycle method possesses some inherent characteristics so that alternative courses of actions for reducing working capital are revealed. It has been realized, due to the evolution of operating cycle method, that standard of ratios (like a standard current ratio of 2) cannot be relied upon. Operating cycle concept suggests that the optimum level of working capital can be determined by the operating funds needed for completing one operating cycle. The duration of operating cycle is equal to the number of days for which cash is tied up in the stages of the operating cycle, starting from cash on hand to acquisition of raw material, processing and selling the goods and realization of proceeds from sundry debtors. The number of days' credit allowed by creditors will have to be set off in the process.

There are two ways the operating cycle period is calculated—(a) based on sales and (b) based on appropriate costs that determine the value of current assets and current liabilities. We will discuss both in the following section.

Operating cycle time (based on sales): The sales based operating cycle period uses the average (or year-end) values of items in current assets and current liabilities to calculate the sales equivalent amount that has been tied up with each item. The sum of all periods of current assets less the sum of period of each current liability item is the operating cycle time.

	Name	Equation	Equation No.
1.	Inventory period	$\frac{\text{Average Inventory}}{\text{Daily Sales}}$	(12.1)
2	Receivables period	$\frac{\text{Average Receivables}}{\text{Daily Sales}}$	(12.2)
3.	Cash period	$\frac{\text{Average Cash}}{\text{Daily Sales}}$	(12.3)
4.	Credit period	$\frac{\text{Average acconts payables}}{\text{Daily Sales}}$	(12.4)
5.	Operating cycle period	Equations 12.1 + 12.2 + 12.3 – 12.4	(12.5)

where, Average value = (opening value + closing value) ÷ 2

Daily sales = Sales ÷ 365

Notes:

(a) Some use the year-end values of items of current assets and current liabilities for the calculation of operating cycle period. That may be simple and convey the concept accurately, the average based operating cycle period is little better in accuracy, as the level of these item change gradually over the period.

(b) Some take 360 days in a year rather than 365.

(c) All types of inventory (raw material, semi-finished goods, work-in-process and finished goods) can be combined into one when sales based operating cycle is calculated, because the sales is a common divisor for all items.

(d) For the same logic, one can even take the average of all current assets and divide by the daily sales to get current asset period.

It is apparent that the amount of working capital required at any point in time is governed by the speed with which this cash cycle is sustained. Faster the cycle (i.e., smaller cycle period), lesser is the investment in working capital.

Operating cycle time (based on cost): A firm can calculate the operating cycle period by dividing the amount of every item in current assets and current liabilities by the cost at which they are determined. In this case the denominator is changed to represent the underlying costs for every item of current assets and current liabilities. The operating cycle time under this method is calculated as follows:

	Name	Equation	Equation No.
1.	Raw material inventory period	$\frac{\text{Average Raw Material Inventory}}{\text{Daily Purchase}}$	(12.6)
2.	Finished goods inventory period	$\frac{\text{Average Finished Goods Inventory}}{\text{Daily Cost of Production}}$	(12.7)
3.	Receivables period	$\frac{\text{Average Receivables}}{\text{Daily Cost of Sales}}$	(12.8)
4.	Cash period	$\frac{\text{Average Cash}}{\text{Daily Expenses}}$	(12.9)
5.	Credit period	$\frac{\text{Average acconts payables}}{\text{Daily Purchase}}$	(12.10)
6.	Operating cycle period	Equations 12.6 + 12.7 + 12.8 + 12.9 – 12.10	(12.11)

Note:

(a) Semi-finished goods may be added into the finished goods at the equivalent value.

(b) Receivables period is often calculated using the daily sales with an argument that once finished goods are sold the selling value is due to the firm and therefore, that is the firm's money, which remains invested in receivables. However, the counter argument is that credit sales is a business custom and also the firm's policy; therefore, cost of sales is what is invested in the receivables by the firm.

(c) Daily expenses are calculated by taking value added expenses (cost of sales less material consumed).

Investment in raw material is at the rate of cost of purchase. Therefore, it is more appropriate to calculate the days for which a rupee remains invested in the raw material rather than daily sales. Likewise, a rupee remains invested in the finished goods inventory at the rate of cost at which it is produced. Receivables shall be calculated at cost of sales (some calculate it at sales value). Cash balance is for

NOTES

meeting the expenses. Therefore, cash days are calculated at the daily expense rate. Credit period is calculated at the cost of purchase.

The sales based operating cycle is simple in calculation. The appropriate cost based operating cycle probably explains the cycle time of a rupee invested in operations more convincingly. However, the solved example will bring out its limitations that ensue from the simple addition of days even though each component days are calculated using different denominator.

Example 5.3: Calculation of operating cycle period

Selected financial data of XYZ Company Limited is given below for the successive years:

XYZ Company Limited

₹ in crores

Items	2012–13	2013–14
Sales	2,72,000	3,70,000
Raw materials consumed	1,16,000	2,00,000
Purchase	1,20,000	1,25,000
Cost of Production	1,80,000	2,20,000
Selling & distribution expenses	50,000	52,000
Current assets	1,25,000	1,50,000
Inventories: Raw Material	26,000	25,000
Inventories: Finished Goods	30,000	35,000
Receivables	50,000	55,000
Cash and bank balance	19,000	35,000
Current liabilities & provisions	80,000	90,000
Sundry Creditors	80,000	90,000
Total assets	1,20,000	1,40,000
Working Capital	45,000	60,000

Calculate the operating cycle period using sales a basis as well as appropriate cost as the basis. Discuss from the calculations the (a) results under both the methods and also (b) the working capital trend over the two successive periods. You may take year-end values rather than the average figures.

Solution: Operating cycle period on sales basis

2012–13: Daily sales = 272,000 ÷ 365 = 745.21

2013–14: Daily sales = 370,000 ÷ 365 = 1,013.70

	Formula	2012–13	2013–14
RM Inventory Period	$\frac{\text{RM Inventory}}{\text{Daily Sales}}$	$\frac{26,000}{745.21} = 34.89$ days	$\frac{25,000}{1,013.70} = 24.66$ days
FG Inventory Period	$\frac{\text{FG Inventory}}{\text{Daily Sales}}$	$\frac{30,000}{745.21} = 40.26$ days	$\frac{35,000}{1,013.70} = 34.53$ days
Receivables Period	$\frac{\text{Receivables}}{\text{Daily Sales}}$	$\frac{50,000}{745.21} = 67.10$ days	$\frac{55,000}{1,013.70} = 54.26$ days
Cash Period	$\frac{\text{Cash}}{\text{Daily Sales}}$	$\frac{19,000}{745.21} = 25.50$ days	$\frac{35,000}{1,013.70} = 34.53$ days
Creditors Period	$\frac{\text{Creditors}}{\text{Daily Sales}}$	$\frac{80,000}{745.21} = 107.35$ days	$\frac{90,000}{1,013.70} = 88.78$ days
Operating Cycle		34.89 + 40.26 + 67.10 + 25.50 – 107.35 = **60.4 days**	24.66 + 34.53 + 54.26 + 34.53–88.78 = **59.2 days**

Discussion

- There is overall 1.2 day reduction is operating cycle. That means now the amount equivalent to sales is remaining invested in the working capital less by 1.2 days a reduction from 60.4 days to 599.2 days.
- The company enjoys less credit now and also hold more cash than previous year, the overall reduction in the operating cycle period is largely due to efficient handling of raw material and finished goods inventory as well as receivables.
- Management of current assets, except cash, has improved on all fronts in the year 2013–14 as compared to the previous year.

Operating cycle period on appropriate cost basis

Daily purchase

2012–13: Daily purchase = 120,000 ÷ 365 = 328.77

2013–14: Daily purchase = 125,000 ÷ 365 = 342.47

Daily cost of production

2012–13: Daily cost of production = 180,000 ÷ 365 = 493.15

2013–14: Daily cost of production = 220,000 ÷ 365 = 602.74

Daily cost of sales

2012–13: Daily cost of sales = 230,000 ÷ 365 = 630.14

2013–14: Daily cost of sales = 272,000 ÷ 365 = 745.21

Daily expenses

2012–13: Daily expenses = (180,000 + 50,000 -116,000) ÷ 365 = 312.33

2013–14: Daily expenses = (220,000 + 52,000 - 200,000) ÷ 365 = 197.26

	Formula	2012–13	2013–14
RM Inventory Period	$\frac{\text{RM Inventory}}{\text{Daily Purchase}}$	$\frac{26,000}{328.77} = 79.08$ days	$\frac{25,000}{342.47} = 73.00$ days
FG Inventory Period	$\frac{\text{FG Inventory}}{\text{Daily Cost of Prod.}}$	$\frac{30,000}{493.15} = 60.83$ days	$\frac{35,000}{602.74} = 58.07$ days
Receivables Period	$\frac{\text{Receivables}}{\text{Daily Cost of Sales}}$	$\frac{50,000}{630.14} = 79.35$ days	$\frac{55,000}{745.21} = 73.80$ days
Cash Period	$\frac{\text{Cash}}{\text{Daily Expenses}}$	$\frac{19,000}{312.33} = 60.83$ days	$\frac{35,000}{197.26} = 177.43$ days
Creditors Period	$\frac{\text{Creditors}}{\text{Daily Purchase}}$	$\frac{80,000}{328.77} = 243.33$ days	$\frac{90,000}{324.47} = 262.80$ days
Operating Cycle		79.08+60.83+79.35+60.83–243.33 = **36.76 days**	73.0+58.07+73.8+177.43–177.8 = **119.50 days**

Discussion

- A rupee invested in the operating cycle remains invested in it for 36.76 days in the year 2012–13. This period has significantly increased to 119.50 days.
- The increase in days is due to cash on hand, which is disproportionately higher in the year 2013–14.

NOTES

- All current assets, other than cash, have a declined cycle period.
- Creditors period has increased somewhat.

One would note that the cost based operating cycle is higher than the sales based operating cycle. A visual inspection of the absolute numbers of each working capital items and sales would convince the reader that there is some difficulty with the specific expense based operating cycle. The denominator is small and they are different for different items of working capital. The small denominator for cash on hand gives a very long cycle time for the cash. Also, the operating cycle period is simply the addition of all current asset items cycle period less that of current liabilities. Each of these items is calculated using the different denominator, which is illogical mathematics.

The application of operating cycle concept has duel objectives: (a) to budget the total funds needed to conduct a period's manufacturing and selling operations, and (b) to derive budgets for individual working capital items. Before the beginning of each period therefore the operating-cycle- period-based working capital budgets should be used for cross checking and/or for modifying the budgets as derived by using ratios (Gupta, 1978).

Operating cycle theory is not new anymore. Still very few large companies in the private sector use it for the planning of working capital. It was mostly used by high growth companies as against the low growth companies. The thumb rules like working capital as percentage of either production or sales is more common in practice for working capital planning.

Limitations of these Methods

Every method described earlier suffers from some common limitations. The important limitations are explained below:

- Every item is from the balance sheet, which represents the value as on a particular point in time. The values are subject to change from time to time.
- Often, the ratio or cycle period calculated can be misleading.
- Extra working capital is unlikely to be detected in the monitoring and control mechanism, as it does not hamper the production and sales processes, unlike the inadequacy of working capital.

Check Your Progress

3. How does low working capital impact the business?
4. What are the two ways of calculating operating cycle period?

5.4 MANAGING LIQUID ASSETS

Liquid assets refer to cash, cash equivalents or anything that can easily be converted into cash. It can easily be bought and sold in the market with high demand. A non-liquid asset cannot be sold or converted into cash easily without a loss of investment. The key to managing liquid assets in the short term is to make tactical decisions.

NOTES

5.4.1 Management of Cash

Cash management is one of the most important decision areas of working capital management. The worst use of cash is to keep it idle. That includes cash in hand as well as cash at bank. Idle funds may result in zero returns and therefore, maintaining optimum cash balance is very important. It affects the liquidity and profitability of the business. Firms need cash for the smooth conduct of business because shortage of cash will obstruct their operations. Cash is not like other assets of the firm, as assets such as plant and machinery help in the production of goods and the like. Cash itself cannot produce goods and services but it helps in the production of goods and services. Firms require cash for the smooth and uninterrupted production of goods. They needs cash balance to pay day-to-day expenses, too.

Cash is the most liquid current asset. If there is a scarcity of cash, firms have to arrange a loan to acquire some. It suggests that there is a gap in cash inflows and cash outflows. There are many instances when cash receipts are more than cash payments, and vice versa. In such situations, firms have to manage their cash. They should invest excess cash to earn interest on it and arrange for the shortage. A financial manager tries to manage the cash inflows with cash outflows. Perfect synchronization of cash inflows and cash outflows however, is not possible and that is why financial managers have to devote sufficient time for the management of cash.

Motives for Holding Cash

- **Transaction motive:** For day-to-day operations of the business, a firm needs cash. For cash payment, such as expenses, purchase of raw material, taxes and dividend, etc. firms need cash. So, firms are required to manage their cash in full.
- **Precautionary motive:** Sometimes, firms need cash to meet uncertainties in business. For example, sometimes debtors are unable to pay their dues on time. So, to meet such type of requirements, firm have to keep some cash balance.
- **Speculative motive:** Occasionally, to meet uncertain price fluctuations, firms need cash to buy raw material at a low price. These types of opportunities are not regular ones. Firms see such type of instances quite rarely. Thus, firms have to manage sufficient cash for such type of objectives, too.

Facets of Cash Management

Cash management includes the following aspects of management:

1. Cash Planning
2. Managing the cash flows
3. Investing surplus cash
4. Optimum cash level

NOTES

Fig. 5.5 *Aspects of Cash Management*

1. **Cash Planning**

Cash planning is a technique to plan and control the use of cash. Firms use a cash budget for such purposes. A projected cash flow statement can be prepared for this purpose. Generally, firms prepare the cash budget in advance to forecast cash inflows and cash outflows. Cash forecasting and budgeting are used for cash planning.

- Cash budget is the most significant device to plan for and control cash receipts and payments.
- Cash forecasts are needed to prepare cash budgets.

Cash budget

The cash budget is prepared to forecast the cash requirement and control its spending in business. The cash inflows and cash outflows from various sources are assessed and the surplus and deficit cash is determined from the balance. Cash budgets can be prepared on daily, weekly, monthly or quarterly basis depending upon the requirement of business.

Cash forecasting

Cash forecasting is required in order to anticipate cash requirement for operations and for managing the surplus. Cash forecasting has short-term and long-term methods at its disposal.

Short-term cash forecast

This forecasting methods include:

- The receipt and disbursements method
- The adjusted net income method

Long-term cash forecast

Long term cash forecasting is done to assess the financial requirement for capital projects. This forecast for cash can only be done after receiving the requirement of long term funds by all divisions of the business.

The following is an example of a cash budget.

Example 5.4

From the following information prepare cash budget for the month of July, August, September and October:

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Months	Sales (credit)	Purchase	Wages and Salaries	Manufacturing expenses	Administrative Expenses	Selling and Distribution Expenses
April	650000	630000	25000	10000	9000	1500
May	650000	730000	35000	12000	8000	1600
June	550000	550000	30000	14000	9500	1100
July	680000	650000	32000	13000	8500	1000
August	710000	550000	32000	16000	7500	1300
September	730000	600000	28000	10000	8000	1400
October	680000	600000	33000	12000	7000	1000

- The customers are allowed a credit period of three months.
- A dividend is payable of ₹ 30,000 in the month of September.
- In the month of August firm is required to incur one capital expense. Firm is required to buy one plant and machinery of ₹1, 00,000.
- The creditors allow a credit of three months.
- Wages and salaries are paid on the first of next month.
- There is a lag of one month in the payment of other expenses.
- Cash in hand on 1st July 2020 is ₹ 100000.

Solution:

	July	**August**	**September**	**October**
Receipts				
Opening Balance of Cash	**100000**	**295400**	**100900**	**44100**
Cash receipts from debtors	650000	650000	550000	680000
total Cash available	750000	945400	650900	724100
Payments				
Payments made to creditors	630000	730000	550000	650000
Wages and Salaries	30000	32000	32000	28000
Manufacturing Expenses	14000	13000	16000	10000
Administrative Expenses	9500	8500	7500	8000
Selling and Distribution Expenses	1100	1000	1300	1400
Dividend Payment				
Purchase of Plant and Machinery		100000		
Total Expenses	684600	884500	606800	697400
Closing Balance of Cash	**65400**	**60900**	**44100**	**26700**

NOTES

2. Managing Cash Collections and Disbursements

Accelerating cash collections

To have proper cash balance, firms tries to accelerate their cash collection. For this, firms commonly follow these two methods:

- **Decentralized Collections:** By setting multiple collection centers, firm can speed up their cash collection and use that money to finance their cash flows.
- **Lock-box System:** In this system, firms have lock-boxes at different locations. The objective of this is also to speed up their cash collections.

Controlling disbursements

Controlled disbursement is a method via which an institution increases its funds for the purposes of investments or the payment of debts. This method capitalizes on the availability of cash and makes the most out of it during the time it is present in the money market. It controls the flow of checks in a banking system.

Disbursement or Payment Float: Firms should linger on their cash payment as much as they can. For that duration, firms can use that money to make payments. This method is a bit harmful for the goodwill of the firm. So, firms should take due care in postponing the payment to any creditor. They should make payments only through cheques and as frequently as possible.

By using the following methods, firms can accelerate collections of cash (Figure 5.6):

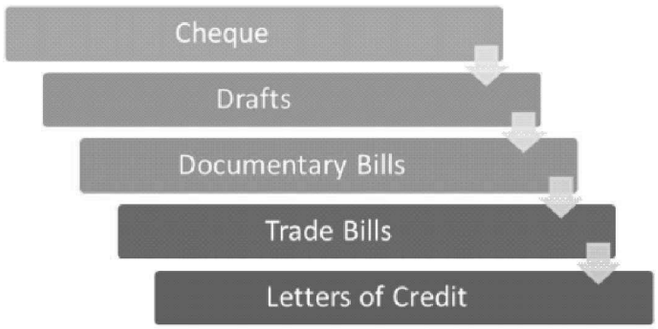

Fig. 5.6 *Cash Collection Instruments in India*

3. Investing Surplus Cash

The profits that have been accumulated overtime by firms is a good opportunity for cash management. The surplus cash can be invested in the most ideal fashion, so that the firm can grow exponentially and reap even more benefits.

4. Optimum Cash Level/Balance

The optimum cash balance has various methods that a firm should know about. There are some mathematical models to estimate the optimum cash balance level. The following two methods are particularly popularly in this regard:

- William J. Baumol's Model
- M H Miller and Daniel Orr's Model

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Optimum Cash Balance Models

The optimum cash balance is a vital part of cash management because that is how firms calculate their requirements of cash and other things in advance. This is how they plan whether they are to move ahead with their investments or are they to go down other roads. The meaning of the models is right there in the name. Their primary function is to provide firms with the ability to develop a system using which they can preserve the most ideal cash balance for themselves. The cash budget is prepared also keeping in mind this very notion because shortage of cash is very problematic.

1. William J. Baumol's Model: Cash Balance under Certain Conditions

The model developed by Baumol is applicable in certain conditions. These conditions require a firm which is able to forecast cash requirements with certainty. Throughout the year, firms incur cost and receive cash from various sources. So, firms hold an average cash balance (Figure 5.7).

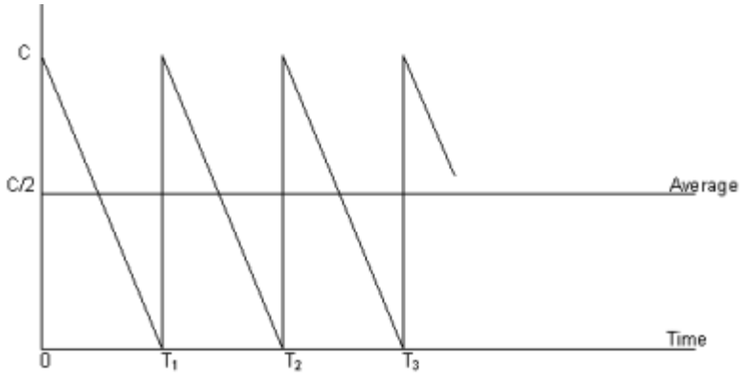

Fig. 5.7 *Average Cash Balance*

This model is based on some assumptions. These assumptions are as follows:

(a) Transaction cost of converting securities into cash remains constant.

(b) Opportunity cost of capital remains constant.

(c) The cash requirements of the firm are known with certainty.

(d) Cash outflows of the firm (cash disbursement) of the firm are known and certain.

This technique resembles Economic Order Quantity (EOQ) of inventory management. EOQ is the quantity where carrying cost/holding cost and ordering cost is minimized. Similarly the optimum cash balance is the tradeoff between transaction cost (cost of converting marketable securities into cash) and opportunity cost of holding cash. The point of optimum cash balance is when these two costs are equal.

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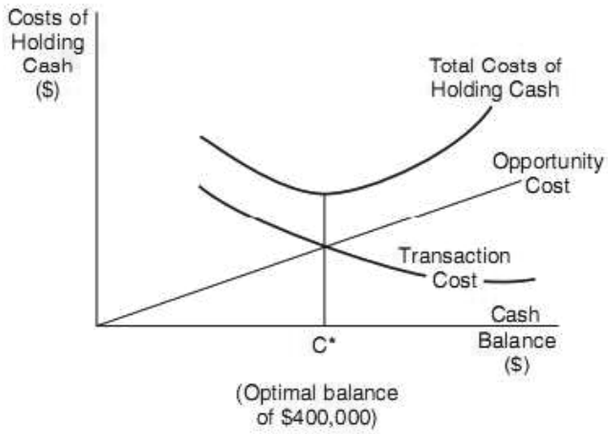

Fig. 5.8 *Optimal Cash Balance*

Following formula is used to calculate the amount of optimum cash balance.

$$Optimum\ Cash\ balance\ (C) = \sqrt{\frac{2A\ F}{O}}$$

In this equation, C is optimum cash balance, A is annual cash disbursement/ requirement, F is fixed cost per transaction and O is the opportunity cost of holding cash. This method can be explained with the help of following example.

Example 5.5

Annual cash requirement of Jolly Ltd. is ₹ 20 lakh. The company has marketable securities in lot size of ₹ 50,000, ₹ 1, 00,000, ₹ 1, 50,000 and ₹ 2, 00,000. Cost of conversion of marketable securities per lot size is ₹ 1,000. The company has 8% opportunity cost of capital on its securities. Calculate optimum cash balance by using Baumol's model.

Solution:

Calculation of lot size by using Baumol's model

Here, Annual cash requirement is ₹ 20 lakh, F fixed cost per transaction is ₹ 1000, O is the opportunity cost of holding cash which is 0.08.

$$Optimum\ Cash\ balance\ (C) = \sqrt{\frac{2A\ F}{O}}$$

$$Optimum\ Cash\ balance\ (C) = \sqrt{\frac{2\ x\ 2000000\ x1000}{0.08}} = ₹\ 223607$$

2. **Miller and Orr Model of Optimum Cash Balance**

One of the biggest limitations of Baumol's model is that it assumes certain business conditions. Baumol's model assumes the firm is able to forecast its cash requirement, its timings and size of cash flows with certainty. In practice however, cash flows are difficult to estimate. Cash flows are not certain and fixed. These are flexible. To meet such type of uncertainty, Miller and Orr gave a model of optimum cash balance. In this model, there is one upper control limit and lower control limit.

With this, there is one return point. When the firm keeps on paying its dues and cash balance hits the lower limit then the firm is required to sell a few marketable securities to increase cash balance to the previous level. Now, suppose there are continuous cash inflows and cash balance hits upper control limit. Then it's time to invest in marketable securities. These two limits upper and lower limit are the action point of the firm's financial manager.

Following formula is used to calculate the difference in upper limit and lower limit.

$$Z = 3\left(\frac{3}{4}x\frac{Transaction\ cost\ x\ variance\ of Cash\ Flows}{per\ day\ interest\ rate}\right)^{\frac{1}{3}}$$

Return point = Lower Limit + (Spread (Z))/3

The above mentioned method can be used to calculate the optimum cash balance requirement of a firm.

Example 5.6

A company has a policy of maintaining a cash balance of ₹ 2, 00,000. Standard deviation of daily cash balance is ₹ 20, 000. The interest rate on daily basis is 0.02%. The transaction cost of each sale or purchase of is ₹ 100. You are required to calculate upper and lower control limit by using these information.

Solution:

$$Z = 3\left(\frac{3}{4}x\frac{Transection\ cost\ x\ variance\ of Cash\ Flows}{per\ day\ interest\ rate}\right)^{\frac{1}{3}}$$

$$Z = 3\left(\frac{3}{4}x\frac{50\ x\ (20000)^2}{0.0002}\right)^{\frac{1}{3}}$$

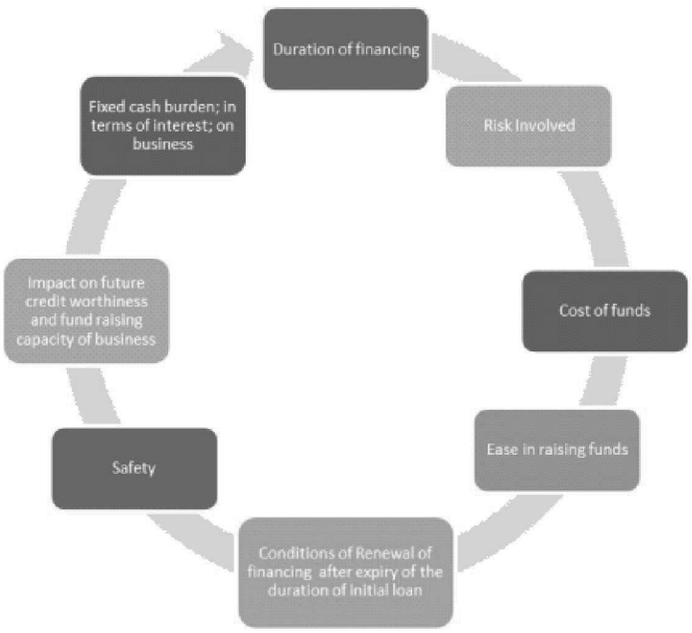

Fig. 5.9 *Short-term vs. Long-term Investment Avenue*

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5.4.2 Management of Accounts Receivables

Account receivables constitute an important place in current assets. Companies are required to sell their products not only on cash basis but on credit basis too. Receivables are also known as accounts receivables, customers receivables, trade receivables, and book debts. To increase their sales, companies are required to sell their products on credit too. This credit sale depends on credit policy of the company/firm. The customers from whom receivables or book debts have to be collected in the future are called trade debtors or debtors. Credit sale involves risk. Cash sales of a business are totally risk free. However, credit sales are made today in the hope that amount of credit sale will be recovered in the future without much loss. In credit sales, the buyer of the product receives the right to use that product for which he can pay in future. In India, debtors have a major portion of the current asset of the firm. Credit sales (debtors) constitute at least one third portion of the current assets of the firms. Credit sales block firm's funds in debtors. So firms have to finance their requirement of funds through loans from banks and financial institutions. Therefore, trade debtors involve investments of the firms, so it should be carefully analyzed.

Receivables management is focused towards various issues related to credit policy of the business. The key issues involved in receivables management are as under:

- **Terms and conditions for credit sales:** A firm's investment in debtors depends on the volume of sales and collection policy. Investment manager can make changes in the investment in debtors by changing the terms and conditions of credit sales i.e. through change in credit policy. Credit policy of a firm is dependent on credit standards, credit terms and collection efforts. If firm follows a liberal credit policy then it should have large investment in debtors.
- **Duration for credit sales:** It refers to the duration given to debtors within which they are allowed to make payment of their purchase.
- **Collection policy:** It involves the detailed procedure that a firm is going to follow to collect cash from the debtors.

The main objective of a firm's credit policy is to maximize the shareholders wealth by increasing sales which leads to the improvement in profitability. Increase in sales leads to increase in operating profits as well as increase in investment and cost. Firms have to maintain a trade off in incremental cost and incremental benefits from the increased sales. A liberal credit policy may result in more credit sales but simultaneously block the funds of the business and risk might increase. A tight credit policy has opposite effects. Therefore, cost benefit analysis based on liquidity-profitability trade-off must be done.

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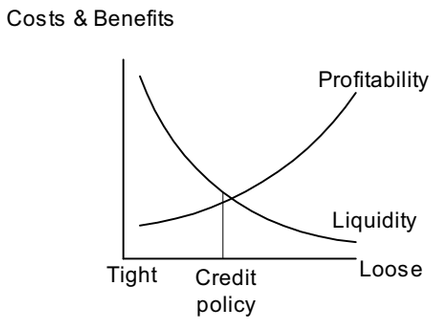

Fig. 5.10 *Cost Benefit Analyses based on Liquidity-Profitability Trade-off*

Cost of Maintaining Receivables

Cost of maintaining receivables includes cost of financing receivables, cost of collection and bad debts. Cost of financing receivables means cost incurred to finance the investment in receivables. Proper collection of receivable is essential for the management of receivables. For collection of cash from debtors various reminders are generally sent to the debtors and sometimes, when debtors delay payment for long then some legal action is also taken against them. All this collection efforts include some cost which is called collection costs. Bad debts occur when debtors are unable to pay amount due towards them. This can be controlled by an efficient collection mechanism but this cost cannot be reduced to zero.

Fig. 5.11 *Factors Affecting Size of Receivables*

Tools to manage credit sales

A firm is required to monitor its receivables to ensure the success of its collection efforts. Following methods are used to manage credit sales:

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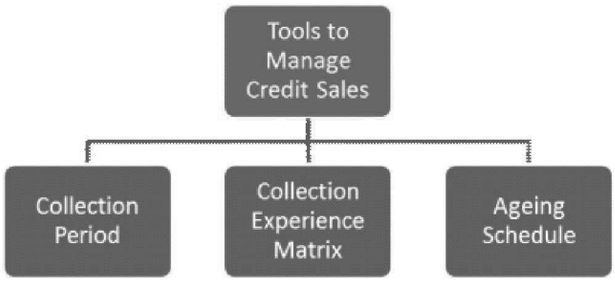

Fig. 5.12 *Tools to Manage Credit Sales*

1. **Collection period**: Average collection period is calculated as follows:

$$Average\ collection\ Period = \frac{Debtors\ x\ 360}{Credit\ sales}$$

The calculated average collection period is compared with the firm's pre-defined collection period. Let us take an example, if by using above method average collection period comes out to be 45 days and firm has set 30 days of average collection period, it means firm is following a slow practice of cash collection from debtors. Extended collection period is a hindrance in smooth and timely cash inflows. These delays badly affect the firm's liquidity position. This method also suffers from a limitation. It provides an average figure of collection period which might not be accurate. It also does not provide meaningful information about the quality of outstanding debtors so as to take timely corrective measures.

2. **Aging schedule**: This method breaks down the receivables as per the length of time for which receivables have been outstanding. Let us suppose that a firm has stated its credit period to be of 20 days and its experience states that 60% of the receivables remain outstanding after a period. Then firm has to main a significant amount of investment in receivables. Therefore, aging schedule provides more information about the collection period and collection experience of the firm.

Outstanding days	Outstanding Debtors/ Receivables	%
0-20	1000000	60%
21-25	600000	36.00%
26-30	360000	14.40%
31-35	216000	5.76%
Over 35 days	129600	2.30%
Total investment in receivables for 35 days	**2305600**	

It is clear from the above mentioned sample table of calculation of investment in receivables that this firm has to maintain a balance of ₹ 23,05,600 in its account on account of credit sales/debtors.

3. **Collection experience matrix:** The basic limitation of the aging schedule method and other traditional methods of receivable management is that all these methods fail to correlate the outstanding debtors to their credit sales. This limitation may lead to the difference in the estimation of receivables by

different experts. However, this limitation can be worked out by using disaggregate data for analyzing collection experience of the firm. This method has one major advantage that it relates receivables of a period to the sales of that particular period. In this method, a matrix is constructed by taking time period in rows and receivables in column. This is the reason that this method is called collection experience matrix. Let us take an example in order to understand this method better. Suppose a financial manager is analyzing the receivables emerged from the credit sales of the firm for last 6 months. Following table shows the credit sales of the firm for last 6 months,

	Credit Sales (₹ Lakh)		Credit Sales (₹ Lakh)
January	600	April	420
February	750	May	390
March	570	June	550

From the sales ledger, financial manager collects information related to the outstanding receivable data for each of the above said month.

The aging schedule of above sale can be presented in the following table. In the month of January, outstanding receivables are 80% of the sales, in the month of February, outstanding receivables are 40% of the sales and in the month of March, outstanding receivables are 40% but in the month of April there is no receivable for the sales of January. So, we can say that sales for the month of January will be recovered till April month. Likewise in case of other months.

	January	February	March	April	May	June
Sales receivables	600	750	570	420	390	550
January	480					
February	240	600				
March	240	300	456			
April	0	300	342	336		
May	0	0	228	168	312	
June	0	0	0	168	156	440

Factoring

Receivables are one of the important parts of the firm's current assets as they represent credit sales which are important ingredients of total sales of any business these days. Receivable management is very crucial for the business as it contributes in the total sales by increasing it. By increasing investment in receivables, firms can generate more sales but at the same time it increases default rate (non-payment by debtors), collection cost and cost of managing receivables. Receivable management involves two basic costs i.e. financing receivables and other one is collection cost including default cost. A small business firm can manage such costs and can do receivable management in efficient manner. But for large business firm/companies receivable management is very difficult (as it involves large cost) and they need services of some specialized institutions who have expertise in the receivable management. This business is called factoring business.

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Factoring can be defined as a specialized service provided by financial institutions in which financial institutions buy (through an agreement) receivables from the seller of services/goods and manage seller's receivables. Here, specialized institution is called 'factor'. The word 'factoring' has different meanings in different countries. However, a study constituted by international institute for the Unification of Private Law in Rome (1988) has given the definition of the term, 'Factoring means an arrangement between a factor and his client which includes at least two of the following services: finance, maintenance of accounts, collection of debts and protection against credit.'

It is clear from the above definition that factoring includes not only financing of receivables of the client but also gives some other services to the clients like maintenance of books of accounts of the client, collection of debts on behalf of the client and protection of the client against the non-payment of receivables.

Some special terminology of factoring is as follows:

***Client*:** It means supplier (business institution) who gives goods on credit and wants to get factoring facility.

***Customer or Debtor*:** It refers to person or business who bought goods on credit from the supplier or client.

***Account Receivables*:** When goods are sold on credit, they generate account receivables.

***Eligible Debt**:* Before entering into an agreement with client usually factor analyze the account receivables of the customer and find out debts eligible for the process of factoring.

Prepayment: The advance payment made by factor to the client is called prepayment.

***Open Account sales*:** When goods are sold by the client to the customers without raising promissory note or any bills of exchange.

Features of factoring

- It is a financial service in which factor converts credit sales of client business into cash on the payment of some commission.
- While doing factoring, factor takes overall risks attached to the receivables of the client when the factoring is without recourse.
- A factor performs at least two of the following functions- finance, maintenance of accounts, collection of debts and protection against credit risk (risk associated with the default in repayment of receivables).
- Financial institution (factor) performs the role of intermediary between client (seller) and buyer. Seller sells goods to the buyer on credit and factor obtains those debtors.
- Other than financing receivables, factor maintains sales accounting, collects debt, gives safety against loss due to bad debts and other valuable services and advises the client for management of sales.

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Parties of the factoring and system of factoring

Buyer of goods *(debtor)*, seller of goods *(client)* and financial institution *(factor)* are the three parties of any factoring process.

- Buyer is the person who buys goods/services from the client and makes an agreement to pay for these goods on some future date. He receives instructions from the seller to pay money, for the goods bought on credit, to the factor. In case he fails to pay, he has to face legal actions.
- Seller is the person who sells goods on credit and avail the services of factoring from the factor in which seller receives 80% or more of debtor's amount (depends on his negotiability with factor). With this seller sends instruction (with invoice and delivery challan) to the buyer to pay money to the factor.
- Factor (financial institution) discounts bills of seller and give him money on the promise that debtor of seller will pay him on some future date. For this, he charges some percentage as commission from the seller.

The whole system (*mechanism*) of factoring can be summed up with the help of following diagram:

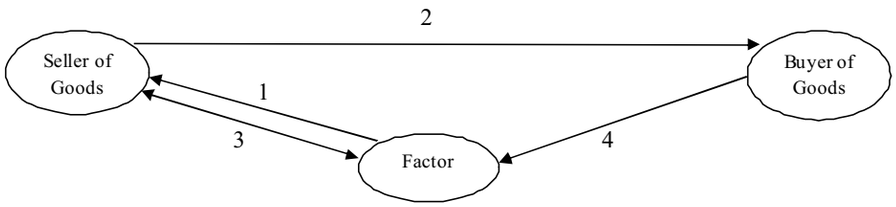

Fig. 5.13 *System of Factoring*

1. First of all, seller and client enter into an agreement of factoring. In this agreement they decide about the terms and conditions of factoring.
2. Seller sells the goods to the buyer on credit.
3. Now seller sends invoice to the factor and discount his bills after payment of commission to the factor. Usually this amount is 80% or more of the final payment which factor is to receive from the buyer at some future point.
4. Now factor has to wait till the due date. On the due date, he receives money from the buyer of the goods.
5. Factor makes final payment to the seller of the good after deducting fees, commission or charges for providing this service to the seller.

Types of factoring

Contract of factoring can be of various types. However, it can be divided on the following basis as well:

1. **Recourse and non-recourse factoring:** In recourse type of factoring agreements, factor has right for the recourse on client which means if buyer fails to make payment for the goods on due date then factor has the right to

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receive payment from the seller of goods. In such type of factoring agreements, factor works as the agent of the seller who receives money on due date from the buyer of goods and factor does not cover default risk associated with the non-payment of interest and principal by the buyer. In other words, seller is responsible for the non-payment by the buyer and for buyer's creditworthiness. Usually factor manages sales ledger and debt collections of the client.

On the other hand, non-recourse factoring is that type of factoring in which factor gives cover for the default risk of buyer to the client. If buyer of goods does not make payment on the due date to the factor then factor cannot claim that amount from the seller of the goods. In this case of factoring, commission and other charges of the factor are high as compared to recourse type of factoring. Commission charged by factor for buyer's default risk is called del credere commission.

2. **Advance/maturity factoring:** Advance factoring is that type of factoring in which factor gives definite percentage of the receivables in advance to the client. It can range from 75% to 95%. After agreement, this amount is made available to the client. This discount rate is determined on the basis of creditworthiness of the buyer, prevailing rates, volume of sales and duration of the factoring agreement. Sometimes, banks are also involved in such types of factoring. In case of maturity factoring, factor waits till payment date. After receiving payment from the buyer of goods, factor make this payment to the client. In this case, factor performs the role of agent of the client and collects receivables on his behalf.
3. **Conventional/full factoring:** In this case of factoring, factor carries out almost all the services of the factoring like maintenance of sales ledger, credit collection and other for the client. This is called conventional factoring in which factor performs various services for the client like advising him on receivable management, bill collection on the basis of maturity, maintenance of books of accounts of client etc. This method is very popular in developed countries, not in India. In India, SBI (state bank of India) is the example for such type of factoring and is given to the creditworthy clients for creditworthy buyers of goods with recourse.
4. **Domestic and export factoring:** This segregation is made on the basis of number of parties involved in the factoring agreement. In domestic factoring, three parties- client, customer and factor are involved. Moreover, all these parties are from the same country i.e. having domicile of same country. In case of export factoring, (also called international factoring or cross boarder factoring) four parties are involved. These are- exporter, importer, export factor and import factor. Export factoring is also called two factor factoring as there are two factors involved in it. In it, two agreements are made one is between importer and import factor and other one is between exporter and export factor. This factoring type is generally non-recourse type.
5. **Limiting factoring:** In this type of factoring, factor discounts service of factoring is given on some selected bills only not for all receivables.

6. **Selected seller and selected buyer based factoring:** In selected seller based factoring, seller sells all receivables to the factor after selling goods to the customers. Factor carries out all functions associated with factoring and seller is approved by the factor before entering into the agreement. But in case of selected buyer based factoring, factor approves buyers on the basis of their creditworthiness and makes a list of them. Approved buyer contacts factor for factoring their bills. After this, factor discounts the bills and makes payments to the seller on the request of buyer of goods.
7. **Disclosed and undisclosed factoring:** Factoring agreement in which name of factor is mentioned in the agreement between seller and buyer and seller asks buyer to make payments to the factor on due date is called disclosed factoring. Supplier bears all risk associated with the sale without giving it to the factor. In case of undisclosed factoring, factor name is not disclosed to the buyer but factor still controls the factoring deal and maintains sales ledger of client etc.

Functions of a factor

A factor performs following functions:

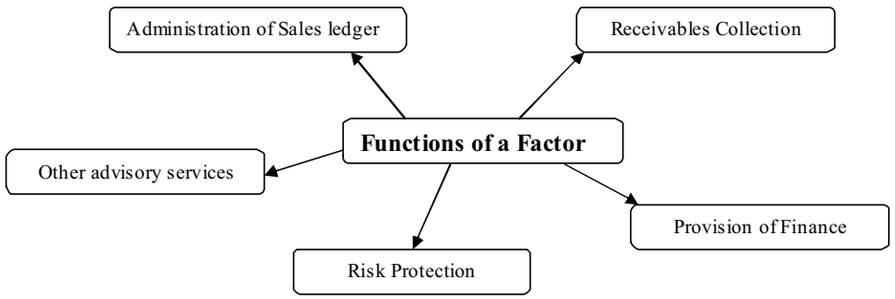

Fig. 5.14 *Functions of a Factor*

Functions of a Factor

1. **Administration of sales ledger:** The main function of factor is to maintain administration of the sales ledger of every seller. While performing this function, factor does the following activities:
   - Factors verify the originality of the invoice bills prepared by the seller of goods.
   - After every invoice bill, factor updates sales ledger of his client and keeps an up-to-date record of credit sales of the client.
   - Factor prepares monthly statement of receivables and sends reminders to the customers to pay on time.
   - Factor maintains good relation between the buyer and seller and solves various disputes between them. These disputes can be regarding the quality of goods, rate of discount term of sales agreement etc.

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- After receiving money from the buyer, factor remits this amount to the seller after deducting his dues (commission etc.).
- Factor checks the creditworthiness of the buyers (debtors) in order to check their debt repaying capacity.
- Factor also submits client reports on overdue unpaid buyers, legal case etc.

2. **Receivable collection:** It is another task of factor. Factor relieves the client from the collection of receivables so that the client can concentrate more on other important aspects of the business. Factors have huge resources like good infrastructure and technology, experienced work force by which they help their clients to manage their receivables in an efficient and effective manner.
3. **Provision of finance:** Providing early finance on receivables or debtors is one of the main functions of the factor by which clients can get finance on non-cash items of current assets and convert them into more liquid asset (cash). Client can have up to 95% of debtor's amount by availing factor's services.
4. **Protection against risk:** When factoring is of non-recourse type, then factor issues some credit limits to the client upto which he can sell his goods on credit to the customers. Factor takes all debtors within this prescribed limit and bears all default risk associated to credit sales. By doing so, factors help their clients to have better credit control policy. Credit risk, credit control and credit protection are all interrelated.
5. **Advisory services:** In addition to the functions mentioned above, factor also performs following advisory functions related to factoring:
    - Gives advice to the clients about the creditworthiness of the buyers.
    - Conducts research on market competitors.
    - Helps client in getting finance from the financial institutions.
    - Gives suggestions related to the procedural aspect or receivable management to the clients.
    - Provides client with monthly statement about the schedule of payment by the debtors, overdue debtors, average debtor collection period, creditworthiness of the clients etc.

Advantages of factoring

Factoring is becoming very popular these days as it offers various benefits to the clients. In fact, by availing the services of factoring seller can transfer full administration of credit sales to the factor and concentrate on other important aspect of their business. Other benefits which seller has from factoring are listed below:

- It helps to improve the efficiency of seller. Seller transfers the administration of receivables to the factor who performs all operations to manage receivables with the help of specialized people. This helps seller to have

ample time to concentrate on the other aspects of the business in order to improve efficiency.

- It helps to increase liquidity. Factor provides almost 75% to 95% of amount of receivables which provides liquidity to the seller. Now seller can pay his day to day expenses on time which improves his creditworthiness among suppliers, lenders, bankers and competitors.
- By increasing their cash flows, sellers can meet their commitment on time.
- By availing the service of factoring, seller can meet temporary cash requirement or seasonal cash requirements of the business.
- As factoring increases cash flows in the business, client is in a position to make a concrete planning of the purchases and can get cash discounts.
- Factoring is an off-balance sheet transaction and it does not affect financial structure of the balance sheets. Therefore, it does not affect efficiency ratios of the client.
- Factor helps his client to enquire about the creditworthiness of the buyers and provides information about market scenario which helps client to make better credit policy.
- Factors maintain all records for better administration and control of the receivables of the clients.

Disadvantages of factoring

These are as follows:

- Uncertainty in the rights of factor.
- Lack in the performance of factor services due to lack of management skills and competence to adapt environment.
- Careless behavior of the client in selecting buyers and making credit sales.
- Increase in fraudulent activities by making false invoices by clients.

Effective mobilization and allocation of funds

Effective mobilization of funds is necessary for the organizations because it has an impact on the liquidity, profitability, solvency, capital structure decisions, growth and diversification of business, risk exposure and risk management and so on. So a firm's growth and survival is dependent on the effective and efficient mobilization of funds.

Moreover, market value of a business and its shares can be increased by the efficient fund management. Firms can minimize their overall/weighted cost of capital by effective fund management. These days fund management is significant because firm credit rating, employee's, supplier's and customer's faith depends on effective fund management. Moreover, fund management is not only related to the internal fund management but it has global dimensions also. In short, fund management affects all aspects of a business like profitability, liquidity, solvency, growth and so on. So, proper allocation of funds is necessary for the growth and survival of any business in long run. Precisely, the following activities are connected to the allocation of funds in any business:

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- Total amount of investment in assets (size of the business).
- Deciding about the proportion of fixed assets to the current assets (related to risk level of business).
- Proper mix of all fixed assets (related to risk level of business).
- Finding and evaluating various alternatives of investment in fixed assets (capital budgeting decisions).
- Risk and return evaluation of the various investment alternatives (capital budgeting decisions).
- Proper mix of current assets (cash, debtor, stock and so on) (working capital management).
- Study of liquidity and profitability aspects of short term sources of finance (cash management, stock management, credit management and short term sources of finance management).
- Making portfolio of various assets (current as well as fixed) efficient and effective (balancing of overall portfolio of fixed and current asset held by the business).

A good deal of planning, organization, coordination, control is necessary at every stage of fund management. For this, capital budgeting decisions (fixed asset management), capital rationing decisions, working capital decisions (cash management, credit management and so on), dividend decisions etc. are necessary.

Consequences of mal-mobilization and misallocation of funds

Misallocation of funds means over-allocation or under-allocation of funds. Over-allocation leads to wastage of funds and idle capacity, low returns on investment, some projects or assets may be given more priority when it should not be given and so on. Under-allocation of funds leads to long gestation period, increase in competition due to delay in projects, increased cost and time out operations so on. Misallocation or faulty allocation of funds leads to the wastage of right resources which causes harm to the other projects in hand. Wrong allocation harms the liquidity, profitability, solvency, credit rating and so on. This whole circle leads to the winding up of the company in long run. In nut shell, we can say that funds allocation is a significant task. Thus, proper consideration is given in allocation of the long and short term funds by the fund manager.

Check Your Progress

5. What is controlled disbursement?
6. What does the cost of maintaining receivables include?
7. Define factoring.
8. What are the three parties of any factoring process?
9. What is advanced factoring?

5.5 ANSWERS TO 'CHECK YOUR PROGRESS'

NOTES

1. Budget is generally recognized as a plan of action to be pursued by an organization during a defined period of time in order to achieve its objectives. It is a statement of anticipated results expressed either in financial or non-financial terms.
2. Budgetary control is a systematic process designed to plan and control the major activities of a firm's business through budgets prepared in advance with an objective to ensure effective use of resources.
3. Less working capital might disturb the payment schedule, affect the dividend policy adversely, opportunities of low price or quantity discount or cash discount may not be grabbed.
4. There are two ways the operating cycle period is calculated—(a) based on sales and (b) based on appropriate costs that determine the value of current assets and current liabilities.
5. Controlled disbursement is a method via which an institution increases its funds for the purposes of investments or the payment of debts.
6. Cost of maintaining receivables includes cost of financing receivables, cost of collection and bad debts.
7. Factoring can be defined as a specialized service provided by financial institutions in which financial institutions buy (through an agreement) receivables from the seller of services/goods and manage seller's receivables.
8. Buyer of goods *(debtor)*, seller of goods *(client)* and financial institution *(factor)* are the three parties of any factoring process.

5.6 SUMMARY

- Budget is generally recognized as a plan of action to be pursued by an organization during a defined period of time in order to achieve its objectives. It is a statement of anticipated results expressed either in financial or non-financial terms.
- A budget is a detailed schedule of the proposed combinations of the various factors of production which the management deems to be the most profitable for the defined period. It may be a forecast of sales, production costs, distribution costs, and administrative and financial expenses–and, therefore, of profit or loss.
- Budgetary control is a system which uses budgets as a means of planning and controlling all aspects of producing and/or selling commodities or services.
- Different authorities have given different classifications of budgets. Some classify them on the basis of functions involved, period covered, nature of transactions while others classify them according to activity levels.

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- The term 'working capital' has attracted a few debatable interpretations. According to some authors, working capital is nothing but the total current assets. They advocate that current assets should be considered as working capital because it is the current assets which help to earn profits. The meaning of working capital has now changed to 'excess of current assets over current liabilities'.
- Working capital concepts can be explained through three approaches for understanding the working capital (primarily the current assets). These three approaches are:
  - o Working capital cycle approach
  - o Pipeline approach, and
  - o Cash tank approach
- The working capital cycle approach begins with the given cash on hand. It does not illustrate the sources of cash and implies that once the cash gets into the cycle there is no further infusion of cash nor takeout of cash from the cycle. The net working capital cycle explains the current liabilities along with the cycle of current asset.
- The pipeline approach considers the inflow into the pipeline as well as outflow of cash from the pipeline, but does not narrate the sources of inflow and applications of outflow. The cash tank approach is more comprehensive as it shows the sources and uses of funds that affect the flow of cash in the operations.
- Working capital must keep circulating in the business. Less working capital might disturb the payment schedule, affect the dividend policy adversely, opportunities of low price or quantity discount or cash discount may not be grabbed. High working capital pulls down investment turnover ratio, reducing the return on investment and reduced shareholders' profit.
- Several factors are responsible for the presence of working capital of a firm. Most important of them can be grouped in three categories namely, (a) external factors, (b) firm specific situation and (c) firm's policy.
- Managerial tasks involved in the management of working capital can be divided into four areas as follows:
  - o Planning
  - o Monitoring and control
  - o Organizational system
  - o Financing
- Planning and control techniques include the following:
  - (i) Conventional methods like:
    - o Ratio analysis
    - o Fund flow analysis
  - (ii) Advanced methods like:
    - o Element-wise analysis

- Statistical methods
- Operations research methods, and
- Operating cycle approach

- Conventional techniques for determining and monitoring the working capital use accounting techniques like ratio analysis and fund flow analysis. Non-conventional techniques adopt a more logical approach for forecasting the working capital. Element-wise analysis, use of statistical methods, operations research methods and operating cycle approach are common under this category.
- Cash management is one of the most important decision areas of working capital management. The worst use of cash is to keep it idle. That includes cash in hand as well as cash at bank. Idle funds may result in zero returns and therefore, maintaining optimum cash balance is very important.
- Cash management includes the following aspects of management:
  - Cash Planning
  - Managing the cash flows
  - Investing surplus cash
  - Optimum cash level
- The optimum cash balance is a vital part of cash management because that is how firms calculate their requirements of cash and other things in advance. This is how they plan whether they are to move ahead with their investments or are they to go down other roads.
- Account receivables constitute an important place in current assets. Companies are required to sell their products not only on cash basis but on credit basis too. Receivables are also known as accounts receivables, customers receivables, trade receivables, and book debts. To increase their sales, companies are required to sell their products on credit too. Receivables management is focused towards various issues related to credit policy of the business.
- Cost of maintaining receivables includes cost of financing receivables, cost of collection and bad debts. Cost of financing receivables means cost incurred to finance the investment in receivables. Proper collection of receivable is essential for the management of receivables. For collection of cash from debtors various reminders are generally sent to the debtors and sometimes, when debtors delay payment for long then some legal action is also taken against them.
- Receivables are one of the important parts of the firm's current assets as they represent credit sales which are important ingredients of total sales of any business these days. Receivable management is very crucial for the business as it contributes in the total sales by increasing it.
- Factoring can be defined as a specialized service provided by financial institutions in which financial institutions buy (through an agreement) receivables from the seller of services/goods and manage seller's receivables.

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- Buyer of goods *(debtor)*, seller of goods *(client)* and financial institution *(factor)* are the three parties of any factoring process.
- Factoring is becoming very popular these days as it offers various benefits to the clients. In fact, by availing the services of factoring seller can transfer full administration of credit sales to the factor and concentrate on other important aspect of their business.

5.7 KEY TERMS

- **Budget**: It is generally recognized as a plan of action to be pursued by an organization during a defined period of time in order to achieve its objectives. It is a statement of anticipated results expressed either in financial or non-financial terms.
- **Budgetary control:** It is a systematic process designed to plan and control the major activities of a firm's business through budgets prepared in advance with an objective to ensure effective use of resources.
- **Liquid assets:** It consist of cash, cash equivalents or anything that can easily be converted into cash.
- **Factoring:** It can be defined as a specialized service provided by financial institutions in which financial institutions buy (through an agreement) receivables from the seller of services/goods and manage seller's receivables.

5.8 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short Answer Questions

1. Write a short note on budgetary control.
2. What are the main objectives of budgetary control?
3. State the characteristics of a good budgetary control.
4. Mention the various classifications of budgets.
5. Write a short note on pipeline approach.
6. What are the motives for holding cash?
7. Briefly mention the features of factoring.

Long Answer Questions

1. Explain the advantages and disadvantages of budgetary control.
2. Discuss in detail the three approaches used for understanding working capital.
3. Analyse the factors influencing working capital level.
4. Explain the concept of receivables management.
5. Discuss in detail the methods used by firms to manage credit sales.
6. Analyse the functions of a factor.

5.9 FURTHER READING

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