11.4 PURPOSE OF CASH FLOW STATEMENT

The main objective of preparing the Cash Flow Statement is to deliver information about cash receipts, cash payments, and the difference in cash position out of business activities from the operations, investments, and financing activities of a company during a particular financial year. In other words, the Cash Flow Statements where an organisation's cash is being generated, and where its cash is being paid during a particular period of time. Thus, the Cash Flow Statements helps the management to analyse the liquidity as well as long term solvency of the business. The main purpose of Cash Flow Statement is to transform the accrual basis income statement to a cash flow statement.

Information about the cash flows of a business is useful in providing users of financial statements with a basis to assess the ability of the enterprise to generate cash and cash equivalents and the needs of the enterprise to utilise those cash flows. The economic decisions that are taken by users require an evaluation of the ability of an enterprise to generate cash and cash equivalents and the timing and certainty of their generation. The Standard deals with the provision of information about the historical changes in cash and cash equivalents of an enterprise by means of a cash flow statement which classifies cash flows during the period from operating, investing and financing activities.

Users of an enterprise's financial statements are interested in how the enterprise generates and uses cash and cash equivalents. This is the case regardless of the nature of the enterprise's activities and irrespective of whether cash can be viewed as the product of the enterprise, as may be the case with a financial enterprise. Enterprises need cash for essentially the same reasons, however different their principal revenue-producing activities might be. They need cash to conduct their operations, to pay their obligations, and to provide returns to their investors.

There are basically three components of Cash Flow Statements which are briefly given below:

(a) **Cash Flow from Operating Activities**: In this case, all the business transactions resulting from operating activities of the business that are executed only in terms of cash are considered. Operating activities basically represents the revenue generating activities of a business. Some examples of operating activities are the cash receipts from the sale of goods and services like salaries and wages, rents, transportation and any other operating expenses for the smooth running of its business.

(b) **Cash Flow from Investing Activities:** In this case, all the business transactions resulting from investment activities of the business that are executed only in terms of cash are considered. Investment activities basically represent the payments made to purchase of long term assets and thereby cash receipts from the sale of long term assets. Some examples of investment activities are the cash receipts from sale of fixed assets or any other assets, plants, machineries, equipment, the purchase or sale of a equities, debts or debentures etc.

(c) **Cash Flow from Financing Activities**: Here, all the business transactions resulting from financing activities of the business that are executed only in terms of cash are considered. Financing activities are transactions between a business and its creditors and investors. Financing activities basically represents those activities that will change the equity share holding or borrowings of a business. Some examples of financing activities are the sale or purchase of a company's own shares, announcement of dividends and its payment to its shareholders, repayment of short-term loans and long-term loans, the retirement of bonds payable etc.

11.5 PREPARATION OF CASH FLOW STATEMENT

After ascertaining information regarding different sources and uses of cash, we can easily prepare the Cash Flow Statement. There is no specific format of preparing Cash Flow Statement but usually it is prepared in report form. The information for the Cash Flow Statement is derived from the

income statement and balance sheets for the current and past financial years. In preparing the Cash Flow Statement, the three components viz., operating, investment and financing activities are considered. As already discussed, operating activities are the principal revenue-producing activities of the enterprise and other activities that are not investing or financing activities. Let us now cite some examples of cash flows that are generated from operating activities:-

(a) cash receipts from the sale of products and services
(b) cash receipts from patents, royalties, fees, commissions and from such sources.
(c) cash payments to suppliers for products and services
(d) cash payments to the employees of the organisation
(e) cash receipts and cash payments of an insurance enterprise for premiums and claims
(f) cash payments or refunds of income taxes unless they can be specifically identified with financing and investing activities
(g) cash receipts and payments relating to advanced derivative products like futures contracts, forward contracts, option contracts and swap contracts when the contracts are held for dealing or trading purposes.

The second component of Cash Flow Statement is all those cash that are generated from investing activities. Investing activities are the acquisition and disposal of long-term assets and other investments not included in cash equivalents. Let us now cite some examples of cash flows that are generated from investing activities:-

(a) Cash payments to possess fixed assets including intangible assets as well as assets acquired to capitalised research and development activities and self-constructed fixed assets
(b) Cash receipts from the sale of fixed assets including intangible fixed assets
(c) Cash payments to acquire shares, warrants or debt instruments of other enterprises and interests in joint ventures other than cash payments for trading activities

(d) Cash receipts from disposal of shares, warrants or debt instruments of other enterprises and interests in joint ventures other than cash receipts from trading activities

(e) Cash advances and loans made to third parties other than advances and loans made by a financial enterprise

(f) Cash receipts from the repayment of advances and loans made to third parties other than advances and loans of a financial enterprise

(g) Cash payments for advanced financial products like futures contracts, forward contracts, option contracts and swap contracts other than the payments made for trading activities

(h) Cash receipts from futures contracts, forward contracts, option contracts and swap contracts other than receipts generated from trading activities

Financing activities are activities that result in changes in the size and composition of the owners' capital (including preference share capital in the case of a company) and borrowings of the enterprise. Let us now cite some examples of cash flows that are generated from financing activities:-

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

(b) Cash proceeds from issuing debentures, loans, notes, bonds, and other short or long-term borrowings

(c) Cash repayments of amounts borrowed

The Cash Flow Statement begins with the opening balance of cash and after adding different sources of cash and subtracting application of cash, the cash balance at the end of the particular period is found. This is explained in detail in the next section.

11.6 FORMAT OF CASH FLOW STATEMENT (AS3: REVISED METHOD)

This Accounting Standard is not mandatory for Small and Medium Sized Companies, as defined in the Notification. Such companies are however encouraged to comply with the Standard.

Cash Flow Statement of … (Name of the Company) for the Year … (Current Financial Year)

Particulars	Amount (in Rs.)	Amount (in Rs.)
Cash Flows From Operating Activities		
Cash receipts from customers		
Cash paid to suppliers and employees		
Cash generated from operations		
Income taxes paid		
Cash flow before extraordinary item		
Net cash from operating activities		
Cash Flows From Investing Activities		
Purchase of fixed assets		
Proceeds from sale of equipment		
Interest received		
Dividends received		
Net cash from investing activities		
Cash Flows From Financing Activities		
Proceeds from issuance of share capital		
Proceeds from long-term borrowings		
Repayment of long-term borrowings		
Interest paid		
Dividends paid		
Net cash used in financing activities		
Net increase in cash and cash equivalents		
Cash and cash equivalents at beginning of period		



CHECK YOUR PROGRESS

Q1: Write the main objective of preparing the cash flow statement.

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Q2: What are the three components of cash flow statement?

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Q3: Give some examples of operating activities?

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Q4: State true or false for the following statements:

(i) Cash flow statement shows the movement of cash and cash equivalents from the business as well as into the business which results out of the business activities.

(ii) Cash advances and loans made to third parties other than advances and loans made by a financial enterprise are an example of operating activity.

(iii) Investing activities are the acquisition and disposal of long-term assets and other investments not included in cash equivalents.

11.7 CASH FLOW FROM OPERATING ACTIVITIES

Operating activities are those activities which are the primary drivers of an organisation. For example, for a company producing mobile phones, operating activities are purchase of raw material in the form of different types plastics, chips, camera lense, monitor glass etc., other of manufacturing expenses, sale and distribution of phones, etc. All these activities are referred to as operating activities and earn the principal revenue for the organisation. Thus operating activities are different from financing and investment activities because of its nature. Operating activities are performed after the financing and investment activities are already over. Examples of financial activities are cash proceeds from shares, debentures and cash proceeds related to loans, dividends, interest etc. On the other hand some examples of investment activities are buy and sale of fixed assets like land, building, equipment, machinery etc. which is for long term.

An efficient an effective operating activity guarantees a sound internal solvency level in an organisation. Cash flows generated from the operating activities ultimately is the main driver for the profitability and sustainability of the firm. There are some indirect cash flows generated to support operating activities of a firm. For example, cash flows arising from the purchase and sale of Securities which are hold for acquiring inventories are treated as operating activities. Similarly cash advances and loans made by financial firms are also treated as operating activities since they denote the primary activity of the firm. There are two types of cash flows viz., cash inflow and cash out flow. Let us now highlight some cash inflows generated from operating activities of a mobile manufacturing firm as follows:

(a) cash receipts from sale of mobile phones.
(b) cash receipts from customer sale service.
(c) cash receipts from sale of spare parts.
(d) cash receipts from annual maintenance charges.

Let us now highlight some cash outflows out of operating activities of a mobile manufacturing firm as follows:

(a) cash payments to vendors for items supplied.
(b) cash payments for the services received.
(c) cash payments to the employees.
(d) cash payments to insurance policies.

The main purpose of preparing an operating cash flow is to show the net operating cash flow which is derived by deducting cash outflows from cash inflows.

11.8 CASH FLOW STATEMENT UNDER DIRECT METHOD

Cash flow statement from the operating activities can be found out using direct method. Cash flow statement under direct method basically considers major classes of gross cash receipts and gross cash payments. Under direct method, major cash inflows and outflows are considered like cash proceeds related to trades, employees, expenses, etc. In the profit

and loss account, some items are expressed on accrual basis which are converted to cash equivalent with the following adjustments:-

(1) Cash expenses = Expenses on accrual basis + Prepaid expenses in the beginning and
Outstanding expenses in the end – Prepaid expenses in the end and Outstanding expenses in the beginning.

(2) Cash payments to suppliers = Purchases + Trade Payables in the beginning – Trade Payables in the end.

(3) Cash receipts from customers = Revenue from operations + Trade receivables in the beginning – Trade receivables in the end.

(4) Purchases = Cost of Revenue from Operations – Opening Inventory +Closing Inventory.

Exercise 11.1



Let us take one example to understand the preparation of cash flow statement from operating activities using direct method from the information given below:-

Statement of Profit and Loss of Expan Types Ltd.
for the year ended on March 31, 2017

Particulars	Amount (Rs.)
Cash receipts from customers	137600
Cash paid to suppliers and employees	120550
Dividends paid	80550
Factory Expenses	68000
Income taxes paid	29000
Purchase of fixed assets	180000
Interest paid	9500
Proceeds from issuance of share capital	350000
Proceeds from long-term borrowings	125000
Sale of old furniture	44000
Commissions paid	28000
Interest received	90000
Repayment of long-term borrowings	28000
Dividends received	19000

Opeing Cash Balance	25000
Loans repaid	100000
Proceeds from sale of equipment	53000

Solution:

Let us now prepare the Cash Flows Statement from Operating Activities of Expan Types Ltd. using direct method as below:

Cash Flows Statement from Operating Activities of Expan Types Ltd.

(A) Cash flow from Operating Activity		Amount (Rs.)
Receipts: Cash Sales from customers	1,37,600	
Payments: Cash Purchases	(1,20,550)	
Factory expenses	(68,000)	
Income tax	(29,000)	
Commission Paid	(28,000)	
Net Cash from Operating Activities: Total (A)		(1,07,950)
(B) Cash flow from Investment Activity		
Receipts: Proceeds from sale of equipment	53,000	
Dividends received	19,000	
Interest received	90,000	
Sale of old furniture	44,000	
Payments: Purchase of Fixed assets	(180,000)	
Net Cash from Investment Activities: Total (B)		26,000
(C) Cash flow from Financing Activity		
Receipts: Equity shares issued	3,50,000	
Proceeds from long-term borrowings	125000	
Payments: Loan repaid	(100000)	
Dividend disbursed	(80,550)	
Repayment of long-term borrowings	(28000)	
Interest paid	(9,500)	
Net Cash from Financing Activities: Total (C)		3,56,950
Net increase in cash and cash equivalents Total Cash Flow (A+B+C)		2,75,000
Add: Opening Cash Balance		25,000
Closing Cash Balance		2,00,000

11.9 DIFFERENCE BETWEEN CASH FLOW STATEMENT AND FUND FLOW STATEMENT

The basic differences between cash flow statement and fund flow statement are pointed out below:-

(a) Cash Flow Statement shows the cash and cash equivalents position of an organisation which includes cash transactions. On the other hand, fund flow statement is a statement of changes in financial position. Here, the word 'fund' represents the working capital of the business.

(b) Cash flow statement shows the movement of cash and cash equivalents from the business as well as into the business which results out of the business activities. Cash Flow Statement basically shows the cash inflows and cash out flows. Fund flow statement is a statement summarising the significant financial changes which have occurred between the beginning and the end of company's accounting period.

(c) In the preparation of balance sheet and income statement, accounting is done on accrual basis but in cash flow statement, accounting is done on cash basis. Moreover, Cash Flow Statement also shows the source of cash receipts and it also reveals the purposes for which payments are made. Fund Flow Statement is a supplementary statement and shows the sources of mobilisation of the funds and their detailed utilisation during a particular financial year. Fund Flow Statement also deal with the non-cash items.

(d) Cash Flow Statement explains the reasons for the changes in cash balance of a business between the two consecutive Balance Sheet dates. On the other hand, the Fund Flow Statements clearly identify the changes in working capital and also help the management to find out the factors responsible for this working capital changes.

(e) The main objective of preparing the Cash Flow Statement is to deliver information about cash receipts, cash payments, and the difference in cash position out of business activities from the operations,

investments, and financing activities of a company during a particular financial year. In other words, the Cash Flow Statements where an organisation's cash is being generated, and where its cash is being paid during a particular period of time. Thus, the Cash Flow Statements helps the management to analyse the liquidity as well as long term solvency of the business. The main purpose of Cash Flow Statement is to transform the accrual basis income statement to a cash flow statement. On the other hand, Fund Flow Statement helps management about the allocation of resources and shows the operational aspects of the business activities which are not available in Profit and Loss Account and Balance Sheet.

(f) Cash flow statement helps to find out the capacity of an organisation to meet its short-term obligations and liquidity position whereas fund flow statement helps to find out the capacity of an organisation to meet its long-term obligations.

11.10 USES OF CASH FLOW STATEMENT

Cash flow statement is used to identify and explain the difference profits and cash and assesses the current liquidity position of a company. Let us now understand the usage of cash flow statement with some illustrations.



Exercise 11.2

Expan Telecom Ltd. provided the following financial information. Prepare the cash flow statement.

Profit & Loss Account for the year ended 31 March 2017

Particulars	Amount (Rs.)	Particulars	Amount (Rs.)
Gross Profit	96,000	Sales	198,000
Expenses on Wage, Power (Direct)	24,000		
Purchases for the year	78,000		
Total	198,000	Total	198,000
Net Profit	19,200	Gross Profit b/d	78,000

Start-up expenses written-off	1,800	Profit on sale of furniture	15,600
Tax Provisions	3,000		
Dividends Proposed (withdrawals)	12,000		
Provisions for bad debt	6,000		
Depreciation	18,000		
Salary	24,000		
Rent	9,600		

Solution:

Let us prepare the cash flow statement as per the direct method. Under the direct method, cash receipts from the customers and cash payments to the vendors and employees are disclosed. So, let us prepare the cash flow statement below –

Particulars	Amount (Rs.)	Amount (Rs.)
Cash flow from operating activities		
Cash received under sale of goods		198,000
Less: Cash Payments		
Purchases	96,000	
Direct Expenses	24,000	
Salary	24,000	
Rent	9,600	153,600
Cash Inflow from Operating Activities		44,400

Note: Sale of furniture is not considered as a part of operating activity. It is a part of investment activity.



Exercise 11.3

Prepare a cash flow account for Expan Telecommunications Ltd. for the year ended 31-03-2017 from the following information –

Cash Account for the year ended 31-03-2017

Particulars	Amount (Rs.)	Particulars	Amount (Rs.)
Opening Cash balance	175,000	Cash Purchases of Goods	3500,000
Equity shares issued	262,500	Administrative expenses	437,500
Preference shares issued	262,500	Factory expenses	262,500
Cash sales	4025,000	Income tax	87,500
Sale of old machineries	1050,000	Dividend disbursed	262,500
		Loan repaid	700,000
		Closing Cash Balance	525,000
Total	5775,000	Total	5775,000

Solution:

Let us prepare the cash flow statement as per the direct method. Under the direct method, cash receipts from the customers and cash payments to the vendors and employees are disclosed. So, let us prepare the cash flow statement below –

Expan Telecommunications Ltd.

Cash Flow Statement of for the year ended 31-03-2017

(A) Cash flow from Operating Activity			Amount (Rs.)
Receipts: Cash Sales from customers		4025,000	
Payments: Cash Purchases		(3500,000)	
Administrative expenses		(437,500)	
Factory expenses		(262,500)	
Income tax		(87500)	
Net Cash from Operating Activities: Total (A)			(262,500)
(B) Cash flow from Investment Activity			
Sale of old machineries		1050,000	
Net Cash from Investment Activities: Total (B)			1050,000

(C) Cash flow from Financing Activity			
Receipts: Equity shares issued		262,500	
Preference shares issued		262,500	
Payments: Loan repaid		(700,000)	
Dividend disbursed		(262,500)	
Net Cash from Financing Activities: Total (C)			(437,500)
Net increase in cash and cash equivalents Total Cash Flow (A+B+C)			350,000
Add: Opening Cash Balance			175,000
Closing Cash Balance			525,000



Exercise 11.4

Prepare a cash flow account for Excell Tyres Ltd. for the year ended 31-03-2017 from the following information–

Cash Account for the year ended 31-03-2017

Particulars	Amount (Rs.)	Particulars	Amount (Rs.)
Opening Cash balance	75,000	Commissions paid	3,50,500
Equity shares issued	10,50,275	Administrative expenses	4,37,500
Preference shares issued	5,25,500	Factory expenses	12,62,500
Cash sales	80,50,250	Income tax	2,50,000
Sale of old machinery	9,50,000	Cash Purchases of goods	43,76,025
Sale of old furniture	2,25,500	Dividend disbursed	9,50,000
		Legal fees paid	25,00,000
		Loan repaid	6,50,000
		Closing cash balance	4,15,550
Total	57,75,000	Total	57,75,000

Solution:

Let us prepare the cash flow statement as per the direct method. Under the direct method, cash receipts from the customers and cash payments to the vendors and employees are disclosed. So, let us prepare the cash flow statement below –

Excell Tyres Ltd Ltd.

Cash Flow Statement of for the year ended 31-03-2017

(A) Cash flow from Operating Activity	Amount (Rs.)	Amount (Rs.)
Receipts: Cash Sales from customers	80,50,250	
Payments: Cash Purchases	-43,76,025	
Administrative expenses	-4,37,500	
Factory expenses	-12,62,500	
Income tax	-2,50,000	
Commission Paid	-3,50,500	
Legal Fees Paid	-25,00,000	
Net Cash from Operating Activities: Total (A)		-11,26,275
(B) Cash flow from Investment Activity		
Sale of old furniture	2,25,500	
Sale of old machineries	9,50,000	
Net Cash from Investment Activities: Total (B)		11,75,500
(C) Cash flow from Financing Activity		
Receipts: Equity shares issued	10,50,275	
Preference shares issued	5,25,500	
Payments: Loan repaid	-6,50,000	
Dividend disbursed	-9,50,000	
Net Cash from Financing Activities: Total (C)		-24,225
Net increase in cash and cash equivalents Total Cash Flow (A+B+C)		25,000
Add: Opening Cash Balance		75,000
Closing Cash Balance		1,00,000



CHECK YOUR PROGRESS

Q5: What are operating activities?

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Q6: What are the main differences between cash flow statement and fund flow statement?

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Q7: State true or false for the following statements:

(i) Fund flow statement explains the reasons for the changes in cash balance of a business between the two consecutive Balance Sheet dates.

(ii) Cash flow statement under direct method basically considers major classes of gross cash receipts and gross cash payments.



11.11 LET US SUM UP

In this unit we have discussed the purpose of Cash Flow Statement. The main objective of preparing the Cash Flow Statement is to deliver information about cash receipt cash payments, and the difference in cash position out of business activities from the operations, investments, and financing activities of a company during a particular financial year. In other words, the Cash Flow Statements where an organisation's cash is being generated, and where its cash is being paid during a particular period of time. The unit also helps to learn the preparation of Cash Flow Statement under Direct Method. The unit also discusses the difference between Cash Flow Analysis and Fund Flow Analysis. The Cash Flow Statements helps

the management to analyse the liquidity as well as long term solvency of the business. The main purpose of Cash Flow Statement is to transform the accrual basis income statement to a cash flow statement. On the other hand, Fund Flow Statement helps management about the allocation of resources and shows the operational aspects of the business activities which are not available in Profit and Loss Account and Balance Sheet.



11.12 FURTHER READING

1. Srinivasan, N.P & Murugan, M.S.(2011), '*Accounting for Management',* S Chand Publishing, India
2. Ramachandran, N. & Kakani, R.K. (2011), '*Financial Accounting for Management*', McGraw Hill Education
3. Bhattacharya, A.K. (2012), '*Financial Accounting for Business Managers*',PHI.



11.13 ANSWER TO CHECK YOUR PROGRESS

Ans to Q.1: The main objective of preparing the Cash Flow Statement is to deliver information about cash receipts, cash payments, and the difference in cash position out of business activities from the operations, investments, and financing activities of a company during a particular financial year. The main purpose of Cash Flow Statement is to transform the accrual basis income statement to a cash flow statement.

Ans to Q.2: There are basically three components of Cash Flow Statement which are briefly given below:

(a) Cash Flow from Operating Activities

(b) Cash Flow from Investing Activities

(c) Cash Flow from Financing Activities

Ans to Q.3: Some examples of cash flows that are generated from operating activities:-

(a) cash receipts from the sale of products and services

(b) cash receipts from patents, royalties, fees, commissions and from such sources.

(c) cash payments to suppliers for products and services

Ans to Q.4: (i) True; (ii) False; (iii) True

Ans to Q5: Operating activities are those activities which are the primary drivers of an organisation. For example, for a company producing mobile phones, operating activities are purchase of raw material in the form of different types plastics, chips, camera lense, monitor glass etc., other of manufacturing expenses, sale and distribution of phones, etc. All these activities are referred to as operating activities and earn the principal revenue for the organisation.

Ans to Q6: The basic differences between cash flow statement and fund flow statement is pointed out below:-

(a) Cash Flow Statement shows the cash and cash equivalents position of an organisation which includes cash transactions. Fund Flow statement is a statement of changes in financial position.

(b) Cash flow statement shows the movement of cash and cash equivalents from the business as well as into the business which results out of the business activities. Fund flow statement is a statement summarising the significant financial changes which have occurred between the beginning and the end of company's accounting period.

(c) In the preparation of balance sheet and income statement, accounting is done on accrual basis but in cash flow statement, accounting is done on cash basis. Moreover, Cash Flow Statement also shows the source of cash receipts and it also reveals the purposes for which payments are made. Fund Flow Statement is a supplementary statement and shows the sources of

mobilisation of the funds and their detailed utilisation during a particular financial year. Fund Flow Statement also deal with the non-cash items.

Ans to Q.7: (i) True; (ii) False; (iii) True



11.14 MODEL QUESTIONS

Q1. Explain the cash concept.

Q2. Define the cash flow statement and explain how it is different from fund flow statement.

Q3. How do you compute cash from financing activities?

Q4. How do you compute cash from operating activities?

Q5. Prepare the cash flow statement from the following information of a company –

Particulars	Amount (Rs.)
Purchase of fixed assets	225,000
Interest paid	11,875
Proceeds from issuance of share capital	437,500
Proceeds from long-term borrowings	156,250
Loans repaid	125,000
Sale of old furniture	55,000
Commissions paid	35,000
Interest received	112,500
Repayment of long-term borrowings	35,000
Dividends received	23,750
Opeing Cash Balance	31,250
Proceeds from sale of equipment	66,250
Cash receipts from customers	172,000
Cash paid to suppliers and employees	150,688
Dividends paid	100,688
Factory Expenses	85,000
Income taxes paid	36,250

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UNIT:12 COST

UNIT STRUCTURE

12.1 Learning Objectives

12.2 Introduction

12.3 Meaning of Cost

12.4 Objectives of Costing

12.5 Methods of Costing

12.6 Techniques of Costing

12.7 Classification of Cost

12.8 Elements of Cost

12.9 Statement of Cost Sheet

12.10 Practical Problems

12.11 Let Us Sum Up

12.12 Further Reading

12.13 Answers to Check Your Progress

12.14 Model Questions

12.1 LEARNING OBJECTIVES

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

- explain the meaning of cost
- describe various methods and techniques of costing
- classify various cost
- explain the elements of cost
- prepare cost sheet

12.2 INTRODUCTION

Understanding cost is vital for any organization, In this unit we are going to familiarize ourselves about the meaning of costing, its importance. Different methods of costing for different industries depend upon the production activities and the nature of business.

We will learn the various methods and techniques of costing and its types. This unit will also focus on preparation the Cost sheet.

12.3 MEANING OF COST

In simple terms, Cost means the amount of money required to produce a particular product or service by an organization. The Cost Accounting Standards-I (CAS-I) issued by the Council of the Institute of Cost and Works Accountants of India (ICWAI) defined cost as ***"Cost is a measurement, in monetary terms of the amount of resources used for the purpose of production of goods or rendering services"***

Term 'cost' is also referred as 'expense'. The term 'cost' signifies both assets and expense. The amount of money require to acquire an asset is also termed as cost, whereas cost also means the value of item give in exchange for the item received, e.g, cost of labour. The calculation of cost is important for any organization to match against the revenue for determining the profits or loss.

12.4 OBJECTIVES OF COSTING

Costing is the technique and process of determining cost of the object. The prime objectives of costing are as follows:

- **Estimation the Cost:** The main objective of costing is to ascertain the cost of goods and services being produced by an organization. Various methods and techniques are employed by organizations to arrive at the actual cost.
- **Cost Control and reduction:** Another important objective of costing is to control and reduce the amount of cost. In order to attain profitability under the stiff competition at the present scenario, controlling and reducing the cost becomes an integral part of every organization.
- **Cost Allocation:** It means association of a particular cost to a specific cost centre. For example the salary of supervisor is assigned to factory cost, similarly delivery vehicle cost is allocated to Sales and Marketing department.

- **Helps in Decision Making**: By maintaining proper methods of costing, it is easier for the management to take decisions among various alternatives. For this purpose various accounting systems are used by the organization which helps the management is making decision such as
  - o To offer discount or not on a product,
  - o To produce or buy a component
  - o To outsource a process or not
  - o To merge a unit or not
- **Planning Profits:** The primary objective of any organization is to earn and maximize the amount profits. By implementing the proper methods of costing, an organization can plan in advance the amount of profits, it targets to achieve.

12.5 METHODS OF COSTING

The methods of costing means the various techniques and process used to determine the costs. The methods of costing may vary from industries to industries, types of products and production process. For example, in all the process industries like chemical works, textile, refineries etc. process costing system is adopted, whereas in service industry like Hotel, tourism etc. operating costing system used. Therefore the method of costing to be used in a particular organization depends upon the type and nature of manufacturing activity.

Basically, there are two methods of costing namely a) Job costing & b) Process costing. All the other methods of costing are the variation of these above mentioned two methods. We are enumerating below the various methods of costing applied.

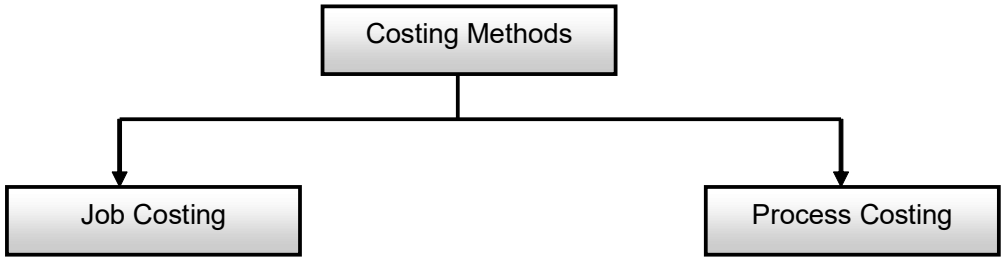


Fig : 12.1 Methods of Costing

1. **Job costing**: It is a method of costing that accumulates cost and assigns to a specific job. In an organization, different job consumes different resources like material, labour, expenses etc. in different sizes and quantities, the best way to determine the cost of that particular product or service is to accumulate the cost for that particular job. In this system of costing per unit cost is calculated by dividing Total job costs by the number of units produced in that batch. The industry where this method of costing is used includes hospitals, printing shops, auto repair shops, furniture making firms and so on. Job costing is further classified into (a) Contract costing (b) Cost plus contract and (c) Batch costing.
   a. **Contract Costing**: It is an extension of job costing system hence the principles of job costing apply to this method. The major difference between job costing and contract costing is size of the job. It is well said that "*a contract is a big job and a job is small contract".* The objective of preparing contract costing is to ascertain the cost incurred in order to show the profits earned or loss suffered during the period of its execution as well after the completion of the contract. Since the duration of many contract are long, the work may continue over more than one financial year. Since each contract is unique and required different kinds of resources (raw materials, labour, plant and machineries), therefore separate accounts are prepared for each contract. This type of costing is mostly suited for industries related to civil engineering, shipbuilding, aircraft manufacturing etc.
   b. **Cost plus Contract :** These contracts provide for the payment by the contracted of the actual cost of manufacture plus a stipulated profit. The profit to be added to the cost. It may be a fixed amount or it may be a stipulated percentage of cost. These contracts are generally entered into when at the time of undertaking a work, it is not possible to estimate its cost with reasonable accuracy due to unstable condition of material, labour etc.

c. **Batch Costing**: Batch costing is another variation of job costing. Under this method of costing, costs are assigned to each batch of goods produced rather than each job. This method is useful where goods are to be manufactured in definite quantity as per customer's specification. Since batch costing is similar to job costing therefore the costing and accounting procedures remains the same as of job costing method. The costing of resources follows normal job costing principles. The total cost of each batch of goods produced is divided by the quantity of goods produced in that batch to figure out the per unit cost. This method is mainly used in manufacturing industries like Toy, shoes, garments, bakery etc.

2. **Process Costing**: This method of costing is applied to those industry or manufacturing units which are involved in the production of standardized product is large quantities and in continuous processes. The products are generally similar (homogeneous) in nature. Industries such as food processing, cement, iron & steel, sugar, potato chips, soap manufacturing etc. applies this method. The costs are accumulated, period by period approach and not by job or batch approach. Cost of each unit is calculated at the end of the period e.g a week, fortnight, a month etc. The cost per unit is calculated by dividing the total cost during a particular period of production by total number of units produced during that period, for example the cost per unit in case of cement, iron & steel, sugar industry will be *cost per tonne*. Under this method of costing a product may go through more than one process, the output of the first process can be the input (raw material) of the second process; the output of second process may be the input of third process and so on. Finally the output of the last process is transferred to Finished Stock Account.

12.6 TECHNIQUES OF COSTING

In additions to the methods of costing discussed above, there are certain techniques of costing which may be used for special purpose in

order to control the cost in any business irrespective of the methods of costing used. The following are the various techniques of costing.

1. **Budgetary control:** It is a technique of exercising control over the business activities through the process of budgeting. A budget is a financial and quantitative plan to achieve certain set of activities within a definite time frame. Thus budgetary control is a technique aims to control the total expenses on material, labour and overheads by comparing the actual performance with the planned performance. Therefore the starting point of budgetary control technique is the process of preparing the budget. It includes the following step by step approach
   a. Forecasting
   b. Preparing budget based on the forecast
   c. Communicating targets through the budget
   d. Measuring actual performance
   e. Comparing the performance against the budget
   f. Figuring the difference or variance
   g. Take corrective action to fill the gap between budgeted expectation and actual performance.
2. **Standard Costing**: It is a technique of costing which uses pre determined standard cost of products or services. The actual costs are than calculated and compared with the pre determined standard costs. The difference between the two is known as ***variance.*** If the variance is above normal, than it needs investigation to figure out the cause for the variation and corrective steps needs to be taken to avoid it in future. The pre determined standard costs needs to checked periodically and adjusted (if required) from time to time to incorporate any changes in technology, design, cost of raw materials etc. The following objectives of an organization can be achieved with the help of standard costing
   a. To estimate the cost
   b. To establish standard
   c. To communicate the target based on the standard
   d. To delegate responsibility

e. To facilitate budget preparation
f. To compare actual performance vis a vis the standard
g. To help in decision making

3. **Marginal Costing:** Under this technique of costing, it is essential to figure out the variable cost and the fixed cost in manufacturing process. This is because the marginal costing technique, only variable cost of production is included in the unit cost. Fixed cost is treated as period cost and it is charged to the Profit & Loss Account in full. There are two reasons for excluding fixed cost under this technique of calculation, they are
   a. There are many costs which are independent irrespective of units of production in a given period of time. For example the rent, taxes, insurance etc. are not dependent on the production; they are fixed in nature irrespective of production.
   b. Fixed cost per unit will be more if production is less and vice versa. The variation in fixed costs per unit may impact the cost of calculation in the short run.

Therefore in marginal costing system, all variable costs are incorporated in the ***cost of sales*** calculation. The difference between the sales and the cost of sales is treated as ***contribution.*** The fixed cost is recovered out of this contribution and post recovery of the fixed cost, the amount left is treated as ***profit.*** If the contribution is not sufficient to cover the fixed cost, then it is treated as loss for the period.

4. **Absorption costing:** Unlike marginal costing which takes in to account only the variable cost, absorption costing technique takes in to consideration both the fixed as well as variable cost in computing the cost of production. This method is considered to be a traditional method of costing and at present it has very limited applications.
5. **Uniform Costing:** This technique of costing simply denotes a situation where in a number of firms adopt a uniform set of costing. This is not a separate technique of costing. It simply helps to compare the performance of the firms engage in similar businesses and to derive the benefits of anyone's experience and performance.



CHECK YOUR PROGRESS

Q1: What are the Costing methods?

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Q2: Define Process Costing method.

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12.7 CLASSIFICATION OF COST

Total cost incurred in producing goods or services can be classified in different ways so that it is useful for the management for various purposes such as planning and control, product costing, pricing policy, decision making etc. The following are the important bases on which costs are classified :

a) On the basis of Nature (or) Elements.

b) On the basis of Function

c) On the basis of Variability.

d) On the basis of Normality.

e) On the basis of Controllability and Decision Making.

The following chart can explain further the classifications cost:

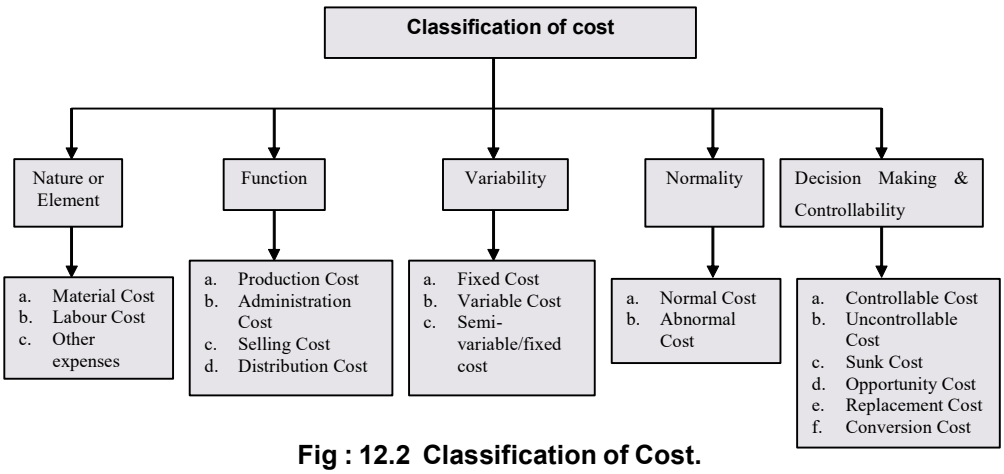


Fig : 12.2 Classification of Cost.

1) **On the basis of Nature or Elements:** One of the important classification cost is on the basis of nature or elements. Based on elements, it is classified into Material Cost, Labour Cost and Other Expenses. They can be further subdivided into Direct and Indirect Material Cost, Direct and Indirect Labour Cost and Direct and Indirect Other Expenses.

2) **On the basis of Function:** The classification of costs on the basis of the various functions of a concern is known as function-wise classification. Here, there are four important functional divisions in the business organization. viz. (a) Production Cost (b) Administration Cost (c) Selling Cost and (d) Distribution Cost.

3) **On the basis of Variability :** On the basis of variability with the volume of production cost is classified into Fixed Cost, Variable Cost and Semi Variable Cost. Fixed Costs are those costs which remain constant with the volume of production. Rent and rates of office and factory building are some example of fixed cost.

   Variable costs are those costs incurred directly with the volume of output. For example, cost of materials and wages to workers are the expenses chargeable with direct proportion to the volume of production.

   Semi-Variable Costs are those costs incurred partly fixed and partly variable, with the volume of production. Accordingly, it has both fixed and variable features. For example, depreciations and maintenance cost of plant and machinery.

4) **On the basis of Normality:** Costs are classified into normal costs and abnormal costs on the basis of normality features. Normal costs are those incurred normally within the target output or fixed plan.

5) **On the basis of Controllability and Decision Making:** Based on the managerial decision making and controllability the classifications are as follows: (a) Controllable Cost, (b) Uncontrollable Cost, (c) Sunk Cost, (d) Opportunity Cost, (e) Replacement Cost, (f) Conversion Cost.



CHECK YOUR PROGRESS

Q3: What are the important bases on which costs are classified?

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12.8 ELEMENTS OF COST

A cost is consisting of three elements namely material, labor and expense. Each of these elements may be direct or indirect. Elements of cost are necessary to have a proper classification and analysis of total cost. Thus, elements of cost provide the management with necessary information for proper control and management decisions. For this purpose, the total cost is analysed by the elements or nature of cost, i.e. material, labour and overheads. The various elements of costs may be illustrated as below :

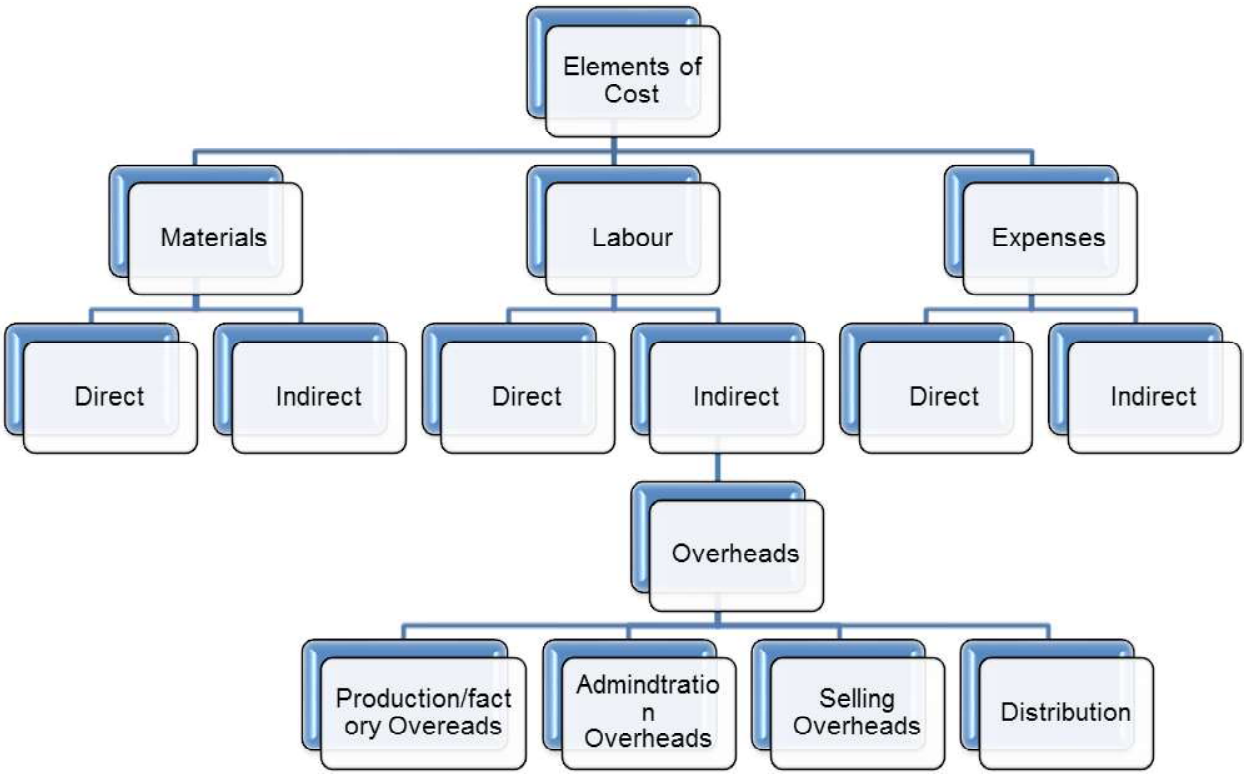


Fig : 12.3 Elements of Cost.

By grouping the above elements of cost, the following divisions of cost are obtained :

1)	Prime Cost	=	Direct materials + Direct Labour + Direct Expenses
2)	Work Cost (Factory)	=	Prime Cost + Factory Overhead
3)	Cost of Production	=	Factory Cost + Office and Administrative Overhead
4)	Cost of Sales (or) Total Cost	=	Cost of production + Selling and Distribution overhead

Let us discuss these in detail below:

1. **Material Cost:** It is the cost which is incurred on different materials in producing a product. Materials may be direct or indirect
   - ***a. Direct Materials:*** It is that cost which can be directly identified and allocated to the cost unit. For example in shoe manufacturing company, leather is a direct material. Similarly timber in a furniture industry is a direct material. It is mainly the base material which becomes finished product. Sugarcane, cotton, woods etc. are examples of direct materials .The cost of materials involves conversion of raw materials into finished products.
   - ***b. Indirect Materials:*** These are the cost which are small and relatively inexpensive item which become a part of the finished product e.g, screw, nuts, nails, adhesive like fevicol are all part of indirect cost. There also certain cost which are not physically become part of the finished product but they play an important role in production of the goods like coal, lubricating oil, sand paper etc. Lubricating oil, consumable stores, fuel, design, layout etc. are examples of indirect material cost.
2. **Labour Costs :** It is the cost of remuneration of the employees of an organization. Wages, salaries, commissions, fringe benefit such as P.F, ESI, gratuity, overtime etc. are all part of labour cost.
   - ***a. Direct Labour:*** Wages paid to the worker who engaged in the conversion of raw material in to finished goods are direct labour

cost. These cost can be conveniently identified with a particular product. Wages for supervision, Wages for foremen, Wages for labours who are actually engaged in operation or process are examples of direct labour cost.

b. ***Indirect Labour:*** Indirect labour is not directly engaged in the production process but it assist in production operations. For example wages of clerk, cleaner, watchman, inspector etc are part of indirect labour.

3. **Expenses:** All expenses are other than material and labour that are incurred for a particular product or process. They are defined by ICMA as "The cost of service provided to an undertaking and the notional cost of the use of owned assets." Expenses are further grouped into (a) Direct Expenses and (b) Indirect Expenses.
   a. **Direct Expenses :** Direct expenses which are incurred directly and identified with a unit of output or process are treated as direct expenses. Hire charges of special plant or tool, royalty on product, cost of special pattern etc. are the examples of direct expenses.
   b. **Indirect Expenses :** Indirect expenses are expenses other than indirect materials and indirect labour, which cannot be directly identified with a unit of output. Rent, power, lighting, repairs, telephone etc. are examples of indirect expenses. Indirect expenses are those expenses which are incurred after the manufacturing of goods.
4. **Prime Cost:** The combined costs of direct material, direct labour and direct expenses is known as prime cost. Thus,
   Prime Cost= Direct material+ Direct labour+ Direct expenses
5. **Overheads:** All indirect material cost, indirect labour cost, and indirect expenses are termed as overheads. Overheads may also be classified into (a) Production or Factory Overhead (b) Office and Administrative Overheads (c) Selling Overhead and (d) Distribution Overhead.
   a) **Production Overhead :** Production Overhead is also termed as Factory Overhead. Factory overhead includes, indirect material, indirect labour and indirect wages which are incurred in the factory.

For example, rent of factory building, repairs, depreciation wages of indirect workers etc.

b) **Office and Administrative Overhead :** Office and Administrative Overhead is the indirect expenditure incurred in formulating the policies, establishment of objectives, planning, organizing and controlling the operations of an undertaking. All office and administrative expenses like rent, staff salaries, postage, telegram, general expenses etc. are example.

c) **Selling Overhead :** Selling Overhead is the indirect expenses which are incurred for promoting sales, stimulating demand, securing orders and retaining customers. For example, advertisement, salesmen's commission, salaries of salesmen etc.

d) **Distribution Overhead :** These costs are incurred from the time the product is packed until it reaches its destination. Cost of warehousing, cost of packing, transportation cost etc. are some of the examples of distribution overhead.



CHECK YOUR PROGRESS

Q4: What is Prime cost?

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Q5: Give some examples of direct expenses.

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Q6: State true or false for the following statements:

(i) Lubricating oil, fuel, designs are some examples of direct material cost.

(ii) Rent, power, telephone bills etc. are some of the example of indirect expenses.

12.9 STATEMENT OF COST SHEET

Cost sheet is a statement prepared periodically to provide detailed cost of a cost centre or unit. It shows various component of the total cost. The cost sheet can be prepared for a period of a week, a month, a year etc. While preparing cost sheet, the components of the cost are grouped under following heads.

- Prime cost
- Factory cost/ works cost/ manufacturing cost
- Cost of production/administrative cost
- Cost of production of goods sold
- Cost of sales or total cost.

Particulars	Amount in Rs
Direct Materials (Raw materials consumed) ➢ Opening stock --- ➢ Add: Raw materials purchased --- ➢ Add: Carriage inward & purchase expenses --- ➢ Less: Closing stock --- Total materials consumed Direct wages Direct expenses **Prime Cost** Add: Factory overheads **Gross factory cost** Add: Opening stock of work in progress --- Less: Closing stock of work in progress --- Less: sale of scrap --- **Net factory cost** Add: Administrative overheads --- **Cost of production of goods produced** Add: Opening stock of finished stock --- Less: Closing stock of finished stock --- **Cost of production of goods sold** Add: Selling and distribution overheads --- **Total Cost** **Add: Profit** **Sales or Selling price**	

12.10 SOLVED PROBLEMS



Exercise 12.1

Prepare cost sheet of XYZ Ltd on the basis of following information

1) Cost of raw materials Rs. 100000
2) Labour Cost Rs. 50000
3) Closing stock of work-in-progress Rs 20000
4) Factory overheads 20% of prime cost

During the year 2015-16, 10000 units were produced out of which 8000 units were sold at a total value of Rs. 500000. There was no opening stock of work-in-progress and finished goods. Administrative overheads are Rs. 2 per unit and selling and distribution overheads are absorbed at Rs. 3 per unit.

Cost sheet for the period ending March 31, 2016

Particulars	Amount in Rs
Raw materials consumed	100000
Labour Cost	50000
Prime Cost	150000
Add: Factory overheads @ 20% of prime cost	30000
Gross factory cost	180000
Less: Closing stock of work in progress	20000
Net factory cost	160000
Add: Administrative overheads @ Rs 2/- for 10000 units	20000
Cost of production of 10000 units	180000
Less: Closing stock of finished goods (2000 units): (180000/10000)*2000	36000
Cost of production of goods sold	144000
Add: Selling and distribution overheads @ Rs 3/- for *8000 units*	24000
Total Cost of 8000 units	168000
Add: Profit (Sales-Total Cost)	332000
Sales or Selling price	500000

Exercise 12.2

Prepare cost sheet of ABC Ltd on the basis of following information

1) Raw materials consumed Rs. 33,00,000
2) Direct Wages Rs. 15,00,000
3) Factory overheads Rs. 12,00,000

In the beginning of the financial year 2014-15 there was no opening stock of W.I.P & finished goods. At the year end 2,00,000 units of finished stock were lying unsold in the warehouse and only 8,00,000 units were sold @ 20/- per unit.

The administrative overheads are absorbed @ 2/- per unit and selling & distribution overheads are absorbed @ 2/- per unit sold.

Solution : Cost sheet for the period ending March 31, 2015

Particulars	Amount in Rs
Raw materials consumed	33,00,000
Direct wages	15,00,000
Prime Cost	48,00,000
Add: Factory overheads @ 20% of prime cost	12,00,000
Net factory cost	60,00,000
Add: Administrative overheads @ Rs 2/- for 10,00,000 units	20,00,000
Cost of production of 10,00,000 units	80,00,000
Less: Closing stock of finished goods (2,00,000 units): (80,00,000/10,00,000)*2,00,000	16,00,000
Cost of production of goods sold	64,00,000
Add: Selling and distribution overheads @ Rs 2/- for *8,00,000 units*	16,00,000
Total Cost of 8,00,000 units	80,00,000
Profit	80,00,000
Sales revenue (8,00,000 units @ Rs. 20/- per unit)	1,60,00,000



Exercise 12.3

Prepare cost sheet of Shiva Industries on the basis of the following information.

Opening Stock	Amount in Rs.
Raw Materials	52950
W.I.P	12350
Finished Goods	35961
Closing Stock	
Raw Materials	48735
W.I.P	15423
Finished Goods	28860
Raw material purchase	55362
Productive wages	30850
Non- productive wages	2612
Works expenses	16326
Office overheads	5525
Selling & distribution overheads	9200
Sales of finished goods	180360
W.I.P is valued at prime cost	

Solution : Cost sheet for the period ending…….

Particulars	Amount in Rs
Direct Materials (Raw materials consumed)	
Opening stock of raw materials	52950
Add: Raw materials purchased	55362
	10831
Less: Closing stock	248735
Total materials consumed	59577
Productive wages	30850
Prime Cost	90427
Add: Opening stock of work in progress	12350
	102777

Less: Closing stock of work in progress	15423
Net prime cost of goods produced	87354
Add: Factory overheads	
Non-productive wages	2612
Works expenses	16326
Net factory cost	106292
Add: office overheads	5525
Cost of production of goods produced	111817
Add: Opening stock of finished stock	35961
	147778
Less: Closing stock of finished stock	28860
Cost of production of goods sold	118918
Add: Selling and distribution overheads	9200
Total Cost	128118
Add: Profit	52242
Sales or Selling price	180360



Exercise 12.4

From the following information for the month of January 2017, prepare a cost sheet

Particulars	Amount in Rs
Direct Material	6,00,000
Direct wages	3,15,000
Factory rent	55,000
Office rent	35,000
Repairs and maintenance- Plant	40,000
Plant depreciation	42,500
Factory lighting	25,000
Factory manager's salary	30,000
Office salaries	36,000
Directors remuneration	45,000

Telephone and postage	2,000
Printing & Stationary	2,500
Legal expenses	15,000
Advertisement	20,000
Sale executive salaries	25,000
Showroom rent	9,000
Sales	14,00,000

Solution : Cost sheet for the year ending 31st March, 2017

Particulars	Amount in Rs	Amount in Rs
Direct Materials (Raw materials consumed)		6,00,000
Direct wages		3,15,000
Prime Cost		9,15,000
Add: Factory overheads		
Factory rent		
Repairs and maintenance- Plant		
Plant depreciation	55,000	
Factory lighting	40,000	
Factory manager's salary	42,500	
Gross factory cost	25,000	
Add: Administrative overheads	30,000	
Office salaries		
Director's remuneration		1,92,500
Telephone & postage	36,000	11,07,500
Office rent	45,000	
Printing & stationary	2,000	
Legal expenses	35,000	
Cost of production of goods produced	2,500	
Add: Selling and distribution overheads	15,000	
Advertisement		
Sale executive salaries		
Showroom rent	20,000	
Total Cost	25,000	
Add: Profit (Balance figure)	9,000	
Sales		1,35,500
		12,43,000
		54,000
		12,97,000
		1,03,000
		14,00,000



Exercise 12.5

From the following information for the month of March 2017, prepare a cost sheet

Particulars	Amount in Rs
Opening stock:	
Raw materials	8,500
Work in progress	28,000
Finished stock	1,37,000
Stores	9,000
Closing stock:	
Raw materials	22,000
Work in progress	26,000
Finished stock	1,48,000
Stores	13,000
Raw material purchase	2,85,000
Purchase of stores	18,000
Wages paid	1,03,000
Direct expenses	13,500
Power	18,000
Supervision	14,000
Indirect labour	42,500
Office salary	1,28,000
Office rent	22,000
Office electricity	8,300
Advertising	16,000
Delivery van expenses	17,000
Sales expenses	11,350
Sales	9,36,000

Solution : Cost sheet for the year ending 31st March, 2017

Particulars	Amount in Rs	Amount in Rs
Direct Materials (Raw materials consumed)		
Opening stock of raw material		8,500
Add: Purchase of raw material		2,85,000
Less: Closing stock of raw material		22,000
Raw material consumed		2,71,500
Wages paid		1,03,000
Direct expenses		13,500
Prime Cost		3,88,000
Add: Factory overheads		
Stores consumed (9000+18000-13000)	14,000	
	18,000	
Power	14,000	
Supervision	42,500	88,500
Indirect Labour		4,76,500
Gross factory cost		28,000
Add: Opening stock of work in progress		26,000
Less: Closing stock of work in progress		4,78,500
Net factory cost		
Add: Administrative overheads	1,28,000	
Office salary	22,000	
Office rent	8,300	1,58,300
Office electricity		6,36,800
Cost of production of goods produced		1,37,000
Add: Opening stock of finished stock		1,48,000
Less: Closing stock of finished stock		6,25,800
Cost of production of goods sold		
Add: Selling and distribution overheads	16,000	
Advertising	17,000	
Delivery van expenses	11,350	44,340
Sales expenses		6,70,150
Total Cost		2,65,850
Profit (balancing figure)		9,36,000
Sales		



CHECK YOUR PROGRESS

Q7: What is cost sheet?

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Q8: List three important factors of cost sheet.

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12.11 LET US SUM UP

In this unit we have discussed the following points:

- Cost is a measurement, in monetary terms of the amount of resources used for the purpose of production of goods or rendering services
- Costing is the technique and process of determining cost of the object. The prime objectives of costing are a. Estimation the Cost b. Cost Control and reduction c. Cost Allocation d. Helps in Decision Making e. Planning Profits.
- There are two methods of costing namely a) Job costing & b) Process costing.
- The following are the various techniques of costing.
  1. Budgetary control
  2. Standard Costing
  3. Marginal Costing
  4. Absorption costing
  5. Uniform Costing
- Important bases on which costs are classified are:
  a) On the basis of Nature (or) Elements.
  b) On the basis of Function
  c) On the basis of Variability.

d) On the basis of Normality.

e) On the basis of Controllability and Decision Making.

- The total cost is analysed by the elements or nature of cost, i.e. material, labour and overheads.
- Cost sheet is a statement prepared periodically to provide detailed cost of a cost centre or unit. It shows various component of the total cost.



12.11 FURTHER READING

1. Khatri D K (2015), '*Accounting for Management*', Mc Graw Hill Education (India) Pvt. Ltd., New Delhi
2. M.N Arora (2012), '*A Textbook of Cost & Management Accounting*', Vikash Publishing House Pvt. Ltd., New Delhi.
3. M. Hanif(2013), '*Modern Cost & Management Accounting*', Mc Graw Hill Education (India) Pvt. Ltd., New Delhi
4. Ravi M. Kishore(2013), '*Advanced Management Accounting'*, Taxmann Allied Services (P) Ltd., New Delhi.



12.12 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q1: There are two methods of costing namely a) Job costing & b) Process costing.

Ans to Q2: Process costing is a type of operation costing which is used to ascertain the cost of a product at each process or stage of manufacture.

Ans to Q3: The following are the important bases on which costs are classified :

a) On the basis of Nature (or) Elements.

b) On the basis of Function

c) On the basis of Variability.

d) On the basis of Normality.

e) On the basis of Controllability and Decision Making.

Ans to Q4: The combined costs of direct material, direct labour and direct expenses is known as prime Cost. Thus,
Prime Cost= Direct material+ Direct labour+ Direct expenses

Ans to Q5: Examples of direct expenses are hire charges of special plant or tool, royalty on product, cost of special pattern.

Ans to Q6: (i) False (ii) True

Ans to Q7: Cost Sheet or a Cost Statement is "a document which provides for the assembly of the estimated detailed elements of cost in respect of cost centre or a cost unit."

Ans to Q 9: The three important factors of cost sheet are:

1) It provides for the presentation of the total cost on the basis of the logical classification.

2) Cost sheet helps in determination of cost per unit and total cost at different stages of production.

3) Assists in fixing of selling price.



12.13 MODEL QUESTIONS

1. Define costing and various objectives of costing?
2. What is the basic difference between costing and cost accounting?
3. How cost per unit is calculated under batch costing method?
4. What are objectives that can be achieved by following standard costing technique?
5. Why marginal costing technique does not take in to account the fixed cost element?
6. Distinguish between variable, semi-variable and fixed costs.
7. What are the costs classifications on the basis of management decision making?
8. Distinguish between Product cost and Period cost.
9. Distinguish between Direct cost and indirect cost.
10. Explain various types of overheads.
11. Distinguish between :
    a) Direct material and Indirect material
    b) Direct labour and Indirect labour.

c) Direct expenses and Indirect expenses.

12. From the following particulars of a manufacturing firm prepare a statement showing :

    1) Cost of Materials Consumed

    2) Factory or Work Cost

Cost of Production	***Rs.***
Stock of materials on 1st January 2003	80,000
Purchases during the period	22,00,000
Stock of finished goods on 1st January 2003	1,00,000
Direct wages	10,00,000
Sales	48,00,000
Factory on cost	30,00,000
Office and Administrative Expenses	2,00,000
Stock of raw materials on 31st December 2003	2,80,000
Stock of finished goods on 31st December 2003	1,20,000

Ans. :

(1) Rs. 20,00,000 (2) Rs. 33,00,000 (3) Rs. 35,00,000

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UNIT: 13 MARGINAL COSTING AND BREAK EVEN ANALYSIS

UNIT STRUCTURE

13.1 Learning Objectives

13.2 Introduction

13.3 Concept and characteristics of Marginal Costing

13.4 Application of Marginal Costing

13.5 Advantages and Limitations of Marginal Costing

13.6 Absorption Costing

- 13.6.1 Difference between Absorption Costing & Marginal Costing

13.7 Cost Volume Profit (CVP) Analysis

- 13.7.1 Assumptions of Cost-Volume-Profit Analysis
- 13.7.2 Objectives of Cost-Volume-Profit Analysis

13.8 Marginal Cost

13.9 Break Even Analysis

- 13.9.1 Profit Volume Ratio
- 13.9.2 Margin of Safety
- 13.9.3 Angle of Incidence

13.10 Target Profit

13.11 Solved Problems

13.12 Let Us Sum Up

13.13 Further Reading

13.14 Answers to Check Your Progress

13.15 Model Questions

13.1 LEARNING OBJECTIVES

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

- discuss the concept of Marginal Costing
- outline the difference between Absorption Costing & Marginal Costing
- explain Cost Volume Profit (CVP) Analysis

- discuss Profit Volume Ratio
- discuss about Break Even Analysis

13.2 INTRODUCTION

In this unit, we are going to discuss the concept of marginal costing and cost volume profit analysis.

Marginal Cost may be defined as the “cost of producing one additional unit of product”. We will discuss about it in detail in the following sections.

Again, we will get an idea about cost volume profit analysis.

Cost-volume-profit analysis employs the same basic assumptions as in breakeven analysis. At the end of this unit, we will come to know about Break Even Analysis, margin of safety and angle of incidence.

13.3 CONCEPT AND CHARACTERISTICS OF MARGINAL COSTING

Meaning of Marginal Costing :

Marginal costing is technique/ system of presentation of sales and cost to the management for taking short term decisions with respect to product mix, make or buy, accepting special orders etc. It is used by management for cost control, budgeting and profit planning purposes.

It is a system of costing where only variable cost of production is included to calculate the cost per unit. Hence fixed cost is treated as period cost and written off during the period in full. The fixed costs do not enter in the valuation of stock. In most of the cases, marginal cost is nothing but the variable cost, which is charged to the product manufactured. The fixed cost components are charged to costing Profit & Loss Account of the period in which they are incurred. There are various concepts which are relevant and used in marginal costing technique:

- Contribution
- Break- even analysis
- Profit volume ratio
- Target Profit

- Margin of Safety

Different costs behave differently with the changes in the volume of production. The cost which changes proportionately with the change in volume of production is called variable cost. Whereas the cost which remain constant with the change in the volume of production is known as fixed cost. Marginal costing takes in to account the variable cost of production for calculation of unit costs. Fixed costs are treated as period costs and charged to profit & loss account in full.

In marginal costing system, all variable costs are included in the *cost of sales* calculation. The difference between sales and cost of sales is treated as *contribution.* The contribution is used to recover fixed cost for the period. Any excess after recovering the fixed cost is considered as *profit.*

Characteristics of Marginal Costing

Following are the characteristics of Marginal Costing System

1. **Segregation:** In marginal costing all costs are segregated in to fixed cost and variable cost.
2. **Variable costs as product cost:** Only variable costs are taken into consideration for calculating unit cost.
3. **Fixed costs as period cost:** Fixed cost are treated as period cost and written off during the period in full.
4. **Inventory valuation:** The work-in-progress and closing stocks are valued at marginal (variable) cost of production only.
5. **Decision making:** Marginal costing system used extensively for short term decision making which is generally less than a year.
6. **Contribution:** It is the difference between sales revenue and cost of sales. Fixed costs are adjusted against contribution.
7. **Pricing:** In marginal costing, prices are determined on the basis of marginal cost plus contribution

13.4 APPLICATION OF MARGINAL COSTING

The marginal costing is applicable for management in making many decisions in the short term, since the fixed cost in short term remain same and the decisions to be made on the basis of contribution. The following are the various applications of marginal costing technique in managerial decision making process:

i. ***Make or buy decisions:*** Most of the organizations buy various items for its production from outside suppliers. A company may meet its requirement internally or may buy it from outside vendors. The decisions, on whether to manufacture the components in house or buy from outside is known as 'make or buy decisions'. Marginal costing helps the management in taking 'make or buy decisions'. It helps in knowing through marginal costing what contribution to fixed cost will result if the management decides to *'make'* the product.

A detailed analysis of cost and non-cost factors are to be made. The management can evaluate alternative using marginal costing system. Bases on marginal costing, comparison is to be made between cost of buying the product or service and the marginal cost of manufacture. Common fixed costs are excluded from the analysis, as these are to be incurred any way. However any specific fixed cost related to the decisions must be taken in to consideration.

ii. ***Acceptance of special orders:*** A special order is a onetime order which the organization receives and accepted without disturbing the existing production. Generally special orders are accepted when there is spare capacity of production. The cost of executing the special order must be calculated on the basis of marginal cost. Any common fixed costs must be excluded, however specific fixed cost must be take into consideration.

iii. ***Discontinuation of a product:*** Many a times for a company a particular or few of the products is not accepted by the customer. In such a situation, if the product performance is not up to the expectation, then such product/products should be discontinued provided there is no

contribution margin from that product. At the time of discontinuing a product, marginal costing technique is used. The following points needs to be taken in to consideration in taking a discontinuation decisions

- Product will be discontinued only if the contribution from that product is negative.
- Total fixed cost for the organization is either constant or reduced
- Share of fixed cost of the discontinued product will have to be borne by the existing range of products.
- Effect on sale of existing products due to discontinuation of that particular product.

iv. ***Optimizing product mix:*** With the help of marginal costing, management can decide the best product mix or sales mix that yield maximum profit for the organization. However the management must take in to consideration the available resources, as resources are limited. The limitation in terms of resources is called *'limiting factor'.* The limiting factor may consist of specified raw material, specific labour skills, a specific equipment, space etc. The limiting factor serves as an indicator to select the best course of action to achieve optimum profitability in alternative product mix.

v. ***Shutdown vs continuation:*** Political influence or temporary recession etc. may compel the management to decide whether to continue or suspend a particular operation. With the help of marginal costing, the shutdown cost is compared with the loss to be incurred if the operation is continued. If the cost of operation is more than the shutdown cost than the whole operation will be suspended.



CHECK YOUR PROGRESS

Q1: What is Marginal costing?

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Q2: State any four Characteristic of Marginal Costing

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Q3: Discuss the applications of marginal costing technique in managerial decision making process.

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13.5 ADVANTAGES AND LIMITATIONS OF MARGINAL COSTING

Advantages of Marginal Costing:

The following are the important decision making areas where marginal costing technique is used :

1. Pricing decisions in special circumstances :
   a) Pricing in periods of recession;
   b) Use of differential selling prices.
2. Acceptance of offer and submission of tenders.
3. Make or buy decisions.
4. Shutdown or continue decision or alternative use of production facilities.
5. Retain or replace a machine.
6. Decisions as to whether to sell in the export market or in the home market.
7. Change Vs status quo.
8. Whether to expand or contract.
9. Product mix decisions like for example :
   a) Selection of optimal product mix;
   b) Product substitution
   c) Product discontinuance.
10. Break-Even Analysis.

Limitations of Marginal Costing:

Marginal costing system has certain limitations which are described below:

i. **Ineffective in capital-intensive industries:** Marginal costing is not very effective in capital-intensive industries where the proportion of fixed costs is fairly large. For example in telecommunication companies, major part of the total costs is depreciation, insurance, rates & taxes etc. which are fixed in nature, hence marginal costing technique will not depict the true picture of the business.

ii. **Difficulty in segregation of costs:** In many organizations, certain costs are difficult to segregate in to fixed and variable. For example certain costs are caused purely by management decisions such as payment of bonus to workers, amenities to staff etc. are difficult to classify.

iii. . **Difficulty in application:** Marginal costing is difficult to apply in certain industries where large stock of work-in-progress is piled up. For example in ship building or construction contracts, if fixed overheads are not taken in to consideration in valuation of work-in-progress, the accounts will show loss for the year, whereas on completion of the contract it will shows enormous amount of profits. Thus in certain cases marginal costing may not provide the correct picture.

iv. **Ignores time factor:** Marginal costing technique ignores time factor since it does not take in to account the fixed cost component. For example the marginal cost of two jobs A & B are the same but the time of completion of job A is double than job B. In such a case the true cost of Job A will be higher than Job B which will not be disclosed by marginal costing method.

v. **Improper basis of pricing:** In the long run revenue must cover all the costs (fixed and variable). Marginal costing run the risk of understating unit costs by excluding fixed cost. Any pricing based on this unit cost will incur loss for the organization.

13.6 ABSORPTION COSTING

Absorption costing is also termed as Full Costing or Total Costing or Conventional Costing. It is a technique of cost ascertainment. Under this

method both fixed and variable costs are charged to product or process or operation. Accordingly, the cost of the product is determined after considering both fixed and variable costs.

13.6.1 Difference between Absorption Costing & Marginal Costing

	Marginal Costing	**Absorption Costing**
Unit cost calculation	Unit cost is calculated on the basis of marginal (variable) cost of production	Unit cost is calculated on the basis of all (both fixed & variable) cost of production
Fixed costs treatment	All fixed costs are treated as period cost and charged to Profit & Loss Account of the period in which they incurred. No carry forward of fixed costs to the next period happens under marginal costing	A part of the fixed costs are carried forward to the next period with the value of closing stock.
Profit fluctuation	Under marginal costing profit is not affected by the change in the level of stock	Under absorption costing profit will vary with the change in stock level
Valuation of inventory	Under marginal costing inventory is valued at variable cost only	Under absorption costing inventory is valued at both fixed as well as variable cost.
Decision making	Certain decisions such as continuation of a product, offering discount on products, make or buy etc. are taken by considering variable costs only, which is justified and prudent.	Similar decisions taken by considering total cost might be wrong in many a times. As fixed cost is to be incurred even when these offers are accepted or not.

13.7 COST VOLUME PROFIT (CVP) ANALYSIS

Cost Volume Profit Analysis (C V P) is a systematic method of examining the relationship between changes in the volume of output and changes in total sales revenue, expenses (costs) and net profit. In other words, it is the analysis of the relationship existing amongst costs, sales revenues, output and the resultant profit.

To know the cost, volume and profit relationship, a study of the following is essential:

1) Marginal Cost Formula
2) Break-Even Analysis
3) Profit Volume Ratio (or) P/V Ratio
4) Profit Graph
5) Key Factors and
6) Sales Mix

Cost –volume-profit analysis (CVP analysis) studies the relationship between expense (costs), revenue (sales) & net income (net profit).

These three core elements of marginal costing system are linked to each other in such a way that change in one likely to have impact on rest of the two and vice versa. In decision making, management pays a great deal of attention to the profit opportunities of alternative courses of action. In other words better evaluation can be made of profit opportunities by studying the relationships among costs, volume and profits. Hence an understanding of the CVP analysis is crucial for the management in deciding upon

a) What sales volume is required to break-even?
b) What sales volume is required to achieve budgeted profit?
c) What will be the effect on profit, if sales mix is changed?
d) What will be the effect on profit, if selling price is changed?
e) What will be the profit at various level of sales?

13.7.1 Assumptions of Cost Volume Profit Analysis

CVP analysis is based on following assumptions:

I. Fixed costs will remain same at all level of activity in the short run.
II. All costs can be divided into fixed and variable costs.
III. Variable cost per unit and selling price per unit will remain constant.
IV. There is no change in technology, production process and efficiency.
V. Stocks are valued at variable cost only
VI. A single product or a constant mix of products is produced.
VII. The analysis is applicable only to a short term period.

13.7.2 Objectives of Cost Volume Profit Analysis

The following are the important objectives of cost volume profit analysis:

1) Cost volume is a powerful tool for decision making.
2) It makes use of the principles of Marginal Costing.
3) It enables the management to establish what will happen to the financial results if a specified level of activity of volume fluctuates.
4) It helps in the determination of break-even point and the level of output required to earn a desired profit.
5) The P/V ratio serves as a measure of efficiency of each product factory sales area etc. and thus helps the management to choose a most profitable line of business.
6) It helps us to forecast the level of sales required to maintain a given amount of profit at different levels of prices.

13.8 MARGINAL COST

Marginal cost is the cost of producing an additional unit of product. It is the total of all variable costs. The CIMA, UK has defined marginal cost *"as the amount at any given volume of output by which aggregate costs are changed, if volume of output is increased or decreased by one unit"*. In other words it is the cost of one unit of product which would be avoided if that unit is not produced. Please note that the unit may be a single unit/

article, a batch of units/articles, a stage of production capacity, a process or a department. For example, in a factory the cost of manufacturing X units of products is Rs. 5000/- and cost of producing X+1 unit is Rs. 6000/-, the cost of the additional unit of production is Rs. 1000/- which is the marginal cost. Similarly, if the cost of production of X-1 units is Rs 4000/-, the cost of marginal unit will be Rs. 1000/-. An important point is that marginal cost per unit remains unchanged, irrespective of the level of activity.

The Following are the main important equations of Marginal Cost:

Sales = Variable Cost + Fixed Expenses ± Profit / Loss

or

Sales — Variable Cost = Fixed Cost ± Profit or Loss

or

Sales — Variable Cost = Contribution

Contribution = Fixed Cost + Profit

The above equation brings the fact that in order to earn profit the contribution must be more than fixed expenses. To avoid any loss, the contribution must be equal to fixed cost.

Contribution: Contribution is the difference between selling price and variable cost. It is the surplus after all variable costs have been covered. Variable costs includes direct material, direct labour/wages, direct expenses, variable factory overheads, variable administrative overheads and variable selling & distribution overheads. Under marginal costing all variable cost are incorporated under cost of sales. In other words the difference between the sales and the cost of sales is treated as contribution***.*** The fixed cost is recovered out of this contribution and post recovery of the fixed cost, the amount left is treated as ***profit.*** If the contribution is not sufficient to cover the fixed cost, then it is treated as loss for the period.

The relationship of sales, variable costs, contribution, fixed costs and profit can be shown as below:

- Contribution= Sales – Variable costs
- Contribution = Sales — Marginal Cost
- Contribution= Fixed costs + Profit
- Contribution= Fixed costs - Loss



Exercise 13.1

Calculate the profit using the following three factors

- Sales revenue= Rs. 2,50,000/-
- Variable Costs= Rs. 1,00,000/-
- Fixed Costs= Rs. 70,000/-

Solution :

I. Contribution= Sales – Variable costs

Contribution= 2, 50,000-1, 00,000= Rs.1, 50,000/-

II. Profit= Contribution- Fixed cost

Profit= 1, 50,000-70,000= Rs. 80,000/-

Thus profit is Rs. 80,000/-

13.9 BREAK EVEN ANALYSIS

Break- even analysis refers to ascertainment of level of operations where total revenue equals to total costs. It is a method of studying the relationship among sales, variable costs and fixed costs to determine the level of production at which the total costs is equal to total sales revenue and it is a no profit no loss situation. Break-Even Analysis is also called Cost Volume Profit Analysis.

The term Break-Even Analysis is used to measure inters relationship between costs, volume and profit at various level of activity. A concern is said to break even when its total sales are equal to its total costs. It is a point of no profits no loss. This is a point where contribution is equal to fixed cost. In other words, the break-even point where income is equal to expenditure (or) total sales equal to total cost. BEP will be discussed in the following section.

Break-even Chart:

A break-even chart is a graphical presentation which indicates the relationship between cost, sales and profit. The chart depicts fixed costs, variable cost, break-even point, profit or loss, margin of safety and the angle of incidence. Such a chart not only indicates break-even point but also shows the estimated cost and estimated profit or loss at various level of activity. Break-even point is an important stage in the break-even chart which represents no profit no loss.

The following Break-Even Chart can explain more above the inter relationship between the costs, volume and profit :

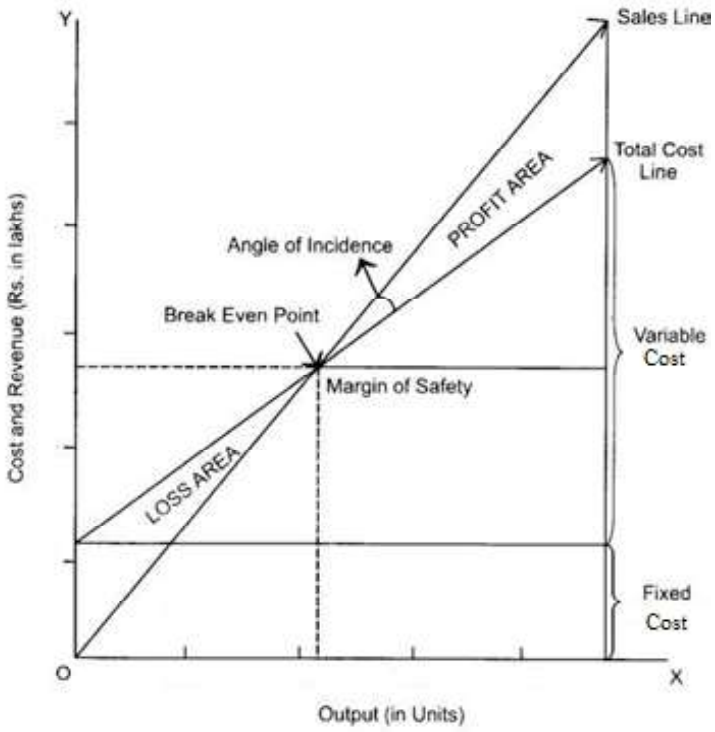


Fig : 13.1 Break Even Chart

From the above break-even chart, we can understand the following points:

1) Cost and sales revenue are represented on vertical axis, i.e., Y-axis.
2) Volume of production or output in units are plotted on horizontal axis, i.e. X-axis.
3) Fixed cost line is drawn parallel to X-axis.
4) Variable costs are drawn above the fixed cost line at different level of activity. The variable cost line is joined to fixed cost line at zero level of activity.
5) The sales line is plotted from the zero level, it represents sales revenue.
6) The point of intersection of total cost line and sales line is called the break even point which means no profit no loss.
7) The margin of safety is the distance between the break-even point and total output produced.

8) The area below the break-even point represents the loss area as the total sales and less than the total cost.
9) The area above the break-even point represents profit area as the total sales more than the cost.
10) The sales line intersects the total cost line represents the angle of incidence. The large angle of incidence indicates a high rate of profit and vice versa.

It is the graphic representation of break-even analysis. In the chart, the point at which the total cost line intersects with the sales line is called break-even point. A break-even chart showed not only the break-even point but also profit & loss at various levels of activity. It portrays the following information.

- Break-even point
- The profit/loss at various levels of output
- The relationship between fixed cost, variable cost & total costs.
- The margin of safety
- The angle of incidence, indicating the rate at which profits are being earned once the break-even point is reached.
- The amount of contribution at different levels of sales

Break-even Point:

It is the level of sales at which firm has neither earns profit nor suffer losses. At this level of sales the total cost is equal to total sales. Below this point the firm has loss and above this point it earns profit. It is also called “no profit no loss” point. Knowledge about the Break-even point (BEP) is must for an organization to formulate business strategies regarding pricing, accepting special orders or bulk supply order etc. BEP calculated by using following formula:

- $\text{BEP (in units)} = \dfrac{\text{Total fixed costs}}{\text{Contribution per unit}}$

- $\dfrac{\text{Total Fixed Costs}}{\text{Contribution}} \times \text{Sales} \quad \text{or} \quad \dfrac{\text{Total Fixed Costs}}{\text{Profit} - \text{Volume (P / V) Ratio}}$

Let us understand the BEP with the help of following graphical representation

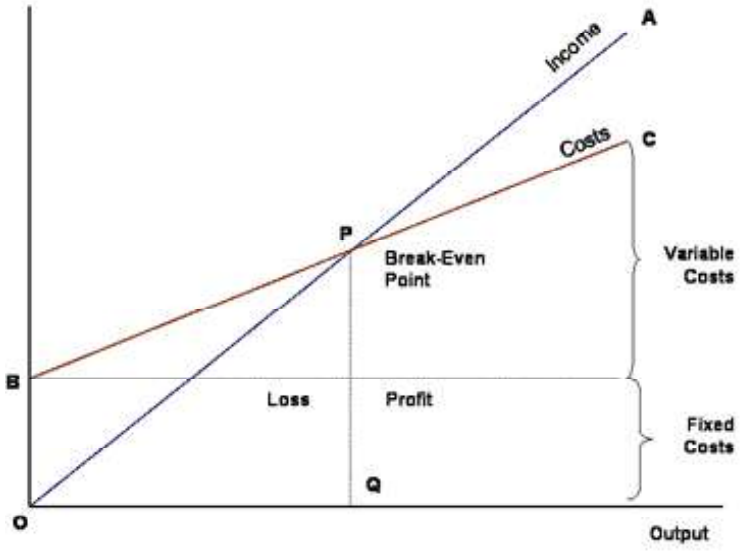


Fig : 13.2 Break Even Point

In the diagram above, the line OA represents the income/sales level at different levels of production/output. The part OB represents the total fixed costs. The fixed costs remain same irrespective of the output produced. On the other hand as output increases, variable costs are also increasing, which lead to increase in total cost (fixed + variable). At low levels of output, costs are higher than Income. At the point of intersection, P (which is the break-even point), costs are exactly equal to income, and hence neither profit nor loss is made. The area above the point of 'P' i.e, break- even point) is the profit zone for the organization. The area below the point 'P' is the area of loss.

Exercise 13.2

ABC Corporation is selling 36000 units per annum @ Rs. 120/- per unit. Its variable cost is Rs. 50 per unit and operating fixed cost is Rs. 12,60,000/- p.a. Prepare the break even chart and calculate the BEP.

Units	Total Variable cost	Total Fixed cost	Total Cost	Total Revenue
0	0	1,260,000	1,260,000	0
6,000	300,000	1,260,000	1,560,000	720,000
12,000	600,000	1,260,000	1,860,000	1,440,000
18,000	900,000	1,260,000	2,160,000	2,160,000
24,000	1,200,000	1,260,000	2,460,000	2,880,000
30,000	1,500,000	1,260,000	2,760,000	3,600,000
36,000	1,800,000	1,260,000	3,060,000	4,320,000



The Break-even chart given above shows the BEP in units. The point at which total revenue line intercepts with the total cost line is the Break-even

point. In this case it is 18000 units of sales quantities corresponding on the 'X' axis is the BEP in units. The value corresponding to this on 'Y' axis is Rs. 21,60,000/- is the BEP in rupees. So ABC corporation will have no profit no loss when it produces & sale 18000 units for Rs. 21,60,000/-.

13.9.1 Profit Volume Ratio

The profit volume (p/v) ratio, also known as contribution- sales ratio (c/s) is calculated as follows

$$\text{P/V ratio (C/S ratio)} = \frac{\text{Contribution}}{\text{Sales}} \times 100$$

This ratio indicates the rate at which each rupee of sales available to cover fixed costs and provide for profit. For example is p/v ratio is 60% then it means for every rupees 100 of sales revenue, contribution is Rs. 60/- and remaining Rs. 40/- is variable cost. Out of the contribution of Rs. 60/- , after deducting the fixed cost whatever amount left is the profit. Alternatively P/V ratio is 100- Variable cost percentage of sales.



Exercise 13.3

Calculate P/V ratio of ABC Corporation using following data

Sale (10000 units)	Rs. 2,00,000
Variable costs	Rs. 1,10,000

Solution:

$$\text{P/V ratio (C/S ratio)} = \frac{\text{Contribution (Sales - Variable costs)}}{\text{Sales}} .\times 100$$

P/V ratio (C/S ratio)= {(2,00,000-1,10,000)/2,00,000}*100= 45%

P/V ratio is an indicator of the rate at which the organization is earning profit. A high P/V ratio implies high profitability and vice versa. The P/V ratio is also used in making following types of calculation:

a) For calculating BEP

b) For calculating profit at a given level of sales

c) For calculating volume of sales required to earn a desired profit

d) For calculating volume of sales required to maintain the current level of profit, if the sale price is reduced.

P/V ratio is a function of sales and variable cost, thus the P/V ratio can be increased or improved by increasing sales, reducing variable cost or changing the sales/product mix.



Exercise 13.4

A firm is selling 500 units of a single product at a price of Rs. 50/- per unit. The variable cost per unit of the product is Rs. 18/- and fixed cost is Rs. 7500/-. Calculate the P/V ratio & BEP in units and sales revenue.

Solution: Contribution per unit= Sale price per unit- variable cost per unit

Contribution per unit= 50-18= Rs. 32/-

$$\text{P/V ratio (C/S ratio)} = \frac{\text{Contribution (Sales - Variable costs)}}{\text{Sales}} .\times 100$$

P/V ratio (C/S ratio)= (32/50).*100= 64%

Total Contribution (in Rupees)= 500 units X 32/-= Rs 16000/-

$$\text{BEP (in Units)} = \frac{\text{Total fixed costs}}{\text{Contribution per unit}} = \frac{7500}{32} = 234 \text{ units}$$

$$\text{BEP (in Rupees)} = \frac{\text{Total fixed costs}}{\text{Profit- volume ratio}} = \frac{7500}{64} \times 100 = \text{Rs. } 11719/-$$

13.9.2 Margin of Safety

Margin of safety is the sales over and above the break-even point. It is the difference between the actual sales and sales at break-even point. The size of the margin of safety indicates the health of the organization. A high rate of margin of safety indicates that the business can still make profit even if the sales fall for any reason. In other words during depression, it acts as a safety cushion or shock

absorber. Therefore a low margin of safety is a matter of concern for the organization, if sales drops. It can be expressed in absolute money terms or as a percentage of sales.

Margin of safety= Actual sales- Break-even point sales



Example : 13.1

	A Ltd.	B Ltd.
Sales	20,00,000	12,00,000
Break-even point sales	7,00,000	7,00,000
Margin of safety (in absolute number)	13,00,000	5,00,000
Margin of safety (as a % of sales)	(13,00,000/20,00,000)* 100= 65%	(5,00,000/12,00,000)*100 = 42%

13.9.3 Angle of Incidence

The angle formed by the sales line and the total cost line at the break-even point is known as Angle of Incidence. The angle of incidence is used to measure the profit earning capacity of a firm. A large angle of incidence indicates a high rate of profit and on the other hand a small angle of incidence means that a low rate of profit.

Relationship between Angle of incidence, Break-Even Sales and margin of Safety Sales :

1) When the Break-even sales are very low, with large angle of incidence, it indicates that the firm is enjoying business stability and in that case margin of safety sales will also be high.
2) When the break-even sales are low, but not very low with moderate angle of incidence, in that case though the business is stable, the profit earning rate is not very high as in the earlier case.

3) Contrary to the above when the break-even sales are high, the angle of incidence will be narrow with much lower margin of safety sales.

13.10 TARGET PROFIT

Many a times organizations want to maintain a particular level of profit. In such a case the management used to estimate sales required to earn a target profit. Sales to earn a target profit are calculated as follows:

$$\text{Sales (in units) for target profit} = \frac{\text{Fixed costs+ Target profit}}{\text{Contribution per unit}}.$$

$$\text{Sales (in Rupees) for target profit} = \frac{\text{Fixed costs+ Target profit}}{\text{P/V ratio}}.X\ 100$$



Exercise 13.5

A firm is selling 10000 units @ Rs. 1500/- per unit. Variable cost per unit is Rs. 1125/- and Fixed costs per annum is Rs. 15,00,000/-. Calculate the profit. Also calculate the sales in units and in rupees if the firm wants to increase its profit by 50%.

Solution: Contribution per unit= 1500-1125= Rs. 375/-

Total Contribution= 10000 units * 375= Rs. 37, 50,000/-

Profit= Contribution- Fixed Cost= 37, 50,000- 15, 00,000= Rs. 22,50,000/-

To increase the profit by 50% from current level = 22, 50,000+(50% of 22,50,000)= 33,75,000/-

$$\text{Sales (in units) for target profit} = \frac{\text{Fixed costs} + \text{Target profit}}{\text{Contribution per unit}}$$

$$= \frac{15,00,000 + 33,75,00}{375} = 13000 \text{ units}$$

$$\text{Sales (in Rupees) for target profit} = \frac{\text{Fixed costs} + \text{Target profit}}{\text{P / V}}.\times 100$$

$$\text{P/V ratio (C/S ratio)} = \frac{\text{Contribution}}{\text{Sales}}.\times 100 = \frac{375}{1500} \times 100 = 25\%$$

Sales (in Rupees) for target profit $= \frac{15,00,000 + 33,75,000}{\text{Rs.}1,95,00,000 / -25} \times 100$



CHECK YOUR PROGRESS

Q4: State the limitations of Marginal Costing

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Q5: What is meant by Break-Even Chart

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Q6: Define Angle of Incidence

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13.11 PRACTICAL PROBLEMS



Exercise 13.6

Calculate Break- even point in each of the following situations:

i. Fixed cost Rs. 25,000; P/V ratio 25%
ii. Fixed cost Rs. 30,000; contribution per unit Rs. 5/-
iii. Fixed cost Rs 15,000, variable cost to sales ratio 40%
iv. Sales Rs. 1,00,000, Margin of safety 25%
v. Margin of safety Rs. 85,000, Sales Rs. 5,25,000.
vi. Sales 25000 units, Margin of safety 7,500 units.

Solution

i. B.E.P (in Rupees) = Fixed cost / P/V ratio= 25000/25%= Rs. 1,00,000
ii. B.E.P (in units)= Fixed cost / contribution per unit= 30000/5= Rs. 6,000 units

iii. P/V ratio= 100- % of variable cost to sales= 100-40%= 60%
B.E.P = Fixed cost / P/V ratio= 15000/60%= Rs.25, 000

iv. B.E.P = Sales- Margin of safety= 100000- (25%*100000)= Rs 75,000

v. B.E.P= Sales- Margin of safety= 5,25,000-85,000= Rs. 4,40,000

vi. B.E.P= Sales- Margin of safety= 25,000-7,500= 17,500 units



Exercise 13.7

XYZ Company is selling 32000 units per annum @ Rs 40/- per unit. Its variable cost per unit is Rs 24/- and fixed operating cost is Rs. 3,25,000 p.a. Calculate BEP (in units & in rupees), P/V ratio, margin of safety (MOS) & present level of profit.

Solution

i. Contribution (in units)= Sales- variable cost= 40-24= Rs 16 per unit

ii. P/V ratio= (Contribution/Sales)*100= (16/40)*100= 40%

iii. BEP (in units)= Fixed cost/ contribution per unit= 325000/16= 20313 units.

iv. BEP (in Rupees)= (Fixed cost/ contribution per unit)* selling price per unit= (325000/16)*40= Rs. 8,12,500

v. MOS(in units)= Total sales in units- B.E.P in units= 32,000-20313= 11687 units.

vi. MOS (in Rupees)= Total sales- BEP sales= (32000 units*Rs 40)-812500= Rs. 4,67,500/-

vii. Profit= Total contribution- Fixed cost= (32000 units* Rs 16)-3,25,000= Rs. 187000/-



Exercise 13.8

ABC corporation's sales for the year 2015-16 is Rs. 35,00,000, variable cost to sales ratio is 48% and fixed cost is Rs. 5,72,000. Calculate (i) BEP, P/V ratio, MOS and profit at present (ii) How much will be the profit if sales is increase by 100% (iii) What should be the sales to double the profit.

Solution

i. P/V Ratio= 100- % of variable cost to sales= 100-48%= 52%

BEP (in Rupees)= (Fixed cost/ P/V ratio)* 100= (572000/52)*100= Rs. 11,00,000

MOS(in Rupees)= Total sales- BEP sales= 35,00,000-11,00,000= Rs. 24,00,000

Profit= Contribution- Fixed cost

Contribution= Sales- Variable costs= 3500000-(48%*3500000)= Rs. 18,20,000/-

Profit= 1820000-572000= Rs. 12,48,000/-

ii. How much will be the profit if sales is increase by 100%.

Sales= 35,00,000+ (100%of 35,00,000)= Rs. 70,00,000/-

Contribution= Sales- Variable costs= 7000000-(48%*7000000)= Rs. 36,40,000/-

Profit= Contribution- Fixed cost= 3640000-572000= Rs. 30,68,000-

iii. What should be the sales to double the profit?

Double of profit Rs. 12,48,000 = Rs 24,96,000/-

$$\text{Sales (in Rupees) for target profit} = \frac{\text{Fixed costs+ Target profit}}{\text{P/V ratio}} \times 100$$

Sales (in Rupees) for target profit = [(572000+2496000)/52]*100= Rs 59,00,000/-



Exercise 13.9

Roseberry organization's total capacity of production is 5,00,000 units. At present, it is operating at 42% capacity utilization. Following are the cost per unit at 42% level

Selling price	Rs. 100.00
Variable cost	Rs. 65
Fixed cost	Rs. 30
Profit	Rs. 5

Calculate: (i) Present level of profit, BEP in units & rupees, MOS in units & rupees (ii) What will be the profit of the organization if it operates at 60% capacity?

Solution (i) Present level of profit, BEP in units & rupees, MOS in units & rupees

Present level of sales= 42% of 500000 units= 210000 units

Particulars	Amount in Rs.
Total sales (210000*100)	2,10,00,000
Less: variable cost (210000*65)	1,36,50,000
Contribution (Sales- Variable cost)	73,50,000
Less: Fixed cost (210000*30)	63,00,000
Profit	10,50,000

Contribution (in units)= Sales- variable cost= 100-65= Rs 35 per unit

BEP (in units)= Fixed cost/ contribution per unit= 6300000/35= 180000 units

BEP (in Rupees)= (Fixed cost/ contribution per unit)* selling price per unit= (6300000/35)*100= Rs. 1,80,00,000/-

P/V ratio= (Contribution/Sales)* 100= (35/100)*100= 35%

MOS(in units)= Total sales in units- BEP sales in units= 210000-180000= 30000 units

MOS(in Rupees)= Total sales- BEP sales= 21000000-18000000= Rs. 30,00,000

(ii) What will be the profit of the organization if it operates at 60% capacity?

60% of capacity= 60%* 500000 units= 3,00,000 units

Fixed cost will remain same at Rs. 63,00,000

Particulars	Amount in Rs.
Total sales (300000*100)	3,00,00,000
Less: variable cost (300000*65)	1,95,00,000
Contribution (Sales- Variable cost)	1,05,00,000
Less: Fixed cost (210000*30)	63,00,000
Profit	42,00,000



Exercise 13.10

From the below information calculate BEP (in units) and the sales required to earn profit of Rs. 250000:

Fixed overheads	Rs. 520000
Variable cost per unit	Rs. 12
Selling price per unit	Rs. 25

Calculate MOS at profit of Rs. 250000/-

Solution

i. Contribution (in units)= Sales- variable cost= 25-12= Rs 13

ii. BEP (in units)= Fixed cost/ contribution per unit= 520000/13= 40000 units

iii.

$$\text{Sales (in Rupees) for target profit} = \frac{\text{Fixed costs+ Target profit}}{\text{P/V ratio}} \times 100$$

P/V ratio= (Contribution/sales)*100= (13/25)*100= 52%

Expected Sales (in rupees)= (520000+250000)/52%= Rs. 14,80,769/-

iv. Calculate MOS at profit of Rs. 250000/-

MOS(in Rupees)= Total sales- BEP sales

Total sales to earn profit of Rs. 250000= Rs. 14,80,769/-

BEP (in Rupees)= BEP in units* Selling price per unit= 40000*25= Rs. 10,00,000

MOS(in Rupees)= 1480769-1000000= Rs. 4,80,769/-



Exercise 13.11

XTM Ltd. Is having following data at a sales of 8000 units

Item	Amount (in Rs)
Direct Material	4,00,000
Direct labour	2,50,000
Factory overheads	1,15,000
Administration overheads	2,25,000
Selling & Distribution overheads	1,35,000
Sales	15,00,000

Calculate P/V ratio, BEP, MOS & current profit.

Solution

As per the information furnished above, the only cost which is fixed in nature is the administration overheads. Hence fixed cost is considered as Rs. 2,25,000/-

Particulars		Amount in Rupees
Sales		1500000
Less: Direct material	400000	
Direct labour	250000	
Factory overheads	115000	
Selling & Distribution overheads	135000	
Total variable cost		900000
Contribution		600000
Less: Fixed cost (Administration cost)		225000
Profit		375000



13.12 LET US SUM UP

In this unit we have discussed the Following concepts:

- Marginal costing is the cost of producing one additional unit of product. It is a technique of cost control and decision making.
- Absorption costing is a technique of cost ascertainment.
- Differential costing “is a technique based on preparation of ad hoc information in which only cost and income differences between two alternatives/ courses of actions are taken into consideration.”
- Cost Volume Profit Analysis (C V P) is the analysis of the relationship existing amongst costs, sales revenues, output and the resultant profit.
- The Contribution refers to the difference between Sales and marginal Cost of Sales.
- Break-Even Analysis is also called Cost Volume Profit Analysis. The term Break-Even Analysis is used to measure inters relationship between costs, volume and profit at various level of activity. It is a point of no profits no loss.

- Profit Volume Ratio is also called as Contribution Sales Ratio (or) Marginal Income Ratio (or) Variable Profit Ratio. It is used to measure the relationship of contribution, the relative profitability of different products, processes or departments.
- The term Margin of Safety refers to the excess of actual Sales over the break-even sales.
- The angle formed by the sales line and the total cost line at the break-even point is known as Angle of Incidence.



13.13 FURTHER READING

1. Khatri D K (2015), '*Accounting for Management*', Mc Graw Hill Education (India) Pvt. Ltd., New Delhi
2. M.N Arora (2012), '*A Textbook of Cost & Management Accounting*', Vikash Publishing House Pvt. Ltd., New Delhi.
3. M. Hanif(2013), '*Modern Cost & Management Accounting*', Mc Graw Hill Education (India) Pvt. Ltd., New Delhi
4. Ravi M. Kishore(2013), '*Advanced Management Accounting'*, Taxmann Allied Services (P) Ltd., New Delhi.



13.14 ANSWER TO CHECK YOUR PROGRESS

Ans to Q1: Marginal costing is a technique/ system of presentation of sales and cost to the management for taking short term decisions with respect to product mix, make or buy, accepting special orders etc. It is used by management for cost control, budgeting and profit planning purposes.

Ans to Q2: Following are the four characteristics of Marginal Costing System

1. Segregation
2. Variable costs as product cost
3. Fixed costs as period cost

4. Inventory valuation

Ans to Q3: The following are the various applications of marginal costing technique in managerial decision making process:

1. Make or buy decisions
2. Acceptance of special orders
3. Discontinuation of a product
4. Optimizing product mix
5. Shutdown vs continuation

Ans to Q4: Marginal costing system has certain limitations which are described below:

a. Ineffective in capital-intensive industries
b. Difficulty in segregation of costs
c. Difficulty in application
d. Ignores time factor

Ans to Q5: A break-even chart is a graphical presentation which indicates the relationship between cost, sales and profit.

Ans to Q6: The angle formed by the sales line and the total cost line at the break-even point is known as Angle of Incidence



13.15 MODEL QUESTIONS

Q 1: Define Marginal Costing ?

Q 2: Define Marginal Costing. Briefly explain the features of marginal costing?

Q 3: What are the differences between Absorption costing and marginal Costing ?

Q 4: What are the important decision making areas of Marginal costing?

Q 5: Briefly explain the advantages and limitations of Marginal Costing?

Q 6: What do you understand by Cost Volume Profit Analysis?

Q 7: Briefly explain the objectives of cost volume profit analysis.

Q 8: Explain Marginal cost equation.

Q 9: What do you understand by Break-Even Analysis?

Q 10: Write short notes on :

a) Profit volume ratio

b) Margin of Safety

c) Break-Even chart

d) Angle of Incidence

Q 12: From the following particulars, you are required to find out

(a) Contribution

(b) Break-even point in units

(c) Margin of Safety

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UNIT: 14 BUDGETARY CONTROL

UNIT STRUCTURE

14.1 Learning Objectives

14.2 Introduction

14.3 Meaning of Budget

14.4 Budgetary Control

14.5 Objectives of Budgetary Control

14.6 Essential features of Budgetary Control

14.7 Steps in Budgetary Control

14.8 Types of Budgets

14.9 Merits of Budgetary Control

14.10 Limitations of Budgetary Control

14.11 Practical Problems

14.12 Let Us Sum Up

14.13 Further Reading

14.14 Answer to Check Your Progress

14.15 Model Questions

14.1 LEARNING OBJECTIVES

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

- define budget
- analyze the concept budgetary control
- explain different types of budget
- explain objectives and features of budgetary control
- discuss the advantages and limitations of Budget Control

14.2 INTRODUCTION

In this unit, we are going to discuss about budgetary control. Budgeting has come to be accepted as an efficient method of short-term planning and control. It is employed, no doubt, in large business houses, but even the small businesses are using it at least in some informal manner.

Through the budget, a business wants to know clearly as to what it proposes to do during an accounting period or a part thereof. The technique of budgeting is an important application of Management Accounting. Probably the greatest aid to good management that has ever been devised is the use of budgets and budgetary control. It is a versatile tool and has helped the managers to cope with many problems including inflation.

14.3 MEANING OF BUDGET

Budgets are one of the most important aspects of any system- be it in personal life, an organization or a nation. At personal level, most people make budgets for future planning. Against their income people make budget to plan their expenditures. Knowingly or unknowingly many people already doing the budgeting process.

Similarly an organization also prepares budget to plan their expenses vis a vis their income. The business budgets are however, prepared in detail and involve detail work. It is a formal expression of management's plan for the future. The act of preparing budget is called ***Budgeting.*** It involves sequential steps to prepare a budget. Budgeting begins with the forecast and ends with the outcome in the form of budget.

A budget is a formal expression of the expected income and expenditures for a definite future period. It is the estimate of revenue and expense about a definite activity to be accomplished in a certain time period. A budget is generally prepared for next financial year or next twelve months. However if situation demands, it can be prepared for shorter duration also. A budget is always object specific and based upon certain constraints. With the help of budget, responsibility can be fixed regarding the achievement of targets and performing the duties. The Chartered Institute of Management Accountants (CIMA) London, has defined a budget as *" a financial and/or quantitative statement, prepared prior to a definite time, of the policy to be pursued during that period for the purpose of attaining a given objective"*

14.4 BUDGETARY CONTROL

Budgetary control is a system of controlling costs through preparation of budgets. It is a wider term and has broader scope which includes budget as well as the process of preparing budget, which is also known as budgeting. Budgetary control includes mainly:

- Making a forecast
- Using forecast to prepare budget
- Communicates objectives or targets through budget
- Measurement of actual performance
- Comparing actual performance against the budget
- Finding out variance
- Taking corrective action to eliminate variance.

According to CIMA, London, *"Budgetary control is the establishment of budgets relating to the responsibilities of executives of a policy and the continuous comparison of the actual with the budgeted results, either to secure by individual action the objective of the policy or to provide a basis for its revision."*

14.5 OBJECTIVES OF BUDGETARY CONTROL

Budgetary Control is planned to assist the management for policy formulation, planning controlling and co-ordinating the general objectives of budgetary control and it can be stated in the following ways:

1. **Planning:** A budget is a financial plan of action for a business over a definite period of time. The main objective of preparing budget is to do planning for future course of action. The main feature of budgetary control is to do planning by showing financial implications of the operations. Hence, budgeting forces management to think for future, trying to anticipate possible problems and their solution.
2. **Coordination:** Another objective of budgetary control is to ensure proper coordination among various departments. In absence of coordination the head of the various department will follow course of action which may be beneficial for their respective department but may not be

beneficial for the organization as a whole. For example, the purchase department may be interested in buying raw materials in bulk for availing good discount from the supplier. However holding high quantity of raw materials in stock may increase the inventory cost or damage of materials which results in loss for the overall organization.

3. **Communication:** Budget is an excellent devise to communicate plans to various managers. With the help of budget, the higher management communicates its expectations to the lower level management so that the overall goal of the organization is achieved.
4. **Motivation:** A budget is a useful devise for motivating employees to perform in line with the company objectives. If individuals have actively participated in the preparation of budgets, it acts as a strong motivating force to achieve the targets.
5. **Control:** One of the prime objectives of budgetary control is to ensure control by measuring actual performance against the pre set standards. Control is exercised by comparing the actual number with the budgeted number. The difference between the two is reported to the management for taking corrective actions.
6. **Performance Evaluation:** A budget helps to evaluate the performance of the managers by comparing the numbers achieved vis a vis their budgeted target. Many companies incentivize their employees on the basis of their achievement. Many a times the promotion is also linked to the achievement of budgeted figures.



CHECK YOUR PROGRESS

Q1: Define Budget.

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Q2: State any four objectives of budgetary control.

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14.6 ESSENTIAL FEATURES OF BUDGETARY CONTROL

The following are the essential features of budgetary control

1. **Establishment of Budget:** One of the main features of budgetary control is to prepare budgets for each function/ department of the organization.
2. **Comparison of actual performance:** Budgetary control system ensures that the actual performance of the function/department is continuously compared against the budgeted standards.
3. **Analysis of variations:** Another important features of budgetary control is to analyze the reason for variance in the actual performance from that of the budgeted performance.
4. **Taking remedial action:** Budgetary control ensures that management takes remedial action where necessary to eliminate the variance in actual vis a vis budgeted performance.
5. **Revision of Budget:** Wherever necessary the management must revise the budget in view of the changes in conditions.

14.7 STEPS IN BUDGETARY CONTROL

The following are the common steps of a budgetary control system:

1. **Formulation of budget committee:** A budget committee is the apex body of the budgetary control system. The committee may comprise the sales manager, production manager and finance manager under the direction of the MD or CEO. The main function of this committee is to issue guidelines to various departments for the preparation of budget. They develop the time frame for preparing the budget. The main task of this committee is to approve or disapprove the budget forwarded by different departments. The committee has the right to make amendments and alteration in the budget prepared by various departments to ensure that the organization's long term objectives are achieved.

2. **Preparation of budget manual:** It is document prepared under the supervision of budget committee. The manual states the specific procedure to be followed in the development of the budget so that uniformity is maintained across years and across departments. Generally a budget manual contains the following
   i. A statement of the objective of the business.
   ii. A statement of duties and responsibilities of different personnel involved in the preparation of the budget
   iii. Time schedule for budget preparation
   iv. Forms of different schedules
   v. Procedures for budgetary control
   vi. Procedures for obtaining approval
3. **Budget Period:** Budget can be prepared for short term as well as long term. Mainly budgets are prepared for a period of one year, however few budgets like sales budget may be prepared for a shorter duration like quarterly or half yearly. The budget period is largely dependent upon the nature of the business. For example organization which is in to ship- building or aircraft manufacturing, prepare budget which are more than a year. Whereas businesses which are seasonal in nature may prepare budget for less than a year.
4. **Budget factor:** Budget in an organization are prepared under certain constraints like limited raw materials, labour etc. These limiting factors affect the budget estimates and priorities. A clear identification of budget factors facilitates the adoption of clear budget preparation guidelines.
5. **Decision about activity level/ capacity utilization:** The capacity utilization or activity level is decided after considering the demand of the product in the market, It is the responsibility of the top management to decide about the expected capacity utilization level to be maintained during the budget period. A clear specification of activity level or capacity utilization helps each and every department in providing accurate data for the preparation of budgets.
6. **Base of budget:** A base is essential to prepare a budget. The base can be selected depending upon the type of activity, organizational

philosophy etc. of the organization. For example, previous year's budget, current year's actual performance, forecast about the future outcomes etc. can be the base for preparing the current year budget.

7. **Preparation of organization chart:** An organization chart is essential for successful budget system. Each member of the management team must know of his responsibility and authority through organizational chart. The chart will depend upon the nature and size of the organization.
8. **Control parameters:** One of the key objectives of budgetary control is to exercise control over the business activities with the help of budgeting process. It is the responsibility of the budget committee to specify the parameters on which control is to be exercised. The selection control parameters may vary from organization to organization. It is mostly dependent on key factors, nature of cost involved, appetite of the management towards risks, environmental factors etc.
9. **Follow up:** One of the critical steps for implementing successful budgetary system is the follow up. It involves ensuring that the pre defined target are achieved and take remedial measures wherever necessary. The budgetary control system should have the provision for follow up so that evaluative steps can be initiated to ensure the successful implementation of the budgetary system.



CHECK YOUR PROGRESS

Q3: What are the essential features of Budgetary Control?

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Q4: What is the function of Budget Committee

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14.8 TYPES OF BUDGETS

Following are the common types of budget prepared by an organization depending upon the requirement and specification of the budget committee.

1. Classification on the basis of Time
   a. Long Term Budgets
   b. Short Term Budgets
   c. Current Budgets
2. Classification on the basis of flexibility
   a. Fixed budget
   b. Flexible budget
3. Classification on the basis of functions
   a. Functional budget
   b. Master budget
4. Classification on the basis of types of expenditure
   a. Capital Expenditure budget
   b. Revenue expense budget
   5. Zero base Budgeting

The following diagram shows the various types of Budgetary Control:

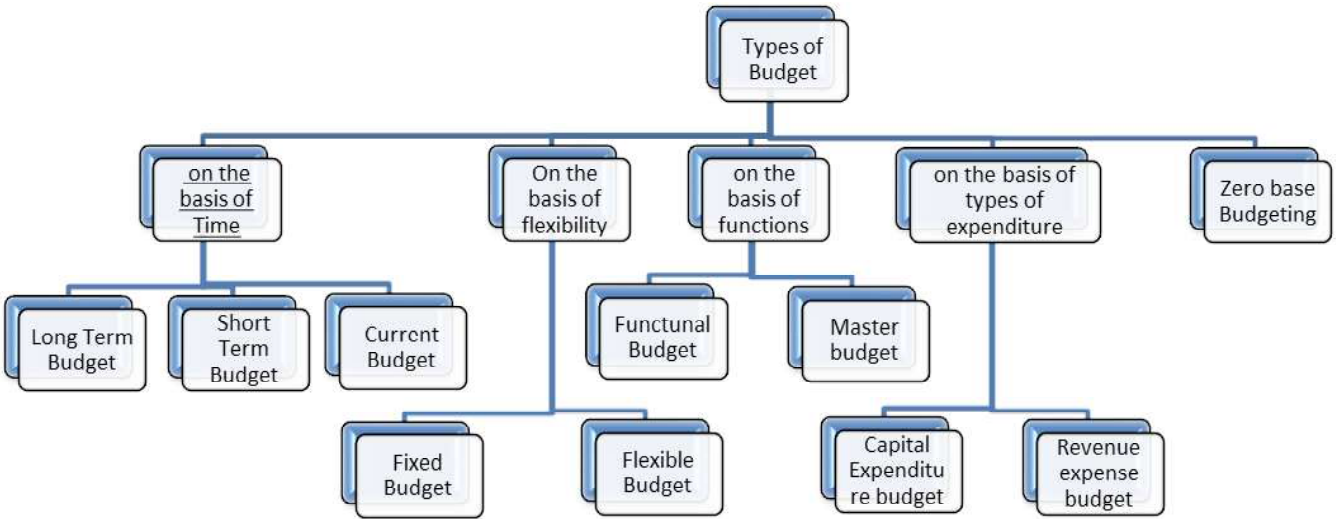


Fig : 14.1 Types of Budgetary Control

Let us discuss the types of budget in detail below:

1. **Classification on the Basis of Time**

   a. **Long-Term Budgets :** Long-term budgets are prepared for a longer period that varies between five to ten years. It is usually developed by the top level management. These budgets summaries the general plan of operations and its expected consequences. Long-Term Budgets are prepared for important activities like composition of its capital expenditure, new product development and research, long-term finance etc.

   b. **Short-Term Budgets:** These budgets are usually prepared for a period of one year. Sometimes they may be prepared for even a shorter period as for quarterly or half yearly. The scope of budgeting activity may vary considerably among different organizations.

   c. **Current Budgets:** Current budgets are prepared for the current operations of the business. The planning period of a budget is generally for months or weeks. As per ICMA London, "current budget is a budget which is established for use over a short period of time and related to current conditions."

2. **Classification on the basis of Flexibility**

   a. **Fixed budget:** It is a type of budget which is prepared keeping in my only one level of output. This budget has revenue and expense estimate only for one level of activity. It is prepared on the assumption that all the key factors such as revenue, output, expense etc. can be estimated with fair degree of accuracy. Fixed budget is suitable for such organization where not much of the fluctuations are expected in the activity level. Output level or capacity utilization remains same almost throughout the year.

   b. **Flexible budget**: Flexible budget is one which is designed to change in relation to the level of activity achieved. Thus this type of budget might be prepared for various level of activity such as 80%, 90%, 100% of capacity utilization. In certain organization it is difficult to forecast the output and revenue with accuracy due to the nature of the industry, in such situation flexible budget can be used as a

tool for exercising control. Unlike fixed budget which is applicable only in one set of operating conditions, flexible budget are adaptable to any given set of operating conditions. Hence flexible budgets are more realistic, practical and useful compared to fixed budget which have limited application.

3. Classification on the basis of Functions

a. Functional budgets: An organization consists of various functions like sales, production, purchase, labour etc. when budgets are prepared for each functional area of the organization, such practice is called preparing budget on the basis of the functions of the organization. There are many types of functional budgets, of which the following are important.

I. Sales Budget: Sales budget is considered as one of the most important as well as most difficult budget to prepare. Because if the sales figure is incorrect, then practically all other functional budget will be affected. It is difficult to prepare as it is not easy to estimate consumer demand, particularly when a new product is launched. The sales budget forecast what the company can reasonably expect to sell during the budget period. The following factors should be taken into consideration at the time of forecasting sales.

- Current level of sales and trend of last few years.
- General economic and industrial environment of the place where it operates.
- Plan and actions of competitors
- Policy of the Government
- New product development with superior technology
- Advertising and promotional activities
- Any major events which may influence the demand of the product.

II. Production Budget: This budget is prepared after the sales budget. A company would like to align its production facilities according to the sales budget. Once sales budget has been

prepared, it serves as the basis for production budget. For preparing this budget, the manager requires the data about the quantity which can probably be sold during the budget period as well as the data of opening stock of finished goods and estimate of the closing stock of finished goods to be maintained at the end of the year. Following pro forma is used for preparing production budget.

Particulars	***Quantity***
Budgeted sales in units	*********
Add: Expected closing stock in units	*********
Less: Opening stock in units	*********
Budgeted production in units	*********

III. Materials/Purchase Budget: Materials contribute a significant part of the cost of production. Materials budget takes into consideration the quantity of raw materials to be purchased and the rate at which it must be procured. Following is the pro forma of materials/ purchase budget.

Particulars	***Quantity***
Raw materials required for production	*********
Add: Expected closing stock of raw materials to be maintained	*********
Less: Opening stock of raw materials	*********
Quantity of raw materials to be purchased	*********
Rate per unit	*********
Amount needed for purchase	*********

IV. Labour budget: The labour budget represents the forecast of labour requirement to meet the organization's demand. This budget is prepared with two objectives in mind, first to determine the labour cost and the second is to plan for human resources. The labour budget indicates the labour time and number of workers required for each category of work along with the rate at which labour is to be paid.

V. Overhead/Cost budget: Overheads are the indirect expenses which are incurred in production, administration and selling activities. A separate budget is prepared for each type of overheads. Each overhead budget contains the classification of overheads into fixed and variable overhead.

VI. Cash budget: The cash budget is one of the most important budget. It contains detailed estimates of cash receipts from all sources and cash payments for all purposes. It ensures that the business has sufficient cash available to meet its needs. There are three methods of preparing cash budget given below

- *Receipts and Payment method:* This method is usually used for short term cash forecast. The budget in this method begins with opening balance of cash in hand and at bank. To this are added the cash receipts from various sources and deducted all payment to be made in cash. The net figure is the closing cash balance.
- *Adjusted Profit and loss method:* This method is suitable for long term cash forecast. Under this method, the profit is derived from the profit & loss account and is converted into cash figure by preparing an Adjusted Profit & Loss Account. It is often termed as cash flow statement because it converts the profit & loss account into cash forecast. The main difference between this method and the receipt & payment method is that adjusted profit & loss method takes into consideration non-cash items whereas the later takes into account only cash transactions. Under this method, the equation that profit is equal to cash will hold good if there were no credit transactions, accruals, depreciation, capital transactions etc.
- *Balance sheet method:* Under this method, a budgeted balance sheet is prepared with all the items of assets and liabilities except cash and bank balance. After this both the sides are totaled and the balancing figure is taken as cash. If the liabilities are more than assets, it indicates balance of cash in hand or

at bank and if assets exceeds liabilities, it means there is bank overdraft.

b. **Master Budget:** A master budget is a consolidated summary of all the functional budgets. It has generally two parts (a) operating budget which is budgeted profit & loss account and (b) financial budget which is a budgeted balance sheet. Thus master budget consist of projected profit & loss account and a balance sheet. It is generally prepared by the budget office/director and presented to the budget committed for approval. The master budget is finally approved by Board of Directors of the organization.

4. **Classification on the basis of types of Expenditure**

a. **Capital Expenditure budget:** A capital expenditure budget represents all the expenses on fixed assets such new plant & machinery, building, land to be incurred during the budget period. Generally capital expenditure is planned well in advance and broken down into convenient periods such as yearly, half yearly, quarterly or monthly. It involves huge amount of expenditure and hence approval of the top management is essential.

b. **Revenue expense budget:** Revenue expense budget is generally a budget for expenses such as wages, direct expenses, factory overheads, administrative overheads, selling & distribution overheads. It is prepared at regular interval depending upon the capacity utilization of the organization.

5. **Zero Base Budgeting (ZBB):**

Zero base budgeting (ZBB) is a recent development in the area of management control system. This system of budgeting was developed to overcome the drawbacks of traditional budgeting system. Traditional budgeting is prepared by taking last year figure as the 'base figure' and a percentage is added for inflation and for any incremental changes.

However ZBB starts with the zero, means zero is considered as a base and the management of concerned department is required to justify all budgeted expenditures. In other words the base line is 'zero' rather than previous year's budget. ZBB takes the view that every item

of expenditure should be re-evaluated and re-assessed and then fixed. Actual figure of last year is ignored.

The following are the main features of ZBB

- All budget items both new and old are considered as fresh items.
- Amount to be spent on each budget items needs to be fully justified.
- The main focus is on 'why' a department needs to spend on any given activity.
- Managers at all levels participate in ZBB process.

14.9 MERITS OF BUDGETARY CONTROL

The following are the main advantages of budgetary control

1. It helps management to think ahead- to anticipate and prepare for changing conditions.
2. It helps in coordinating the activities of various departments
3. Budgetary control increases production efficiency, eliminates waste and controls the costs.
4. It points out the extent and lack of efficiency in the organization.
5. Budgetary control aims at maximizing profits through careful planning and control.
6. Periodic review of budget will help to check the progress of the target to be achieved.
7. Budgetary control shows management where action is required to control a situation.
8. It ensures that working capital is available for smooth operation of the business.
9. It helps to develop at all levels of management the habit of timely, careful and adequate consideration of all factors before reaching important decisions.
10. It is a motivating devise for young executives.
11. It provides a platform for evaluating subsequent performance.
12. A budgetary control system assists in delegation of authority and assignment of responsibility.

14.10 LIMITATIONS OF BUDGET CONTROL

There are few limitations of budgetary control systems which are as follows:

1) **Budgets are based on forecast:** Absolute accuracy is difficult to achieve since budget is always based upon forecast and estimates. The success of an effective budgetary control system depends upon how accurately the estimates are made.
2) **Budget Needs to be flexible:** A budget programme needs to be flexible and dynamic to suit itself to the volatile business conditions. A budgetary system may be ineffective if it is rigid in nature and are not revised with changing circumstances.
3) **Lack of coordination:** If the coordination among different departments in the organization is not strong enough, it may create problem in achieving the desired results.
4) **Expensive technique:** The implementation of budgetary system is an expensive affair as it involves employment of specialized staff and other expenditure which small organizations may find it difficult to incur.
5) **Incorrect budget may hamper full capacity utilisation:** A budget may prevent achieving the full potential of the organization if it is not planned well in advance. If the budgeted figures are fixed at a lower level compared to its actual potential, it might be detrimental to the overall health of the organization.



CHECK YOUR PROGRESS

Q5: What is capital expenditure budget?

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Q6: State the features of Zero Base Budgeting.

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13.11 PRACTICAL PROBLEMS



Exercise 14.1

A company is in to the manufacturing of hardware for mobile, tablet & laptop. The company has forecast its sales quantities for the year 2017-18 as below:

Units	Selling	Price(in Rs.)
i. Mobile	50000	8000
ii. Tablet	10000	10000
iii. Laptop	20000	25000

Prepare the sales budget for the year 2017-18.

Solution:

Sales Budget for the period 2017-18

Products	Quantity (in units)	Price per Unit (in Rs.)	Sales Value (in Rs.)
i. Mobile	50000	8000	40,00,00,000
ii. Tablet	10000	10000	10,00,00,000
iii. Laptop	20000	25000	50,00,00,000
TOTAL SALES			100,00,00,000



Exercise 14.2

The following are the estimated sales of a company for first 6 months of 2015-16.

Month	Sales (units)	Month	Sales (units)
April	8000	July	12000
May	10000	August	12000
June	11000	September	15000

Finished goods inventory at the end of each month is expected to be 25% of budgeted sales quantity for the following month. The finished goods inventory as on April 1 2015 & Sept 30th 2015 is 3000 & 2500 units respectively. There is no work-in-progress at the end of any month. Prepare the production budget for 1st half of 2015-16.

Solution:

Production Budget for the half year ending 30th September 2015 (in units)						
Month	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*
Budgeted sales in units	8000	10000	11000	12000	12000	15000
Add: Expected closing stock in units *(25% of next month sales units)*	2500	2750	3000	3000	3750	2500
Total Requirement	10500	12750	14000	15000	15750	17500
Less: Opening stock in units *(Closing stock of current month will be opening stock of next month)*	3000	2500	2750	3000	3000	3750
Budgeted production in units	***7500***	***10250***	***11250***	***12000***	***12750***	***13750***

Exercise 14.3

The following are the budgeted production of a company for 6 months of 2015-16.

Month	Budgeted production (units)	Month	Budgeted production (units)
April	5000	July	7000
May	6000	August	7500
June	6000	September	8000

The company maintains the closing balance of finished goods & raw materials as follows:

Stock Items	Closing stock of a month
Raw materials	estimated consumption for next month

Closing stock of raw materials for the month of September 2015 is 24000 units.

Opening stock of raw materials for the month of April 2015 is 15000 units

Every unit of production requires 3 kg of raw materials @ Rs. 6 per kg.

Prepare the Material Purchase Budget (in units and cost) for the 1st half of 2015-16.

Solution:

Materials Prchase Budget for the half year ending 30th September 2015 (in units)						
Month	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*
Required production	5000	6000	6000	7000	7500	8000
Raw materials required for per unit of production (Kg)	3	3	3	3	3	3
Total Raw materials consumed (Kg)	15000	18000	18000	21000	22500	24000
Add: Desired closing stock of raw materials *(100% of next month estimated consumption units)*	18000	18000	21000	22500	24000	24000
	33000	36000	39000	43500	46500	48000
Less: Opening stock of raw materials *(opening stock is equal to closing stock of previous month)*	15000	18000	18000	21000	22500	24000
Purchase of raw materials (Kg)	18000	18000	21000	22500	24000	24000

Cost of Materials Purchase Budget for the half year ending 30th September 2015						
Month	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*
Purchase of raw materials (Kg)	18000	18000	21000	22500	24000	24000
Cost of per kg raw materials (in Rs.)	6	6	6	6	6	6
Total Purchase cost (in Rs)	108000	108000	126000	135000	144000	144000



14.12 LET US SUM UP

In this unit we have discussed the following:

- A budget is a formal expression of the expected income and expenditures for a definite future period.
- The act of preparing budget is called Budgeting. It involves sequential steps to prepare a budget. Budgeting begins with the forecast and ends with the outcome in the form of budget.
- Budgetary control includes mainly:

- Making a forecast
- Using forecast to prepare budget
- Communicates objectives or targets through budget
- Measurement of actual performance
- Comparing actual performance against the budget
- Finding out variance
- Taking corrective action to eliminate variance.

- Objectives of Budgetary Control are as follows:
  1. Planning
  2. Coordination
  3. Communication
  4. Motivation
  5. Control
  6. Performance Evaluation
- The following are the common steps of a budgetary control system:
  a. Formulation of budget committee
  b. Preparation of budget manual:
  c. Budget Period
  d. Budget factor
  e. Decision about activity level/ capacity utilization
  f. Base of budget
  g. Preparation of organization chart
  h. Control parameters
  i. Follow up
- Following are the common types of budget prepared by an organization:
  a. Classification on the basis of Time
  b. Classification on the basis of flexibility
  c. Classification on the basis of functions
  d. Classification on the basis of types of expenditure
  e. Zero base Budgeting
- There are few limitations of budgetary control systems which are as follows:

a. Incorrect budget may hamper full capacity utilization
b. Budgets are based on forecast
c. Budget Needs to be flexible
d. Lack of coordination
e. Expensive technique



14.13 FURTHER READING

1. Khatri D K (2015), '*Accounting for Management*', Mc Graw Hill Education (India) Pvt. Ltd., New Delhi
2. M.N Arora (2012), '*A Textbook of Cost & Management Accounting*', Vikash Publishing House Pvt. Ltd., New Delhi.
3. M. Hanif(2013), '*Modern Cost & Management Accounting*', Mc Graw Hill Education (India) Pvt. Ltd., New Delhi
4. Ravi M. Kishore(2013), '*Advanced Management Accounting'*, Taxmann Allied Services (P) Ltd., New Delhi.



14.14 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q1: Budget is a financial and/or quantitative statement, prepared prior to a definite time, of the policy to be pursued during that period for the purpose of attaining a given objective"

Ans to Q2: The four objectives of budgetary control are:

a. Planning
b. Coordination
c. Communication
d. Motivation

Ans to Q3: The following are the essential features of budgetary control

a. Revision of Budget
b. Comparison of actual performance
c. Analysis of variations
d. Taking remedial action

e. Establishment of Budget

Ans to Q4: A budget committee is the apex body of the budgetary control system. The committee may comprise the sales manager, production manager and finance manager under the direction of the MD or CEO. The main function of this committee is to issue guidelines to various departments for the preparation of budget. They develop the time frame for preparing the budget. The main task of this committee is to approve or disapprove the budget forwarded by different departments.

Ans to Q5: A capital expenditure budget represents all the expenses on fixed assets such new plant & machinery, building, land to be incurred during the budget period.

Ans to Q6: The main features of Zero Base Budgeting are:

- All budget items both new and old are considered as fresh items.
- Amount to be spent on each budget items needs to be fully justified.
- The main focus is on 'why' a department needs to spend on any given activity.
- Managers at all levels participate in ZBB process.



14.15 MODEL QUESTIONS

Q 1: What is meant by a budget ?

Q 2: What are the essentials of a budget ?

Q 3: What is meant by budgetary control ?

Q 4: Explain briefly the characteristics of an effective budget ?

Q 5: What are the objectives of Budgetary Control ?

Q 6: What are the advantages of Budgetary Control ?

Q 7: What are the limitations of Budgetary Control ?

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UNIT:15 STANDARD COSTING

UNIT STRUCTURE

15.1 Learning Objectives

15.2 Introduction

15.3 Definition and Meaning of Standard Costing

15.4 Differences between Standard cost and Budgetary Control

15.5 Establishment of Standards

15.6 Advantages and Limitations of Standard Costing

15.7 Standard Hour and Standard Cost Card

15.8 Variance analysis

15.9 Classification of Variance analysis

- 15.9.1 Material Cost Variance
- 15.9.2 Labour Cost Variance
- 15.9.3 Overhead Cost Variance

15.10 Let Us Sum Up

15.11 Further Readings

15.12 Answers To Check Your Progress

15.13 Model Questions

15.1 LEARNING OBJECTIVES

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

- explain the meaning of Standard Costing
- describe the advantages and limitations of Standard Costing
- discuss the determination of Standard Cost
- explain the concept of variance analysis and its various types.

15.2 INTRODUCTION

In the earlier unit, we discussed about Budgetary control. Now in this unit we are going to discuss the concept of Standard Costing and variance analysis.

Standard Costing is a technique which helps us to control costs and business operations. It aims at elimination wastes and increasing efficiency in performance through setting up standards or formulating cost plans. We will also discuss the difference between estimated Costs and Standard Costs and the advantages and limitations of Standard Costing. Again, we will get a fair idea on determination of Standard Cost.

Also, at the end of this unit we will discuss the variance analysis, its various types and its classifications. One of the prime objectives of any business organization is to control costs. Costs can be controlled by setting some standards to compare the actual outcome of business activities.

15.3 DEFINITION AND MEANING OF STANDARD COSTING

Standard costing is one of the popular methods of cost control. In this method, all the costs are pre-determined. That means based on the past data or past experience or expertise, the cost of performing an activity is fixed (pre-determined) in the budgeting stage of a business. In this way, all the costs under consideration are pre-determined. These pre-determined costs are referred to as standard costs. Now the next step is the execution of the work and this needs actual expenditure. So in this stage all costs are incurred and actual costs are measured. Theses actual costs are then compared with the pre-determined cost or standard costs in order to find the deviation. This deviation is known as variances. Some variances are favourable and some are not favourable for the business. These variances are then reported to the management for taking corrective actions so that actual costs adhere to the standard costs.

Chartered Institute of Management Accountants (CIMA, London) defined Standard Cost as - “a predetermined cost which is calculated from managements standards of efficient operations and the relevant necessary expenditure. They are the predetermined costs on technical estimate of material, labor and overhead for a selected period of time and for a prescribed set of working conditions”. So, standard costing is applying

the methodology or techniques to ascertain the standard cost. CIMA, London defined Standard Costing as follows:-

"the preparation of standard costs and applying them to measure the variations from actual costs and analysing the courses of variations with a view to maintain maximum efficiency in production." However, the Institute of Chartered Accountants of India (ICAI) defines standard costing in simple words as follows:-

"Control technique that reports variances by comparing actual costs to pre-set standards so facilitating actions through management by exception."

Thus from the above definitions it is clear that standard cost is a planned cost and used for the purpose of cost control and standard costing the techniques to do the same.

Standard costing is an important concept of cost accounting. Standard costing is the technique whereby standard costs are computed and subsequently compared with the actual cost to figure out the difference between the two. The difference is known as *variance,* which then analyzed to know the causes thereof so as to provide a basis of control.

15.4 DIFFERENCES BETWEEN STANDARD COSTING AND BUDGETARY CONTROL

The main objective of Standard Cost as well Budgetary Control is the cost control. Both the methods establish predetermined targets of performance and thereby measure the actual performance. Then variances or deviations are found by comparing actual performance with the predetermined performance targets. Both these techniques help management to take corrective measures and important and complementary to each other. In spite of these similarities there are some differences between standard cost and budgetary control which may be pointed out below:

Sl. No.	Standard Costing	Budgetary Control
1	Standard costing is based on past experience	It is based on forecast about future course of action.
2	It focuses on cost only	It focuses on cost as well as revenue
3	It is individualistic in nature, standards are determined for each and every product separately and not collectively	Budgetary control considers business as a whole and budgets are prepared accordingly.
4	It can be applied to production and sales function.	It can be applied to each functional area of the business enterprise.
5	Standard costing can be applied only when the standardization of products and services is possible.	It does not require standardization of products and services
6	It can be applied to programmed activities only.	Budgetary control can be applied to non programmed activities also.
7	Standard costing is product and activity oriented.	Budgetary control is division and organization oriented.
8	Usually standard costing has no precise time frame for applicability.	Budgetary control has to be applied within precise time frame only.

15.5 ESTABLISHMENT OF STANDARDS

Appropriate standard has to be established in order to implement Standard costing effectively. The following steps must be carried out to determine proper standards.

1. ***Establishment of cost centers:*** The first step is to establish cost centers with clear defined areas of responsibility. The cost center related to a person is known as personnel cost center and the cost center related to products or machineries is termed as impersonal cost center.

2. ***Classification of Accounts:*** The next step in the process is to classify accounts as per the functions, revenue items etc. The organsation may use codes and symbols to identify various classes of accounts.
3. ***Types of Standards:*** Standards may be divided in following two types
   a. Basic standards: These are the standards which are established for indefinite period of time. Generally industries which manufacture small range of products over a long period of time apply this type of standards. The standards are revised if there is any change in the materials or technology productions.
   b. **Current Standards:** These standards are in operation for limited period of time and are related to current conditions. There are three types of current standards, they are.
      i. Ideal Standards: While setting the ideal standards, it is assumed that all favorable conditions will prevail and management will operate at its highest efficiency level. However, in practice the ideal standards may have adverse effects as these are set on assumptions rather than reality.
      ii. Expected Standards: These standards are based on expected performance after taking in to consideration a reasonable level of unavoidable losses. This is the most commonly used type of standard.
      iii. Normal Standards: This standard is based on the average performance in the past. The objective of setting such a standard is to eliminate the variations in the cost which arise out of trade cycles.
4. ***Setting Standard Costs:*** The success of standard costing depends on the reliability, accuracy and acceptance of standards. Standard costs are set for each element of costs. The various elements of cost are
   a. Setting standards for Direct Materials: These includes material price standard and material usage standard.
   b. Setting standards for Direct Labor: This includes labor rate standard and labor time standard.
   c. Setting standards for Direct Expenses
   d. Setting standards for Overheads

15.6 ADVANTAGES AND LIMITATIONS OF STANDARD COSTING

ADVANTAGES OF STANDARD COSTING:

The following are the important advantages of standard costing:

1. It guides the management to evaluate the production performance.
2. It helps the management in fixing standards.
3. Standard costing is useful in formulating production planning and price policies.
4. It guides as a measuring rod for determination of variances.
5. It facilitates eliminating inefficiencies by taking corrective measures.
6. It acts as an effective tool of cost control.
7. It helps the management in taking important decisions.
8. It facilitates the principle of “Management by Exception.”
9. Effective cost reporting system is possible.

LIMITATIONS OF STANDARD COSTING:

Besides all the benefits derived from this system, it has a number of limitations which are given below :

1. Standard costing is expensive and a small concern may not meet the cost.
2. Due to lack of technical aspect, it is difficult to establish standards.
3. Standard costing cannot be applied in the case of a concern where non-standardised products are produced.
4. Fixing of responsibility is difficult. Responsibility cannot be fixed in the case of uncontrollable variances.
5. Frequent revision is required while insufficient staff is incapable of operating this system.
6. Adverse psychological effects and frequent technological changes will not be suitable for standard costing system.

15.7 STANDARD HOUR AND STANDARD COST CARD

1. **Standard Hour:** An organization produces different types of products which are measured in different units. Hence it is important to have a standard unit of measurement which can be applicable to all the items produced by that organization. A common practice is to express the various units in terms of time, known as *standard hour.* The standard

hour is the quantity of output or amount of work which should be performed in one hour. For example, if 100 units of product are produced in one hour, then an output of 5000 units would represent 50 standard hours.

2. **Standard Cost Card:** The next step post establishment of standard costs is to prepare standard cost card. It records the standard material, labor and overhead costs. Such a card is maintained for each product or service. A specimen is given below:

Standard Cost Card

Item Code: B 205 Date of fixing standard: 1st April 2016

Unit: Dozen Date of revision

……

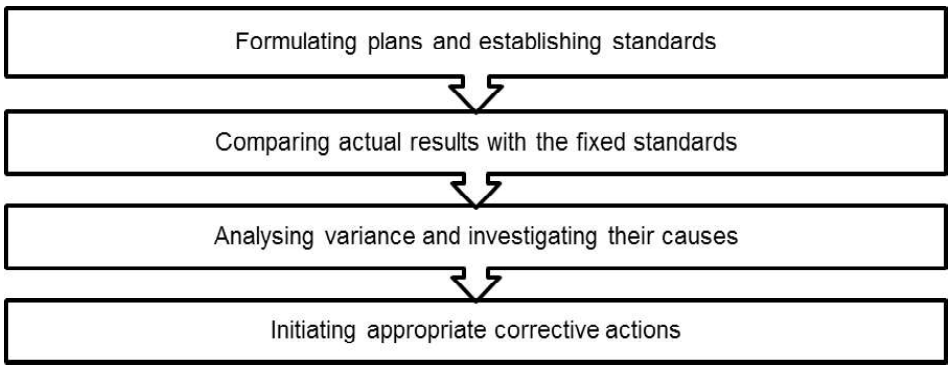
	Rate (Rs.)	Dept. I (Rs.)	Dept. II (Rs.)	Total (Rs.)
Direct Materials:				
10 units of material A	50	200	-	10000
15 units of material B	70	-	250	17500
Total				27500
Direct Labor:				
Machine operator				
16 hours	50	80	-	4000
20 hours	50	-	100	5000
Total				9000
Factory overheads:				
Machine Hour rate I 16 hrs	20	300	-	6000
Machine Hour rate II 20 hrs	30	-	200	6000
Total				12000

Cost Summary

Direct Materials	27500
Direct Labor	9000
Factory overheads	12000
	48500

15.8 VARIANCE ANALYSIS

Variance analysis represents the difference between actual cost and standard cost. This variance may be favorable (where actual cost is less than standard cost) or unfavorable (where actual cost is more than standard cost). The probable cause of any variance is identified and corrective action is initiated to control the variance. Under variance analysis cost measurement is done individually for each element of production i.e, material, labor and overheads. The process involved in the variance analysis is shown below.



According to CIMA, London cost variance is “the difference between a standard cost and the comparable actual cost incurred during a period”. CIMA also defined variance analysis which is “the process of computing the amount of variance and isolating the causes of variance between actual and standard.”

Thus from the above definitions it is clear that variance analysis is an important tool which helps management to find out the deviations from standards.

Usage of Variance Analysis

There is various usage of variance analysis for an organization. Given below are some of the benefits of using variance analysis.

- It helps in decision making

- Maintain coordination among various departments to achieve the common goal of the organization.
- Variance Analysis helps in fixing selling price which depends upon the cost of production.
- Variance Analysis identifies the problem areas of the operations
- Helps in forecasting future needs of the business.
- Inventory costing can be reduced by proper usage of variance analysis.
- It helps in manufacturing a product at the lowest cost while maintaining the quality standards.

15.9 CLASSIFICATION OF VARIANCE ANALYSIS

Since variances are related to the cost of production, It involves costs related to material, labor and overheads. The below table shows the summary of different types of variances associated in an organization.

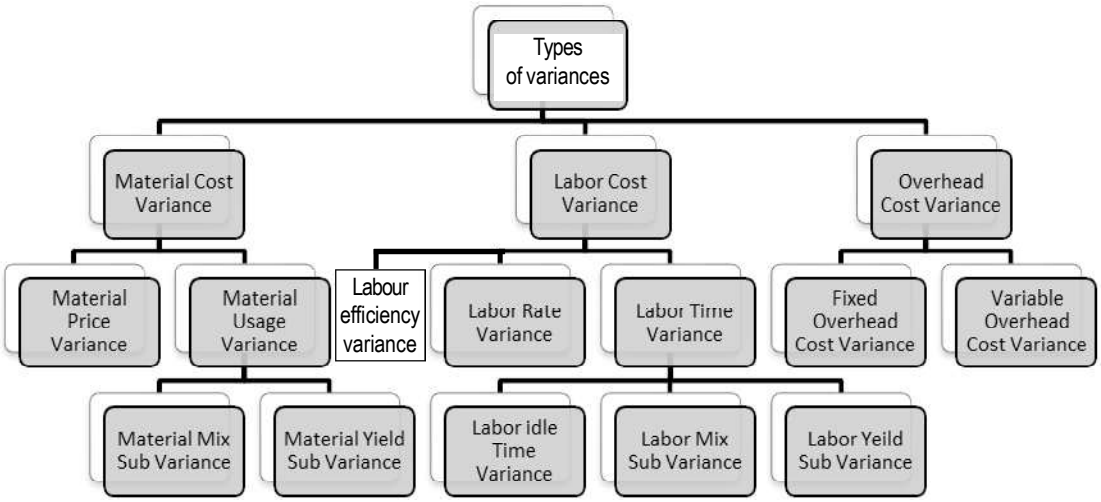


Fig : 15.1

15.9.1 Material Cost Variance

It is the difference between the standard cost of the direct material that has been set for output achieved and the actual cost incurred on direct material. The material cost variance can be computed using the following formula:

Material Cost Variance= Standard cost of actual output- Actual cost

MCV = SC – AC

= (Standard Cost of Actual Output × Standard Price) – (Actual Quantity × Actual Price)

MCV= (SQ × SP) – (AQ × AP)

Thus we see from the above formula that

SC = Standard Cost of Actual Output

SP = Standard Price

AQ= Actual Quantity

AP=Actual Price

Exercise 15.1



An official cabinet making company uses ply for making cabinets. It is known from the past company records that –

Standard quantity of ply per cabinet	: 3 square feet
Standard price per square feet of ply	: Rs.120
Actual production of cabinets	: 500
Ply actually used	: 1400 square feet
Actual purchase price of ply per square feet	: Rs.130.

Considering above information, find out the material cost variance.

Solution: We know that

Material Cost Variance = Standard Cost of Actual Output – Actual Cost

MCV = SC – AC

= (Standard Cost of Actual Output × Standard Price) – (Actual Quantity × Actual Price)

MCV= (SQ × SP) – (AQ × AP)

= (500 × 3 × 120) – (1400 × 130)

= 2000 (A)

Thus, we can conclude that material cost variance is Rs.2000 adverse and not a favourable variance for the company.

Again, Material Cost Variance can also be classified into two variances viz., Material Price Variance and Material Usage Variance which can be expressed in the following formula:-

Material Cost Variance = Material Price Variance + Material Usage Variance

Let us now briefly explain these two variances below.

1. **Material Price Variance:** According to C.I.M.A, London, Material Price Variance (MPV) is – "that portion of the material cost variance which is due to the difference between the standard price specified and the actual price paid".

It measures the difference between what is actually paid for a given quantity of direct materials and what should have been paid as per standard set. The formula for calculating Material price variance is:

Material Price variance = (Standard Price- Actual Price) X Actual Quantity of Materials = (SP – AP) ×AQ

Material Price variance is considered favorable when the standard price exceeds the actual price and it is considered adverse when actual price paid is more than standard price. The factors responsible for material price variance are:

- Fluctuations in market price.
- High/ Low transportation charge.
- Purchasing at uneconomical lot.
- Not availing quantity discount.
- Faulty standard settings
- Changes in Govt. taxes and duties.
- Unplanned purchases to meet immediate delivery.

Thus we see that MPV is the difference between the standard price and the actual price multiplied by the actual quantity. If the MPV is positive then it is usually regarded as favourable for the company and referred to as '**F**'. If the MPV is found to be negative, then it is not regarded as a favourable variance and referred to as '**A**', which means adverse. The adverse price variance may be due to fluctuations in the market prices of materials, change in discounts, purchasing quantity, delivery costs, change in quality, sudden change in purchase quantity, change in exercise duty, custom duty, other tariffs etc.

Let us take an example to understand it better.



Exercise 15.2

A furniture making company uses ply for making office tables. It is known from the past company records that –

Standard quantity of ply per table : 3 square feet

Standard price per square feet of ply : Rs.120

Actual production of tables : 500

Ply actually used : 1400 square feet

Actual purchase price of ply per square feet : Rs.130.

From the above information, find out the Material Price Variance.

Solution:

In this given problem,

Standard Price (SP) = 120

Actual Price (AP) = 130

Actual Quantity (AQ) = 1400

We know that

MPV = (Standard Price – Actual Price) × Actual Quantity

= (SP – AP) ×AQ

= (120 – 130) ×1400

= 14000 (A)

Thus we can conclude that material cost variance is Rs.14000 adverse and not a favourable variance for the company.

2. Material Usage Variance: According to C.I.M.A, London, Material Usage Variance (MUV) is – "that portion of the material cost variance which is due to the difference between the standard quantity specified and the actual quantity used".

It is the difference between the quantity of direct materials consumed in production and the quantity that should have been consumed as per the standards. MUV is calculated using the following formula:

Material usage variance = (Standard quantity for actual output-Actual quantity) X Standard Price

= (SQ – AQ) × SP

The factors responsible material usage variances are:

- Use of sub-standard materials
- Labor inefficiency or lack of skills in using materials
- Pilferage
- Defect in plant and machinery
- Change in the design of the product.
- Inadequate inspection of materials
- Excessive wastage, spoilage.

Thus we see that MUV is the difference between the standard quantity specified and the actual quantity used multiplied by the standard price. If the MUV is positive then it is usually regarded as favourable for the company and referred to as '**F**'. If the MUV is found to be negative, then it is not regarded as a favourable variance and referred to as '**A**', which means adverse. The adverse usage variance may be due to use of sub-standard materials, material wastage, poor workmanship, fault in plant and machinery, change in material quality, sudden change in design of the product etc.

Let us take an example to understand it better.



Exercise 15.3

A furniture making company uses ply for making office tables. It is known from the past company records that–

Standard quantity of ply per table	: 3 square feet
Standard price per square feet of ply	: Rs.120
Actual production of tables	: 500
Ply actually used	: 1400 square feet
Actual purchase price of ply per square feet	: Rs.130.

From the above information, find out the Material Usage Variance.

Solution:

In this given problem,

Standard Quantity (SQ) = 3 × 500 = 1500

Actual Quantity (AQ) = 1400

Standard Price (SP) = 120

We know that

MUV = (Standard Quantity – Actual Quantity) × Standard Price

= (SQ – AQ) × SP

= (1500 – 1400) ×120

= 12000 (F)

Thus we can conclude that material cost variance is Rs.14000 adverse and not a favourable variance for the company.

Thus from the above examples, we can conclude that

MCV = MPV + MUV

2000 (A) = 14000 (A) + 12000 (F)

= 2000 (A)



Exercise 15.4

Compute the material usage variance from the following information

Standard material cost per unit	Materials issued
Material I 10 pieces @ ' 20= 200	Material I 1500 pieces
Material II 15 pieces @ ' 15= 225	Material II 2500 pieces
The total units completed 160	

Solution: Material usage variance= (Standard quantity for actual output- Actual quantity) X Standard Rate

Material I= (1600-1500)*20= ' 2000 (Favorable)

Material II= (2400-2500)*15= '1500 (Adverse)

The material usage variance is further divided into sub categories: Material mix sub variance and Material yield sub variance.

a. **Material Mix Sub-variance:** Material mix variance arises where more than one type of material is used to produce the finished product. The formula for computing Material Mix Sub-Variance is:

Material Mix Variance = (Revised Standard Quantity – Actual Quantity) × Standard Price

MMV = (RSQ – AQ) × SP

RSQ is defined as below:

$$RSQ = \frac{\text{STANDARD QUANTITY OF ONE MATERIAL}}{\text{TOTAL OF STANDARD QUANTITIES OF ALL MATERIALS}} \times \text{TOTAL ACTUAL QUANTITIES OF ALL MATERIALS}$$



Exercise 15.5

Calculate material mix variance, material price variance & material usage variance from the following data.

Raw material	Standard	Actual
A	100 units @ ` 150 per unit	125 units @ ` 150 per unit
B	150 units @ ` 130 per unit	140 units @ ` 140 per unit
Total	250 units	265 units

Solution: Calculation of Revised Standard Quantity (RSQ)

RSQ of material A= (100/250)*265= 106 units

RSQ of material B= (150/250)*265= 159 units

Material Mix Sub-variance= (RSQ- Actual Quantity) X Standard Price

Material A= (106-125)* 150= ‘ 2850 (Adverse)

Material B= (159-140)* 130= ‘ 2470 (Favorable)

Material Mix Sub-variance= ‘ 380 (Adverse)

Material Price variance= (Standard Price- Actual Price) X Actual Quantity of Materials

Material A= (150-150)* 125= ‘ Nil

Material B= (130-140)* 140= ‘ 1400 (Adverse)

Material Price variance = ‘ 1400 (Adverse)



Exercise 15.6

From the following information of XYZ Ltd., Find out Material Mix Variance.

Raw Material	Standard Quantity	Standard Price Per Kg. (Rs.)	Actual Quantity	Actual Price Per Kg. (Rs.)
Plastic	80	100	100	100
Rubber	120	80	120	90
Total	200		220	

Solution:

To calculate MMV, at first we have to calculate Revised Standard Quantity (RSQ)

$$RSQ = \frac{\text{STANDARD QUANTITY OF ONE MATERIAL}}{\text{TOTAL OF STANDARD QUANTITIES OF ALL MATERIALS}} \times \text{TOTAL ACTUAL QUANTITIES OF ALL MATERIALS}$$

$$\text{RSQ of Plastic} = \frac{80}{200} \times 220 = 88\ kgs.$$

$$\text{RSQ of Rubber} = \frac{120}{200} \times 220 = 132\ kgs.$$

Now, MMV = (RSQ – AQ) × SP

Material Plastic = (88 – 100) × 100 = 1200 (A)

Material Rubber = (132 – 120) × 80 = 960 (F)

MMV = 240 (A)

Thus we see that the material mix variance is having an adverse variance of Rs.240.

b. Material Yield Sub-variance: It is a portion of material usage variance, which arises due to difference between the actual yield achieved, and the standard yield specified. It arises in process industries like chemicals, where loss of material in production generally happens. Material yield variance is an *output variance,* whereas other material variances are *input variance.* The formula for calculation of material yield variance is:

Material Yield Variance = (Actual Yield – Standard Yield) × Standard Output Price

MYV = (AY – SY) × SOP

Here, SOP is the standard material cost per unit of output.



Exercise 15.7

During the month of January 2017, the following data is for ABC Ltd.

Raw material	Standards Mix			Actual Mix		
	Units (Kg)	Price `	Amount `	Units (Kg)	Price `	Amount `
A	130	35	4550	120	35	4200
B	90	60	5400	100	60	6000
Total	220		9950	220		10200
(-) Loss	20			15		
Yield	200			205		

The standard loss is 25%, calculate

1. Material yield variance &
2. Material mix variance

Solution:

1. Material Yield Variance= (Actual yield-Standard yield) X Standard cost per unit

   Standard cost per unit= (Standard material cost/ Standard output)= 9950/200= ‘49.75

   Material Yield Variance= (205-200)* 49.75= ‘ 248.75

2. Material Mix Sub-variance= (RSQ- Actual Quantity) X Standard Price

   Material A= (130-120)* 35= ‘ 350 (Favorable)

   Material B= (90-100)* 60 = ‘ 600 (Adverse)

   Material Mix Variance= ‘ 250 (Adverse)



Exercise 15.8

From the following information of XYZ Ltd., Find out Material Yield Variance.

Raw Material	Standard Mix			Actual Mix		
	Units (in Kg.)	Price (in Rs.)	Amount (in Rs.)	Units (in Kg.)	Price (in Rs.)	Amount (in Rs.)
Plastic	120	50	6000	112	50	5600
Rubber	80	100	8000	88	100	8800
Total	200		14000	200		14400
Less: Loss	60			52		
Yield	140			148		

Solution:

We know that

Material Yield Variance = (Actual Yield – Standard Yield) × Standard Output Price

MYV = (AY – SY) × SOP

= (148 – 140) × 100

= 800 (F)

Where, SOP (Standard Material Cost Per Unit of Output)

$$= \frac{Standard\ Material\ Cost}{Standard\ Output}$$

$$= \frac{14000}{140}$$

= 100



CHECK YOUR PROGRESS

Q1: What do you mean by "Standard Cost"?

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Q2: What is variance analysis?

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Q3: What is the difference between Ideal Standard and Expected Standard?

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Q4: State true or false for the following statements:

(i) The main objective of Standard Cost as well Budgetary Control is the cost control.

(ii) The process of computing the amount of variance and isolating the causes of variance between actual and standard is called standard cost.

(iii) Material Cost Variance is the difference between the standard cost of direct materials defined for the output achieved and the actual cost of direct materials used.

15.9.2 Labor Cost Variance

Direct labor variance can be defined as the difference between the standard labor cost assigned and the actual labor cost paid. The formula for computing the same is:

Labour Cost Variance = Standard Labour Cost of Actual Output – Actual Labour Cost

$$LCV = SC - AC$$

Again, LCV can also be expressed as

LCV = (Standard Hours for Actual Cost ×Standard rate) – (Actual Hours ×Actual rate Per Hour)

LCV = (SH ×SR) – (AH × AR)

Let us take an example to understand this concept better.



Exercise 15.9

A furniture making company is producing plastic chairs and provides following information. You have to find out the labour cost variance of the company.

Standard hours per chair	= 12
Standard rate	= 5 per hour
Actual production	= 800 chairs
Actual hours	= 12,000 hours
Actual rate	= Rs.4.5 per hour

Solution: We know that –

LCV = (Standard Hours for Actual Cost ×Standard rate) – (Actual Hours ×Actual rate Per Hour)

LCV = (SH × SR) – (AH × AR)

= (12 × 800 × 5) – (12,000 × 4.5)

= Rs. 6,000 (A)

Thus the company is having an adverse labour cost variance of Rs.6000.

The labor cost variance may arise due to the difference either in wage rate or in time. Hence labor cost variance is further classified into labor rate variance and labor time variance (or efficiency variance). Let us now briefly explain these two concepts below:

1. **Labor Rate Variance:** It is the difference between the actual wage rate paid and the standard wage rate assigned and the total actual labor hours worked. LRV is calculated with the help of the following formula:-

   Labour Rate Variance = (Standard Rate – Actual Rate) ×Actual Hours

   LRV = (SR – AR) × AH

   The usual reasons for labor rate variance are generally

   - Change in the basic wage rate
   - Shortage of availability of labor

- Overtime paid to meet the order deadline
- Employing more skilled workers to do the job who are paid more wages
- Employing unskilled workers who are paid lower actual rate.



Exercise 15.10

The furniture making company is producing plastic chairs and provides following information. You have to find out the labour rate variance of the company.

Standard hours per chair	= 12
Standard rate	= 5 per hour
Actual production	= 800 chairs
Actual hours	= 12,000 hours
Actual rate	= Rs.4.5 per hour

Solution: We know that –

Labour Rate Variance = (Standard Rate – Actual Rate) × Actual Hours

$$LRV = (SR - AR) \times AH$$
$$= (5 - 4.5) \times 12{,}000$$
$$= Rs.6{,}000\ (F)$$

Thus we find that the company is having an adverse labour efficiency variance of Rs.50,400.

2. Labor Efficiency Variance: Labour Efficiency Variance (LEV) is that portion of the labour cost variance which is due to the difference between labour hours specified for actual output and the actual labour hours expended. LEV is calculated with the help of the following formula:-

Labour Efficiency Variance = (Standard Hours for Actual Output – Actual Hours) ×Standard Rate

$$LEV = (SH - AH) \times SR$$

The factors responsible for time/efficiency variance are:

- Poor working conditions
- Breakdown of plant and machinery
- Inefficient workers engaged
- Use of below standard materials
- Change in the method of operations
- Increased labor turnover



Exercise 15.11

A furniture making company is producing plastic chairs and provides following information. You have to find out the labour efficiency variance of the company.

Standard hours per chair	= 12
Standard rate	= 5 per hour
Actual production	= 800 chairs
Actual hours	= 12,000 hours
Actual rate	= Rs.4.5 per hour

Solution: We know that –

Labour Efficiency Variance = (Standard Hours for Actual Output – Actual Hours) ×Standard Rate

$$LEV = (SH - AR) \times SR$$
$$= (12 \times 800 - 12,000) \times 5$$
$$= Rs.12,000 \text{ (A)}$$

Thus we find that the company is having an adverse labour efficiency variance of Rs.50,400.

Let us now summarise the above results of Labour Efficiency Variance and Labour Rate Variance from the above examples just worked out.

Analysing the above problems together, we find that the company has an advance labour cost variance of Rs.6000 which is not favourable. This variance may be due to the increase in labour rate or it may be due to the lack of efficiency of the labours. Therefore, labour cost variance is classified into labour efficiency variance and labour rate variance.

Labour Efficiency Variance + Labour Rate Variance

= Rs.12,000 (A) + Rs.6,000 (F)

= Rs. 6,000 (A)

= LCV

LCV = LEV + LRV

Thus we can conclude that the adverse variance in labour cost is not due to increase in labour rate but because of lack of efficiency. The labor efficiency variance (LEV) is further classified into labor idle time variance, labor mix sub-variance and labor yield sub-variance.

3. Labor Time Variance :

(a) Labor Idle Time Variance: This variance occurs due to the inability of workers to perform. There may be various reasons such as power failure, breakdown of machinery, lack of materials etc. which leads to labor idle time variance. This variance is always adverse variance. The formula for calculating labor idle time variance is:

Idle Time Variance= Idle hours X Standard rate

(b) Labor Mix Sub-Variance: In certain situations, the circumstances demands that a particular job requires different kinds of workers and the ideal mix of workers is not available. In such a situation, there may be engagement of skilled and expensive labor to complete the job. This leads to deviation of the actual labor mix from the standard mix. Labour Mix Variance (LMV) is almost similar to material mix variance. Here this variance arises due to the employment of more than one grade of workers. LMV also arises due to the composition of actual grade of workers which differs from those specified. LMV is calculated with the help of the following formula:-

Labour Mix Variance = (Revised Standard Hours – Actual Hours) × Standard Rate

LMV = (RSH – AH) × Standard Rate

Here, RSH = $\frac{Standard\ Hours\ of\ the\ Grade}{Total\ Standard\ Hours} \times$ Total Actual Hours



Exercise 15.12

Greenply Ltd. manufactures a piece of waterproof ply board of 32 square feet, the standard direct labour cost of which is Rs.480 per 32 square feet and the company also provide the following information:

Grade of Workers	Hours	Rate	Amount (in Rs.)
Skilled	60	4	240
Unskilled	40	6	240
Total	100		480

For the first Quarter, 1000 pieces of this ply board were manufactured, the actual labour cost of which is given below:-

Grade of Workers	Hours	Rate	Amount (in Rs.)
Skilled	64,000	3	192,000
Unskilled	38,000	8	304,000
Total	102,000		496,000

Solution:

Grade of Workers	Standard for 1000 ply boards			Actual for 1000 ply boards		
	Hours	Rate	Amount (in Rs.)	Hours	Rate	Amount (in Rs.)
Skilled	60,000	4	240,000	64,000	3	192,000
Unskilled	40,000	6	240,000	38,000	8	304,000
Total	100,000		480,000	102,000		496,000

In this case, we have to first find the revised standard hours for both the skilled grade and unskilled grade.

RSH for Skilled Grade

$= \frac{Standard\ Hours\ of\ the\ Grade}{Total\ Standard\ Hours} \times$ Total Actual Hours

$= \frac{60,000}{100,00} \times 102,000$

= 61,200

RSH for Unskilled Grade

$$= \frac{40,000}{100,00} \times 102,000$$

= 40,800

As we know that –

Labour Mix Variance = (Revised Standard Hours – Actual Hours) × Standard Rate

Now, LMV for Skilled = (61,200 – 64,000) × 4 = 11,200 (A)

LMV for Unskilled = (40,800 – 38,000) × 6 = 16,800 (F)

Labour Mix Variance (LMV) = 5,600 (F)

c. **Labor Yield Sub-Variance:** It is similar to the material yield sub-variance. It is computed by calculating how many more or less than total absolute standard hours are used in the actual production. Below is the formula:

Labour Yield Variance (LYV) = (Actual Yield – Standard Yield from Actual Input) × Standard Labour Cost per Unit of Output



Exercise 15.13

Expan Ltd. manufactures digital ceiling fan and the company provides the following information:

Standard Output	1,500 ceiling fans
Actual Output	1400 ceiling fans
Standard Time	6,000 hours
Standard Rate	Rs.40 per hour

Your task is to find out the Labour Yield Variance.

Solution:

Standard Time per ceiling fan = $\frac{6000\ hours}{1500\ ceiling\ fan}$ = 4 hours

Standard Cost per ceiling fan = 4 hours × Rs.40 = Rs.160

Therefore,

Labour Yield Variance (LYV) = (Actual Yield – Standard Yield from Actual Input) × Standard Labour Cost per Unit of Output

= (1400 – 1500) × 160

= 1600 (A)



CHECK YOUR PROGRESS

Q5: What is Labour Efficiency Variance?

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Q6: How is Labour Yield Variance calculated?

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Q7: What is the difference between Labour Cost Variance and Material Cost Variance?

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Q8: State true or false for the following statements:

(i) Labour Cost Variance shows the difference between the Standard Direct Labour Cost specified for the activity achieved and the Actual Direct Labour Cost incurred.

(ii) Labour Rate Variance is that portion of the labour cost variance which is due to the difference between labour hours specified for actual output and the actual labour hours expended.

(iii) Labour Mix Variance arises due to the composition of actual grade of workers which differs from those specified.

15.9.3 Overhead Cost Variance

The term overhead refers to those expenses which are indirect in nature for example indirect material, indirect labor and other indirect expenses. Overheads are ongoing expenses which are needed for continuous functioning of the business. Therefore overhead cost variances are related to factory, office, sales & distribution etc. The

overhead cost variance arises when there is a difference between actual overhead cost and standard overhead cost. The following formula are used to calculate various overhead variance

- Standard overheads rate per unit= Budget overheads/ Budgeted output
- Standard overheads rate per hour= Budgetary overheads/ Budgeted Hours
- Standard hours for actual output= (Budgeted hours* Actual output)/ Budgeted output
- Standard output for actual time= (Budgeted output* Actual hours)/ Budgeted hours
- Absorbed overheads= Standard rate per hour * Actual hours OR Standard rate per unit* Standard hours for actual output
- Budgeted overheads= Standard rate per unit* Budgeted Output OR Standard rate per hour* Budgeted hours
- Standard overheads= Standard rate per unit* Standard Output for actual time OR Standard rate per hour* Actual hours
- Actual Overhead= Actual rate per unit* Actual Output OR Actual rate per hour* Actual hours

The Overhead variance are classified into two parts, they are Fixed Overheads and Variable overheads.

1. **Fixed Overhead Variance:** The fixed overhead variance is the difference between actual and recovered fixed overheads. It generally arises due to higher or lower amount of fixed overheads than the budgeted fixed overheads for the same production; or the same amount of fixed overheads incurs for higher or lower production than budgeted production. The formula for Fixed overhead variance is:

   Fixed Overhead Variance= Recovered Fixed overheads – Actual Fixed Overheads
2. **Variable Overhead Variance:** It is the difference between standard variable overheads for actual output, and the actual variable overheads. The variable overheads changes with the

change in volume of production. The variable overhead variance may occur due to advance payment of expenses, payments of past outstanding payments. The formula is

Variable Overhead Variance= Recovered Variance Overhead – Actual Variance Overhead



15.10 LET US SUM UP

In this unit we have discussed the following:

- The important part of standard cost accounting is a variance analysis which breaks down the variation between actual cost and standard costs into various components
- Standard cost is the Pre-determined Cost based on technical estimate for materials, labour and overhead for a selected period of time and for a prescribed set of working conditions."
- Standard costing is useful in formulating production planning and price policies. It guides as a measuring rod for determination of variances.
- The main objective of Standard Cost as well Budgetary Control is the cost control. Both the methods establish predetermined targets of performance and thereby measure the actual performance. Then variances or deviations are found by comparing actual performance with the predetermined performance targets. Both these techniques help management to take corrective measures and important and complementary to each other.
- The term "Variances" may be defined as the difference between Standard cost and actual cost for each element of cost incurred during a particular period.
- Variances may be broadly classified into three categories (A) Materials Cost Variance and (B) Labour Cost variance and (C) Overhead Cost Variance



15.11 FURTHER READING

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15.12 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q.1: Standard cost as defined by the Institute of Cost and Management Accountant, London "is the Pre-determined Cost based on technical estimate for materials, labour and overhead for a selected period of time and for a prescribed set of working conditions."

Ans to Q.2: Variance analysis is the process of computing the amount of variance and isolating the causes of variance between actual and standard. Variance analysis is an important tool which helps management to find out the deviations from standards.

Ans to Q.3: Ideal standard assumes that there is no allowance for machine breakdown, loss of time, loss of material wastages, loss of man hours, accidents, or any other wastage.

On the other hand, expected standard is established with anticipation and based on expected performance after making provisions for reasonable allowance for unavoidable losses and other unavoidable lapses from perfect efficiency scenarios.

Ans to Q.4: (a) True; (b) False; (c) True

Ans to Q.5: Labour Efficiency Variance (LEV) is that portion of the labour cost variance which is due to the difference between labour hours specified for actual output and the actual labour hours expended. LEV is calculated with the help of the following formula:-

Labour Efficiency Variance = (Standard Hours for Actual Output – Actual Hours) ×Standard Rate

LEV = (SH – AH) × SR

Ans to Q6: Labour Yield Variance (LYV) is almost similar to Material Yield Variance. LYV reports the effect on labour cost of actual output or yield being more or less than the standard yield. Labour Yield Variance is calculated with the help of the following formula:-

Labour Yield Variance (LYV) = (Actual Yield – Standard Yield from Actual Input) × Standard Labour Cost per Unit of Output

Ans to Q7: Labour Cost Variance shows the difference between the Standard Direct Labour Cost specified for the activity achieved and the Actual Direct Labour Cost incurred. LCV is calculated with the help of the following formula:

Labour Cost Variance = Standard Labour Cost of Actual Output – Actual Labour Cost

LCV = SC – AC

Again, LCV can also be expressed as

LCV = (Standard Hours for Actual Cost ×Standard rate) – (Actual Hours ×Actual rate Per Hour)

LCV = (SH ×SR) – (AH × AR)

On the other hand, Material Cost Variance is the difference between the standard cost of direct materials defined for the output achieved and the actual cost of direct materials used. Material Cost Variance is defined in terms of Standard

Cost and Actual Cost which is expressed in the following formula:-

Material Cost Variance = Standard Cost of Actual Output – Actual Cost

MCV = SC – AC

= (Standard Cost of Actual Output × Standard Price) – (Actual Quantity × Actual Price)

MCV= (SQ × SP) – (AQ × AP)

Ans to Q8: (a) True; (b) False; (c) True



15.13 MODEL QUESTIONS

(a) What are the advantages of standard costing technique for the business organisations?

(b) Critically evaluate the role of standard costing in organisational cost control.

(c) Distinguish standard costing from budgetary control.

(d) What do you mean by variance? Explain the various categories of cost variances?

(e) Distinguish between material price variance and material usage variance with suitable examples.

(f) Define labour cost variance? What are the reasons of labour rate variance and labour efficiency variance?

(g) Define Standard Costing.

(h) What do you understand by Standard Cost and Standard Costing?

(i) What are the differences between Standard Costing and Estimated Costing?

(j) Briefly explain and compare and contrast between Standard Costing an budgetary Control.

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