

Cost Accounting-II

DCOM206



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COST ACCOUNTING - II

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EXCEL BOOKS PRIVATE LIMITED
A-45, Naraina, Phase-I,
New Delhi-110028
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Phagwara

SYLLABUS

Cost Accounting – II

Objectives:

- To familiarize the students with concepts, principles, and practices of cost accounting.
- To make students understand the use of various techniques of cost control.
- To enable students to choose cost effective alternatives in real time situations of business.

Sr. No.	Content
1	Service costing: users of service costing, evaluation of cost of various service organizations.
2	Reconciliation of cost and financial accounting.
3	Absorption costing and marginal costing: need for marginal costing and difference between Absorption costing and marginal costing.
4	Cost Volume Profit analysis: objectives, marginal cost equation, effects of certain changes on P/V ratio, Break even Analysis and practical applications of C.V.P analysis for decision making.
5	Differential Cost: meaning, difference between differential cost analysis and marginal costing and practical application of differential costs.
6	Budgetary Control: Introduction, meaning, objectives of Budgetary control, essentials of budgetary control, classification of budget-preparation of cash and flexible budgets. Performance budget, Zero base budgeting.
7	Cost Audit, Cost reduction and cost control
8	Cost accounting records, Information system and reporting to management.
9	Standard costing: Material, Labour and overhead variances.
10	Emerging concepts in cost management: ABC Costing, Target Costing, Kaizen Costing, Life cycle Costing, Value Chain Analysis.

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Unit 1: Service Costing

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- 1.5 Summary
- 1.6 Keywords
- 1.7 Review Questions
- 1.8 Further Readings

Objectives

After studying this unit, you will be able to:

- Define the meaning, nature and users of service costing;
- Describe the evaluation of cost of various service organisations;
- Differentiate between powerhouse costing and hotel costing;
- Describe the hospital, cinema and canteen costing with objectives.

Introduction

We often hear people using the term 'Service Costing' somewhat loosely. Some use it to mean a costing system adopted by petrol pumps or garages which service motor vehicles while others employ it to denote costing of services rendered by service centres. However, with the increase in the important role of the service sector in the national economy, the topic has assumed importance.

Service costing is that part of operation costing which is used in all organisations that provide services instead of producing of goods. For calculating the price of each service, it is very necessary to collect all the expenses relating to those services. We make a cost sheet in which we show all the cost relating to specific service. These costs are calculated on the time basis.

Notes

The aim of this unit is to enable the students to understand the meaning of service costing and its implications for management.

1.1 Meaning of Service Costing

The Terminology of CLMA defines Service Costing as the cost of specific services and functions, e.g., maintenance, personnel, canteen, etc. These may be referred to as service centres, departments or functions.

Service costing involves the method of determination of the cost of services. At the end of specified periods, collection of operating costs takes place and the aggregate of these costs is duly divided by the quantity of services provided in the period. This gives the cost per unit.



Note This method of costing is applicable to activities that render a service.

The word 'service' as used in this context is worth noting. It means services rendered by various departments within the organisation or organisations providing services to outside firms namely personnel's maintenance, canteen, hospitals, boiler house, captive power units, computer services department, hotels, electricity companies, road maintenance, water supply, goods transport, transport of passengers, educational institutions, accounting firms, management consultancy firms etc.



Did u know? Service costing is also called 'Operating Costing',

Service organisations/internal service departments render a variety of services. Owing to the peculiarities of services, different cost accounting treatment is required.

1.2 Features of Service Organisations

Service organisations possess its number of features which distinguish them from other organisations. The main features are:

1. **Definition of cost unit difficulty:** Service organisations provide a wide variety of services, this could range from catering services, transport services, public utility services to professional services. Consequently it generally becomes difficult to define the cost unit.
2. **Labour intensive activities:** These organisations employ a large number of people for running the business. The manpower cost incurred is much higher in relation to machine related cost.
3. **Services cannot be stored:** It can be said that services is like a perishable commodity. Once a service has been rendered, it cannot be stored. It has to be used or else it is wasted.
4. **Major inputs cannot be stored:** The major input in such industries is labour. The firm should utilise their services. In the absence of this, labour remains idle. The efforts of idle labour cannot be stored and utilised as and when required.
5. **Intangible products:** Service organisations do not produce tangible goods. Instead, they are engaged in providing services to the public.

1.2.1 Nature and Characteristics of Operating Costing

The nature and characteristics of operating costing are as follows:

- (i) Operating costing method is related to provide various types of services to customers,
- (ii) Costs are generally computed period-wise and order-wise,
- (iii) In operating costing, standing or fixed, maintenance and running charges are calculated,
- (iv) The services of a industry or organisation may be sold to the public or may be used within the organisation, and
- (v) The demand for the services of enterprises or organisations or industries adopting operating cost method for costing fluctuates.

1.3 Users of Service Costing

Service or Operating Costing is used both by service organisations and by departments within organisations rendering services to other departments. These are given below:

Service Organisations: Organisations which are engaged in the business of rendering services to outsiders with the view to earning profit are known as service organisations.



Example: Service organisations include Power generation and distribution firm, nursing homes, transport firms, educational institutions, management consultancy firms, accounting firms, shipping firms, airlines etc.

Internal Service Departments: These are departments within organisations render services to the production department and also to other departments.



Example: Internal services departments include hospital, crèche, canteen, boiler house which produces steam for production department, computer services department, captive power generation unit, transport department operating vehicles for transporting staff, inputs and finished goods, water supply and maintenance services etc.



Caselet

Litigation Work

Dua and Associates is a law firm specialising in carrying out litigation work for clients. It has 25 professionals who work for clients (5 partners and 20 associates). The average budgeted total compensation per professional for 1999 is ₹ 1,04,000. Each professional is budgeted to have 1,600 billable hours to clients in 1999. Dua and Associates is a highly respected firm and all professionals work for clients to their maximum 1,600 billable hours. All professional labour costs are traceable to jobs on a per hour basis. The budgeted indirect cost (legal support) in 1999 is ₹ 22,00,000. The indirect costs are allocated to the jobs using professional labour hours as the allocation base. In this example for ascertaining the cost of Job Company consider single direct cost rate (i.e. Professional labour) and single indirect cost rate.

Source: http://220.227.161.86/18859sm_finalnew_cp7.pdf

Notes

Self Assessment

Fill in the blanks:

1. Service costing involves the method of determination of the cost of
2. is also called 'Operating Costing'.
3. Service organisations do not produce goods.
4. organisations are engaged in the business of rendering services to outsiders with the view to earning profit are known as service organisations.
5. services departments within organisations render services to the production department and also to other departments.

1.4 Evaluation of Cost of Various Service Organisations

Service costing or operating costing is applied to the following undertakings:

- (i) Transport undertakings,
- (ii) Electricity undertakings,
- (iii) Hotel undertakings,
- (iv) Hospital and Nursing homes,
- (v) Canteen services,
- (vi) Cinema companies,
- (vii) Municipal services,
- (viii) Educational institutions,
- (ix) Public libraries, and
- (x) Distribution services.

Following are some examples of operating cost unit:

Service Organisations	Cost Unit
Goods transport	Per tonne km.
Passenger transport	Per passenger km.
Electricity	Per kilowatt hour (kwh)
Hotel	Per room per day
Hospital and Nursing homes	Per bed per day
Canteen	Per meal or per lunch or per dinner or per dish
Cinema	Per sheet per show
Water supply	Per 1000 gallon water
Boiler houses	Kilograms of steam supplied
Road maintenance	Per kilometre

Operating costs are classified into the following three categories:

- (i) Fixed or Standing Charges,
- (ii) Maintenance or Semi-variable charges, and
- (iii) Running or Variable Charges.

These are discussed in detail as below:

Notes

- (i) **Fixed or Standing Charges:** These are expenses which are more or less fixed nature. For example, in case transport service, road licence fee, garage rent, insurance premium, taxes, depreciation, interest on capital, salary to driver-conductors-cleaners, general supervision charges, establishment expenses, etc. are standing charges. In case of Nursing home and Hospital, the depreciations pertaining to the cost of building, equipment, beds, insurance, etc. are fixed charges.



Note These expenses are constant and are incurred irrespective of the extent of service.

- (ii) **Maintenance or Semi-variable Charges:** They are semi-variable or semi-fixed in nature. They include expenditure on repairs and maintenance, spares and accessories, tyres and tubes, painting charges, telephone charges, etc.
- (iii) **Running or Variable Charges:** These are variable cost and variable nature. Running charges are expenses which are incurred on the actual running of the vehicle. For example, in case of hospital, the cost of medicine, laundry, etc., will represent the running charges. In case of transport service petrol, diesel, grease, oil, salaries and wages to drivers, conductors and cleaners on the basis of distance, depreciation calculated on the basis of mileage or kilometres run are running or variable charges.

The classification of various items of costs into the above three categories should not be attempted as a matter of rule. It depends basically on the nature of each case.

Self Assessment

State whether the following statements are true or false:

6. Running charges are expenses which are more or less fixed nature.
7. Maintenance or semi-variable charges are semi-variable or semi-fixed in nature.
8. Fixed or standing charges are expenses which are incurred on the actual running of the vehicle.

1.4.1 Transport Costing

The transport costing refers to the determination of the cost per unit of service i.e., cost of per passenger – kilometre and the cost of per tone – kilometre.

Suppose the following information is given:

Number of trucks	10 of 5 tons each
Number of km. run per day	50 km.
Effective days in a month	25
Wastage on loading capacity	10%
Percentage of trucks laid for maintenance	10%

Now, number of effective km. = $10 \times 5 \times 50 \times 25 \times 90/100 \times 90/100 = 50,625$ km.

Notes

If the total cost of running these 10 trucks in month comes to ₹ 4,00,000, the cost of per ton per km.
 = $4,00,000 \div 50,625 = ₹ 7.90$

Objectives of Transport Costing

The following are main objectives of transport costing:

- (i) Collection and analysis of cost for cost control,
- (ii) Comparison of the cost of running and semi-variable of different vehicles,
- (iii) Assignment of costs to services provided by each vehicle or group of vehicle,
- (iv) To decide whether to own a vehicle or to hire a vehicle,
- (v) Cost comparisons and analysis for decision-making, and
- (vi) To help to apportion the cost of transport between different departments.

Collection of Costs

Each vehicle is given a distinct number and all the basic documents will contain the assigned number of respective vehicles. A separate Daily Log Sheet for each vehicle is maintained by the driver.



Did u know? A daily log sheet or log book is maintained for each vehicle to record details of each trip. This sheet is completed by the driver and is handed over to the manager. The logbook also contains records relating to repair expenses incurred during journeys performed.

A specimen of daily log sheet is given below:

Figure 1.1: Daily Log Sheet

Vehicle No.:		Daily Log Sheet		Date :				
License No.:				Departure Time :				
Route:				Arrival Time :				
Details of Trip								
Trip No.	Station		Goods/Packages		Km.	Time		Remarks
	From	To	Out	Collected on route		Out	In	
Suppliers		Time of Workers		Analysis of Last Time				
Petrol	:	Driver	:	Traffic delays :				
Oil	:	Conductor	:	Accidents :				
Grease	:	Cleaner	:	Loading :				
				Unloading :				

Source: Cost Accounting by K. S. Thakur

Statement of Operating Cost

The cost data of a transport are presented periodically, say monthly or quarterly, in the form of a cost sheet or statement of cost. A specimen of statement of operating cost is given below:

Kartik Transport Company Limited
Operating Cost Sheet for the month of

Notes

Vehicle No.:

Capacity:

Particulars of Expenses	Total (₹)	Cost of per km. (₹)
(A) Standing Charges or Fixed Costs:		
Garage Rent		
Insurance Premium		
Interest on Capital		
Depreciation		
Rates and Taxes		
Drivers Wages		
License Fee		
General Supervision		
Total		
(B) Maintenance Cost or Semi-variable Charges:		
Tyres and Tubes		
Repairs		
Servicing and Cleaning		
Garage Staff Salary		
Total		
(C) Running or Operating Charges :		
Petrol or Diesel		
Engine Oil and Grease		
Salary to Running Staff		
Depreciation		
Insurance on Transit Goods		
Total		
(D) Total Operating Cost (A + B + C)		
(E) Total Ton-Kilometre		
(F) Operating Cost per ton-km.		

Problem 1:

From the following particulars, find out total passenger kilometre per day and per month:

Distance: 25 kilometres

A vehicle makes 2 trips round daily carrying 45 passengers and working every day.

Solution:

Total km. per day = No. of vehicle × No. of days × Trips × 2 (Round) × Km. in a trip

- Total km. per day = $1 \times 1 \times 2 \times 2 \times 25$
Total km. per day = 100
- Total passengers km. per day = 100×45
Total passengers km. per day = 4,500
- Total passengers km. per month = $4,500 \times 30$ days
Total passengers km. per month = 1,35,000

Notes

Problem 2:

The Kartik Transport Company which keeps a fleet of lorries, show the following information:

Kilometres run for 2005	1,50,000
Wages for the month of March	₹ 10,000
Petrol, Oil expenses for March	₹ 20,000
Cost of vehicle	₹ 5,00,000
Depreciation @ 20% on cost of vehicle	—
Repairs and maintenance for the month of March	₹ 30,000
Garage rent for the month of March	₹ 5,000
Licence, insurance for the year	₹ 30,000

Prepare a statement for March, 2005 showing the operating cost per running km.

Solution:

Operating Cost Sheet for Kartik Transport Company

Period: March, 2005

Kilometres Run: 1,50,000

Particulars of Expenses	Total (₹)
(A) Standing or Fixed Charges :	
Depreciation @ 20% p.a. $(5,00,000 \times 20 \div 100) \div 12$	8,333
Wages for the month of March	10,000
Garage rent for the month of March	5,000
Licence $(30,000 \div 12)$	2,500
Total	25,833
(B) Variable Charges :	
Petrol, Oil expenses	20,000
Repairs and maintenance	30,000
Total	50,000
(C) Total Opening Cost (A + B)	75,833
(D) Cost per running kilometre $(75,833 / 1,50,000 = 0.505)$	0.505



Task

How do you decide the unit of cost in case of Transport Costing? Explain.

1.4.2 Power House Costing

The generation of electricity requires the use of fuel oil or steam. Where steam is used for the purpose of generating electricity, it is possible to compute the cost of electricity generated by aggregating the steam production costs with other related costs of electricity generation. Generation of power or electricity or gas is carried on and these are made available to outsiders or to own production departments.

Notes



Caution A statement of cost is prepared to find out the cost of per unit. This may be per KWT or KWH. The costs are normally classified into: Steam production cost and Electricity generation costs or Fixed charges, Maintenance charges and Variable charges.

Following are two specimens of statement of cost for power house costing:

Statement of Operating Cost for Electricity generation for the month of

Steam Produced:

Units of Electricity Generated:..... Steam Used for Generation:.....

Particulars of Expenditure	Total Cost (₹)	Cost per unit (₹)
(A) Cost of Steam Generation:		
Coal		
Labour		
Water		
Fixed overhead		
Repairs and maintenance		
Supervision charges		
Total Cost of steam generation/Total production		
Less: Used in heating		
Cost of Steam Used for Electricity Generator		
Total		
(B) Cost of Electricity Generation:		
Cost of steam used		
Wages		
Depreciation		
Stores		
Supervision		
Repairs and Maintenance		
Total		
(C) Total Operating Cost (A+B)		
(D) Cost of per unit = Total Operating Cost ÷ Total Units Generated		

Operating Cost Sheet for Electricity Generation

Units of Electricity Generated:

Particulars of Expenditure	Total Cost (₹)	Cost per unit (₹)
(A) Fixed Charges :		
Depreciation		
Supervision		
Administrative overhead		
Interest on capital		
Total		
(B) Variable and Maintenance Charges :		
Cost of steam used		
Cost of coal		
Wages to operators		
Lubricants, spares and stores		
Repairs and maintenance		
Total		
(C) Total Operating Cost (A+B)		
(D) Cost of per unit = Total Operating Cost ÷ Total Units Generated		

Notes

Problem 3:

The following cost data pertaining to the year 2005-2006 are collected from the books of Prakash Power Company Limited. Prepare an operating cost sheet showing the cost of generation of power per unit of Kwh.

Total units generated	15,00,000 units
Operating labour	₹ 16,500
Plant supervision	₹ 5,250
Lubricants & supplies	₹ 10,500
Repairs and maintenance	₹ 21,000
Administrative overheads	₹ 9,000
Capital cost	₹ 1,50,000

Coal consumed per kwh. For the year is 1.5 lbs. and cost of coal delivered to the power station is ₹ 33.06 per metric tonne. Depreciation rate chargeable is 4% per annum and interest on capital is to be taken as at 7%.

Solution:

Statement of Operating Cost of Prakash Power Company Limited for the Year 2005-2006

Total Units Generated: 15,00,000

Particulars of Expenses	Amount (₹)
(A) Fixed Charges :	
Plant supervision	5,250
Administrative overheads	9,000
Depreciation (4% on ₹ 1,50,000)	6,000
Interest on capital (7% on ₹ 1,50,000)	10,500
Total	30,750
(B) Variable Charges :	
Coal used	33,735 ⁽¹⁾
Lubricants & supplies	10,500
Repairs and maintenance	21,000
Operating labour	16,500
Total	81,735
(C) Total Cost of Generation (A +B)	1,12,485
(D) Cost of Generation of per unit of kwh.(1,12,485 ÷ 15,00,000)	0.075 paise

Working note:

(1) Cost of one tonne (2,205 lbs) = ₹ 33.06

For 1 kwh the coal consumption is 1.5 lbs for 15,00,000 kwh the coal consumption is

$$= 1.5 \times 15,00,000 = 22,50,000 \text{ lbs}$$

$$\text{Cost of 22,50,000 kwh} = ₹ 33.06 \times 22,50,000 \div 2,205$$

$$= ₹ 33,735$$

Problem 4:

Find out the cost per unit of electricity generated in the power house located in the Eagle Engineering Works for the month of November, 2007 with reference to the following data

extracted from the account books of the eagle engineering works. The operating cost sheet should be drawn up in the appropriate form:

Notes

Fuel: Coal 1,200 tons @ ₹ 11 per ton.

Coke 500 tons @ ₹ 15 per ton.

Handling charges of the fuel 50 p. per ton

Ash removal charges - 160 tons @ 25 p. per ton

Cost of water pumped from the river - 160 thousand gallons

@ 37.5 paise per thousand gallons

Lubricating oil - 50 gallons @ ₹ 4 per gallon

(a) Sale of ash: 280 tons @ 25 p. per ton.

(b) Cost of steam supplied to the manufacturing shops:

30,000 lb @ ₹ 10 per 1,000 lb.

Salaries and operating staff in the power house:

1 Foreman @ ₹ 400 per month

2 Astd. foremen @ ₹ 125 per month.

4 Mechanics @ ₹ 75 per month

1 Coolie @ ₹ 2.50 per day for 30 days

Depreciation	Capital Cost	Rate of Depreciation
Boiler	₹ 20,000	6%
Generator and other		
Electrical Equipments	₹ 1,20,000	4%
Building	₹ 12,000	1%

25% of monthly total technical supervision charges amounting to ₹ 3,940.

Total gross units generated: 97,000 units

Loss during the month due to leakage in course of generation and due to defective equipments = 1,000 units.

Solution:

Operating Cost Sheet of Eagle Engineering Works for the Month of November, 2007

Units Generated: 97,000

Particulars of Expenses	Amount (₹)
Fuel :	
Coal : 1,200 tons @ ₹ 11 per ton	13,200
Coke : 500 tons @ ₹ 15 per ton	7,500
Handling Charges of the fuel :	850
@ 50 Paise per ton (1,200 + 500 x 0.50)	
Ash removal charges : 160 tons	40
@ 25 Paise per ton (160 x 0.25)	
Cost of Water Pumped : (1,60,000 x 0.375 ÷ 1,000)	60

Contd...

Notes			
	Lubricating oil : 50 gallons @ ₹ 4 per ton (50 × 4)		200
	Depreciation on :		
	Boiler : (20,000 × 6 ÷ 100 = 1,200 × 1 ÷ 12)		100
	Building (12,000 × 1 ÷ 100 = 120 × 1 ÷ 12)		10
			21,960
	Less: Credit on account of :		
(a)	Sale of Ash: 280 tons @ 25 Paise per ton (280 × 0.25)	70.00	
(b)	Steam to manufacturing shops : (30,000 lbs ÷ ₹ 10 per 1,000 lb.)	300.00	370
			21,590
	Cost of Steam produced :		
	Salaries and wages of operating staff		
	1 Foreman @ ₹ 400 p.m.	400	
	2 Asst. Foreman (2 × 125)	250	
	4 Mechanics (4 × 75)	300	
	1 Coolie @ ₹ 2.50 per day for 30 days (2.50 × 20)	75	1,025
	Technical supervision charges : (3,940 × 25 ÷ 100)		985
	Depreciation on Generator and other Electrical equipment : (1,20,000 × 4 ÷ 100 = 4,800 × 1 ÷ 12)		400
	Total Cost of Electricity Generated		24,000
	Units generated : (Gross)	97,000	
	Less : Leakage units	1,000	
	Net units generated	96,000	
	Cost of per unit of electricity : (24,000 / 96,000 = ₹ 0.25)		0.25 Paise

1.4.3 Hotel Costing

Hotel services include boarding and lodging. For providing rooms and accommodations, hotels have to calculate cost per room-per day.

Objectives of Hotel Costing

The main objectives of hotel costing are:

- (i) Ascertainment of cost per unit,
- (ii) Interfirm comparisons,
- (iii) Analysis of cost of hotel for decision-making,
- (iv) Collection of cost data and its analysis for cost control, and
- (v) It is advisable to select different cost units.

Specimen for Hotel Costing

A Specimen of Operating Cost of Hotel is given below:

Operating Cost Sheet of Vikas Hotel for the Year.....

Notes

Particulars	Amount (₹)
(A) Fixed Charges:	
Staff salaries	
Wages for attendants	
Repairs	
Depreciation	
Interest on investment	
Interior decoration	
Rent of premises	
Administrative expenses	
Linen	
Total	
(B) Variable Charges:	
Lighting and heating	
Power	
Sundries	
Total	
(C) Total Operating Cost (A + B)	
(D) Total Room Days	
(E) Rent per room day = Total Operating Cost ÷ Total Room Days	

Problem 5:

Following are the information given by an owner of Udai Hotel. You are required to advise him what rent should be charged from the customers per day, so that he is able to earn 25% on cost other than interest:

Managerial staff salaries	₹ 1,80,000 p.a.
Repairs to building	₹ 10,000 p.a.
Cost of building	₹ 4,00,000
Rate of depreciation	5% p.a.

Room attendant's salary ₹ 2 per day. The salary is paid on daily basis and services of room attendants are needed only when the room is occupied. There is one room for one attendant.

Lighting, heating and power charges: The normal lighting expenses for a room if it is occupied for the whole month is ₹ 50 per room. Power is used in winter only and normal charges are ₹ 20 p.m. for a room, if room is occupied.

Equipments	₹ 1,00,000
Rate of depreciation	10%
Internal decoration	₹ 20,000 p.a.

Interest @ 5% may be charged on its investment of ₹ 5,00,000 in the building and equipment.

Linen	₹ 14,800 p.a.
Sundries	₹ 16,600 p.a.

There are 100 rooms in the hotel and 80% of the rooms are normally occupied in summer and 30% of the rooms are occupied in winter. You may assume that period of summer and winter is six months each. Normal days in a month may be assumed to be 30.

Notes

Solution:

Operating Cost Sheet of Udai Hotel

Particulars of Expenses	Amount in (₹)
Managerial staff salaries	1,80,000
Repairs to building	14,800
Depreciation on building @ 5%	20,000
Depreciation on equipment @ 10%	10,000
Room attendant's salaries :	
Summer: ₹ 2 × 100 rooms × 80% × 30 days × 6 months =	28,800
Winter: ₹ 2 × 100 rooms × 30% × 30 days × 6 months =	10,800
	39,600
Lighting, heating and power charges:	
Summer: ₹ 50 × 6 months × 100 rooms × 80% =	24,000
Winter: ₹ 50 × 6 months × 100 rooms × 30% =	9,000
	33,000
Power: ₹ 20 × 6 months × 100 rooms × 30% =	3,600
Internal decoration	20,000
Linen	14,800
Sundries	16,600
Interest on investment @ 5% on ₹ 5,00,000	25,000
Total Operating Cost	3,72,600
Add: Profit 25% on Cost other than interest (25% on ₹ 3,47,600 (3,72,600 - 25,000) = ₹ 86,900	86,900
Total Rooms Rent for the year	4,59,500
Total Room Days	19,800 ⁽¹⁾
Rent per room per day = Total Room Rent ÷ Total Room Days	23.00 ⁽²⁾

Working notes:

(1) Calculation of Total Room Days:

Summer: 100 rooms × 6 months × 30 days × 80% = 14,400

Winter: 100 rooms × 6 months × 30 days × 30% = 5,400

Total Room Days = 19,800

(2) Rent per room per day = 4,59,500 ÷ 19,800 = 23.21 or ₹ 23 (Approx.)

1.4.4 Hospital Costing

Costing of hospital may relate to ascertaining the cost of medical services rendering by a Nursing home or dispensary belonging to an industry or organisation.

Objectives of Hospital Costing

The main objectives of hospital costing are:

- (i) To calculate cost of per patient per day,
- (ii) Inter comparison between two or more hospitals or nursing homes,
- (iii) Analysis of cost of hospital or nursing home for decision-making, and
- (iv) Collection of cost data for cost control.

Problem 6:**Notes**

Gwalior Hospital runs an intensive medical care unit. For this purpose, it has hired a building at a rent of ₹ 30,000 p.m. with the understanding that it would bear the repairs and maintenance charges also.

The unit consists of 25 beds and 5 more beds can be comfortably accommodated when the occasion demands. The permanent staffs attached to the intensive medical care unit are as follows:

Doctor's fee	₹ 6,000 p.m.
Salary to 4 Supervisors	₹ 800 p.m. each
Salary to 6 Nurses	₹ 500 p.m. each
Salary to 4 Ward boys	₹ 300 p.m.

The unit is open for patients all the 365 days, scrutiny of accounts reveals that only for 120 days in the year, the unit has the full capacity of 25 patients per day and for another 80 days, it has on an average 20 beds only occupied per day in the year. But, there are occasions when the beds are full in the year. Extra beds are hired at a charge of ₹ 4 per day-per bed and this does not come to more than 5 beds extra above the normal capacity on any day. The total hire charge for the extra beds incurred for the whole year amounts to ₹ 5,000. The other expenses for the year are as follows:

Repairs	₹ 16,000
Medicines	₹ 50,000
Food to patients	₹ 65,000
Expenses on Oxygen, X-ray	₹ 65,000
Expense of generator	₹ 24,000
Laundry charges	₹ 41,600
Administration expenses	₹ 50,000

If the unit recovers an overall amount of ₹ 200 per day on an average from each patient, what is the profit per patient day made by the unit?

Solution:**Statement of Cost and Profit for Gwalior Hospital**

Particulars		Amount (₹)
(A) Earnings:		
Income received (5,850 × 200)		11,70,000
Total		11,70,000
(B) Fixed Charges:		
Staff salaries : (4 × 800) + (6 × 500) + (4 × 300) × 12		88,800
Rent (30,000 × 12)		3,60,000
Repairs		16,000
Administration expenses		50,000
Cost of Oxygen, X-ray		65,000
Total		5,79,800

Contd...

Notes		
(C) Variable Costs:		
Food to patients		65,000
Expenses of generator		24,000
Laundry charge		41,600
Medicines		50,000
Doctor's Fee (6,000 × 12)		72,000
Hire Charges for Extra Beds		5,000
	Total	2,57,600
(D) Total Cost of Hospital (B+C)		8,37,400
(E) Profit (A - D) i.e. 11,70,000-8,37,4000		3,32,600
(F) Profit per patient day = $\frac{3,32,600}{5,850}$ = 56.854 or ₹ 59 (approx.)		59.00

Working note:

(1) Calculation of Total Patient Days:		
25 Beds × 120 days	=	3,000
20 Beds × 80 days	=	1,600
Extra bed days = ₹ 5,000 ÷ 4	=	1,250
Total Patient Days		<u>5,850</u>

1.4.5 Cinema Costing

Cinema houses are one of the operating service rendering undertakings. This method is also important method of service costing.

Objectives of Cinema Costing

Following are the main objectives of Cinema Costing:

- (i) To calculate rate for each show and each class,
- (ii) Cost analysis of cinema house for management decision-making,
- (iii) Inter comparison between two or more cinema house, and
- (iv) Collection of cost data for cost control of cinema house.

Problem 7:

The following information's are relates to Kazal Cinema for the year ending 31st March, 2008:

Salary to 1 manager	₹ 5,000 p.m.
Salary to 10 gate keepers	₹ 800 p.m. each
Salary to 4 operators	₹ 1,200 p. m. each
Salary to 6 clerks	₹ 1,500 p.m. each
Power	₹ 20,000
Stationery	₹ 5,000
Advertisement	₹ 30,000

Administrative overheads	₹ 10,000	Notes
Hire for print	₹ 1,00,000	
Other expenses	₹ 5,000	

The premises are valued at ₹ 6,00,000 and its estimated life is 10 years. Projector and other equipments cost ₹ 2,00,000 on which 10% depreciation is to be charged. Daily three shows are run throughout the year. Total capacity is 500 seats which are divided into three classes as follows:

Third class	250 seats
Second class	150 seats
First class	100 seats

Ascertain cost per man show assuming that:

- 20% of the total seats remain vacant, and
- Weightage to be given to these classes in to the ration of 1:2:3

Determined the rate for each class if the management expects 33.33 % return on gross proceeds. Ignore entertainment taxes.

Solution:

Statement of Operating Cost of Kazal Cinema for the year ended 31st March, 2008

Particulars	Amount (₹)
(A) Standing Charges:	
Manager's Salary (₹ 5,000 × 12)	60,000
Gate Keeper's Salary (₹ 800 × 10 × 12)	96,000
Operator's Salary (₹ 1,200 × 4 × 12)	57,600
Clerk's Salary (1,500 × 6 × 12)	1,08,000
Administration Overheads	10,000
Depreciation on Premises @ 10% on 6,00,000	60,000
Depreciation on Machinery @ 10% on 2,00,000	20,000
Total	4,11,600
(B) Variable Charges:	
Power	20,000
Stationery	5,000
Advertisement	30,000
Hire for Print	1,00,000
Other expenses	5,000
Total	1,60,000
(C) Total Operating Cost of Cinema (A +B)	5,71,600
(D) Total No. of Man-Shows	8,10,300 ⁽³⁾
(E) Cost per man-show = 5,71,600 ÷ 8,10,300 = 0.7054	0.7054

Working notes:

- Capacity used of cinema:
 - Third class = 250 × 80% = 200 seats
 - Second class = 150 × 80% = 120 seats
 - First class = 100 × 80% = 80 seats

Notes

(2) Total no. of shows during the year = $365 \times 3 = 1,095$

(3) Calculation of Total Man-Shows:

Class	No. of Seats	×	No. of Shows	×	Weightage	=	Man-Show	
Third class	200	×	1,095	×	1	=	2,19,000	
Second class	150	×	1,095	×	2	=	3,28,500	
First class	80	×	1,095	×	3	=	2,62,800	
Total Man-Shows								<u>8,10,300</u>

(4) Calculation of Rate Per Men Show:

Cost per man-show (stated above)	0.7054
Add: Profit (33.33 % of gross proceeds or 50% of cost)	<u>0.3527</u>
Rate per man-show	<u>1.0581 or 1.06</u>

(5) Rate (with weightage) for Different Classes:

Third class = $1.06 \times 1 = 1.06$

Second class = $1.06 \times 2 = 2.12$

First class = $1.06 \times 3 = 3.18$

1.4.6 Canteen Costing

A canteen is established in most of the industries for welfare facility. Generally, they are either partly or fully subsidies. A supervisor is usually made responsible for the running of a canteen. He is held accountable to the factory manager or the personnel manager of the industry. A canteen serves meals, tea and coffee, etc.

Objectives of Canteen Costing

The main objectives of canteen costing are:

- (i) To calculate cost of per lunch, dinner, etc. per day,
- (ii) Inter comparison between two or more canteens,
- (iii) Analysis of cost of canteen for decision-making, and
- (iv) Collection of various types of cost data for cost control of canteen.

Collection of Cost Data

The collections of costs are done under account headings. The main account headings used for the purpose are given hereunder:

- (a) **Provision:** Rice, flour, meat, fish, eggs, vegetables, vegetable oil, fruits, soft drinks, coffee, sugar, tea, spices, milk, etc.
- (b) **Labour:** Supervisor, kitchen assistants, cooks, porters, waiters, sweepers, brushes, cleaning materials, disinfectants, etc.
- (c) **Services:** Power, gas, steam, water, electricity, etc.

(d) *Consumable Stores*: Crockery, cutlery, table linen, dust bins, glass ware, etc.

Notes

(e) *Miscellaneous Overheads*: Depreciation, rent and rates, insurance premium, etc.

The sale of meals and subsidy bring in revenue for the canteen. Depending upon the type of meal served namely principal meal, tea and snacks etc., the colour of coupons issued to the workers vary. The canteen supervisor is vested with the responsibility for cost control. Consequently, the collection of costs is done by him in such a way that it is possible to control costs.

Problem 8:

From the following data relating to a staff canteen for the year ended 31st December, 2007 find out the cost per meal served:

Meat purchased	₹ 5,000
Fish purchased	₹ 3,000
Eggs purchased	₹ 500
Vegetables purchased	₹ 1,500
Bakery items purchased	₹ 1,000
Fruits purchased	₹ 500
Milk purchased	₹ 500
Beverages purchased	₹ 1,000
Sundry food supplies	₹ 500
Supervisors salary	₹ 6,000
Cooks' salary	₹ 6,000
Helpers' salary	₹ 1,800
Cleaners' salary	₹ 1,200
Sweepers' salary	₹ 1,200
Crockery and cutlery purchased	₹ 300
Cleaning materials purchased	₹ 100
Towels purchased	₹ 100
Consumable stores purchased	₹ 200
Gas purchased	₹ 600
Management salaries	₹ 12,000
Premises rent	₹ 2,000
Insurance premium	₹ 1,000
Repairs and maintenance	₹ 500
Other administrative expenses	₹ 1,500
The number of meals served during the year	1,200

Notes

Solution:

Operating Cost Sheet of Canteen for the Year ended 31st December, 2007

No. of Meals Served: 1,200

Particulars	Total Cost (₹)	Cost Per Meal (₹)
(A) Salaries and Wages:		
Supervision	6,000	
Cooks' salary	6,000	
Helpers' salary	1,800	
Cleaners' salary	1,200	
Sweepers' salary	1,200	
Total	16,200	13.50
(B) Provisions :		
Meat	5,000	
Fish	3,000	
Eggs	500	
Vegetables	1,500	
Bakery items	1,000	
Fruits	500	
Milk	500	
Beverages	1,000	
Sundry food	500	
Total	13,500	11.25
(C) Consumable Stores :		
Crockery and cutlery	300	
Cleaning materials	100	
Towels	100	
Consumable stores	200	
Total	700	0.58
(D) Services :		
Gas	600	
Total	600	0.50
(E) Miscellaneous Overheads :		
Management salaries	12,000	
Premises rent	2,000	
Insurance premium	1,000	
Repairs and maintenance	500	
Other administrative expenses	1,500	
Total	17,000	14.17
(F) Total operating cost of canteen (A+B+C+D+E)	48,000	-
(G) Cost of per meal (48,000 ÷ 1,200 = 40.0)	-	40.0

Self Assessment

Notes

Fill in the blanks:

9. The costing refers to the determination of the cost per unit of service i.e., cost of per passenger – kilometre and the cost of per tone – kilometre.
10. A daily log sheet or log book is maintained for each vehicle to record details of each
11. A statement of is prepared to find out the cost of per unit.
12. services include boarding and lodging.
13. Costing of may relate to ascertaining the cost of medical services rendering by a Nursing home or dispensary belonging to an industry or organisation.
14. The sale of meals and subsidy bring in revenue for the
15. defines Service Costing as the cost of specific services and functions, e.g., maintenance, personnel, canteen etc. These may be referred to as service centres, departments or functions.



Case Study

Reducing Service Costing in Logistics

Knoll Incorporated is a global leader in office furnishings, design and manufacturing. Increasing cost pressures caused the company to source lower cost components in Asia. Although improved pricing was achieved, delivery reliability was extremely poor, and transportation costs were eroding potential savings. The company required a cost-effective international transportation management process with increased visibility. Penske's solution to develop a single-provider process with responsibility for vendor management, transportation, order management, warehousing and container consolidation resulted in ocean/air freight savings and increased order visibility, yielding nearly a 50 percent reduction of air freight requirements.

Challenges

- To reduce international/air/ocean transportation costs
- To increase overall visibility throughout Knoll's supply chain
- To establish international supplier conformance standards

Reduced International Transportation Costs, Improved Customer Service

Penske's China-based team manages Knoll's orders from inception to actual pick-up at the supplier's dock. This detailed product availability and visibility reduces Knoll's transportation costs by routing its shipments using the most economical mode, while Penske continues to explore consolidation opportunities on each shipment.

Penske's intimate understanding of the product and manufacturing process allows for proper routing of materials to either the manufacturing facility in the United States or to a de-consolidation point for line-hauling the needed product to the proper facility. Once the product is delivered, Penske continues to provide value to Knoll by providing a single, itemized weekly invoice for all international shipments and detailed performance reporting on all activity managed.

Contd...

Notes

Penske's successful international transportation management solution continues to provide value for Knoll. Improved route optimization efforts reduce air/ocean transportation costs, as well as cycle times.

Currently, Knoll's planning and buying teams receive multiple updates weekly of all open international shipments. The added visibility and control over Asian shipments encourages Knoll to increase its Asian supplier base. As Knoll's supply chain continues to grow and expand to other regions of the globe, Penske's solution will adapt to the new challenges while minimizing costs and inefficiencies.

Questions:

1. What steps would you suggest to reduce international transportation costs?
2. List various steps to increase overall visibility throughout Knoll's supply chain.

Source: www.penskelogistics.com/pdfs/07_knoll_case_study_2.pdf

1.5 Summary

- Service sector companies provide their customers with services or intangible products.
- The activities of service sector may be used for both: (i) Provision of services to outside customers (ii) Provision of services internally (i.e. captive consumption).
- The types of services that may be provided, by service sector are of diverse nature and have their own peculiarities and requirements in respect of the cost accounting treatment.
- The Terminology of CLMA defines Service Costing as the cost of specific services and functions, e.g., maintenance, personnel, canteen etc. These may be referred to as service centres, departments or functions.
- Service costing involves the method of determination of the cost of services.
- At the end of specified periods, collection of operating costs takes place and the aggregate of these costs is duly divided by the quantity of services provided in the period. This gives the cost per unit.
- Service organisations/internal service departments render a variety of services.
- Owing to the peculiarities of services, different cost accounting treatment is required.

1.6 Keywords

Costing of Hospital: It is related to ascertaining the cost of medical services rendered by a nursing home or dispensary belonging to an industry or organisation.

Daily Log Sheet or Log Book: It is maintained for each vehicle to record details of each trip.

Fixed or Standing Charges: These are expenses which are more or less fixed nature.

Internal Services: Departments within organisations render services to the production department and also to other departments.

Running or Variable Charges: These are variable cost and variable nature. Running charges are expenses which are incurred on the actual running of the vehicle.

Service Costing: The Terminology of CLMA defines Service Costing as the cost of specific services and functions, e.g., maintenance, personnel, canteen, etc.

Service Organisations: Organisations which are engaged in the business of rendering services to outsiders with the view to earning profit are known as service organisations.

Transport Costing: Refers to the determination of the cost per unit of service i.e., cost of per passenger – kilometre and the cost of per tone – kilometre.

Notes

1.7 Review Questions

1. What do you mean by operating costing? Discuss its methods.
2. Discuss the nature and applications of operating costing.
3. What are the classifications of operating cost?
4. What are the objectives of transport costing? Explain.
5. What is power house costing? Explain its objectives.
6. Define hotel costing. Discuss its objectives in detail.
7. What do you mean by cinema costing? Discuss its objectives.
8. Define hospital costing. Explain various objectives of hospital costing.
9. What do you mean by canteen costing? Discuss its objectives.
10. Singh Travels, a transport company, is running a fleet of six buses between two towns 75 kms apart. The seating capacity of each bus is 40 passengers. The following particulars are available for the month of May, 2007.

(i) Salaries of office and supervisory staff	₹ 1,500
(ii) Wages of drivers, conductors and cleaners	₹ 3,600
(iii) Taxes and insurance	₹ 2,400
(iv) Interest and other charges	₹ 3,000
(v) Repairs and maintenance	₹ 1,200
(vi) Depreciation	₹ 3,000
(vii) Diesel and oils	₹ 10,320
Total	₹ 25,020

The actual passengers carried were 80% of the seating capacity. All buses ran on all day in the month. Each bus made one trip per day. Find out the cost per passenger-kilometre.

Answers: Self Assessment

- | | |
|--------------|--------------------|
| 1. Services | 2. Service costing |
| 3. Tangible | 4. Service |
| 5. Internal | 6. False |
| 7. True | 8. False |
| 9. Transport | 10. Trip |
| 11. Cost | 12. Hotel |
| 13. Hospital | 14. Canteen |
| 15. CLMA | |

Notes

1.8 Further Readings



Books

Bhar. K. B. (2008) *Cost Accounting, Methods & Problem*, Academic Publishers.

Lal, Jawahar & Srivastava, Seema (2009) *Cost Accounting*, 4th Edition, Tata McGraw-Hill Education.

Nigam, Lal B. M. & Jain I. C. (2001) *Cost Accounting: An Introduction*, PHI Learning Pvt. Ltd.

Thakur. S. K, (2009). *Cost Accounting: Theory and Practice*, Excel Books.



Online links

<http://www.svtuition.org/2010/11/service-costing.html>

http://220.227.161.86/18859sm_finalnew_cp7.pdf

<http://iamsam.hubpages.com/hub/Methods-of-Costing>

<http://www.caclubindia.com/articles/costing-for-service-sector-an-overview-part-1-13251.asp>

Unit 2: Reconciliation of Cost and Financial Accounting

Notes

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Objectives

Introduction

- 2.1 Need for Reconciliation
- 2.2 Reasons for Differences in Profit
- 2.3 Advantages of Reconciliation
- 2.4 Method or Procedure of Reconciliation
- 2.5 Summary
- 2.6 Keywords
- 2.7 Review Questions
- 2.8 Further Readings

Objectives

After studying this unit, you will be able to:

- Discuss the need for reconciliation;
- Understand the advantages of reconciliation;
- Explain the method or procedure of reconciliation;
- Analyse reconciliation between two profits.

Introduction

When cost accounts and financial accounts are separately maintained in two different sets of books, two profit and loss accounts will be prepared—one for costing books and second for financial books. The profit or losses shown by the cost accounts may not agree with the profit or loss shown by financial accounts or books. Therefore, it becomes necessary that profit or loss shown by the two sets of accounts is reconciled.

According to Wheldon, "No system is complete unless it is linked up with the financial accounting, that results shown by both cost and financial accounting may be reconciled." In the words of Eric L. Kohler, "Reconciliation is the determination of the items necessary to bring the balances of two or more related accounts or statements, into agreement."

In this unit, we will study in detail about reconciliation and its implications in financial and cost accounting.

2.1 Need for Reconciliation

The need for reconciliation arises due to the following reasons:

- (i) To find out the reasons for the difference in the profit or loss in cost and financial accounts,

Notes

- (ii) To ensure the mathematical accuracy and reliability of cost accounts in order to have cost ascertainment, cost control and to have a check on the financial accounts,
- (iii) Reconciliation helps in formulation of various policies regarding overheads, depreciation and valuation of stock, and
- (iv) It promotes coordination and cooperation between departments of cost accounts and financial accounts.

When cost and financial accounts are maintained separately, the profit shown by one set of books may not agree with that of the other set. In such a situation, it becomes necessary to reconcile the results (profit/loss) shown by two sets of books.

There are certain items, which appear in financial books only and are not recorded in cost accounting books e.g. loss on sale of fixed assets; expenses on stamp duty; interest on bank loan etc. Similarly, there may be some items, which appear in cost accounts only and do not find a place in the financial books e.g. notional rent; notional interest etc.

In cost accounts, overheads are generally absorbed on the basis of a predetermined overhead rate, whereas in financial accounts actual expenditure on overheads is recorded, this will also cause a difference between the figures of profit shown under financial and cost accounts.

Different methods of valuation of closing stock adopted in cost and financial accounts will also cause a difference in the results shown by the two sets of books. In financial accounts the method generally followed is cost or market price, whichever is less whereas in cost accounts different methods of pricing of material issues such as LIFO, FIFO, average etc. are used.

Use of different methods of depreciation is also responsible for the variation of profit shown by two sets of books. In financial accounts, depreciation may be charged according to written down value method whereas in cost accounts it may be charged on the basis of the life of the machine.

Abnormal items not included in cost accounts also cause a difference in profit. If such items of expenses are included, cost ascertained will not be correct.



Note It is important to note that the question of reconciliation of cost and financial accounts arises only under non-integral system. However, under the integral accounts, since cost accounts and financial accounts are integrated into one set of books and only one profit and loss account is prepared, the problem of reconciliation does not arise.

Self Assessment

Fill in the blanks:

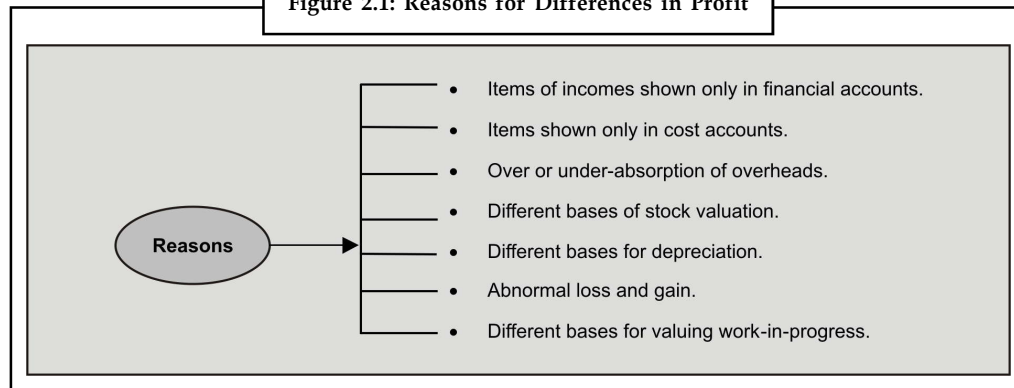
1. According to, "No system is complete unless it is linked up with the financial accounting, that results shown by both cost and financial accounting may be reconciled.
2. In the words of, "Reconciliation is the determination of the items necessary to bring the balances of two or more related accounts or statements, into agreement."
3. Need for reconciliation arises due the reasons for the in the profit or loss in cost and financial accounts.
4. Reconciliation helps in formulation of various policies regarding overheads, depreciation and of stock.

2.2 Reasons for Differences in Profit

Notes

Difference in profit or loss between cost and financial accounts may arise due to the following reasons:

Figure 2.1: Reasons for Differences in Profit



1. **Items of Incomes Shown Only in Financial Accounts:** There are a number of items which are included in financial accounts but find no place in cost accounts. While reconciling any items under this category must be considered. Such items are classified into three categories as under:
 - (i) **Purely Financial Charges:** Under this category, the following charges or examples are considered:
 - (a) Loss on investments
 - (b) Discount on debentures and bonds
 - (c) Loss on the sale of capital assets
 - (d) Expenses of the company's share transfer office
 - (e) Interest on bank loan and mortgages
 - (f) Capital expenditure
 - (g) Commission to partners and managing agents
 - (h) Damages payable at law
 - (i) Fines and penalties
 - (j) Goodwill written off, preliminary expenses
 - (k) Loss due to theft, fire, accident etc.
 - (l) Debit balance of profit and loss account written off
 - (m) Excess provision for depreciation
 - (n) Commission on issue of shares and debentures
 - (o) Cash discount allowed.
 - (ii) **Purely Financial Incomes:** Under this category, the following items of income are included:
 - (a) Rent receivable
 - (b) Transfer fees received

Notes

- (c) Dividend and interest received on investments
- (d) Profits on the sale of fixed assets
- (e) Interest received on bank deposits
- (f) Income tax refund
- (g) Commission received
- (h) Cash discount received
- (i) Brokerage received
- (j) Damages received.

(iii) *Appropriations of Profit:* Under this category, the following items are included:

- (a) Donations and charities
- (b) Income tax
- (c) Dividend paid
- (d) Transfers to reserves and sinking funds
- (e) Any other items which appear in profit and loss appropriation account.

2. **Items Shown Only in Cost Accounts:** There are certain items which are included in cost accounts but not in financial accounts.



Examples:

- (a) Nation depreciation on assets fully depreciated in the books
- (b) National rent of the owned building and no rent is payable
- (c) Interest on capital employed but not actually paid
- (d) National salaries

3. **Over or Under-absorption of Overheads:** Overheads absorbed in cost accounts on the basis of estimation like percentage on direct materials, percentage on direct wages, etc. may be more or less than the actual amount incurred. If overheads are not fully absorbed, i.e. the amount in cost accounts is less than the actual amount, the shortfall is called under-absorption. On the other hand, if overhead expenses in cost accounts are more than the actual, it is called over-absorption. Thus, under or over-absorption of overheads leads to difference in two accounts. Sometimes, selling and distribution expenses are ignored in cost accounts and as such costing profit will be higher and thus requires reconciliation.

4. **Different Bases of Stock Valuation:** In cost accounting, stock are valued according to the method adopted in stores accounts i.e., FIFO, LIFO, etc. On the other hand, valuation of stock in financial accounts is invariably based on the cost or market price, whichever is less. Different stock values result in some difference in profit or loss shown by the two sets of account books.

5. **Different Bases for Depreciation:** In cost accounts, the assets may be depreciated on the straight line method, whereas in financial accounts, a different method of depreciation such as reducing balance method or sinking policy method or a different method is followed. The difference in the method of depreciation followed in these systems of accounts results in a difference of profit.

6. **Abnormal Loss and Gain:** Abnormal losses and abnormal gains are completely kept separate from cost accounts or they are transferred to costing profit and loss account. If they are not included in cost accounts then the profit shown by these two sets of book will vary and adjustment for which has to be done. If these losses are transferred to costing profit and loss account then the profit will tally with the profit as shown by financial accounts. These losses are like – theft, loss by fire, idle time loss etc.
7. **Different Bases for Valuing Work-in-progress:** Work-in-progress is valued either at the stage of prime cost, works cost or cost of production. In cost accounts, the basis followed may be quite different than that followed in financial accounts.



Did u know? Difference in the method of valuing work-in-progress gives rise to preparation of reconciliation statement.

Self Assessment

State whether the following statements are true or false:

5. Work-in-progress is valued either at the stage of prime cost, works cost or cost of production.
6. Valuation of stock in financial accounts is invariably based on the cost or market price, whichever is greater.
7. If overheads are not fully absorbed, i.e. the amount in cost accounts is less than the actual amount, the shortfall is called over-absorption.
8. If overhead expenses in cost accounts are more than the actual, it is called under-absorption.
9. Under Integral type of accounting cost accounts and financial accounts are integrated into one set of books and only one profit and loss account is prepared, the problem of reconciliation does not arise.
10. Non-integral system of accounting is the system of accounting in which similar ledgers are maintained in cost and financial accounts by accountants.

2.3 Advantages of Reconciliation

The advantages of reconciliation are as follows:

- (i) The arithmetical accuracy can be checked in both the sets of books.
- (ii) It helps in detecting frauds as for example; any wrong entry of stock of material in stores ledger owing to theft can be brought to light by comparing with the stock of financial accounts.
- (iii) It enables to set right under or over absorption of overheads in cost accounts by making use of supplementary rates.
- (iv) Separate maintenance of cost accounts has the advantage of exemption from statutory audit as the purpose of cost accounts is to ascertain and control cost rather than ascertainment of profit, and
- (v) Reconciliation facilitates location of areas of inefficiencies.

Notes



Note If predetermined overheads are fixed fairly and actual expenditure incurred are more, it is a case of inefficiency requiring remedial measure.



Task Define the concept of reconciliation statement. What is the need for reconciliation statement?

2.4 Method or Procedure of Reconciliation

The cost and financial accounts are reconciled by preparing a Reconciliation Statement or a Memorandum Reconciliation Account.

(A) **Reconciliation Statement:** Reconciliation statement is a popular and important method of cost accounts and financial accounts. The method or procedure of preparing reconciliation statement. The following method or procedure is recommended for preparing a Reconciliation Statement:

- (i) Ascertain the reasons/points of difference between cost accounts and financial accounts.
- (ii) Start with the profit as shown by the cost accounts.
- (iii) (a) Regarding items of expenses and losses:
Add: Items over-charged in cost accounts.
Less: Items under-charged in cost accounts.



Example: Depreciation in cost accounts is ₹ 3,000 and that in financial accounts is ₹ 3,400. This has the effect of increasing costing profit by ₹ 400 as compared to financial profit. Then in order to reconcile, ₹ 400 will be deducted from costing profit.

- (b) Regarding items of income:
Add: Items under-recorded in cost accounts.
Less: Items over-recorded in cost accounts.



Example: Interest on investments received amounting to ₹ 3,000 is not recorded in cost accounts. This will have the effect of reducing profit by ₹ 3,000. Then in order to reconcile, this amount of ₹ 3,000 for interest should be added in the costing profit.

- (c) Regarding stock valuation:
 - Opening stock
Add: Over-valuation in cost accounts.
Less: Under-valuation in cost accounts.
 - Closing stock
Add: Under-valuation in cost accounts.
Less: Over-valuation in cost accounts.

- (iv) The above treatment of items will be reversed when the starting point in the reconciliation statement is the profit as per financial accounts or loss as per cost accounts.
- (v) After making all the above additions and deductions in costing profit, the resulting figure shall be the profit as per financial books.
- (vi) At some places, 'Memorandum Reconciliation Account' is prepared in place of 'Reconciliation Statement.'
- (vii) The following formula for easy reconciliation (with cost profit):
 For Expenses items: Add the excess, deduct the shortage.
 For Income items: Add the shortage, deduct the excess.

Following is the proforma of a reconciliation statement:

**Proforma of Reconciliation Statement
For the year ending.....**

Particulars	Amount (₹) (+)	Amount (₹) (-)
Profit as per Cost Accounts		...
Add: (i) Expenses over-charged in cost account	...	
(ii) Income not included in cost account	...	
(iii) Over-valuation of opening stock in cost account	...	
(iv) Under-valuation of closing stock in cost account	...	
(v) Expenses recorded in cost account but not charged in financial account	...	
(vi) Income recorded in financial books but not recorded in cost books	...	
(vii) Items credited in financial books but not recorded in cost books	...	
(viii) Depreciation over-charged in cost account
Less: (i) Expenses under-charged in cost account		...
(ii) Expenses not charged in cost account	...	
(iii) Under-valuation of opening stock in cost account	...	
(iv) Over-valuation of closing stock in cost account	...	
(v) Expenses not recorded in cost books but recorded in financial books	...	
(vi) Items debited in financial books but not recorded in cost books
Profit as per Financial Accounts		...

- (B) **Memorandum Reconciliation Account:** This account is presented in debit and credit form but it is not a part of double entry system of book-keeping. So it is kept as a memorandum account only.



Caution The procedure of its preparation is similar to that of reconciliation statement, the only difference is that items shown under "+" column are shown on the credit side and items shown under "-" column are shown on the debt side of the memorandum reconciliation account.

Notes

Following is the proforma of memorandum reconciliation account:

Memorandum Reconciliation Account
As on.....

Particulars	(₹)	Particulars	(₹)
To Expenses not recorded in cost accounts	...	By Profits as per cost accounts	...
To Overheads under-absorbed in cost accounts	...	By Incomes not recorded in cost accounts	...
To Under-valuation of opening stock in cost accounts	...	By Expenses not recorded in profit and loss account	...
To Over-valuation of closing stock in cost accounts	...	By Overheads over-absorbed in cost accounts	...
To Profits as per profit and loss accounts	...	By Over-valuation of opening stock in cost accounts	...
		By Under-valuation of closing stock in cost accounts	...

Task Name five items which are included in financial accounts but not in cost accounts and explain their effect on the profit shown by cost accounts.

Self Assessment

Fill in the blanks:

11. Separate maintenance of cost accounts has the advantage of exemption from audit.
12. Reconciliation facilitates location of areas of
13. The cost and financial accounts are reconciled by preparing a Reconciliation Statement or a Reconciliation Account.
14. Memorandum Reconciliation Account is presented in debit and credit form but it is not a part of system of book-keeping.
15. The purpose and objective of financial accounting is reporting mainly to owners, creditors, tax authorities, government and investors.

Caselet

Profit and Loss Account

The Jai Workshop started on 1st January, 2008, manufacturing two types of machines styled as X and Y. You are asked to prepare a statement showing the cost of each type of machine as well as profit on its sale.

Materials used for manufacturing X and Y type were ₹ 1,25,000 and ₹ 75,000 respectively, while the labour charges were ₹ 75,000 and ₹ 60,000. Works oncost was charged at 70% on labour and office oncost at 20% on works cost.

Contd...

Notes

250 machine of X type and 150 machines of Y type were manufactured and sold during the year ending 31st December 2008 at an average price of ₹ 2,000 and 2,500 respectively. Prepare also a profit and loss account for the period in the financial books. The actual works expenses for X and Y type were ₹ 47,000 and ₹ 40,000 respectively, while the actual office expenses were ₹ 52,700 and 38,500 respectively. Reconcile profit figures of the two sets of books.

Problem 1:

The cost books of a company show a profit of ₹ 50,000 while the net profit as per financial books is ₹ 29,500. On the basis of the following information, prepare a statement remitting the two profits for the year ended 31st March, 2007.

Particulars	Cost Books (₹)	Financial Books (₹)
Factory expenses	20,000	22,000
Office expenses	12,000	10,000
Selling and distribution expenses	8,000	7,000
Dividend received	--	5,000
Loss on sale of furniture	--	1,500
Income-tax	--	10,000
Goodwill written-off	--	5,000
Interest on capital	--	10,000

Solution:

**Reconciliation Statement
for the year ending 31st March, 2007**

Particulars	Amount (₹)
Profit as per cost account	50,000
Add : Office expenses over-charged in cost books	2,000
Selling and distribution expenses over-charged in cost books	1,000
Dividend received not recorded in cost books	5,000
	<hr/> 8,000
	58,000
Less : Factory expenses under-charged in cost accounts	2,000
Loss on sale of furniture not recorded in cost accounts	1,500
Income tax not charged in cost books	10,000
Goodwill written-off not charged in cost books	5,000
Interest on capital not charged in cost accounts	10,000
	<hr/> 28,500
Profit as per Financial Accounts	29,500

Problem 2:

Following is the trading and profit and loss account of Jain Traders for the year ended 31st March, 2009:

Particulars	₹	Particulars	₹
To Material consumed	12,000	By Sale (350 units)	70,000
To Wages	4,000	By Finished stock (50 units)	3,500
To Factory expenses	12,000	By Interest received	1,500

Contd...

Notes	To Administrative expenses	12,000	
	To Goodwill written-off	4,000	
	To Discount of debentures written-off	3,000	
	To Net profit	28,000	
		75,000	75,000

The company's cost records show that:

- (a) Factory overheads have been recovered at 100% on prime cost.
- (b) Administrative overheads have been recovered at 25% of factory cost.

Prepare:

- (a) A statement of cost indicating net profit, and
- (b) A statement reconciling the profit as disclosed by cost accounts and that shown in financial accounts.

Solution:

Statement of Cost and Profit

Particulars	Amount (₹)
Material consumed	12,000
Wages	4,000
Prime Cost	16,000
Factory overheads (100% of prime cost)	16,000
Factory Cost	32,000
Administrative overheads (25% of factory cost)	8,000
Cost of Production	40,000
Less : Closing finished stock (40,000 x 50) ÷ 400 ⁽¹⁾	5,000 ⁽²⁾
Cost of Goods Sold	35,000
Profit (70,000 - 35,000)	35,000
Sales	70,000

**Reconciliation Statement
For the year ending 31st March, 2009**

Particulars	Amount (₹)	Amount (₹)
Profit as per cost accounts	35,000	--
Add: Over-absorption of factory overheads in cost accounts	4,000	--
Interest received excluded from cost accounts	1,500	--
Less: Administration overheads under-recovered in cost accounts	--	4,000
Goodwill written off excluded from cost accounts	--	4,000
Discount on debentures excluded from cost accounts	--	3,000
Finished stock over-valued in cost accounts	--	1,500
	40,500	12,500
Profit as per Financial Accounts	--	28,000 ⁽³⁾
	40,500	40,500

Working notes:

Notes

(1) Number of units produced = Number of units sold + Units of closing stock
 = 350 + 50 = 400 units

(2) In cost accounts, closing stock is valued at cost of production, i.e. value of closing stock:

$$= \frac{\text{Cost of production}}{\text{Number of units produced}} \times \text{Units in closing stock}$$

$$= \frac{40,000}{50} \times 50 = ₹ 5,000$$

(3) Profit as per financial accounts = 40,500 - 12,500 = 28,000

Problem 3:

The net profit of Singh Limited for the year ended 31st March, 2008 was ₹ 28,150 as shown by the profit and loss account. The profit shown by the cost account, however was ₹ 38,500 for the same period. A scrutiny of the figures from both sets of accounts revealed the following facts:

Works overheads under-recovered in cost books	₹ 600
Office overheads over-recovered in cost books	₹ 800
Depreciation charged in financial account	₹ 2,000
Depreciation charged in cost account	₹ 2,500
Interest on investment included in financial account	₹ 1,000
Obsolescence loss charged in financial account	₹ 2,000
Income-tax provided in financial account	₹ 7,000
Bank interest & dividend credited in financial account	₹ 200
Loss due to depreciation in stock values	₹ 1,350
Loss by fire	₹ 1,900

Prepare Reconciliation Statement reconciling the profits of two sets.

Solution:

**Reconciliation Statement
For the year ending 31st March, 2008**

Particulars	Amount (₹)
Profit as per cost account	38,500
Add: Office overheads over-recovered in cost books	800
Depreciation charged in excess in cost account	500
Interest on investment not included in cost account	1,000
Bank interest and dividend not recorded in cost account	200
	41,000
Less: Works overheads under-recovered in cost books	600
Obsolescence loss not charged in cost account	2,000
Income-tax not provided in cost account	7,000
Loss due to depreciation in stock values	1,350
Loss by fire	1,900
	12,850
Profit as per Financial Accounts	28,150

Working note: Practically above items are not concerned with Cost Account.

Notes

Problem 4:

From the following particulars, prepare:

- (a) A statement of cost of manufacture for the year, 2007,
- (b) A statement of profit as per cost accounts, and
- (c) Profit and loss accounts in the financial books and show how you would attribute the difference in the profit as shown by (b) and (c).

Opening stock of raw materials	₹ 30,000
Opening stock of finished goods	₹ 60,000
Purchases of raw materials	₹ 1,80,000
Stock of raw materials at the end	₹ 45,000
Stock of finished goods at the end	₹ 15,000
Direct wages	₹ 75,000

Calculate the factory expenses at 25% on prime cost, and office expenses at 75% on factory expenses.

Actual factory expenses amounted to ₹ 58,125 and actual office expenses amounted at ₹ 45,750. The selling price was fixed at a profit of 25% on cost.

Solution:

(a) Statement of Cost of Manufacture for the year 2007

Particulars		Amount (₹)
Opening stock of raw materials	30,000	
Add : Purchases of raw materials	1,80,000	
	2,10,000	
Less : Closing stock of raw materials	45,000	
Cost of raw materials consumed		1,65,000
Direct wages		75,000
	Prime Cost	2,40,000
Factory expenses (25% on prime cost)		60,000
	Works or Factory Cost	3,00,000
Office expenses (75% on factory expenses)		45,000
	Total Cost of Production	3,45,000

(b) Statement of Profit

Particulars		Amount (₹)
Total cost of production		3,45,000
Add : Opening stock of finished goods		60,000
		4,05,000
Less : Closing stock of finished goods		15,000
	Cost of Goods Sold	3,90,000
Profit (25% on cost)		97,500
	Sales	4,87,500

(c) Profit and Loss Account

Notes

Particulars	Amount (₹)	Particulars	Amount (₹)
To Opening stock of finished goods	60,000	By Sales	4,87,500
To Raw materials consumed	1,65,000	By Closing stock of finished goods	15,000
To Direct wages	75,000		
To Factory expenses	58,125		
To Office expenses	45,750		
To Net profit	98,625		
	5,02,500		5,02,500

Reconciliation Statement

Particulars	Amount (₹)
Profit as per cost accounts	97,500
Add: Factory expenses overcharged in cost account (₹ 60,000 - 58,125)	1,875
	99,375
Less: Office expenses under charged in cost account (₹ 45,750 - ₹ 45,000)	750
Profit as per Financial Accounts	98,625

Problem 5:

The financial profit and loss account of XYZ Manufacturing Company for the year ended 31st December, 2008 is as follows:

Particulars	₹	Particulars	₹
To Materials consumed	80,000	By Sales	1,98,400
To Carriage inward	1,600		
To Wages	54,400		
To Factory expenses	19,200		
To Administrative expenses	7,200		
To Selling & Distribution exp.	10,400		
To Debenture interest	1,600		
To Net profit	24,000		
	1,98,400		1,98,400

The net profit shown by cost accounts for the year is ₹ 26,032. Upon detailed examination, the following facts were revealed:

(i) About the overheads, the following amounts were charged in cost accounts:

Factory overheads	₹ 18,400
Office overheads	₹ 7,344
Selling and distribution overheads	₹ 10,624

(ii) No amount has been charged in the cost accounts regarding the debenture interest. Reconcile the profits as shown by the two sets of books.

Notes

Solution:

Reconciliation Statement
For the year ending 31st December, 2008

Particulars	Amount (₹)
Net profit as per cost books	26,032
Add: Office overheads recovered in excess i.e. (7,344 - 7,200)	144
Selling and distribution overheads recovered in excess i.e. (10,624 - 10,400)	224
	26,400
Less: Factory overheads under recovered in cost accounts (19,200 - 18,400)	800
Debenture interest not recorded in cost accounts	1,600
Net Profit as Financial Accounts	24,000

Problem 6:

ABC Manufacturing Company disclosed a net loss of ₹ 3,47,000 as per their cost accounts for the year ended March 31st, 2008. The financial accounts, however, disclosed a net loss of ₹ 5,10,000 for the same period. The following information was revealed as a result of scrutiny of the figures of both the sets of accounts:

Depreciation charged in financial accounts	₹ 3,25,000
Depreciation recovered in cost accounts	₹ 2,75,000
Interest on loan funds in financial accounts	₹ 2,45,000
Factory overheads under-absorbed	₹ 40,000
Administration overheads over-absorbed	₹ 60,000
Interest on investments not included in cost accounts	₹ 96,000
Income-tax provided	₹ 54,000
Dividend received	₹ 32,000
Transfer fee (credit in financial books)	₹ 24,000
Stores adjustment (credit in financial books)	₹ 14,000

Prepare a statement showing reconciliation between the figure of net loss as per cost accounts and the figure of net loss shown in the financial books.

Solution:

Memorandum Reconciliation Account

Particulars	₹	Particulars	₹
To Net loss as per cost accounts	3,47,000	By Administration overheads over-absorbed	60,000
To Factory overheads under-absorbed	40,000	By Interest on investments not included in costs	96,000
To Income tax not recorded in cost account	54,000	By Transfer fees in financial books	24,000
To Depreciation under absorbed in cost account	50,000	By Stores adjustment	14,000

Contd...

To Interest on loan funds in financial account	2,45,000	By Dividend received	32,000
		By Net loss as per financial books	5,10,000
	7,36,000		7,36,000

Notes



Case Study

Connexion Values's Accounting Manager

Connexion Values's Accounting Manager had just retired after more than thirty years of service, their new Accounting Manager have an extensive IT background but little accounting experience. The previous Accounting Manager had little IT knowledge but solid bookkeeping and financial management skills.

The previous Accounting Manager was accustomed to manual (not software-based) reconciliations. He had prepared Profit and Loss Account both as per financial records and as per cost records. He also prepared Reconciliation Statement as per the two records, all of which are shown below.

Particulars	₹
Material consumption	50,00,000
Wages	30,00,000
Factory overheads	16,00,000
Administrative overheads	7,00,000
Selling and distribution overheads	9,60,000
Bad debts	80,000
Preliminary expenses (written-off)	40,000
Legal charges	10,000
Dividend received	1,00,000
Interest received on deposits	20,000
Sales (1,20,000 units)	1,20,000
Closing stocks :	
Finished goods (4,000 units)	3,20,000
Work-in-progress	2,40,000

The cost accounts for the same period reveal that the direct material consumption was ₹ 56,00,000. Factory overhead is recovered at 20% on prime cost. Administration overhead is recovered at ₹ 6 per unit of production. Selling and distribution overheads are recovered at ₹ 8 per unit sold.

Profit & Loss Account

Debit

Credit

₹ in 000s

Particulars	Amount ₹	Particulars	Amount ₹
To direct materials	5,000	By sales 1,20,000 units	12,000
To direct wages	3,000	By closing stock WIP	240
		Finished goods 4800 units	320
To factory overheads	1,600		

Contd...

Notes

To gross profit	2,960		
Total	12,560	Total	12,560
To administrative overheads	700	By gross profit	2,960
To S & D overheads	960	By dividends	100
To legal charges	10	By interest	20
To preliminary expenses written off	40		
To bad debts	80		
To net profit	1,290		
Total	3,080	Total	3,080

Statement Showing Cost and Profits as per Cost Records

Particulars	Amount ₹
Direct material	56,00,000
Direct wages	30,00,000
Prime Cost [Direct material + Direct wages]	86,00,000
Factory overheads: 20% on prime cost	17,20,000
	1,03,20,000
Less: Closing Work-in-progress	2,40,000

Reconciliation of Cost and Financial Accounts

Particulars	Amount ₹
Works cost - 1,24,000 units	1,00,80,000
Administration overheads [₹ 6 per unit × 124000 units]	7,44,000
Cost of production	1,08,24,000
Less: Finished stock [4000 units × ₹ 87.29 *]	3,49,160
Cost of goods sold	1,04,74,840
Selling and distribution expenses [₹ 8 × 1,20,000 units]	9,60,000
Cost of sales	1,14,34,840
Sales	1,20,00,000
Profit	5,65,160

* ₹ 1,08,24,000/1,24,000 units = ₹ 87.29

Reconciliation Statement

Particulars	Amount ₹	Amount ₹
Profit as per cost accounts		5,65,160
Add: Excess expenses charged in cost accounts		
• Material	6,00,000	
• Factory overheads	1,20,000	
• Administrative overheads	44,000	
Income not recorded in cost accounts		
• Dividend	1,00,000	
• Interest received	20,000	
• Total		8,84,000

Contd...

Notes

	Total	14,49,160
Less: Expenses not recorded in cost accounts		
• Legal charges	10,000	
• Preliminary expenses written off	40,000	
• Bad debts	80,000	
• Total	1,30,000	
Less: Overvaluation of closing stock in cost records	29,160	
Total	1,59,160	1,59,160
Profits as per financial accounts		12,90,000

The new Accounting Manager using the new software reconciled Profit and Loss Account and Reconciliation Statement and found them all wrong!!

Questions:

1. Check Profit and Loss Account and state if it is correct or not. If not, make correct entries.
2. Check Reconciliation Statement and state if it is correct or not. If not, correct it.

Source: http://www.myciwai.com/StudyMaterial/Cost_Mgmt_Ac.pdf

2.5 Summary

- When cost accounts and financial accounts are separately maintained in two different sets of books, two profit and loss accounts will be prepared – one for costing books and second for financial books.
- The profit or losses shown by the cost accounts may not agree with the profit or loss shown by financial accounts or books. Therefore, it becomes necessary that profit or loss shown by the two sets of accounts is reconciled.
- It is important to note that the question of reconciliation of cost and financial accounts arises only under non-integral system.
- However, under the integral accounts, since cost accounts and financial accounts are integrated into one set of books and only one profit and loss account is prepared, the problem of reconciliation does not arise.
- The need for reconciliation arises due to the reasons for the difference in the profit or loss in cost and financial accounts, to ensure the mathematical accuracy and reliability of cost accounts in order to have cost ascertainment, cost control and to have a check on the financial accounts.
- The cost and financial accounts are reconciled by preparing a Reconciliation Statement or a Memorandum Reconciliation Account.
- Reconciliation statement is a popular and important method of cost accounts and financial accounts.
- Memorandum Reconciliation Account: This account is presented in debit and credit form but it is not a part of double entry system of book-keeping. So it is kept as a memorandum account only.

2.6 Keywords

Cost Accounting: Its purpose and objective is internal reporting to management.

Cost Ledger: It is the principle ledger of cost department in which impersonal accounts are recorded.

Financial Accounting: The purpose and objective of financial accounting is external reporting mainly to owners, creditors, tax authorities, government and investors.

Integral Accounts: Under this type of accounting cost accounts and financial accounts are integrated into one set of books and only one profit and loss account is prepared, the problem of reconciliation does not arise.

Memorandum Reconciliation Account: This account is presented in debit and credit form but it is not a part of double entry system of book-keeping. So it is kept as a memorandum account only.

Non-integral System of Accounting: It is the system of accounting in which separate ledgers are maintained in cost and financial accounts by accountants.

Reconciliation: Reconciliation is a process whereby profits revealed by two sets of books are tallied after ascertaining the reasons for disagreement of the two profits.

Reconciliation Statement: Reconciliation statement is a popular and important method of cost accounts and financial accounts.

2.7 Review Questions

1. Explain 'reasons for difference' between cash profit and financial profit.
2. Discuss the causes of difference between costing profits and financial profits.
3. What value do you attach to the reconciliation of cost accounts and financial accounts? Explain the main reasons for the difference in the net profits shown by the two sets of accounts.
4. Explain the reconciliation procedure. Under what circumstances, a reconciliation statement can be avoided?
5. What is the purpose of reconciliation cost and financial accounts? Indicate the possible sources of difference between them.
6. Explain the procedure of reconciling the profit as shown by cost and financial accounts.
7. Explain the difference between reconciliation statement and memorandum reconciliation account. Prepare an imaginary memorandum reconciliation account.
8. Distinguish between reconciliation statement and reconciliation account.
9. What is a profit and loss reconciliation statement? How is it prepared? Taking imaginary figures, you are required to prepare a statement.
10. State the steps involved in the preparation of reconciliation statement.
11. Calculate the amount of profit as per profit and loss account on the basis of the following information:

Profit as per cost account ₹ 16,000.

Factory overheads were under-recorded in cost account by ₹ 320.

Depreciation charges were over recovered in cost account by ₹ 200.

Notes

Administrative expense was under recorded in financial accounts by ₹ 400.

Provision for income-tax made in financial books is ₹ 9,600.

Goodwill written-off ₹ 250 was not recorded in financial book.

Interest received on investment during the year ₹ 300.

Transfer fee amounting to ₹ 100 were received during the year in connection with registration of transfer of shares.

Answers: Self Assessment

- | | |
|----------------|--------------------|
| 1. Wheldon | 2. Eric L. Kohler |
| 3. difference | 4. valuation |
| 5. True | 6. False |
| 7. False | 8. False |
| 9. True | 10. False |
| 11. Statutory | 12. Inefficiencies |
| 13. Memorandum | 14. double entry |
| 15. external | |

2.8 Further Readings



Books

Bhar. K.B. (2008) *Cost Accounting, Methods & Problem*, Academic Publishers.

Lal, Jawahar & Srivastava, Seema (2009) *Cost Accounting*, 4th Edition, Tata McGraw-Hill Education.

Nigam, Lal B.M. & Jain I. C. (2001) *Cost Accounting: An Introduction*, PHI Learning Pvt. Ltd.

Thakur. S.K, (2009). *Cost Accounting: Theory and Practice*, Excel Books.



Online links

http://classof1.com/homework_answers/cost_accounting/reconciliation_of_cost_and_financial_accounts/

[http://ebooks.narotama.ac.id/files/A%20Textbook%20of%20Financial%20Cost%20&%20Management%20Accounting%20\(Revised%20Edition\)/Chapter%2025%20%20Reconciliation%20of%20Cost%20and%20Financial%20Accounts.pdf](http://ebooks.narotama.ac.id/files/A%20Textbook%20of%20Financial%20Cost%20&%20Management%20Accounting%20(Revised%20Edition)/Chapter%2025%20%20Reconciliation%20of%20Cost%20and%20Financial%20Accounts.pdf)

<http://www.scribd.com/doc/4089959/Reconciliation-of-CostFinancial-Costing>

http://www.caclubindia.com/share_files/reconciliation-of-cost-financial-accounts-25703.asp#.UOUXA0lazfi

Unit 3: Absorption Costing and Marginal Costing

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Objectives

Introduction

3.1 Definition of Marginal Cost and Marginal Costing

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3.3 Differences between Marginal Costing and Absorption Costing

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3.7 Further Readings

Objectives

After studying this unit, you will be able to:

- Define marginal costing;
- Interpret the need for marginal costing;
- Explain the difference between absorption costing and marginal costing;
- Demonstrate the application of marginal costing.

Introduction

Marginal Costing is not a method of costing like job, batch or contract costing. It is in fact a technique of costing in which only variable manufacturing costs are considered while determining the cost of goods sold and also for valuation of inventories. In fact, this technique is based on the fundamental principle that the total costs can be divided into fixed and variable. While the total fixed costs remain constant at all levels of production, the variable costs go on changing with the production level. It will increase if the production increases and will decrease if the production decreases. The technique of marginal costing helps in supplying the relevant information to the management to enable them to take decisions in several areas. In this unit, the technique of marginal costing is explained in detail.

3.1 Definition of Marginal Cost and Marginal Costing

Marginal Cost is defined as, 'the change in aggregate costs due to change in the volume of production by one unit'. For example, if the total number of units produced are 800 and the total cost of production is ₹ 12,000, if one unit is additionally produced the total cost of production may become ₹ 12,010 and if the production quantity is decreased by one unit, the total cost may come down to ₹ 11,990. Thus the change in the total cost is by ₹ 10 and hence the marginal cost is ₹ 10. The increase or decrease in the total cost is by the same amount because the variable cost always remains constant on per unit basis.

Marginal Costing has been defined as, 'Ascertainment of cost and measuring the impact on profits of the change in the volume of output or type of output. This is subject to one assumption and that is the fixed cost will remain unchanged irrespective of the change.'



Note The marginal costing involves firstly the ascertainment of the marginal cost and measuring the impact on profit of alterations made in the production volume and type.



Example: Suppose company X is manufacturing three products, A, B and C at present and the number of units produced are 45,000, 50,000 and 30,000 respectively p.a. If it decides to change the product mix and decides that the production of B is to be reduced by 5000 units and that of A should be increased by 5000 units, there will be impact on profits and it will be essential to measure the same before the final decision is taken. Marginal costing helps to prepare comparative statement and thus facilitates the decision-making. This decision is regarding the change in the volume of output.

Now suppose if the company has to take a decision that product B should not be produced at all and the capacity, which will be available, should be utilized for A and B this will be change in the type of output and again the impact on profit will have to be measured. This can be done with the help of marginal costing by preparing comparative statement showing profits before the decision and after the decision. This is subject to one assumption and that is the fixed cost remains constant irrespective of the changes in the production. Thus marginal costing is a very useful technique of costing for decision-making.

3.2 Features of Marginal Costing

As mentioned above, marginal costing is not a separate method of costing but it is a technique of costing distinct from the traditional costing which is also called as 'Absorption Costing'. The distinguishing features of marginal costing are as follows:

1. In marginal costing, costs are segregated into fixed and variable. Only variable costs are charged to the production, i.e. included in the cost of production. Fixed costs are not included in the cost of production, which means that they are not absorbed in the production. However this does not mean that they are ignored or not taking into consideration at all. They are taken into consideration while computing the final profit or loss by debiting them to the Costing Profit and Loss Account. The logic behind omitting fixed costs from cost of production is that fixed costs do not remain fixed on per unit basis. On per unit basis, the fixed cost will increase if the production decreases while it will decrease on per unit basis if the production increases. Thus fixed cost per unit are always variable. In view of this, a question arises; on what basis they should be charged to the product? Similarly, there is a problem of under and over absorption of these overheads also. Therefore it is advocated that fixed cost should be eliminated from the cost of production but should be taken into consideration while computing the final figure of profit by charging them to the Costing Profit and Loss Account. The following illustration will clarify the point.



Example: Company X is producing 1,00,000 units. The variable cost per unit is ₹ 5 and the fixed costs are ₹ 5,00,000. If we work out the total cost per unit, it will be variable cost + fixed cost per unit [at present level of production] that means, the total cost will be ₹ 5 + ₹ 5 = ₹ 10. But as per the technique of marginal costing, the variable cost only i.e. ₹ 5, will be charged to the production while the fixed cost of ₹ 5,00,000 will not be charged to the cost of production, it will

Notes

be charged to the Costing Profit and Loss Account. Thus the selling price of the product will be fixed on the basis of variable costs of ₹ 5 per unit. This may result in charging the price below the total cost but producing and selling a large volume of the product will cover the fixed costs. Suppose, in the above example, selling price is ₹ 9, which covers the variable cost but not the total cost, efforts of the company will be to maximize the volume of sales and through the margin between the selling price and variable cost, cover the fixed cost. The difference between the selling price of ₹ 10 per unit and the variable cost of ₹ 5 per units is the margin, which is called as 'Contribution'. The contribution margin in this case is ₹ 5 per unit. If the company is able to produce and sell, say, 1,50,000 units it will earn a total contribution of ₹ 5 × 1,50,000 units = ₹ 7,50,000 which will cover the fixed costs and earn profits. However if the company is not able to sell sufficient number of units, it will incur a loss. The concept of break-even point which is discussed in detail later in this chapter is based on the same calculation.

- Another important feature of marginal costing is the valuation of inventory is done at variable cost only. This means, that variable costs only are taken into consideration while valuing the inventory. Fixed costs are eliminated from the inventory valuation because they are largely period costs and relate to a particular period or year. If they are included in the inventory valuation, they will be carried forward to the next period because the closing inventory for a particular year is the opening inventory for the next year. Thus charging current year's costs to the next year will be against the principle and hence fixed costs are not included in the inventory valuation. Secondly, as discussed above, fixed costs are not included in the cost of production, and so including them in the inventory valuation is not justified from this angle. The following illustration will clarify the point.



Example: A Ltd. is currently producing 25 000 units of product 'P'. The variable cost per unit is ₹ 7 while fixed cost is ₹ 2,00,000. The company is able to sell 20 000 units and 5000 units are unsold. While valuing this inventory, the valuation will be done at ₹ 7 per unit, the value will be 5 000 units × ₹ 7 per unit = ₹ 35,000. It will be seen that the total cost of production is ₹ 7 [variable cost per unit] + ₹ 8 [fixed cost per unit at the present level] = ₹ 15 but the valuation will be at ₹ 7 per unit only which is the variable cost per unit. [Principle of valuation of inventory i.e. cost price or market price whichever is low will be applied and in the example it is presumed that the selling price is more than the variable cost per unit].

- Another feature of marginal costing is the preparation of income statement. The income statement is prepared in a different manner as compared to the statement prepared under traditional costing, i.e. absorption costing. The income statement is prepared as shown below:

**Income Statement Under Marginal Costing
XYZ LTD. Product P**

Particulars	Amount ₹	Amount ₹
Sales		
Less: Variable Costs		
Contribution		
Less: Fixed Costs		
Profit		

If the company is producing more than one product, the contribution from each product is combined as a pool from which the total fixed cost is deducted. Fixed cost is not charged to each product unless it is identifiable with a product. The income statement [with imaginary figures] in such case is prepared as shown below:

XYZ Ltd.
Income Statement Under Marginal Costing

Notes

Particulars	Product X ₹	Product Y ₹	Product Z ₹	Total ₹
Sales:	20,00,000	35,00,000	27,00,000	82,00,000
Less: Variable Cost	12,00,000	17,50,000	16,00,000	45,50,000
Contribution	8,00,000	17,50,000	11,00,000	36,50,000
Less: Fixed Cost	—	—	—	20,00,000
Profit				16,50,000

It can be seen from the above statement that the contribution made by each product towards the fixed cost can be measured and thus the priority for each product can be decided. If any product does not contribute anything towards the fixed cost, the management may decide to close it down.

Self Assessment

Fill in the blanks:

- is a technique of costing in which only variable manufacturing costs are considered while determining the cost of goods sold and also for valuation of inventories.
- In marginal costing, are segregated into fixed and variable.
- The marginal costing involves the ascertainment of the marginal cost and measuring the impact on of alterations made in the production volume and type.
- costs are not included in the cost of production.
- Marginal costing is the valuation of inventory is done at cost only.
- Fixed costs are eliminated from the valuation because they are largely period costs and relate to a particular period or year.
- The technique of marginal costing helps in supplying the to the management to enable them to take decisions in several areas.

3.3 Differences between Marginal Costing and Absorption Costing

We have discussed so far the meaning and features of marginal costing. It must be clearly understood by now, that marginal costing is a technique of costing which advocates that only variable costs should be taken into consideration while working out the total cost of production and while valuing the inventory, only variable costs should be taken into the computation.



Caution Fixed costs should not be absorbed in the cost of production but should be charged to the Costing Profit and Loss Account. On the other hand, under absorption costing all indirect costs i.e. overheads are first apportioned and then absorbed in the production units.

Notes

Table 3.1: Differences between the Absorption Costing and Marginal Costing

Absorption Costing	Marginal Costing
1. Costs are classified as direct and indirect, direct costs are identifiable with a particular product and hence charged directly. Indirect costs i.e. overheads are first identified, apportioned to the cost centers and finally absorbed in the product units on some suitable basis.	1. Costs are classified as fixed and variable. While direct costs are mostly variable, indirect costs, i.e. overheads may be semi variable. The variable portion in the total overhead cost is identified and thus the total variable costs are computed. Only variable costs are charged to the product while the fixed costs are not absorbed in the product units. They are finally debited to the Costing Profit and Loss Account for computing the final figure of profit or loss. Thus the cost of production under marginal costing is only the variable portion of the total costs.
2. The year-end inventory of finished goods under absorption costing is valued at total cost, i.e. fixed and variable.	2. The year-end inventory is valued at variable cost only. Fixed costs are not taken into consideration while valuing inventory, as they are not absorbed in the product units.
3. The fixed overhead absorption may create some problems like over/under absorption. This happens because of the overhead absorption rate which is pre determined. Suitable corrective entries are to be made to rectify the over/under absorption of overheads; otherwise the cost of production will be distorted.	3. The fixed overheads are charged directly to the Costing Profit and Loss Account and not absorbed in the product units. Therefore there is no question of under/over absorption of overheads.
4. Due to the inventory valuation, which is done at the full cost, the costs relating to the current period are carried forward to the subsequent period. This will distort the cost of production.	4. Fixed costs are not taken into consideration while valuing the inventory and hence there is no distortion of profits.
5. The total cost of production is charged to the product without distinguishing between the fixed and variable components. The selling price is thus fixed on the basis of total costs.	5. Only variable costs are charged to the cost of production and therefore the selling price is also based on only variable costs. This will result in fixation of selling price below the total costs. There is a possibility of starting a price war in such situations, which will be harmful to all the companies in the industry.

The points of difference between the absorption costing and marginal costing will clarify the difference between the two. The following problem will further clarify the difference between absorption costing and marginal costing.

Problem 1:

From the following data compute the profit under

- (a) Marginal costing and
- (b) Absorption costing and reconcile the difference in profits.

Selling price per unit: ₹ 8

Variable cost per unit: ₹ 4

Fixed cost per unit: ₹ 2

Normal volume of production is 26,000 units per quarter.

The opening and closing stocks consisting of both finished goods and equivalent units of work in progress are as follows:

Particulars	Quarter I	Quarter II	Quarter III	Quarter IV	Total
Opening stock [Units]	–	–	6,000	2,000	–
Production [Units]	26,000	30,000	24,000	30,000	1,10,000
Sales [Units]	26,000	24,000	28,000	32,000	1,10,000
Closing stock [Units]	–	6,000	2,000	–	–

Solution:

The following statements are prepared to show profits under marginal costing and absorption costing.

Statement Showing Profit/Loss under Marginal Costing

Particulars	Quarter I ₹	Quarter II ₹	Quarter III ₹	Quarter IV ₹	Total ₹
[A] Sales @ ₹ 8*	2,08,000	1,92,000	2,24,000	2,56,000	8,80,000
[B] Marginal costs					
• Opening Stock @ ₹ 4	–	–	24,000	8,000	
• Production @ ₹ 4	1,04,000	1,20,000	96,000	1,20,000	4,40,000
• Total [Opening stock + Production]	1,04,000	1,20,000	1,20,000	1,28,000	4,40,000
• Less: Closing Stock @ ₹ 4	–	24,000	8,000		
• Cost of goods sold	1,04,000	96,000	1,12,000	1,28,000	4,40,000
[C] Contribution [A - B]	1,04,000	96,000	1,12,000	1,28,000	4,40,000
[D] Fixed Cost	52,000	52,000	52,000	52,000	2,08,000
[E] Profit [C - D]	52,000	44,000	60,000	76,000	2,32,000



Note Sales value is computed by multiplying the number of units sold in each quarter by the selling price per unit of ₹ 8.

Statement of Profit under Absorption Costing

Particulars	Quarter I ₹	Quarter II ₹	Quarter III ₹	Quarter IV ₹	Total ₹
[A] Sales @ ₹ 8	2,08,000	1,92,000	2,24,000	2,56,000	8,80,000
[B] Opening Stock @ ₹ 6	–	–	36,000	12,000	
[C] Cost of Production @ ₹ 6*	1,56,000	1,80,000	1,44,000	1,80,000	6,60,000
[D] A + C	1,56,000	1,80,000	1,80,000	1,92,000	6,60,000
[E] Closing Stock @ ₹ 6	–	36,000	12,000	–	–
[F] Cost of Sales [Actual] D - E	1,56,000	1,44,000	1,68,000	1,92,000	6,60,000
[G] Profit before adjustment of under or over absorbed fixed cost [A - F]	52,000	48,000	56,000	64,000	2,20,000
Add: Over absorbed fixed overheads**	–	8,000	–	8,000	16,000

Contd...

Notes

Less: Under absorbed fixed overheads***	-	-	4,000	-	4,000
Profit	52,000	56,000	52,000	72,000	2,32,000

* The total cost of production is ₹ 6, which, consists of ₹ 4 variable cost, and ₹ 2 as fixed cost per unit at the normal volume of production. The opening stock cost of production and closing stock values are computed by taking these figures.

** Over absorption of fixed overheads is computed by multiplying the excess production than the normal volume by the fixed overheads per unit i.e. ₹ 2.

*** Under absorption of overheads is computed by multiplying the units produced below the normal volume of production by the fixed overheads per unit i.e. ₹ 2.

Reconciliation of Profit

Particulars	Quarter I ₹	Quarter II ₹	Quarter III ₹	Quarter IV ₹	Total ₹
Profit as per absorption costing	52,000	56,000	52,000	72,000	2,32,000
Less: Higher fixed cost in closing stock [6000 × ₹ 2]		12,000	-	-	12,000
Add: Higher fixed cost in opening stock*			8,000	4,000	12,000
Profit as per marginal costing	52,000	44,000	60,000	76,000	2,32,000

* In quarter III: [6000 - 2000] × ₹ 2 = ₹ 8,000, Quarter IV = 2,000 × ₹ 2 = ₹ 4,000

Problem 2:

For a particular product, the following cost data is given:

	Per unit (₹)
Selling Price	20
Variable cost	12
Fixed cost	4
Normal production	52000 units

For the four consecutive periods, the following additional data are given:

	Period 1 Units	Period 2 Units	Period 3 Units	Period 4 Units	Total Units
Opening stock	-	-	12000	4000	-
Production	52000	60000	48000	60000	220000
Sales	52000	48000	56000	64000	220000
Closing stock	-	12000	4000	-	-

Prepare a statement showing the profit for different periods under both marginal costing method & absorption costing method.

Solution:

Under Marginal Costing

Particulars	Period 1 (₹)	Period 2 (₹)	Period 3 (₹)	Period 4 (₹)	Total (₹)
Sales - (i)	1040000	960000	1120000	1280000	4400000
Opening stock	-	-	144000	48000	-
Production	624000	720000	576000	720000	2640000

Contd...

Total	624000	720000	720000	768000	2640000
Less: Closing stock	-	144000	48000	-	
Cost of goods Sold (ii)	624000	576000	672000	768000	2640000
Contribution (i) - (ii)	416000	384000	448000	512000	1760000
Less: Fixed Cost 52000 units @ 4	208000	208000	208000	208000	832000
Profit	208000	176000	240000	304000	928000

Notes

Under Absorption Costing

Particulars	Period 1 (₹)	Period 2 (₹)	Period 3 (₹)	Period 4 (₹)	Total (₹)
Sales - (i)	1040000	960000	1120000	1280000	4400000
Opening stock @ ₹ 16 per unit	-	-	192000	64000	
Cost of Production ₹ 16 per unit	832000	960000	768000	960000	3520000
Total	832000	960000	960000	1024000	3520000
Less: Closing stock @ ₹ 16 per unit	-	192000	64000	-	-
Cost of goods sold (Actual)	832000	768000	896000	1024000	3520000
Less: Over-absorbed	-	32000		32000	64000
Overheads		(Notes 1)		(Notes 3)	
	832000	736000	896000	992000	3456000
Add: Under-absorbed			16000		16000
Overheads			(Notes 2)		
Cost of Sales after adjusting under/over absorbed overheads - (ii)	832000	736000	912000	992000	3472000
Profit [(i) - (ii)]	208000	224000	208000	288000	928000



Notes The following adjustments should be carried out for the purpose of comparison of results of absorption costing & marginal costing:

The normal capacity is 52000 units. Actual production during the period is 60000 units. That means there is over-absorption of fixed overhead amounting ₹ 32000 [(60000 units - 52000 units) * ₹ 4].

Actual production is 48000 units which are less than normal production by 4000 units. That means there is under-absorption of fixed overhead amounting ₹ 16000 [(52000 units - 48000 units) * ₹ 4].

Actual production is 60000 units which are more than normal production by 8000 units. That means there is over-absorption of fixed overhead amounting ₹ 32000 [(60000 units - 52000 units) * ₹ 4].

There is difference of profits under both the methods. The reasons of such difference are:

Period 1: During this period, since no opening or closing stock is there, there is no difference in profit figures under both the methods.

Period 2: During this period, profit under Absorption costing is more than that of Marginal costing by ₹ 48000. This is due to the fact that fixed cost of 12000 units @ ₹ 4 is being carried forward for the next year.

Notes

Period 3: During this period, profit under Absorption costing is less than that of Marginal costing by ₹ 32000. This is due to the fact that by 8000 units opening stock is more than that of closing stock. As a result, to the cost of production of current year, a portion of last year's fixed overhead is being charged.

Period 4: During this period, profit under Absorption costing is less than that of Marginal costing by ₹ 16000. This is due to the fact that to the cost of production of current years, the fixed overhead relating to opening stock is being charged.



Caselet

Costing

The costing of all services delivered by NHS providers should be governed by the following principles:

Costs (and income) should be:

- (a) calculated on a full absorption basis to identify the full cost of services delivered;
- (b) allocated and apportioned accurately by maximizing direct charging and where this is not possible using standard methods of apportionment; and
- (c) matched to the services that generate them to avoid cross subsidization. The costing process should also be transparent with a clear audit trail.

Where costs have not been directly attributed to the patient, costing pools should be constructed so that the costs included can be allocated or apportioned using the same method. Costing pools can be constructed in different ways dependent on the nature of the costs included in them. The manual gives examples. One absorption rate is calculated by dividing the combined fixed and semi-fixed costing pools forwards, theatres and outpatients by the appropriate activity units i.e. bed-days, theatre-hours or attendances.

Discussion Points

- 1. What problems might be faced in apportioning overhead costs?
- 2. Why might it be important that the costing process should be transparent with a clear audit trail?

Source: Department of Health, NHS Costing Manual 2008/09, http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/Publications Policy And Guidance/DH_095890.

Self Assessment

Fill in the blanks:

- 8. costing is a method by which all direct cost and applicable overheads are charged to products or cost centres for finding out the total cost of production.
- 9. Fixed costs should not be absorbed in the cost of but should be charged to the Costing Profit and Loss Account.
- 10. Under absorption costing all costs i.e. overheads are first apportioned and then absorbed in the production units.
- 11. Cost control aims at not allowing the cost to beyond the present level.
- 12. Marginal costs are costs consisting of labour and material costs, plus an estimated portion of fixed costs (such as administration overheads and selling expenses).

13. planning, generally known as budget or plan of operation may be defined as the planning of future operations to attain a defined profit goal.
14. The marginal costing technique helps to generate data required for profit planning and
15. decision-making is a very crucial function in any organization.

Notes



Case Study

The City of Dayton, Ohio: A Case Study in Costing New Services Marginal Cost Analysis

While the most effective cost concept for examining the prices of existing municipal services is total cost, the cost concept that is most useful in examining new or expanded services is marginal cost. Marginal cost concentrates attention on the additional expenditures required to deliver a new service or to expand an existing one. In particular, if overhead costs are relatively fixed, the marginal cost is the total additional cost for delivering a new or expanded service.

A report by Paul Mamerow, a management analyst for the City of Dayton, Ohio, follows. It discusses cost and feasibility data for the possible implementation of a mounted horse patrol in downtown Dayton. Interestingly, while the report is a marginal cost analysis, the term marginal cost never appears in it.

September 17, 1974

Marginal Cost Analysis

TO: Paul R. Woodie, Administrator
Office of Management and Budget

FROM: Paul W. Mamerow

SUBJECT: Mounted Horse Patrol

Recently, the city manager requested OMB to provide cost and feasibility data for a mounted horse patrol in the downtown area. The following report supplies relevant cost data and briefly outlines two alternatives for implementation.

In preparing this report, OMB contacted both the International City Manager's Association and the International Chiefs of Police Association for assistance. OMB further made contact with the Cleveland, Philadelphia, Lakewood, Colorado, and Washington Park Police Department (all of which have mounted police) and with several local stabling concerns.

Part I of this report suggests possible objectives for a mounted patrol in Dayton. Part II briefly outlines two alternatives for implementation of the mounted patrol program. Part III presents cost information for each implementation alternative. Cost detail is supplied in the Appendix.

Objectives

The following represent those objectives which apply to a mounted patrol program in Dayton. These objectives were arrived at through review of several mounted patrol programs operating in cities as large as, or larger than Dayton, and through consultation with Mr. Curran as to his expectations.

Contd...

Notes

The objectives are stated as follows:

- To increase police visibility in the downtown area, and/or in City Parks and the river corridor when necessary.
- To enhance the innovative image of downtown Dayton.
- To provide effective traffic control to congested downtown areas, or to areas of special assignment (e.g., sporting events).
- To provide effective crowd management for parades and other social functions downtown, and in areas of special assignment.

It should be noted that the Parking Control Aid Program was implemented to partially accomplish the first objective of increasing police visibility. Furthermore, the Parking Control Aids also provide enforcement of parking restrictions in the downtown area, thus contributing partially to the accomplishment of the third objective. It should also be noted that because the major function of the mounted patrol is to increase on-the-street police visibility, the mounted patrol, like the present walking patrol, will not answer radio dispatches, especially to in-building locations.

Implementation

Implementations of either of the two mounted patrol alternatives outlined below will involve certain programmatic costs pertaining to the purchase, outfitting, and maintenance of horses, the training of horses and riders, the purchase of uniforms, and street cleaning. Total costs for each alternative are outlined in Part III of this report.

Not included in program cost is the cost of hiring new police personnel, since both alternatives assume the utilization of personnel already working the downtown area. Mounted patrolmen would remain under the supervision of present sergeants.

Alternative A: Daytime-Weekday Patrol

This alternative would provide two mounted patrolmen during the day, Monday through Friday. Such a program would require two police officers, and the purchase of three horses. The mounted officer would patrol primarily an area bounded by Mounted Avenue and Fifth Street to the North and South, and Jefferson and Ludlow Streets to the East and West.

This alternative would accomplish during the daytime the objectives of increasing police visibility downtown, enhancing Dayton's innovative image, and providing traffic control and crowd management when needed.

The total cost of this program alternative is \$20,650. This program alternative does not require expanded street cleaning operations since the patrol will be operative on weekdays only and this coincides with existing clean-up schedules.

Alternative B: Six-day, Day and Night Patrol

This alternative would provide four mounted patrolmen, Monday through Saturday, two working during the day and two working in the evening. Such a program would require five police officers and at least six horses.

Mounted officers would patrol primarily the downtown district as outlined above. However, those mounted patrolmen scheduled for evening patrol could be assigned to provide support for Dayton Hydroglobe (Eastwood Lake) Parks, or to areas congested by heavy traffic or crowds when necessary, or to ceremonial functions.

Contd...

Notes

This program alternative would accomplish, during the daytime and night, and on Saturdays, the objectives of increasing police visibility downtown, of enhancing Dayton’s innovative image, and of providing traffic control and crowd management to the downtown area, as well as to areas of special assignment. This alternative represents a total program cost of \$38,225.

Cost

The following represents annual costs for the two implementation alternatives outlined in Section II.

Purchase & Fitting of Horse	Alternative A	Alternative B
Purchase of horses	\$1,200	\$2,400
Riding gear	560	1,400
Maintenance		
Feed	2,190	4,380
Bedding	36	72
Farrier (blacksmith) fees	600	1,200
Veterinarian fees	125	250
Stable rental	900	1,800
Stable cleaning & grooming	4,000 - 10,465	4,000 - 10,465
Training		
Training of horses	600	1,200
Training of riders	1,850	1,850
Miscellaneous		
Trailer	950	950
Uniforms	1,140	2,850
Street Cleaning Costs	-	9,405
Total Program Cost	\$14,151 - \$20,616	\$31,757 - \$38,222

APPENDIX: Cost Detail

Horses

Cost is computed at \$400 per horse. This estimate is derived from quotes by local stable owners and several police departments currently employing mounted patrol.

Riding gear

	For Five Riders	For Two Riders
Saddle with Fittings	\$ 885	\$ 354
Bridles with Bits	265	106
Pads	80	32
Brushes and Curries	35	14
Breast Collars	135	54
Total	\$ 1,400	\$ 560

Contd...

Notes

Feed

Cost is computed at approximately \$2 per horse per day. This estimate is a rough composite figure derived by several estimates advanced by local stabling concerns and several police departments employing mounted patrol. Estimate given here is somewhat higher than those received by OMB, in order to account for rising grain costs.

Bedding

Daily cleaning of stalls for six horses requires approximately two loads of sawdust per month at approximately \$3 per load.

Farrier (blacksmith) fees

Horses working pavement require new shoes approximately once every six weeks. One set of four borium shoes is priced at approximately \$25.

Veterinarian fees

	For Six Horses	For Three Horses
Tetanus Toxoid (1)	\$ 36	\$ 18
Flu and Strangles (1)	60	30
Worming (2)	84	42
Floating of Teeth (1)	42	21
Min. Diagnostic Fees	–	I
Total	\$ 250	\$ 125

Stable Rental

Commissioner Curran has indicated that the Montgomery County Fairground has committed their stables to the City for use in this program. Cost is computed at \$25 per stall per month.

Stable Cleaning & Grooming

The fairground does not provide feeding, bedding or grooming services. The upper estimate is arrived at by computing cost of hiring a stable hand (Grade 112) to do the work. The lower figure is the estimated cost of letting the work out on a contractual basis to fairground personnel.

Training of horses

Cost is estimated at \$40 per month for a five-month period. (Estimate supplied by Mrs. Tressler of Montgomery County Fairground).

Training of riders

Cost for group-rate training is computed as follows: (Estimate supplied by Mrs. Tressler of Montgomery County Fairground)

10 hours classroom training at \$5/hr.	\$ 50.00
120 hours riding training at \$15/hr.	1,800.00
Total	\$ 1,850.00

Trailer

Used, two horse trailer - \$950

Contd...

Uniform Cost

Cost per patrolman supplied by the Lakewood Department of Public Safety, Lakewood, Colorado.

Summer Uniform Cost for One Mounted Patrolman

Boots at \$50	x 2 =	\$ 100
Spurs at \$15	x 1 =	15
Pads at \$65	x 3 =	195
Gun, Belt, Holster, etc. at \$60	x 1 =	60
Lightweight Jacket at \$45	x 1 =	45
Total		\$ 415

Winter Uniform Cost for One Mounted Patrolman

Felt Hat at \$25	x 1 =	\$ 25
Down Coat at \$100	x 1 =	100
Rain Slicker at \$30	x 1 =	30
Total		\$ 155

Total Summer and Winter Uniform Expense \$570

Street Cleaning Operation

Present street cleaning operations span a five-night, Sunday-to-Thursday-night work week. To accommodate a horse patrol active six days a week, street cleaning operations should be shifted to encompass a Monday-to-Friday night work week, and an additional four-hour Saturday night work shift should be added. Cost figures below represent additional time-and-a-half wage cost, including fringes, for a 48-hour work week.

Equipment Operator (2)	\$ 2 005
Labourer (Grade 112)	1 733
Equipment Operator (3) (Sweeper)	2 173
1/2 Equipment Operator (3) (Flusher-six months a year)	1 086
Supervisor (Grade 24)	2 408
Total	\$ 9 405

Questions:

1. Study and analyze the case.
2. Write down the case facts.
3. What do you infer from it?

Source: http://home.xnet.com/~jkelly/Publications/Costing.fldr/Cost.PDF.Files/09Cost_Case_Studies.pdf

3.4 Summary

- Marginal Costing is not a method of costing like job, batch or contract costing.
- In fact, this technique is based on the fundamental principle that the total costs can be divided into fixed and variable. While the total fixed costs remain constant at all levels of production, the variable costs go on changing with the production level.

Notes

Notes

- It will increase if the production increases and will decrease if the production decreases.
- The technique of marginal costing helps in supplying the relevant information to the management to enable them to take decisions in several areas.
- Marginal Costing has been defined as, 'Ascertainment of cost and measuring the impact on profits of the change in the volume of output or type of output. This is subject to one assumption and that is the fixed cost will remain unchanged irrespective of the change.'
- An important feature of marginal costing is the valuation of inventory is done at variable cost only. This means, that variable costs only are taken into consideration while valuing the inventory.
- Fixed costs are eliminated from the inventory valuation because they are largely period costs and relate to a particular period or year.
- An important application of marginal costing is the area of profit planning.
- Profit planning, generally known as budget or plan of operation may be defined as the planning of future operations to attain a defined profit goal.
- The marginal costing technique helps to generate data required for profit planning and decision-making.
- Managerial decision-making is a very crucial function in any organization.
- Decision - making should be on the basis of the relevant information. Through the marginal costing technique, information about the cost behaviour is made available in the form of fixed and variable costs.
- The segregation of costs between fixed and variable helps the management in predicting the cost behaviour in various alternatives.

3.5 Keywords

Absorbed Cost: It includes production cost as well as administrative and other cost.

Absorption Costing: It is a method by which all direct cost and applicable overheads are charged to products or cost centres for finding out the total cost of production.

Direct Costing: Principles under which all cost which are directly related are charged to products, process, operations or services.

Key Factor Analysis: The preparation of a plan after taking into consideration the constraints, if any, on the various resources. These constraints are also known as limiting factors or principal budget.

Marginal Costing: It is in fact a technique of costing in which only variable manufacturing costs are considered while determining the cost of goods sold and also for valuation of inventories.

Marginal Costs: These are variable costs consisting of labour and material costs, plus an estimated portion of fixed costs (such as administration overheads and selling expenses).

Marginal Revenue: It is the additional revenue that will be generated by increasing product sales by 1 unit.

Profit Planning: Generally known as budget or plan of operation may be defined as the planning of future operations to attain a defined profit goal.

3.6 Review Questions

Notes

1. Define 'Marginal Cost' and 'Marginal Costing'. How variable and fixed costs are treated in marginal costing? Give a journal entry for overhead accounts under marginal costing.
2. State the utility of marginal costing in price fixation during trade depression and for export purposes.
3. What do you mean by key factor analysis?
4. Explain the features of marginal costing.
5. Discuss the differences between the marginal costing and absorption costing.
6. Discuss fully the applications of marginal costing.
7. Discuss the reasons for difference between profits under marginal costing and absorption costing.
8. Discuss the limitations of marginal costing.
9. Explain the concept of profit planning and cost control as an application of marginal costing.
10. Throw light on some of the crucial areas of decision-making.

Answers: Self Assessment

- | | |
|---------------------|---------------------|
| 1. Marginal Costing | 2. Costs |
| 3. profit | 4. Fixed |
| 5. Variable | 6. Inventory |
| 7. information | 8. Absorption |
| 9. Production | 10. Indirect |
| 11. Rise | 12. Variable |
| 13. Profit | 14. decision-making |
| 15. Managerial | |

3.7 Further Readings



Books

Bhar. K.B. (2008) *Cost Accounting, Methods & Problem*, Academic Publishers.

Lal, Jawahar & Srivastava, Seema (2009) *Cost Accounting*, 4th Edition, Tata McGraw-Hill Education.

Nigam, Lal B.M. & Jain I. C. (2001) *Cost Accounting: An Introduction*, PHI Learning Pvt. Ltd.

Thakur. S.K, (2009). *Cost Accounting: Theory and Practice*, Excel Books.

Notes



Online links

<http://www.slideshare.net/camie5566/marginal-costing-11752369>

<http://www.csus.edu/indiv/p/pforsichh/documents/AbsorptionvVariableCostingVideoLecture.pdf>

<http://www.accountingtools.com/absorption-costing>

<http://banadurga.blogspot.com/2012/02/difference-between-absorption-costing.html>

Unit 4: Cost Volume Profit Analysis

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Objectives

After studying this unit, you will be able to:

- Define marginal cost equation;
- State the concept of cost-volume-profit analysis;
- Describe the effects of certain changes on P/V ratio;
- Explain break even analysis;
- Recognise practical applications of cost volume profit analysis for decision-making.

Introduction

In the previous unit, we have studied about the need of marginal costing, difference between marginal and absorption costing and the various applications of marginal costing. Students need to have clear understanding of the basic concept of marginal costing, so as to have a better understanding of this unit. As cost-volume-profit analysis is a part of marginal costing.

Notes

Cost-volume-profit (CVP) analysis estimates how changes in costs (both variable and fixed), sales volume, and price affect a company's profit. CVP is a powerful tool for planning and decision making. In fact, CVP is one of the most versatile and widely applicable tools used by managerial accountants to help managers make better decisions.

Thus, cost-volume-profit analysis is the analysis of three variables, viz., cost, volume and profit. In cost-volume-profit analysis, an attempt is made to measure variations of various costs and profit with the volume. Profit as a variable is the reflection of a number of internal and external conditions which exert influence on sales revenue and costs. CVP analysis can address many issues, such as the number of units that must be sold to break even, the impact of a given reduction in fixed costs on the break-even point, and the impact of an increase in price on profit. Additionally, CVP analysis allows managers to do sensitivity analysis by examining the impact of various price or cost levels on profit.

4.1 Concept of Cost-Volume-Profit Analysis

According to **CIMA, London**, "Cost-volume-profit analysis is the study of the effects on future profits of changes in fixed cost, variable cost, sales price, quantity and mix."

In the words of **Heiser**, "The most significant single factor in profit planning of the average business is the relationship between the volume of business, costs and profit."

The cost-volume-profit analysis is the relationship among cost, volume and profit. Profit of a business organisation depends upon a number of factors such as selling price, sales volume, per unit of variable cost, fixed cost and sales mix. The cost-volume-profit analysis explains the inter relationships of these variables for decision-making. The management is always interested in knowing that which product or product mix is most profitable; what effect a change in the volume of output will have on the cost of production and profit etc.



Note Under cost-volume-profit analysis, when volume of output increases, unit cost of production decreases, and vice-versa; because, the fixed cost remains unaffected. When the output increases, the fixed cost per unit decreases. Therefore, profit will be more, when sales price remains constant.

The basic purpose of cost-volume-profit analysis is to determine the impact of fluctuations in cost and volume on the financial results of the business firm or organisation. All these problems are solved with the help of the cost-volume-profit analysis.

4.1.1 Objectives of Cost-Volume-Profit Analysis

Following are the main objectives of cost-volume-profit analysis:

1. To achieve the minimum level of sales for avoiding losses
2. To arrive at the desirable product mix so as to maximise profit
3. The required level of sales that will fetch the planned rate of profit
4. To ascertain the most viable product and the least profits required to gain ground in the market
5. To determine the resultant impact on cost-volume-profit relationships on account of the planned expansion of activities

6. To ascertain the effect of changes in the volume of output, costs and prices on the planned profit, and
7. To determine the sale of a product of a plant to be discontinued or the operation of the business firm should be temporarily stopped.

Self Assessment

Fill in the blanks:

1. CVP is one of the most versatile and widely applicable tools used by managerial accountants to help managers make better
2. as a variable is the reflection of a number of internal and external conditions which exert influence on sales revenue and costs.
3. The cost-volume-profit analysis is the relationship among cost, and profit.
4. The basic purpose of cost-volume-profit analysis is to determine the impact of in cost and volume on the financial results of the business firm or organisation.

4.2 Marginal Cost Equation

The element of cost can be written in the form of an equation. This equation is known as 'marginal cost equation'. The equation is shown below:

$$\text{Sales} = \text{Variable cost} + \text{Fixed cost} + \text{Profit} \quad \text{OR} \quad S = VC + FC + P$$

$$\text{Sales} - \text{Variable cost} = \text{Fixed cost} + \text{Profit} \quad \text{OR} \quad S - VC = FC + P$$

$$\text{Sales} - \text{Variable cost} = \text{Contribution} \quad \text{OR} \quad S - VC = C$$

From the above marginal cost equation, we can understand that in order to earn profit, the contribution must be more than the fixed cost. To avoid any loss, the contribution must be equal to fixed cost.

4.2.1 Contribution

The important element of the marginal cost equation is the 'contribution' factor which is resulted from the sales value after deduction of variable costs. It has been stated above that 'contribution' is the composition of fixed costs plus profit. Contribution is also known as gross margin. In the other words, contribution is the difference between sales and marginal cost. Contribution enables to meet fixed costs and add to the profit.



Note Contribution minus fixed cost is profit, but where fixed cost is more than contribution, the difference is loss.

Contribution can be expressed by the following formula:

$$\text{Contribution} = \text{Sales} - \text{Marginal cost} \quad \text{OR} \quad C = S - MC$$

$$\text{Contribution} = \text{Sales} - \text{Variable cost} \quad \text{OR} \quad C = S - VC$$

$$\text{Contribution} = \text{Fixed cost} + \text{Profit} \quad \text{OR} \quad C = FC + P$$

Notes

$$\begin{aligned} \text{Profit} &= \text{Contribution} - \text{Fixed cost} && \text{OR} && P = C - FC \\ \text{Sales} - \text{Variable cost} &= \text{Fixed cost} + \text{Profit} && \text{OR} && S - V = F + P \end{aligned}$$

Problem 1:

From the following information, find out the (a) Contribution, and (b) Amount of profit earned during the year:

Fixed cost	₹ 5,00,000
Variable cost	₹ 10 per unit
Selling price	₹ 15 per unit
Output	1,50,000 unit

Solution:

(a) Calculation of contribution:

$$\begin{aligned} \text{Contribution} &= \text{Sales} - \text{Marginal cost} \\ \text{Contribution} &= (1,50,000 \times 15) - (1,50,000 \times 10) \\ \text{Contribution} &= 22,50,000 - 15,00,000 \\ \text{Contribution} &= ₹ 7,50,000 \end{aligned}$$

(b) Calculation of amount of profit:

$$\begin{aligned} \text{Profit} &= \text{Contribution} - \text{Fixed cost} \\ \text{Profit} &= 7,50,000 - 5,00,000 \\ \text{Profit} &= ₹ 2,50,000 \end{aligned}$$

Problem 2:

From the following information, find out the (a) Contribution, and (b) Profit earned during the year:

Selling price	₹ 10 per unit
Variable cost	₹ 7 per unit
Fixed cost	₹ 2,00,000
Output	1,00,000 units

Solution:

(a) Calculation of contribution:

$$\begin{aligned} \text{Contribution} &= \text{Sales} - \text{Variable cost} \\ \text{Contribution} &= (1,00,000 \times 10) - (1,00,000 \times 7) \\ \text{Contribution} &= 10,00,000 - 7,00,000 \\ \text{Contribution} &= ₹ 3,00,000 \end{aligned}$$

(b) Calculation of profit:

$$\begin{aligned} \text{Profit} &= \text{Contribution} - \text{Fixed cost} \\ \text{Profit} &= 3,00,000 - 2,00,000 \\ \text{Profit} &= ₹ 1,00,000 \end{aligned}$$

4.3 Effect of Certain Changes on Profit-Volume Ratio

The profit-volume ratio, popularly known as the P/V ratio, expresses the relation of contribution to sales. This ratio is also known as contribution to sales or the marginal income ratio.



Note The profit-volume ratio is often expressed as a percentage and is a guide to the profitability of a business firm. Normally, this ratio is expressed in percentage. P/V ratio is very important in decision-making. It can be used for the calculation of BEP and in problems regarding profit sales relationship.

The formula for computing the P/V ratio is given below:

$$\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 \quad \text{OR} \quad = \frac{C}{S} \times 100$$

$$\text{P/V Ratio} = \frac{\text{Contribution per unit}}{\text{Selling price per unit}} \times 100 \quad \text{OR} \quad = \frac{C \text{ per unit}}{SP \text{ per unit}} \times 100$$

In addition to above, the P/V ratio can be expressed in the following further forms:

$$\text{P/V Ratio} = \frac{\text{Fixed cost} + \text{Profit}}{\text{Sales}} \times 100 \quad \text{OR} \quad = \frac{F + P}{S} \times 100$$

$$\text{P/V Ratio} = \frac{\text{Sales} - \text{Variable cost}}{\text{Sales}} \times 100 \quad \text{OR} \quad = \frac{S - V}{S} \times 100$$

$$\text{P/V Ratio} = \frac{\text{Change in profit (In two periods)}}{\text{Change in sales (In two periods)}} \times 100$$

4.3.1 Improvement of P/V Ratio

Profit-volume ratio is the function of sales and variable costs. Therefore, an improvement of the ratio will mean increasing the gap between sales and variable costs. This can be done by:

- (i) Increasing selling price,
- (ii) Reducing or decreasing variable costs, and
- (iii) Altering sales mixture, i.e., product having low P/V ratio will be substituted by a product with a higher ratio.

Uses of Profit-Volume Ratio

The profit-volume ratio is usually used to ascertain the following:

- (i) To determine the variable cost for any volume of sales,
- (ii) To determine the volume of sales required to earn a given profit,
- (iii) To fix the selling prices,
- (iv) To locate the break-even point and margin of safety,
- (v) To determine the volume of sales required for maintaining the present level of profit, if selling price is reduced, and
- (vi) To compute the profit when margin of safety is given.

Notes

Problem 3:

Calculate P/V ratio from the following information:

Sales	₹ 50,000
Marginal cost	₹ 20,000

Solution:

$$\begin{aligned} \text{Contribution} &= \text{Sales} - \text{Marginal cost} \\ &= 50,000 - 20,000 \\ &= ₹ 30,000 \end{aligned}$$

$$\begin{aligned} \text{P/V Ratio} &= \frac{\text{Contribution}}{\text{Sales}} \times 100 \\ &= \frac{30,000}{50,000} \times 100 = 60\% \end{aligned}$$

4.4 Break-Even Analysis

Break-even analysis is a technique of studying cost-volume-profit relationship. This analysis may be interpreted in broad as well as in narrow sense. In its narrow sense, the break-even analysis determines the break-even point. It is a point to indicate no profit and no loss situation of the project taken up for implementation. If the same is used in broad sense, the analysis is to indicate the probable profit or loss at any given level of activity. Break-even analysis is also known as cost-volume-profit analysis.

According to **Joseph Baggot**, 'Break-even analysis refers to a system of analysing cost into its fixed and variable components to determine the probable profits at given level of activity.'

In the words of **Car Heyel**, "Break-even analysis is a method of studying the relationship among sales revenue, fixed costs and variable expenses to determine the minimum volume at which production can be profitable." Break-even analysis is aimed at measuring variations of cost with volume. It is a useful technique in business decision-making.

4.4.1 Assumption of Break-Even Analysis

Break-even analysis is based on the following assumptions:

- (i) All costs be classified into fixed cost and variable cost,
- (ii) Total fixed costs remain unchanged,
- (iii) Variable costs per unit remains unchanged and total variable costs change with the change in the volume of output in direct proportion,
- (iv) With the changes in the volume of sales, selling price does not change,
- (v) General price level will not change,
- (vi) Stocks are valued at marginal cost,
- (vii) In case of multi product sales programme, sales mix will remain constant,
- (viii) Costs and revenues are influenced only by volume,
- (ix) Productivity per worker remains unaffected, and
- (x) There is synchronisation between production and sales.

Break-Even Point

Notes

Break-even point is a point where the total sales or revenue are equal to total costs. In break-even point, there is no profit or loss in the volume of sales. In other words, it is a point at which no profit no loss situation prevails in the operating activity of a business firm. This indicates that the break-even point is the minimum level of production at which total cost is recovered and no profit or no loss is sustained.

According to **Charles T. Horngren**, "The break-even point is that point of activity (sales volume) where total revenue and total expenses are equal; it is the point of zero profit and zero loss."

According to **G. R. Crowningsheild**, "Break-even point is the point at which sales revenue equals the cost to make and sell the product and no profit or loss is reported."

The following fundamental formula is used to calculate break-even point:

$$\text{Break-even Point (in ₹)} = \frac{\text{Fixed cost} \times \text{Sales}}{\text{Contribution}} \quad \text{OR} \quad = \frac{\text{Fixed cost}}{\text{P/V ratio}}$$

$$\text{Break-even Point (in units)} = \frac{\text{Fixed cost}}{\text{Contribution per unit}} \quad \text{OR} \quad = \frac{\text{FC}}{\text{C per unit}}$$

Problem 4:

From the following particulars, calculate the break-even point:

Selling price	₹ 20 per unit
Variable cost	₹ 14 per unit
Fixed cost	₹ 60,000

Solution:

$$\begin{aligned} \text{Break-even Point (in ₹)} &= \frac{\text{Fixed cost} \times \text{SP per unit}}{\text{Contribution per unit}} \\ &= \frac{60,000 \times 20}{6} = \frac{12,00,000}{6} \\ &= ₹ 2,00,000 \end{aligned}$$

$$\begin{aligned} \text{Break-even Point (in units)} &= \frac{\text{Fixed cost}}{\text{Contribution per unit}} \\ &= \frac{60,000}{6} \\ &= 10,000 \text{ Units} \end{aligned}$$

Working note: (1) Calculation of contribution per unit:

$$\text{Contribution} = \text{Selling price per unit} - \text{Variable cost per unit}$$

$$\text{Contribution} = 20 - 14 = 6 \text{ per unit}$$

Problem 5:

You are required to calculate the break-even point from the following information:

Selling price	₹ 30 per unit
Variable cost	₹ 20 per unit

Notes	Fixed cost	₹ 1,20,000
	Estimated sales	₹ 3,00,000

Solution:

Contribution = Selling price per unit - Variable cost per unit

$$\text{Contribution} = 30 - 20$$

$$= ₹ 10$$

$$\text{P/V Ratio} = \frac{\text{Contribution per unit}}{\text{Selling price per unit}} \times 100$$

$$= \frac{10}{30} \times 100 = 33.33\%$$

$$\text{Break-even Point (in ₹)} = \frac{\text{Fixed cost} \times \text{SP per unit}}{\text{Contribution per unit}}$$

$$= \frac{1,20,000 \times 30}{10} = \frac{36,00,000}{10}$$

$$= ₹ 3,60,000$$

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

$$= \frac{1,20,000}{10}$$

$$= 12,000 \text{ Units}$$

Problem 6:

A Company Manufactures and sells a product at fixed selling price. The budgeted figures for 2008-09 are:

Production output and sales	2,00,000 units
Variable cost	₹ 56 per unit
Fixed cost	₹ 48 lakhs
Profit margin	33.33% of selling price

You are required to determine sales at break-even both in terms of quantity and volume for the budget year 2008-09 at the above selling price.

Solution:

Calculation of selling price per unit:

Variable cost per unit	₹ 56
Fixed cost per unit (48,00,000 ÷ 2,00,000 units)	₹ 24
	₹ 80
Profit 33.33% of selling price or 50% of cost	40
	₹ 120

$$\begin{aligned}\text{Break-even Point (in ₹)} &= \frac{\text{Fixed cost}}{\text{Contribution per unit}} \times \text{Selling price per unit} \\ &= \frac{48,00,000}{64} \times 120 \\ &= ₹ 90,00,000\end{aligned}$$

$$\begin{aligned}\text{Break-even Point (in units)} &= \frac{\text{Fixed cost}}{\text{Contribution per unit}} \\ &= \frac{48,00,000}{64} = 70,000 \text{ units}\end{aligned}$$



Task Cost-volume-profit relationship provides the management with a simplified framework for an organisation which is thinking on a number of problems." Discuss.



Caselet

Ethics and a Cost-Volume-Profit Application

Danna Lumus, the marketing manager for a division that produces a variety of paper products, is considering the divisional manager's request for a sales forecast for a new line of paper napkins. The divisional manager has been gathering data so that he can choose between two different production processes. The first process would have a variable cost of \$10 per case produced and fixed costs of \$100,000. The second process would have a variable cost of \$6 per case and fixed costs of \$200,000. The selling price would be \$30 per case. Danna had just completed a marketing analysis that projects annual sales of 30,000 cases. Danna is reluctant to report the 30,000 forecast to the divisional manager. She knows that the first process would be labour intensive, whereas the second would be largely automated with little labour and no requirement for an additional production supervisor. If the first process is chosen, Jerry Johnson, a good friend, will be appointed as the line supervisor. If the second process is chosen, Jerry and an entire line of labourers will be laid off. After some consideration, Danna revises the projected sales downward to 22,000 cases. She believes that the revision downward is justified. Since it will lead the divisional manager to choose the manual system, it shows a sensitivity to the needs of current employees—a sensitivity that she is afraid her divisional manager does not possess. He is too focused on quantitative factors in his decision making and usually ignores the qualitative aspects.

Required:

Compute the break-even point for each process.

Source: http://www.cengagesites.com/academic/assets/sites/3185_ch04.pdf

Self Assessment

Fill in the blanks:

5. In order to earn profit, the contribution must be more than the
6. is the composition of fixed costs plus profit.

Notes

7. P/V ratio is also known as contribution to sales or the income ratio.
8. Break-even analysis is a technique of studying relationship.
9. Break-even analysis is aimed at measuring variations of with volume.
10. is the point at which sales revenue equals the cost to make and sell the product and no profit or loss is reported."

4.5 Margin of Safety

Margin of safety is an important concept in marginal costing approach. Margin of safety is the difference between the actual sales and the sales at break-even point. This is represented by excess sales over and above the break-even point. The margin of safety refers to amount by which sales revenue can fall before a loss is incurred. That is, it is the difference between the actual sales and sales at the break-even point.



Caution Margin of safety indicates the soundness of the business firm. High margin of safety indicates the soundness of a business firm because even with substantial fall in sale or fall in production, some profit shall be made. Small margin of safety on the other hand is an indicator of the weak position of the business firm and even a small reduction in sale or production will adversely affect the profit position of the business firm.

To improve the margin of safety, the following measures may be adopted:

- (i) Increase the level of production,
- (ii) Increase the selling price,
- (iii) Reducing the fixed and variable costs,
- (iv) Substitute the existing products by more profitable products, and
- (v) Changing to a product mix that improves P/V ratio.

Margin of safety can be calculated with the help of the following formula:

$$\text{Margin of Safety} = \text{Total sales} - \text{Sales at B.E.P.}$$

OR
$$\text{Margin of Safety} = \frac{\text{Profit}}{\text{P/V ratio}}$$

OR
$$\text{Margin of Safety} = \frac{\text{Profit}}{\text{Contribution}}$$

$$\text{Margin of Safety (as a percentage)} = \frac{\text{Margin of safety}}{\text{Total sales}} \times 100$$

Problem 7:

From the following details find out:

- (i) P/V Ratio, (ii) Break-even Point, and (iii) Margin of safety.

Sales	₹ 1,00,000
Total cost	₹ 75,000
Fixed cost	₹ 20,000
Net profit	₹ 25,000

Solution:**Notes**

$$(i) \quad P/V \text{ Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100$$

$$= \frac{45,000}{1,00,000} \times 100 = 45\%$$

$$(ii) \quad \text{Break-even Point (in ₹)} = \frac{\text{Fixed cost}}{P/V \text{ ratio}}$$

$$= \frac{20,000}{45} \times 100$$

$$= ₹ 44,444$$

$$(iii) \quad \text{Margin of Safety} = \frac{\text{Profit}}{P/V \text{ ratio}}$$

$$= \frac{25,000}{45} \times 100$$

$$= ₹ 55,556 \text{ (Approx.)}$$

OR

$$\text{Margin of Safety} = \text{Actual sales} - \text{Break-even point sales}$$

$$= 1,00,000 - 44,444$$

$$= ₹ 55,556$$



Task What is the effect of the following on the break-even point, profit-volume ratio and margin of safety? Explain giving reasons.

- Increase in units of sales,
- Decrease in VC per unit,
- Increase in unit selling price,
- Decrease in total fixed cost,
- Increase in material prices, and
- Discount on selling price.

4.6 Break-Even Chart

A break-even chart is a graphical representation of marginal costing or cost-volume-profit analysis. It is an important aid to profit planning. It has been defined as "A chart which shows the profitability or otherwise of an undertaking at various levels of activity and as a result indicates the point at which neither profit nor loss is made."

According to **Dr. Vance**, "It is a graph showing the amounts of fixed variable costs and the sales revenue at different volumes of operation. It shows at what volume the firm first covers all costs with revenue of break-even."

A break-even chart presents the following information:

- The profit or loss at various levels of activity,

Notes

- (ii) The margin of safety and the angle of incidence,
- (iii) The inter relationship between different costs of production,
- (iv) The sales value and break-even point, and
- (v) The amount of contribution.

At different activity levels, the interaction of volume, selling price, variable costs and fixed costs, the relevant variable and their impact upon profit are considered simultaneously.



Did u know? The most important use of the break-even chart is the ascertainment of a break-even point from the chart, which is a valuable guide to the management.

4.6.1 Assumption of Break-Even Chart

Following are the assumptions of break-even chart:

- (i) Costs can be classified into fixed and variable costs,
- (ii) Fixed costs will remain constant and will not change with the change in level of output,
- (iii) Variable costs will fluctuate in the same proportion in which the volume of output varies,
- (iv) The number of units produced and sold will be the same so that there is no opening or closing stock,
- (v) Selling price will remain constant irrespective of change in volume of production,
- (vi) There is only one product or in the case of many products, product mix will remain unchanged, and
- (vii) There will be no change in operating efficiency.

4.6.2 Advantages and Disadvantages of Break-Even Chart

Following are the main advantages and disadvantages of break-even chart:

Advantages

- (i) The chart is very useful for forecasting costs and profits at various levels of sales,
- (ii) A break-even chart is useful for studying the relationship of cost, volume and profit. The chart is very useful for taking managerial decisions,
- (iii) A break-even chart is a tool for cost control because it shows the relative importance of the fixed cost and the variable cost,
- (iv) Profitability of various products can be compared with the help of break-even chart,
- (v) It is helpful in knowing the effect of increase or reduction in selling price,
- (vi) Profitability of various products can be studied with the help of break-even chart and a most profitable product mix can be adopted. Profits at different levels of activity can also be ascertained,
- (vii) Information provided by the break-even chart can be understood by the management more easily than contained in the profit and loss account and the cost statements because a break-even chart is the simple presentation of cost, volume and profit of the company, and

- (viii) The profit potentialities can be best judged from a study of the position of the break-even point and the angle of incidence in the break-even chart.

Limitations of Break-Even Chart

The main limitations of break-even chart arise from the number of assumptions which are made in drawing break-even charts. These limitations are as under:

- (i) The effect of various product mixes on profits cannot be studied from a single break-even chart,
- (ii) A break-even chart is based on a number of assumptions which may not hold good. In the break-even chart, we have seen that the total cost line and the sales line look straight lines. This is possible only with a number of assumptions. But, in practice, the total cost line and the sales line are not straight lines because the assumptions do not hold good,
- (iii) A break-even chart does not take into consideration capital employed which is a very important factor in taking managerial decisions. Therefore, managerial decisions on the basis of break-even chart may not be reliable,
- (iv) A limited amount of information can be shown, in a break-even chart. A number of charts will have to be drawn up to study the effects of changes in fixed costs, variable costs and selling prices,
- (v) No importance is given to opening and closing stocks, and
- (vi) Constant selling price is not true.

Construction of Break-Even Chart

The common methods, followed in the construction of simple break-even chart, are stated here under:

- (i) A break-even chart is drawn on a graph paper,
- (ii) There are two sides on a graph which are known as 'axis'. The horizontal side at the bottom of the graph is 'x-axis' and the vertical side is the 'y-axis',
- (iii) On the graph, the x-axis shows the volume of production and the y-axis shows the cost and sales price,
- (iv) Draw both axes on the suitable graph paper on the basis of appropriate scale,
- (v) Fixed cost line is drawn on the graph. Fixed cost line is drawn parallel to the x-axis because fixed cost remain the same,
- (vi) Total cost line is drawn above the fixed cost line. For this purpose, the variable cost is added to the fixed cost to arrive at the total cost and drawn at each and every scale of production,
- (vii) Sales revenue line is drawn commencing at zero and finishing at the last point,
- (viii) Then the sales line cuts the total cost line, i.e., sales equals the total cost. This is known as a break-even point. When a line is drawn from BEP to x-axis, it indicates break-even point in units and when a line is drawn from BEP to y-axis, it indicates break-even point in rupees,
- (ix) The difference between the sales line and total cost line to the right of BEP indicates the profit. The position to the left of the BEP on the graph indicates the loss, and

Notes

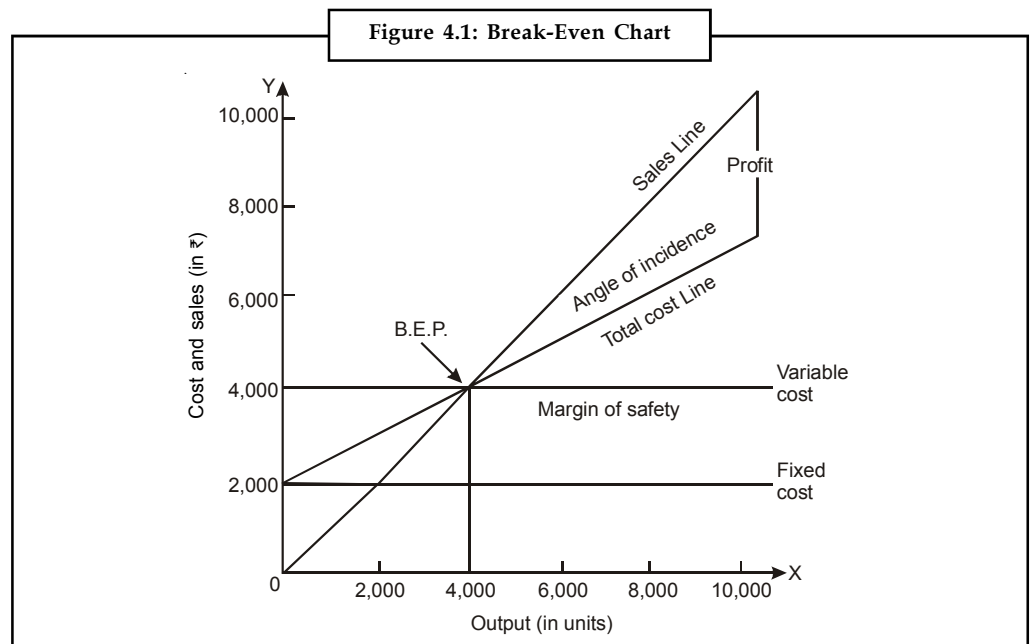
- (x) Then the graph indicates the break-even point, profit or loss at various level of output, contribution, relationship between the marginal cost, fixed cost, total cost and margin of safety.

Problem 8:

From the following information, prepare the break-even chart.

Fixed cost	₹ 2,000
Variable cost	₹ 0.50 per unit
Sales or selling price	₹ 1 per unit
Units produced and sold	2,000; 4,000; 6,000; 8,000 and 10,000.

Solution:



Angle of Incidence

This is the angle between sales and total cost line (see Figure 4.1). This angle is an indicator of profit earning capacity over the break-even point. Therefore, the aim of the management will be to have a large angle which will indicate earning of high margin of profit once fixed overheads are covered. On the other hand, a small angle will mean that even if profits are being made, they are being made at a low rate. This in turn suggests that variable costs form a major part of cost of sales. If margin of safety and angle of incidence are considered together, they will be more informative.



Example: A high margin of safety with a large angle of incidence will indicate the most favourable conditions of a business firm or even the existence of monopoly position.

Task Explain how you would locate the break-even point on the chart.

4.7 Practical Application of CVP Analysis for Decision-making

Notes

Marginal cost helps management to make decision involving consideration of cost and revenue. Basically, marginal costing furnishes information regarding additional costs to be incurred if an additional activity is to be taken up or the saving in costs which may be expected if an activity is given up. This can be compared with the benefit expected from the proposed course of action and thus the management will be able to take the appropriate decision.

Decision-making describes the process by which a course of action is selected as the way to deal with a specific problem. A decision involves the act of choice and the alternative chosen out of the available alternatives.

According to **Heinz Wehrich and Horold Koontz**, "Decision-making is defined as the selection of a course of action from among alternatives."

George R. Terry says, "Decision-making is the selection based on some criteria from two or more possible alternatives."

According to **Haynes and Masie**, "Decision-making is a course of action which is consciously chosen for achieving the desired results."

Following are the important areas of decision-making or **applications of marginal costing**:

1. Fixation of Price,
2. Decision to Make or Buy,
3. Selection of a Profitable Product Mix,
4. Decision to Accept a Bulk Order,
5. Closure of a Department or Discontinuing a Product,
6. Maintaining a Desired Level of Profit, and
7. Evaluation of Performance.

Let us discuss all of the above areas of decision-making in detail.

1. **Fixation of Price:** Product pricing is a most important function of management. One of the purposes of cost accounting is the ascertainment of cost for fixation of selling price of product. Marginal cost of a product represents the minimum price of the product. During normal circumstances, price of product is based on full cost. The theory is that only those products should be produced or sold which make the largest contribution towards the recovery of fixed costs. The selling price fixation is also done under different circumstances.

Problem 9:

P/V ratio is 50% and the marginal cost of the product is ₹ 60. What will be the selling price?

Solution:

$$\begin{aligned} \text{Selling Price} &= \frac{\text{Variable cost}}{(100 \text{ P/V ratio})} = \frac{60}{(100 - 50\%)} \\ &= \frac{60 \times 100}{50} = ₹ 120 \end{aligned}$$

$$\text{Verification: P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 \text{ OR } = \frac{S - V}{S} \times 100$$

Notes

$$= \frac{120 - 60}{120} \times 100$$

$$= \frac{60}{120} \times 100 = 50\%$$

2. **Decision to Make or Buy:** A business firm may make some products, parts or tools or sometimes, it may buy the same thing from outside. The management must decide which is more profitable to the business firm. If the marginal cost of the product is lower than the price of buying from outside, then the business firm can make the product.

Problem 10:

A Pen Manufacturing Company finds that while it costs ₹ 6.25 to make each component X 2730, the same is available in the market at ₹ 4.85 each, with an assurance of continued supply. The breakdown of cost is:

Raw materials	₹ 2.75 each pen
Direct wages	₹ 1.75 each pen
Other variable cost	₹ 0.50 each pen
Fixed cost	₹ 1.25 each pen
	6.25 each pen

Should you make or buy?

Solution:

Variable cost of manufacturing is ₹ 5 (₹ 6.25 - 1.25), but the market price is ₹ 4.85. If the fixed cost of ₹ 1.25 is also added, it is not profitable to make the component. Because there is a profit of ₹ 0.15 even in variable cost, it is profitable to procure from outside.

3. **Selection of a Profitable Product Mix:** In a multi-product manufacturing organisation, a problem is faced by the management as to which product mix or sales mix will give the maximum profit. The product mix which gives the maximum profit must be selected. Product mix is the ratio in which various products are produced and sold.

The marginal costing technique helps the management in taking decisions regarding changing the ratio of product mix which gives maximum contribution or in dropping unprofitable product line. The product which has comparatively less contribution may be reduced or discontinued.

Problem 11:

Present the following information to show to the management: (i) the marginal cost of product and the contribution per unit, (ii) the total contribution and profits resulting from each of the following sales mixtures:

	Type of Products	Per unit (₹)
Materials	X	10
	Y	9
Wages	X	3
	Y	2

Fixed cost ₹ 2,000.

Variable costs are allocated to products as 100% of wages.

Notes

Selling price	X	₹ 20
	Y	₹ 16

Sales mixtures:

- 1,000 units of product X and 2,000 units of product Y,
- 1,500 units of product X and 1,500 units of product Y,
- 2,000 units of product X and 1,000 units of product Y.

Solution:

- Statement of Marginal Cost:

	Type of Products	
	X (₹)	Y (₹)
Materials	10	9
Wages	3	2
Variable cost (100% of wage)	3	2
	Marginal Cost	13
Selling price	20	16
Less: Marginal cost	16	13
	Contribution	3

- Product Mix Choice:

Particulars	(a) ₹	(b) ₹	(c) ₹
Total sales	52,000 ⁽¹⁾	54,000 ⁽¹⁾	56,000 ⁽¹⁾
Less : Marginal cost	42,000 ⁽²⁾	43,500 ⁽²⁾	45,000 ⁽²⁾
Contribution	10,000	10,500	11,000
Less : Fixed cost	2,000	2,000	2,000
Profit	8,000	8,500	9,000

Therefore, sales mixture (c) will give the highest profit and as such, mixture (c) can be adopted.

Working notes:

- $(1,000 \times 20 + 2,000 \times 16) = 52,000$, $(1,500 \times 20 + 1,500 \times 16) = 54,000$, and $(2,000 \times 20 + 1,000 \times 16) = 56,000$
- $(1,000 \times 16 + 2,000 \times 13) = 42,000$, $(1,500 \times 16 + 1,500 \times 13) = 43,500$, and $(2,000 \times 16 + 1,000 \times 13) = 45,000$

- Decision to Accept a Bulk Order:** Large scale purchasers may demand products at less than the market price. A decision has to be taken now whether to accept the order or to reject it. By reducing the normal sales price, the volume of output and the sales can be increased. If the sales price is below the total cost, rejection of the order is aimed at.

Notes

In marginal costing, the offer may be accepted, if the quoted sales price is above marginal cost, because of the reason that existing business contribution can recover the fixed cost and the margin of profits. In such cases, the contribution made by bulk orders will be an addition to the profit. But the sales price should not be less than the marginal cost. However, it should not affect the normal market price.

Problem 12:

ABC to industrial depression, a plant is running at present, at 50% of its capacity. The following details are available:

	Cost of Production per unit
Materials	₹ 2.5
Labour	₹ 1.5
Variable cost	₹ 3.0
Fixed cost	₹ 1.5
	₹ 8.5
Production per month in units	20,000
Total cost of production	₹ 1,70,000
Sales price	₹ 1,50,000
	Loss ₹ 20,000

An exporter offers to buy 6,000 units per month at the rate of ₹ 7.50 per unit and the company hesitates to accept the offer for fear of increasing its already operating losses.

Advise whether the company should accept or decline this offer.

Solution:

Particulars	Existing (20,000 units) (₹)	Offer (6,000 units) (₹)	Total (₹)
(a) Sales	1,50,000	45,000	1,95,000
(b) Marginal cost :			
Materials @ ₹ 2.5 per unit	50,000	15,000	65,000
Labour @ ₹ 1.5 per unit	30,000	9,000	39,000
Variable cost @ ₹ 3 per unit	60,000	18,000	78,000
Total Marginal Cost	1,40,000	42,000	1,82,000
Contribution (a - b)	10,000	3,000	13,000
Less : Fixed cost	30,000	--	30,000
Profit/Loss	(-) 20,000	3,000	(-)17,000

The firm must accept the offer, because the amount of loss stands reduced from ₹ 20,000 to ₹ 17,000.

5. **Closure of a Department or Discontinuing a Product:** Marginal costing technique shows the contribution of each product to fixed cost and profit. If a department or a product contributes the least amount, then the department can be closed or its production can be discontinued. It means the product which gives a higher amount of contribution may be chosen and the rest should be discontinued.

Problem 13:

Notes

The records of Rajesh Limited which has three departments give the following figures:

Particulars	Department X (₹)	Department Y (₹)	Department Z (₹)	Total Amount (₹)
Sales	15,000	19,000	23,000	57,000
Marginal cost	14,000	7,000	17,000	38,000
Fixed cost	3,000	4,000	11,000	18,000
Total cost	17,000	11,000	28,000	56,000
Profit/Loss	(-) 2,000	(+) 8,000	(-) 5,000	(+) 1,000

The management wants to discontinue product Z immediately as it gives the maximum loss. How would you advise the management?

Solution:

Statement of Marginal Cost

Particulars	X (₹)	Y (₹)	Z (₹)	Total (₹)
Sales	15,000	19,000	23,000	57,000
Less: Marginal cost	14,000	7,000	17,000	38,000
Contribution	1,000	12,000	6,000	19,000
Fixed cost				18,000
Profit				1,000

Department Z gives a contribution of ₹ 6,000. If department Z is closed, then it may lead to further loss. Therefore, Z will be continued.

6. **Maintaining a Desired Level of Profit:** A manufacturing organisation has to cut or reduce prices of its products from time to time due to competition, government policies and other reasons. The contribution per unit on account of such cutting is reduced while the organisation is interested in maintaining a minimum level of its profits. Marginal costing technique can ascertain how many units have to be sold to maintain the same level of profits. According to **Charles**, "When desired profits are agreed upon, their attainability may be quickly appraised by computing the number of units that must be sold to secure the wanted profits. The computation is easily made by dividing the fixed costs plus desired profits by the contribution margin per unit."

Sales required to earn a desired profit:

$$\text{Sales (in ₹)} = \frac{\text{Fixed cost} + \text{Desired profit}}{\text{P/V ratio}} \quad \text{OR} = \frac{F + P}{P/V}$$

$$\text{Sales (in units)} = \frac{\text{Fixed cost} + \text{Desired profit}}{\text{Contribution per unit}} \quad \text{OR} = \frac{F + P}{C}$$

Problem 14:

Sales 20,000 units @ ₹ 20 per unit

Variable cost ₹ 10 per unit

Fixed cost ₹ 1,50,000

Find out the sales for earning a profit of ₹ 1,00,000.

Notes

Solution:

Sales to earn a profit of ₹ 1,00,000:

$$\begin{aligned}
 &= \frac{\text{Fixed cost} + \text{Desired profit}}{\text{Contribution}} \\
 &= \frac{1,50,000 + 1,00,000}{2,00,000} \times 4,00,000 \\
 &= \frac{2,50,000}{2,00,000} \times 4,00,000 \\
 &= ₹ 5,00,000
 \end{aligned}$$

7. **Evaluation of Performance:** Marginal costing helps the management in measuring the performance efficiencies of a department or a product line or sales division. The department or the product or sales division which gives the highest P/V ratio will be the most profitable or that is having the highest performance efficiency.

Problem 15:

Given fixed cost ₹ 8,000, profit earned ₹ 2,000, and Break-even sales ₹ 30,000, find the actual sales.

Solution:

Let the actual sales be X.

$$\begin{aligned}
 \text{Break-even Sales} &= \frac{\text{Fixed cost}}{\text{Contribution}} \times \text{Sales} \\
 30,000 &= \frac{8,000X}{8,000 + 2,000} \\
 30,000 &= \frac{8,000X}{10,000} \\
 30,000 &= 0.8X \\
 X &= \frac{30,000}{0.8} = ₹ 37,500
 \end{aligned}$$

Problem 16:

From the following data, find break-even point.

Selling price	₹ 10 per unit
Direct material cost	₹ 3 per unit
Labour cost per unit	₹ 2 per unit
Fixed cost	₹ 10,000
Trade discount	5%

Variable overheads 100% on labour cost.

If sales are (i) 10% and (ii) 15% above the break-even volume, determine the net profits.

Solution:**Notes**

Amount	(₹)
Selling price (per unit)	10.00
Less: Trade discount (5% on selling price)	<u>0.50</u>
	9.50
Less: Variable cost (3 + 2 + 2)	<u>7.00</u>
Contribution (per unit)	2.50

$$\text{BEP (in units)} = \frac{\text{FC}}{\text{C}} = \frac{10,000}{2.50} = 4,000 \text{ units}$$

(i) BEP (in units)	= 4,000	
Add: 10%	<u>= 400 units</u>	
	4,400 units	
Contribution from 4,400 units @ ₹ 2.50		₹ 11,000
Less: Fixed cost		<u>₹ 10,000</u>
	Profit	₹ 1,000
(ii) BEP (in units)	= 4,000	
Add: 15%	<u>= 600 units</u>	
	4,600 units	
Contribution from 4,600 units @ ₹ 2.50		₹ 11,500
Less: Fixed cost		<u>₹ 10,000</u>
	Profit	₹ 1,500

Self Assessment

Fill in the blanks:

- The refers to amount by which sales revenue can fall before a loss is incurred.
- of various products can be compared with the help of break-even chart.
- This angle is an indicator of profit earning capacity the break-even point.
- involves the act of choice and the alternative chosen out of the available alternative.
- Marginal cost of a product represents the price of the product.

Notes



Case Study

Cost-Volume-Profit with Multiple Products, Sales Mix Changes, Changes in Fixed and Variable Costs

Artistic Wood crafting Inc. began several years ago as a one-person cabinet-making operation. Employees were added as the business expanded. Last year, sales volume totalled \$850,000. Volume for the first five months of the current year totalled \$600,000, and sales were expected to be \$1.6 million for the entire year. Unfortunately, the cabinet business in the region where Artistic Wood crafting is located is highly competitive. More than 200 cabinet shops are all competing for the same business.

Artistic currently offers two different quality grades of cabinets: Grade I and Grade II, with Grade I being the higher quality. The average unit selling prices, unit variable costs, and direct fixed costs are as follows:

	Unit Price	Unit Variable Cost	Direct Fixed Cost
Grade I	\$3,400	\$2,686	\$95,000
Grade II	1,600	1,328	95,000

Required:

1. Calculate the number of Grade I and Grade II cabinets that are expected to be sold during the current year.
2. Calculate the number of Grade I and Grade II cabinets that must be sold for the company to break even.
3. Artistic Wood crafting can buy computer-controlled machines that will make doors, drawers, and frames. If the machines are purchased, the variable costs for each type of cabinet will decrease by 9 percent, but common fixed costs will increase by \$44,000. Compute the effect on operating income, and also calculate the new break-even point. Assume the machines are purchased at the beginning of the sixth month. Fixed costs for the company are incurred uniformly throughout the year.
4. Refer to the original data. Artistic Wood crafting is considering adding a retail outlet. This will increase common fixed costs by \$70,000 per year. As a result of adding the retail outlet, the additional publicity and emphasis on quality will allow the firm to change the sales mix to 1:1. The retail outlet is also expected to increase sales by 30 percent. Assume that the outlet is opened at the beginning of the sixth month. Calculate the effect on the company's expected profits for the current year, and calculate the new break-even point. Assume that fixed costs are incurred uniformly throughout the year.

Source: http://www.cengagesites.com/academic/assets/sites/3185_ch04.pdf

4.8 Summary

- Cost-volume-profit (CVP) analysis estimates how changes in costs (both variable and fixed), sales volume, and price affect a company's profit.
- CVP is a powerful tool for planning and decision making. In fact, CVP is one of the most versatile and widely applicable tools used by managerial accountants to help managers make better decisions.

- CVP analysis can address many issues, such as the number of units that must be sold to break even, the impact of a given reduction in fixed costs on the break-even point, and the impact of an increase in price on profit.
- The important element of the marginal cost equation is the 'contribution' factor which is resulted from the sales value after deduction of variable costs.
- Contribution is also known as gross margin. In the other words, contribution is the difference between sales and marginal cost.
- The profit-volume ratio, popularly known as the P/V ratio, expresses the relation of contribution to sales. This ratio is also known as contribution to sales or the marginal income ratio. The profit-volume ratio is often expressed as a percentage and is a guide to the profitability of a business firm.
- According to Joseph Baggot, 'Break-even analysis refers to a system of analysing cost into its fixed and variable components to determine the probable profits at given level of activity.'
- Break-even point is a point where the total sales or revenue are equal to total costs. In break-even point, there is no profit or loss in the volume of sales.
- Margin of safety is an important concept in marginal costing approach. Margin of safety is the difference between the actual sales and the sales at break-even point. This is represented by excess sales over and above the break-even point.
- A break-even chart is a graphical representation of marginal costing or cost-volume-profit analysis. It is an important aid to profit planning. It has been defined as "a chart which shows the profitability or otherwise of an undertaking at various levels of activity and as a result indicates the point at which neither profit nor loss is made."
- Decision-making describes the process by which a course of action is selected as the way to deal with a specific problem. A decision involves the act of choice and the alternative chosen out of the available alternatives.

4.9 Keywords

Break-even Chart: It is a graphical representation of marginal costing or cost-volume-profit analysis.

Angle of Incidence: This is the angle between sales and total cost line.

Break-even Analysis: It refers to a system of analysing cost into its fixed and variable components to determine the probable profits at given level of activity.

Break-even Point: It is a point where the total sales or revenue are equal to total costs. In break-even point, there is no profit or loss in the volume of sales.

Contribution: It is the difference between sales and marginal cost.

Cost-volume-profit Analysis: It is the study of the effects on future profits of changes in fixed cost, variable cost, sales price, quantity and mix.

Decision-making: It is defined as the selection of a course of action from among alternatives.

Margin of Safety: It is the difference between the actual sales and the sales at break-even point.

Marginal Cost Equation: The element of cost can be written in the form of an equation which is called marginal cost equation.

Profit-volume Ratio: Popularly known as the P/V ratio, it expresses the relation of contribution to sales.

Notes

4.10 Review Questions

1. What do you mean by break-even analysis? What are its assumptions?
2. Break-even analysis assumes that variable costs and revenues are linear and that fixed costs are fixed. Briefly explain why these assumptions may not be realistic.
3. Define marginal cost and marginal costing. How are variable costs and fixed costs treated in marginal costing?
4. Discuss the importance of breakeven point, margin of safety, contribution and profit-volume ratio in relation to marginal costing.
5. The size of the margin of safety is an extremely valuable guide to the strength of the business. Discuss the possible ways to rectify the position when the margin of safety is unsatisfactory.
6. What are the various applications of the break-even chart? Enumerate the various criticism usually put up against break-even charts.
7. Draw a break-even chart with few illustration figures. Explain the cost, volume profit relationship. How would a change in the selling price affect the above?
8. What is a break-even chart? What are its uses and limitations?
9. "The break-even concept is fundamentally a static analysis." Discuss the statement and explain the limitations of the concept.
10. What conclusions can be drawn from the position of the break-even point and the angle of incidence in a break-even chart?
11. "The effect of reduction in sale price is to reduce the P/V ratio, to raise the break-even point and to shorten the margin of safety." Explain this statement with the help of a numerical example.
12. "The technique of marginal cost can be valuable aid to management." Discuss this statement and give your views.
13. The effect of increase in sale price is to increase the P/V ratio, to bring down the break-even point and to widen the margin of safety." Discuss.
14. "As a result of calculating break-even-points, accountants have come to realise that many variable facts, all essential for operating a business enterprise, can emerge from the exercise." Comment and mention some of the typical problems which may be solved by break-even analysis.
15. It is often complained that conventional break-even chart is not of much practical use since it is based on a number of limitations, too simple to be true in real business situation. What are those and what modifications, if any, would you suggest to compensate these?

Answers: Self Assessment

- | | |
|---------------|-----------------------|
| 1. Decisions | 2. Profit |
| 3. Volume | 4. Fluctuations |
| 5. fixed cost | 6. Contribution |
| 7. Marginal | 8. cost-volume-profit |
| 9. cost | 10. Break-even point |

- | | | |
|----------------------|-------------------|-------|
| 11. margin of safety | 12. Profitability | Notes |
| 13. Over | 14. Decision | |
| 15. Minimum | | |

4.11 Further Readings



Books

Bhar. K.B. (2008) *Cost Accounting, Methods & Problem*, Academic Publishers.

Lal, Jawahar & Srivastava, Seema (2009) *Cost Accounting*, 4th Edition, Tata McGraw-Hill Education.

Nigam, Lal B.M. & Jain I. C. (2001) *Cost Accounting: An Introduction*, PHI Learning Pvt. Ltd.

Thakur. S.K, (2009). *Cost Accounting: Theory and Practice*, Excel Books.



Online links

<http://smallbusiness.chron.com/advantages-disadvantages-costvolumeprofit-analysis-35135.html>

<http://accountingexplained.com/managerial/cvp-analysis/>

http://www.cliffsnotes.com/study_guide/Cost-Volume-Profit-Analysis.topicArticleId-21248,articleId-21229.html

<http://www.wiley.com/college/sc/eldenburg/ch03.pdf>

Unit 5: Differential Costing

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5.5 Review Questions

5.6 Further Readings

Objectives

After studying this unit, you will be able to:

- Discuss the concept of differential costing;
- Explain the difference between differential cost analysis and marginal costing;
- Discuss the practical applications of differential costing.

Introduction

Differential pricing, also commonly referred to as discriminatory pricing or multiple pricing, is a pricing strategy in which a company charges different products for the same product or service based on a variety of customer and transaction-related factors, including the quantity ordered, delivery time and payment terms. Differential cost is the difference between the cost of two alternative decisions, or of a change in output levels. Here are two examples:

Example of Alternative Decisions: If you have a decision to run a fully automated operation that produces 100,000 widgets per year at a cost of \$1,200,000, or of using direct labour to manually produce the same number of widgets for \$1,400,000, then the differential cost between the two alternatives is \$200,000.

Example of Change in Output: A work centre can produce 10,000 widgets for \$29,000 or 15,000 widgets for \$40,000. The differential cost of the additional 5,000 widgets is \$11,000.

In essence, you can line up the revenues and expenses from one decision next to similar information for the alternative decision, and the difference between all line items in the two columns is the differential cost. We will study this in more detail in this unit.

5.1 Meaning of Differential Costing

Differential costing is a broader and more fundamental concept than marginal costing and hence has a much wider application. It helps in making appropriate decision by examining all

the revenues and cost differences between alternatives. While marginal costing analyses the change in only the variable costs differential costing examines the differences in both variable and fixed costs. Hence this technique is more useful for those situations where fixed costs also differ and thus more appropriate for both short run and long, run decisions.

Differential costs are costs that change in respect of an alternate course of action. The AAA Committee on cost concepts and standards (Accounting Review, Vol. 27) defines it as "the increase or decrease in total cost or the change in specific elements of cost that result from any variations in operation". The alternative actions may owe to change in sales, volume, price, product mix, or methods of production or change in decision. When two levels of activity are under review, differential cost is obtained by deducting the cost at one level from another.



Example: If the work is done in machine the cost is ₹ 2,55,000, if the work is done with the labour the cost will be ₹ 2,00,000, the differential cost is ₹ 55,000.

The technique used for analysing differential costs is known as differential costing. The ICMA terminology defines differential costing as "a technique used in the preparation of ad hoc information in which only cost and income, difference between alternative courses of action are taken into consideration."

It is the process of determining how costs in particular and profit in general will be affected if one alternative is chosen over another. The term "incremental cost" is used to denote differential cost when the increase in cost is due to increase in the level of production. Similarly, the term decremental cost is used when the difference in cost is due to decrease in the level of production.



Did u know? What is said of the differential cost above, applies to differential revenue also.

5.1.1 Features of Differential Costing

The features of differential costing can be enumerated under the following points:

- It is expressed in total but not cost per unit.
- The data considered for such analysis are (i) cost, (ii) revenue and investment which are relevant to the problem under consideration.
- It is not a part of accounting though it is a form of budgeting. It is used only by the management to make decisions.
- The constant costs at different levels are ignored and only the differentials are considered. Absolute cost is not much importance in this analysis.
- Differentials are measured from a common position or level of activity.
- Where the difference between revenue and cost is highest, that course of action is adopted.



Note The differential costing is based on the implication that only the relevant cost, which will change as a result of the decision, is useful for decision-making. Any costs which are not expected to alter are irrelevant for decision-making.

Notes

The following are the examples of cost that are irrelevant:

- (a) Sunk costs, i.e., those costs which have already been incurred are irrelevant.
- (b) Book value of assets
- (c) Cost of fully utilised resources, i.e. where a limiting factor exists it will be used to the full extent and 100%, therefore, cost the same whatever alternative is considered.
- (d) Fixed cost - Any item which remains constant whichever alternative is chosen is not a differential cost and can be ignored in choosing alternatives.

Self Assessment

Fill in the blanks:

- 1. The technique used for analysing costs is known as differential costing.
- 2. is "a technique used in the preparation of ad hoc information in which only cost and income difference between alternative courses of action are taken into consideration."
- 3. "..... cost" is used to denote differential cost when the increase in cost is due to increase in the level of production.
- 4. cost is used when the difference in cost is due to decreases in the level of production.
- 5. The differential costing is based on the implication that only the cost, which will change as a result of the decision is useful for decision-making.

5.1.2 Marginal vs. Differential Costing

Differential costing is similar to marginal costing under the following respects:

- (a) Both the techniques are based on cost analysis for presenting the information to management.
- (b) Costs are analysed on the basis of their behaviour under both the techniques.
- (c) Both the techniques serve the same purpose of planning and decision-making by the management.
- (d) Both the techniques will be same if the fixed costs remain same for alternative proposals.
- (e) Differential cost resembles to economist's concept of marginal cost.

However, differential costing differs from marginal costing in the following respects:

- (a) The scope of marginal costing is narrow, while that of differential costing is broader and hence it has wider applications.
- (b) Marginal costing technique is useful in making decisions in the short run, whereas differential costing is useful in taking both short run and long run decisions where fixed costs do alter.
- (c) Marginal cost is defined as the sum of all variable costs. Such a concrete definition is not possible under differential cost. It can at best be defined as an increase or decrease of total cost owing to rise or fall in production.
- (d) Marginal costing presents cost information under contribution margin approach, whereas differential costing can be presented both under absorption costing and marginal costing techniques.

- (e) Under marginal costing technique the performance is judged by the “contribution” and PV ratio, whereas under differential costing, the performance is evaluated by comparing differential cost with incremental revenue.
- (f) Marginal costing is a part of accounting system whereas differential cost analysis is not a part of accounting system. It may be a part or budgeting.
- (g) Marginal cost is expressed in terms of cost per unit whereas differential cost is expressed in total.

Self Assessment

Fill in the blanks:

6. Marginal costing technique is useful in making decisions in the run.
7. cost is expressed in terms of cost per unit.
8. Under differential costing, the performance is evaluated by comparing differential cost with incremental
9. Marginal costing presents cost information under margin approach.
10. costs are those that have already been incurred are irrelevant.
11. The of marginal costing is narrow.
12. Differential costing can be presented both under techniques.
13. is not a part of accounting system.
14. Differential cost can at best be defined as an increase or decrease of total cost owing to rise or fall in
15. Marginal cost is expressed in terms of cost per unit whereas is expressed in total.

5.2 Applications of Differential Costing

Differential costing techniques is used to solve the problems relating to the following:

- (a) Make or buy decisions.
- (b) Expanding the marketability of the products.
- (c) Changing the product mix.
- (d) Further processing of products.
- (e) Changing the need of production.
- (f) Introducing a new product line.
- (g) Replacing manual labour with mechanical labour.
- (h) Fixation of selling price below the competitive price.
- (i) Accepting or rejecting a new order.
- (j) Dealing with the most profitable level of production.
- (k) Shut down or continuous operation.

Notes



Cost Analysis for a Make-versus-Buy Decision

An example will illustrate how to perform a cost analysis for a make-versus-buy decision. Suppose the City of Greenville is considering outsourcing lawn and grounds maintenance to a private firm. As a first step toward determining if outsourcing lawn and grounds maintenance makes financial sense, the city defines this particular service. Lawn and grounds service is provided by the city's Public Works Department, which maintains 200 acres of developed parkland.

Next, the city calculates the total costs that would be avoided or saved by outsourcing lawn and grounds maintenance. To determine the costs that would be saved by outsourcing, the full cost of the service is itemised, including all of the direct and indirect costs. The top portion of Exhibit 1 shows how this would look over a five-year period. The city would be able to avoid several of the costs in the second column if the service were outsourced. About \$400,000 in personnel costs would be avoided by virtue of a combination of layoffs of seasonal employees and a promise from the vendor to hire 30 percent of the city's employees. The remaining employees would be reassigned to other tasks. The city would continue to incur insurance costs for lawn maintenance equipment until the insurance contract terminates after the first year. Administrative overhead costs often cannot be avoided (at least in the short run) because they are generated in other departments, such as finance and human resources that would likely remain fully staffed even if the service were outsourced. The total savings for each year are discounted to their present value. The third step is to calculate the total costs of outsourcing lawn and grounds maintenance. The bottom portion of Exhibit 1 shows how this would look over a five-year period. The costs of outsourcing include the contractor's bid, the government's contract administration costs, and the government's transition costs, less the additional revenue generated from outsourcing. The total costs for each year are discounted to their present value. Only the new costs associated with outsourcing the service are included in the analysis.

Exhibit 1: Illustrative Make-versus-Buy Analysis

The Costs of Performing the Service In-House							
Cost Items	Current Annual Costs of Service	In-House Costs that Could be Avoided by Outsourcing					
		Now	Year 1	Year 2	Year 3	Year 3	Year 4
Personnel	\$600,000	\$400,000	\$400,000	\$400,000	\$400,000	\$400,000	\$400,000
Insurance	\$16,000	\$0	\$16,000	\$16,000	\$16,000	\$16,000	\$16,000
Equipment & Supplies	\$134,000	\$134,000	\$134,000	\$134,000	\$134,000	\$134,000	\$134,000
Fuel	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000
Administrative Overhead	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	\$1,000,000	\$684,000	\$700,000	\$700,000	\$700,000	\$700,000	\$700,000

A

In-house costs that could be avoided by outsourcing (Net Present Value)

$$\$4,031,851 = \left[\right] + \left[\frac{}{(1+r)^1} \right] + \left[\frac{}{(1+r)^2} \right] + \left[\frac{}{(1+r)^3} \right] + \left[\frac{}{(1+r)^4} \right] + \left[\frac{}{(1+r)^5} \right]$$

The Costs of Outsourcing the Service						
	Now	Year 1	Year 2	Year 3	Year 3	Year 4
Bid Price	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000
Contract Administration	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000

Contd...

Notes

Transition Costs						
• Unemployment compensation	\$0	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
• Accrued vacation benefits	\$20,000	\$0	\$0	\$0	\$0	\$0
• Severance pay	\$10,000	\$0	\$0	\$0	\$0	\$0
• Conversion or disposal of government property and equipment	\$10,000	\$0	\$0	\$0	\$0	\$0
• Penalty fees for early lease termination	\$30,000	\$0	\$0	\$0	\$0	\$0
Subtotal (Costs)	\$645,000	\$576,000	\$576,000	\$576,000	\$576,000	\$576,000
Revenues from sales of unused government assets	\$400,000	\$0	\$0	\$0	\$0	\$0
Additional tax revenues	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal (Revenues)	\$400,000	\$0	\$0	\$0	\$0	\$0
TOTAL (Costs – Revenues)	\$245,000	\$576,000	\$576,000	\$576,000	\$576,000	\$576,000

B Costs of Outsourcing (Net Present Value) $\$2,999,804 = \left[\right] + \frac{\left[\right]}{(1+r)^1} + \frac{\left[\right]}{(1+r)^2} + \frac{\left[\right]}{(1+r)^3} + \frac{\left[\right]}{(1+r)^4} + \frac{\left[\right]}{(1+r)^5}$

A In-house costs that could be avoided by outsourcing	–	B Cost of outsourcing	=	Cost Savings of Outsourcing
\$4,031,851	–	\$2,999,804	=	\$1,032,048

As a final step in the analysis, the city calculates the difference between the costs saved and the costs incurred by outsourcing lawn and grounds maintenance. Subtracting the costs of outsourcing this function from the cost savings shows that the city would save a present value of \$1,032,048 by outsourcing lawn and grounds maintenance. If more than one vendor bid on the service, the city would repeat the last three steps for each vendor to determine which one presented the best overall deal.

Source: <http://www.gfoa.org/downloads/GFRAug04.pdf>

Problem 1:

(Determination of level or production) A company’s flexible budget reveals the following market conditions mid costs:

Output (in units)	Selling Price per Unit (₹)	Total Semi Fixed Cost (₹)	Total Variable Cost (₹)	Total Fixed Cost (₹)
60,000	12	1,30,000	4,18,000	1,42,000
1,20,000	11	1,50,000	8,18,000	1,42,000
1,80,000	10	1,70,000	12,71,000	1,42,000
2,40,000	9	1,70,000	13,78,000	1,42,000
3,00,000	8	2,00,000	17,78,000	1,42,000
3,60,000	7	2,00,000	19,02,000	1,42,000

- (a) Prepare a schedule showing the total differential costs and incremental revenue.
- (b) At what level should the company set its level of production?
- (c) What price should be established in order to obtain the most profitable operations for the year?

Notes

Solution:

(a)

	Output (in units)					
	60,000	1,20,000	1,80,000	2,40,000	3,00,000	3,60,000
Fixed cost	1,42,000	1,42,000	1,42,000	1,42,000	1,42,000	1,42,000
Semi-fixed cost	1,50,000	1,50,000	1,70,000	1,70,000	2,00,000	2,00,000
Variable cost	4,18,000	8,18,000	12,78,000	15,78,000	17,78,000	19,02,000
Total cost	7,10,000	11,10,000	15,90,000	18,90,000	21,20,000	22,44,000
Differential cost		4,00,000 (Col 2 - Col 1)	4,80,000 (Col 3 - Col 2)	3,00,000 (Col 4 - Col 3)	2,30,000 (Col 5 - Col 4)	1,24,000 (Col 6 - Col 5)
Sales value	7,20,000	13,20,000	18,00,000	21,60,000	24,00,000	25,20,000
Marginal revenue		6,00,000	4,80,000	3,60,000	2,40,000	1,20,000

- (b) As long as the increment in total revenue exceeds the differential costs, it pays to increase output, but as soon as the incremental revenue equals differential costs, it is no longer profitable to raise the volume of production. In the above case the incremental revenue is about equal to differential costs at 3,00,000 output level and beyond that it is decreasing so the production should be fixed at this level (correctly between 3,00,000 and 1,60,000 levels).
- (c) The sale price at this level is ₹ 80 per unit which should be adopted for the year, which would bring in maximum profit.

Problem 2:

(Acceptance or rejection of an offer). Following particulars are extracted from the books of Adarsh Co. Ltd. for the period ending 31st Dec, 1992.

Capacity	Unit Cost (in ₹)	Unit Selling price (in ₹)
6,000	80	100
7,000	75	97
8,000	74	95
9,000	72	
10,000	71	

The firm is operating at 8,000 unit's capacity and has received an order for 2000 units from an export market at a price of ₹ 70 per unit. Advise the company as to whether the export order should be accepted or not.

Solution:

Statement showing Incremental Cost and Revenue

Capacity	Unit Cost (in ₹)	Total Cost	Incremental Cost	Unit price	Total sales	Incremental revenue
6,000	80	4,80,000		100	6,00,000	
7,000	75	5,25,000	45,000	97	6,79,000	79,000
8,000	74	5,92,000	67,000	95	7,60,000	8,000
9,000	72	6,48,000	56,000			
10,000	71	7,10,000	62,000			

Notes

At 8000 level of output, the total sales revenue is ₹ 7,60,000 and the total cost is ₹ 5,92,000 leaving a profit of ₹ 1,68,000. The fact that this level of output leaves a profit means that fixed costs have been recovered already. Hence we have to take only the incremental cost for further level of output. For an additional sales of 2,000 units the incremental cost is ₹ 7,10,000 - ₹ 5,92,000 = ₹ 1,18,000. The cost per unit therefore is $1,18,000/2000 = ₹ 59$ for which the price quoted is ₹ 70 per unit. Hence the offer is to be accepted.

Problem 3:

(Increased production capacity) A company at present is working at 90% of its capacity and producing 13,500 units per annum. It operates at flexible budgeting control system. The following figures are obtained from its budget.

	Capacity 90% (₹)	Utilisation 100% (₹)
Sales	15,00,300	16,00,000
Fixed	3,00,500	3,00,600
Semi-fixed expenses	97,500	1,00,500
Variable expenses	1,45,500	1,49,500
Units manufactured	13,500	15,000

Labour and material costs per unit are constant under the present conditions. Profit margin is 10%.

- You are required to determine the differential cost of producing 1,500 units by increasing capacity utilisation to 100 per cent.
- What would you recommend as an export price for these 1500 units after considering that overseas prices are much lower than inland prices?

Solution:

Sales at 90% capacity utilisation	15,00,000
Less: Profit 10%	1,50,000
Cost of goods sold	13,150,000
Less: Expenses(Fixed, semi and variable)	5,43,000
Cost of material and labour	8,07,000

Therefore, Cost of material and labour at 100% capacity utilisation is:

$$8,07,000 \times \frac{100}{90} = ₹ 8,96,667$$

Differential Cost analysis will be as follows:

	Capacity 90% (₹)	Utilisation 100% (₹)
Production (units)	13500	15000
Material and Labour (in ₹)	8,07,000	8,96667
Variable expenses (in ₹)	1,45,000	149500
Semi-fixed expenses (in ₹)	97,500	1,00,500
Fixed expenses (in ₹)	3,000,500	3,000,600
	13,50,000	14,47,267

Notes

(a) Differential Cost = 14,47,267 - 16,50,000 = ₹ 97,267

(b) Minimum price per export = $\frac{97,267}{1,500} = ₹ 64.84$ per unit

At this price, there is no addition to revenue. Any price above ₹ 64.84 per unit may be accepted. A price below this may be considered, if other benefits i.e., mere sales and revenue are likely to accrue. It is assumed that no capital investment is necessary and no export charges have to be incurred and that the export price will have no effect on the home market where the product will continue to be sold at the old price.

Problem 4:

(Equipment replacement) A factory engaged in manufacturing of electronic goods has a ten-year old equipment depreciated on straight-line basis. The useful estimated life of the equipment was estimated to be 20 years with a residual value of ₹ 3 lakhs (original cost of the equipment is 23 lakhs.) the output of the equipment is 1,200 units per hour.

The management now proposes to install an equipment worth ₹ 50 lakhs which has an estimated life of 15 years and a residual value of ₹ 5 lakhs. The payment terms for the new equipment include a part exchange provision of ₹ 6 lakhs in respect of the existing equipment. The output of the new equipment is 3,000 units per hour.

Other comparative annual cost relating to the two equipments are as under:

	Existing Equipment	New Equipment (₹)
Wages	1,00,000	1,20,000
Repairs and Maintenance	20,000	52,000
Consumables	3,20,000	4,80,000
Power	1,20,000	1,50,000
Allocation of fixed cost	60,000	80,000
Total hours run per year	2,400	2,400

You are required to prepare a comparative schedule showing total conversion cost as well as cost per 1,000 units after considering interest @10% on net cash outflow for procuring the new equipment and also for providing the yearly recovery of the loss suffered in the transaction.

Solution:

Comparative statement of Cost of Equipment

	Existing Equipment	New Equipment
Capital cost of equipment including cost of installation	23,00,000	50,00,000
Less: Residual Value	3,00,000	5,00,000
	20,00,000	45,00,000
Less: Depreciation written off	10,00,000	-
	10,00,000	45,00,000

Comparative statement of Operational Cost of Equipment

	Existing Equipment	New Equipment
Annual Depreciation		
New equipment		3,00,000
Old equipment	1,00,000	70,00,000

Contd...

Interest on capital	-	4,40,000
Wages	1,00,000	1,20,000
Repairs and maintenance	20,000	52,000
Consumables	3,20,000	4,80,000
Power	1,20,000	1,50,000
Allocation of fixed expense	60,000	80,000
	7,20,000	16,92,000
Hours run per annum	2400	2400
Operating cost per hour (₹)	300	705
Output per hour (units)	1200	3000
Operating cost per 1000 units (₹)	250	2356

Notes

Therefore, there is net saving in cost of ₹ 15 per 1000 units.

Problem 5:

Acceptance of rejection of an export order: MX Ltd. Having an installed capacity of 1,00,000 units of product is currently operating at 70% utilisation. At current levels of input prices the FOB unit cost (after credit for applicable export incentives) works out as follows:

Capacity Utilisation	FOB unit cost (₹)
70	97
80	92
90	87
100	82

The company has received three foreign offers from different sources as under:

Source A 5,000 units @ ₹ 54 per unit FOB

Source B 10,000 units @ ₹ 52 per unit FOB

Source C 10,000 units @ ₹ 51 per unit FOB

Advise the company as to whether any or all the export orders should be accepted or not.

Solution:**Statement Showing Differential Cost**

Capacity	Production (units)	FOB unit cost (₹)	Installed total cost	Differential cost	Per unit differential cost
70	70,000	97	67,90,000	-	-
80	80,000	92	73,60,000	5,70,000	57
90	90,000	87	78,30,000	4,70,000	47
100	1,00,000	82	82,00,000	3,70,000	37

Notes

Statement showing Gain or Loss on Accepting Various Export Orders

Sources of export order	Export orders in units	Capacity utilisation	Differential cost		FOB price per unit	Sales revenue from the exports	Gain or Loss
			Per unit	Total			
A	5,000	75	57	2,85,000	55	2,75,000	(10,000)
B	10,000	85	5000 @ 57 5000 @ 47	5,20,000	52	5,20,000	NIL
C	10,000	95	5000 @47 5000 @37	4,20,000	51	5,10,000	90,000
	25,000	95%		12,25,000		13,05,000	80,000

From the above analysis it can be said that when all the three exports orders are accepted the company will make a profit of ₹ 80,000. But accepting only source A and B orders will give a loss of ₹ 10,000.

Problem 6:

(Accepting an offer at a lower selling price) The overhead expense of a factory producing a single article at different operating levels is as follows:

Operating Level Capacity	Works Overhead
80%	36,000
100%	40,000
120%	50,000
60%	33,000

The factory is currently operating at 60% operating level and its annual sales amount in ₹ 1,44,000. Selling price has been based on 100% capacity and have the following relationships with cost at this level:

Factory Cost: 66.67% of sales value

Price Cost: 75% of factory cost

Adm and selling exp. 20% of sales value

The management receives an offer for carrying out some work for another company valued at ₹ 33,000 per annum which will be an addition to administration expenses of ₹ 1,500 per month.

The sales manager estimates that the sales of the company's own product will increase to 80% capacity by the time new order materialises.

Calculate the profit on current production.

Solution:

Statement Showing Profitability

			100%	60%
Sales			2,40,000	1,44,000
Less Cost Sales:				
Prime cost	1,20,000	72,000		
Works overhead	40,000	33,000		
Factory Cost	1,60,000	1,05,600		
Adm. and Selling Exp.	48,000	33,600	2,08,000	1,38,600

At 100% capacity:

Factory cost 66.67% of sales value or 2/3 of sales

$$= \frac{2}{3} * 2,40,000 = ₹ 1,60,000$$

Prime cost = 75% of factory cost

$$= \frac{75}{100} * 1,60,000 = ₹ 1,20,000$$

Factory overhead at 100% level given in the problem is 40,000

Administration and selling overhead

$$= \frac{20}{100} * 2,40,000 = ₹ 48,000$$

Of 48,000, 75% is variable, i.e. 36,000 and 12,000 is fixed

At 60% capacity:

Prime cost is 60% of ₹ 1,20,000 = 72,000

Works overhead is ₹ 33,000, Administration and selling overhead variable is 75% and fixed is ₹ 12,000

Statement Showing Profitability for New Work

Capacity	80%	40% Additional	Total 100%
Sales	1,92,000	33,000	2,25,000
Less cost of Sales			
Prime Cost	96,000	20,000	1,16,000
Works overhead	36,000	14,000	50,000
Factory overhead	1,32,000	34,000	1,66,000
Adm and Selling	40,800	6,450	47,250
	1,72,800	40,450	2,13,250
Profit or Loss	19,200	7,450	11,750

Now, As profit is reduced by ₹ 7450 additional order is not profitable.

Selecting the Suitable Product Mix

In the market, dealership is offered by the various companies to the individual intermediaries in promoting the sale of products. Before reaching an agreement with the company to act as a dealer, normally every individual consider the profitability of the product mix offered by the firm. For example, there are two different companies brought forth their advertisements in offering the dealership to the individual trading firms viz HCL and IBM. The profitability under the dealership banner should be appropriately considered prior to take decision. To take rational decision, the firm should compare the profitability of both different dealership of two different giant industrial brands. The greater the share of the profitability in volume will be selected and vice versa.

Notes

Problem 7:

From the following information has been extracted of EXCEL Rubber Products Ltd.:

Direct materials A	₹ 16
Direct Materials B	₹ 12
Direct wages A	24 Hrs at 50 paise per hour
Direct wages B	16 Hrs at 50 paise per hour
Variable overheads	150% of wages
Fixed overheads	₹ 1,500
Selling price A	₹ 50
Selling price B	₹ 40

The directors want to be acquainted with the desirability of adopting any one of the following alternative sales mixes in the budget for the next period:

- (a) 250 units of A and 250 units of B
- (b) 400 units of B only
- (c) 400 units of A and 100 units of B
- (d) 150 units of A and 350 units of B

State which of the alternative sales mixes you would recommend to the management?

Solution:

The first step is to determine the contribution margin per unit of A and B.

The determination of the contribution of product A and B are through the preparation of Marginal costing statement.

Particulars	Product A	(₹)	Product B	(₹)
Selling price		50		40
Less: Direct Materials	16		12	
Direct wages	12		8	
Variable overheads	18		12	
Variable cost		46		32
Contribution		4		8

The next step is to determine the profit level of every mix.

- (a) 250 units of A and 250 units of B.

The first step is to determine the total contribution of the mix. Why the total contribution has to be found out?

The main reason is to determine the profit level of the mix through the deduction of the fixed overheads

Product of A	250 units × ₹ 4	₹ 1,000
Product of B	250 units × ₹ 8	₹ 2,000
Contribution		₹ 3,000
Fixed overheads		₹ 1,500
	Profit	₹ 1,500

			Notes
(b)	400 units of B only		
	Product B Contribution	400 units × ₹ 8	₹ 3,200
	Fixed overheads		₹ 1,500
		Profit	₹ 1,700
(c)	400 units of A and 100 units of B		
	Product of A	400 units × ₹ 4	₹ 1,600
	Product of B	100 units × ₹ 8	₹ 800
	Contribution		₹ 2,400
	Fixed overheads		₹ 1,500
		Profit	₹ 900
(d)	150 units of A and 350 units of B		
	Product A	150 units × ₹ 4	₹ 600
	Product B	350 units × ₹ 8	₹ 2,800
	Contribution		₹ 3,400
	Fixed overheads		₹ 1,500
		Profit	₹ 1,900

The profit level among the given various mixes, the mix (d) is able to generate highest volume of profit over the others.

Determining Optimum Level of Operations: Under this method, the level has to be found out which is having lesser selling price, cost of operations and greater profits known as optimum level of operations.

Problem 8:

A factory engaged in manufacturing plastic buckets is working at 40% capacity and produces 10,000 buckets per annum.

The present cost break up for bucket is as under

Material	₹ 10
Labour	₹ 3
Overheads	₹ 5 (60% fixed)

The selling price is ₹ 20 per bucket.

If it is decided to work the factory at 50% capacity, the selling price falls by 3%. At 90% capacity the selling price falls by 5% accompanied by a similar fall in the prices of material.

You are required to calculate the profit at 50% and 90% capacities and also calculate break even point for the same capacity productions.

Solution:

The very first step is to compute number of units at every level of capacity i.e. 50% and 90%.

But in this problem, 40% capacity utilization given which amounted 10,000 units.

$$\text{For 50\%} = \frac{10,000 \text{ units}}{40} \times 50 = 12,500 \text{ units}$$

Notes

$$\text{For } 90\% = \frac{10,000 \text{ units}}{40} \times 90 = 22,500 \text{ units}$$

The important information is that the changes taken place in the selling price of the product.

Selling price = ₹ 20 @ 40% i.e. 10,000 units

Selling price @ 50% i.e. 12,500 units = ₹ 20 - 3% on ₹ 20 = ₹ 19.40

Selling price @ 90% i.e. 22,500 units = ₹ 20 - 5% on ₹ 20 = ₹ 19

While preparing the marginal costing statement, the fixed cost portion should not be included for the computation of the contribution.

The next step is to prepare the marginal costing statement.

Particulars	50% Capacity (12,500 Units)		90% Capacity (22,500 Units)	
	Per unit (₹)	Total (₹)	Per unit (₹)	Total (₹)
Selling price	19.40	242500	19.00	427500
Less: Direct Materials	10	1,25,000	9.50	2,13,750
Direct wages	3	37,500	3	67,500
Variable overheads	2	25,000	2	45,000
Variable cost	15		14.50	
Contribution	4.40	55,000	4.50	1,01,250
Fixed costs		30,000		30,000
Profit		25,000		71,250

The last step is to determine that the break even point.

Particulars	50% Capacity 12,500 Units	90% Capacity 22,500 Units
Break even point in units = Fixed cost Contribution margin per unit	$\frac{₹ 30,000}{₹ 4.40} = 6,818 \text{ units}$	$\frac{₹ 30,000}{₹ 4.50} = 6,667 \text{ units}$
Break even point in value BEP in units × Selling price	6,818 units × ₹ 19.40 = ₹ 1,32,269.	6,667 units × ₹ 19 = ₹ 1,26,673

Shut Down or Continuous Operation

Very often it become necessary for a firm to temporarily close down the factory due to trade recession with a view to reopening it in future. In such case the decision should be based on marginal cost analysis. If the products are making a contribution towards fixed expenses or in other words if selling price is above the marginal cost, it is preferable to continue because the losses are minimised. By spending the manufacture certain fixed expenses can be avoided and certain extra expenses may be incurred depending upon the nature of the industry. In other words, the shut down point is calculated by using the formula:

$$\text{Shut down point} = \frac{\text{Total fixed cost} - \text{Shut down cost}}{\text{Contribution per unit}}$$

Shutdown involves the following types of decisions:

- (a) Whether to close down a factory, department, product line or other activity or not, either because it is making losses or because it is too expensive to run.

- (b) If we are going for shut down, whether the closure should be permanent or temporary. Shutdown decisions often involve long term considerations, capital expenditures and revenues.
- (c) A shutdown should result in savings in annual operating costs in future.

Notes



Case Study

Make or Buy

In this period of tight budgets, many governments are under increasing pressure to do more with less. One potential way to reduce costs is to outsource services to private firms, non-profit organisations, or other governments that can provide the services more efficiently. In some cases, outsourcing can result in significant cost savings over the long run. In other cases, however, outsourcing may actually end up increasing a government's total costs. How can a government know whether outsourcing a given service will result in a cost savings or a cost increase? This article answers this question by demonstrating how to perform a cost analysis. The decision as to whether to perform a service "in house" or outsource it to an external provider is commonly referred to as the "make-versus-buy" decision. This article walks through the steps involved in a make-versus-buy cost analysis. But first, two key points warrant emphasis: (1) a make-versus-buy cost analysis should use a differential cost perspective and (2) the analysis should cover a multi-year period and discount future cash flows to their present value.

Use a Differential Cost Perspective

Differential cost is the key cost concept for evaluating the outsourcing of a service. The differential cost shows how a decision to outsource will change a government's costs. It is crucial to look at the differential costs instead of merely comparing the total costs of the status quo to the total costs of using a private contractor. The pitfall of comparing total costs is that they may include fixed costs that cannot be avoided by outsourcing a service. This could give the appearance that a government will incur fewer costs by using a private contractor when it actually will incur more. For example, let's say that a private waste hauler offers to provide waste collection services to the City of Unionsville for \$550,000 per year. As it stands, the total cost of providing waste collection services is \$750,000 per year. Thus, it appears that the city could save \$200,000 per year by hiring the private hauler. However, a closer look at the city's fixed costs reveals that it is committed to spending much of the \$750,000 whether or not it switches to a private hauler. More than half of this amount is personnel costs, which the city cannot avoid because of a "no-layoff" policy and the fact that the truck drivers perform other responsibilities. Likewise, the city is committed to \$50,000 per year in debt service payments for the facilities used to store and maintain its garbage trucks.

Sunk Costs: A potential mistake in a make-versus-buy cost analysis is the inclusion of sunk costs. A sunk cost is a cost that has already occurred and will remain the same regardless of what decision is made. As such, sunk costs should be ignored in a cost analysis. To see how including sunk costs can lead to bad decisions, suppose a county government is considering outsourcing its warehouse function to private suppliers that can maintain inventories of all the county's supplies and ship them overnight. One year earlier, the county had spent \$500,000 for a consultant to develop a state-of-the-art inventory process. Opponents of the outsourcing plan argue that the county should not outsource the warehouse function because it just poured \$500,000 into perfecting the existing system. However, this \$500,000 should not influence the decision because it cannot be recovered

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Notes

regardless of the course of action the county takes; only the differential cost of the two alternatives should influence the decision. If the differential cost of outsourcing the warehouse function is \$340,000 less per year than retaining this function in-house, including the sunk cost of the consulting services would lead the county to spend \$340,000 per year more than it has to.

Opportunity costs. Another important cost concept in make versus buy decisions is opportunity cost. Opportunity cost is the lost opportunity of using an asset or resource in a way other than the chosen alternative. For example, if a suburban government sells a public swimming pool to a private company to own and operate, the opportunity cost would include the admittance fee revenue that would have been collected if the pool remained a public asset. Likewise, the opportunity cost of not selling the pool would be the revenue from the sale of the pool.

Cover A Multi-Year Period and Discount Future Cash Flows

A cost comparison should cover a multi-year period. This is important for two reasons. First, a multi-year analysis is more likely to reveal whether outsourcing will generate long-term savings. A government should experience much of the cost savings related to outsourcing in later years, as leases and contracts expire and fixed costs become variable costs. Second, a multiyear contract is usually more attractive to potential vendors, which creates more competition and drives down the costs of the contract.

In a multi-year analysis, future cash flows should be discounted to their present value. This ensures that appropriate weight is given to future costs and benefits. Discounting is the process of converting a future value into its present value.

How to Perform A Make-Versus-Buy Cost Analysis

A make-versus-buy cost analysis involves four basic steps:

Step 1: Define the service

Step 2: Calculate the in-house costs that could be avoided by outsourcing the service

Step 3: Calculate the total costs of outsourcing n *Step 4:* Compare the cost savings from outsourcing to the costs incurred

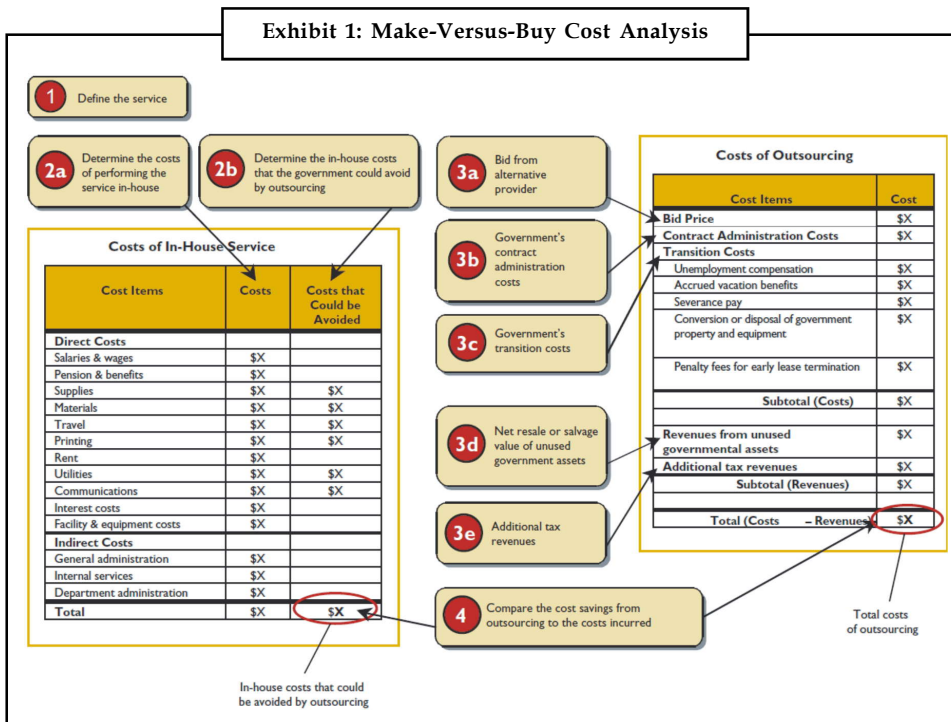
Exhibit 1 illustrates the steps in a make-versus-buy cost analysis.

To simplify the diagram, the analysis is limited to a single year. In actual practice, the analysis should cover a three- to five year period, and steps 2b through 4 should be repeated for each year. The totals for each year should be discounted to their present value.

Step 1: Define the service. The first step in a make-versus buy cost analysis is to clearly define the government service that is being considered for outsourcing. In other words, specify the quality and quantity of the service and the output and outcomes that are expected. This is necessary so that there is an apples-to-apples comparison between the service the government is already providing and the service proposed by outside contractors. If a service is vaguely or incorrectly defined, the in-house costs may be higher (or lower) than the contract costs simply because the government is providing more (or less) service than what is documented in the request for proposals.

When specifying the quality and quantity of the service, it is important to investigate whether government employees informally provide additional services to residents. For example, a parks and recreation department may perform tree trimming for elderly residents upon request, or may deliver wood chips free of charge.

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It is also important to examine whether the resources (labour, facilities, equipment, and material) used for the service are formally or informally shared with other government services. For example, garbage collection crews might assist with snow removal after a heavy snowfall, or they may help the parks and recreation department clean up after a summer festival. All of these details must be documented in the contract to arrive at an accurate cost comparison and to avoid disputes with vendors after the contract is signed.

Step 2: Calculate the in-house costs that would be avoided by outsourcing the service. The second step is to calculate the total government costs that would be avoided or saved by outsourcing the service. To determine the costs that would be saved, first itemise the full cost of the service, including all of the direct and indirect costs. Then, use this list of costs as the basis from which to determine the specific costs that would be saved if the service were outsourced. GFOA's recommended practice on measuring the cost of government services defines the in-house costs saved by outsourcing as those costs that are either eliminated immediately or eliminated after a brief transition period. It is important to remember that many fixed costs—overhead costs in particular—will remain the same even though the resources behind those costs are not being used.

Cost estimates should be made on a multi-year basis and discounted to a present value. To ensure that inflation is treated consistently, nominal costs should be used if a nominal discount rate is used, and real costs should be used if a real discount rate is used.

Step 3: Calculate the total costs of outsourcing. The third step is to calculate the total costs of outsourcing the service. The costs of outsourcing include the contractor's bid price, the government's contract administration costs, and the government's transition costs, less any new revenue generated from outsourcing. These cost estimates should be discounted to their present value and cover the same period as the cost savings in the previous step. To be consistent throughout the analysis, only new costs should be counted, not the costs that would be incurred regardless of who provides the service. For example, if a government already employs workers to perform contract administration, these costs should not be included in the analysis as long as they are absorbed by existing employees.

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Contract Administration Costs: The government's contract administration costs include all of the tasks necessary to select and manage a vendor over the life of the contract. These tasks may include reviewing and evaluating RFPs, writing and negotiating the contract, processing change orders and amendments to the contract, monitoring and evaluating vendor performance, dealing with disputes, and processing payments to the vendor. Depending on the type of contract and their own internal processes, state and local governments can estimate contract costs anywhere from 0 percent to 25 percent. Some governments base their estimates of contract administration costs on a standard formula.

Transition costs. Transition costs include all of the costs incurred by a government as it shifts a service to an outside contractor. These transition costs may include the various personnel related costs related to laying off employees, including unemployment compensation, accrued vacation benefits, and severance pay. They may also include the preparation of government facilities and equipment for use by an outside contractor. Alternatively, these assets might be sold or otherwise disposed of, resulting in a positive or negative net salvage value. If the assets are rented, an early termination of the lease may create additional costs.

Revenues from Outsourcing: Any additional revenues that a government collects as a result of outsourcing should be subtracted from the costs of outsourcing. In some cases, a decision to outsource a service may result in increased tax and fee revenues from the contractor. For example, a contractor may pay property taxes on a new facility constructed within city limits. Another source of revenue is the sale of government assets that are no longer needed because a vendor uses its own assets to provide the service. For instance, a government might sell its garbage trucks if a vendor uses its own vehicles. Care should be taken to include only the additional revenues that are the result of outsourcing.

Step 4: Compare the cost savings from outsourcing to the costs incurred. The final step in a make-versus-buy cost analysis is to calculate the difference between the costs saved by outsourcing a service and the costs incurred. If the costs saved are significantly greater than the costs incurred, then outsourcing may make financial sense.

The final result of a cost analysis is often based on assumptions that have a fair degree of uncertainty. As a countermeasure, it is prudent to conduct a sensitivity analysis, which tests the sensitivity of the final result to changes in the underlying assumptions. There are three main methods for performing a sensitivity analysis. One method is to recalculate the result under pessimistic, expected, and optimistic scenarios. A second method is to recalculate the result many times by testing each assumption over a wide range of values. A third method is to calculate a probability distribution for the result of an analysis. To address the uncertainty inherent in any cost analysis, governments sometimes require that the cost savings from outsourcing exceed the cost of providing the service in-house by a certain margin. For example, the State of Texas and the federal government use a 10 percent threshold.

There are many non-financial costs and benefits that are difficult to quantify in this type of analysis but that should be considered nonetheless. For example, there may be a significant difference in the quality of the service provided by a government and the quality of the service provided by a private contractor. Underutilised facilities, labour, and equipment during the transition period may also entail opportunity costs to the government. And outsourcing may reduce a government's ability to use the service to carry out policy goals. On the positive side, shifting a service to a contractor also transfers liability and other risks to the contractor (even though these risks are likely built into the contract price). Governments are developing increasingly sophisticated ways of handling these issues, such as requiring providers to return a percentage of their profits to non-profit organisations in the community.

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Questions:

1. Study and analyse the case.
2. Write down the case facts.
3. What do you infer from it?

Notes

Source: <http://www.gfoa.org/downloads/GFRAug04.pdf>

5.3 Summary

- Differential cost is a business term that refers to the difference in costs for a business when choosing between two alternatives.
- It is an important tool in the decision-making process for businesses looking to make possible changes to a business model.
- Closely associated with marginal cost, a term favoured by economists, it can refer to either fixed or variable costs. The relevance of these costs is obvious when judged alongside of differential revenue to give businesses a perspective on the positives or negatives of a decision.
- In any decision-making process, a choice is made between alternatives. When it comes to the business world, those choices include costs and benefits that must be weighed in order to assess what decision to ultimately make.
- Differential cost is the difference in costs, either negative or positive, between two or more alternatives.
- This cost must be considered along with the difference in revenue generated by these alternatives in order to come to a significant conclusion.
- The differential costing is based on the implication that only the relevant cost, which will change as a result of the decision, is useful for decision-making. Any costs which are not expected to alter, and then they are irrelevant for decision-making.

5.4 Keywords

Decremental Cost: It is used when the difference in cost is due to decrease in the level of production.

Differential Costs: The increase or decrease in total cost or the change in specific elements of cost that result from any variations in operation is called differential cost.

Fixed Cost: Any item which remains constant whichever alternative is chosen is not a differential cost and can be ignored in choosing alternatives.

Incremental Cost: It is used to denote differential cost when the increase in cost is due to increase in the level of production.

Make or Buy Decision: The act of choosing between manufacturing a product in-house or purchasing it from an external supplier.

Marginal Cost: It is defined as the sum of all variable costs.

Product Mix: Also known as product assortment, it refers to the total number of product lines that a company offers to its customers.

Sunk Costs: Those costs which have already been incurred are irrelevant.

Notes

5.5 Review Questions

1. What do you mean by differential cost?
2. Discuss incremental cost and decremental cost.
3. What are the features of differential costing?
4. State the difference between differential costing and marginal costing.
5. Enumerate the various applications of differential costing.
6. Define sunk costs.
7. What do you mean by fixed costs?
8. "Differential costing is more useful for those situations where fixed costs also differ and thus more appropriate for both short run and long run decisions." Comment.

Answers: Self Assessment

- | | |
|--------------------------------|---|
| 1. Differential | 2. differential costing |
| 3. incremental | 4. decremental |
| 5. relevant | 6. short |
| 7. Marginal | 8. Revenue |
| 9. Contribution | 10. Sunk |
| 11. scope | 12. absorption costing and marginal costing |
| 13. Differential cost analysis | 14. production |
| 15. differential cost | |

5.6 Further Readings



Books

Bhar. K.B. (2008) *Cost Accounting, Methods & Problem*, Academic Publishers.

Lal, Jawahar & Srivastava, Seema (2009) *Cost Accounting*, 4th Edition, Tata McGraw-Hill Education.

Nigam, Lal B.M. & Jain I. C. (2001) *Cost Accounting: An Introduction*, PHI Learning Pvt. Ltd.

Thakur. S.K, (2009). *Cost Accounting: Theory and Practice*, Excel Books.



Online links

http://www.ehow.com/info_8480512_advantages-differential-pricing.html

<http://www.slideshare.net/coiness/differential-cost-analysis-chapter7>

<http://www.gfoa.org/downloads/GFRAug04.pdf>

<http://www.wisegeek.org/what-is-differential-cost.htm>

Unit 6: Budgetary Control

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Objectives

After studying this unit, you will be able to:

- Explain the meaning of budget;
- Discuss the concept and objectives of budgetary control;
- Explain essentials of budgetary control;
- State the classification of budget;
- Discuss the preparation of cash and flexible budget;
- Explain performance budgeting.

Introduction

Planning and control are the most important functions of business management. For assisting business management in these two functions, the techniques of budgetary control and standard costing are applied. Of course, budgeting is not something new to government departments where every year, there is an attempt to equate revenue with expenditure. In private life also, there is an attempt to balance expenditure with earnings. In the business world, a budget is the formal expression of the expected earnings and expenditure for a particular period or future period. In a word, budget has become an important tool of management in all business activities today. A budget is a predetermined detailed plan of action developed as a guide for future operations. Budget also serves as a basis for performance evaluation and control and budgetary control is a system of controlling costs through budgets. Budgetary control is defined by the Institute of Cost and Management Accountants as "The establishment of budgets relating the responsibilities of executives to the requirements of a policy, and the continuous comparison of actual with budgeted results, either to secure by individual action the objective of that policy, or to provide a basis for its revision".

6.1 Concept of Budget

The word 'Budget' is derived from a French word '*Bougette*' representing leather pouch into which funds are appropriated to meet the anticipated expenses. A budget is a plan and blueprint for future management action. It is expressed in monetary terms. It is a financial or quantitative statement, prepared prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective. The following are some of the important definitions:

According to Brown and Howard, "A budget is a predetermined statement of management policy during a given period which provides a standard for comparison with the results actually achieved."

George R. Terry has defined budget as, "Budget is an estimate of future needs arranged according to an orderly basis, covering some or all of the activities of an enterprise for definite period of time."

According to James, "A budget is a comprehensive and coordinated plan, expressed in financial terms, for the operations and resources of an enterprise for some specific period in the future."

6.1.1 Features of a Budget

The following are the main features of a budget:

- (i) A budget is prepared for a definite future period of time. Generally, budgets are prepared for one year. However, in the case of seasonal business like sugar, ice-cream, apparels, etc., there may be two budgets for each year.
- (ii) The figures in the budget are expressed in monetary and quantitative terms.
- (iii) Budget is a plan for the operations and resources of the business or firm.
- (iv) Budget is a tool for developing the cooperation, coordination and control between the various departments.
- (v) It shows how much profit or loss a business organisation is expected to make and thereby reveals its profit potential.
- (vi) The budget proposal which is prepared by the budgetee is revived and approved by an authority higher than the budgetee.

- (vii) After the budget has been approved by the top management of the organisation, the same cannot be altered except under specified conditions, and
- (viii) It indicates the business policy which has to be followed so as to achieve a given objective.

6.1.2 Objectives of Budget

The main objectives of budget are:

- (i) It directs the attention of all concerned to the attainment of a common objective or goal.
- (ii) It contributes to coordinated efforts of all departments in order to achieve an integrated goal.
- (iii) It aims at careful control over the performance and cost of every function.
- (iv) Budgets grow from bottom and are controlled from top-level, and
- (v) The budgets are compared with actual performance.

Differences between a Budget and Forecast

The main differences between a budget and forecast are given as under:

Table 6.1: Difference between Budget and Forecast

S.No.	Budget	Forecast
(i)	A budget is a tool of planning and control.	A forecast is a planning device.
(ii)	A budget is prepared for a defined period of time.	A forecast is generally for a longer period i.e. one year, two years or five years.
(iii)	A budget covers only economic activities of business.	A forecast may cover economic as well as non-economic activities of business.
(iv)	The budget process starts where forecasting ends.	Forecasting precedes preparation of budget.
(v)	Budgeting is not a pre-requisite for forecasting.	Forecasting is pre-requisites for budgeting.
(vi)	A budget relates to planned events. A budget shows policies and programmes to be pursued by the organisation.	A forecast relates to anticipated events of business.
(vii)	Budget is always used for evaluating the efficiency of performance.	Forecast is not used for evaluating the efficiency of performance.

6.2 Budgeting

Budgeting means the process of preparing budgets. In other words, budgeting refers to the management action of formulating budgets. Preparation of budgets involves study of business situations and understanding of management goals as also the capacity of the organisation.

According to Welsch, "budgeting is the principal tool of planning and control offered to management by accounting functions."

In the words of J. Batty, "the entire process of preparing the budgets is known as budgeting."

Rowland and Harr has defined budgeting as, "budgeting may be said to be the act of building budgets."

Notes

6.2.1 Objectives of Budgeting

The main objectives of budgeting are:

- (i) To obtain more economical use of capital.
- (ii) To bring about coordination between different functions of an organisation.
- (iii) To plan and control the earnings and expenditure of the organisation.
- (iv) To create a good business practice by planning for future.
- (v) To ensure the matching of sales with production.
- (vi) To fix departmental responsibilities on different department managers.
- (vii) To prevent wastages or losses and reduce the expenditures, and
- (viii) To ensure the availability of working capital in the organisation.

6.2.2 Advantages and Disadvantages of Budgeting

The advantages of budgeting are as follows:

- (i) Budgeting helps in solving problems in a disciplined manner.
- (ii) Budgeting helps in feeling of cooperation and understanding between different departments.
- (iii) Budgeting is a process of self-examination and self-criticism which is essential for the success of any business or enterprise.
- (iv) Budgeting enables the organisation to review and restate its fundamental goals, policies and procedures.
- (v) It sets responsibilities of employees in relation to each function of business.
- (vi) It forces the management to keep adequate and correct historical data in the business.
- (vii) It helps the organisation to plan well in advance for mobilising resources needed for achieving its goals.
- (viii) As the performance of managers is measured against budgets, they are motivated to accomplish high performance.
- (ix) Budgeting is that there is an improvement in communication moreover, it also leads to proper coordination, and
- (x) Another advantage is that it facilitates management by exception. This is done through variance analysis.

Limitations of Budgeting

The main limitations of budgeting are as under:

- (i) Budgeting is a costly affair for business organisations.
- (ii) Budgeting is not a substitute for management.
- (iii) Budget plan is based on estimates.
- (iv) Budget execution is not proper and automatic, and
- (v) A budget should not have more details than is necessary as it leads to complications.

6.3 Meaning of Budgetary Control

Budgetary control is a system of planning and controlling costs. It has been defined as the establishment of budgets relating the responsibilities of executives to the requirements of a policy, and the continuous comparison of actual with budgeted results, either to secure by individual action the objective of that policy or to provide a basis for its revision. In other words, budgetary control is applied to a system of management and accounting control by which all operations and output are forecasted as far ahead as possible and actual results when known are compared with budget estimates.

According to Wheldon, "Budgetary control is the planning in advance of the various function of a business, so that business as a whole can be controlled."

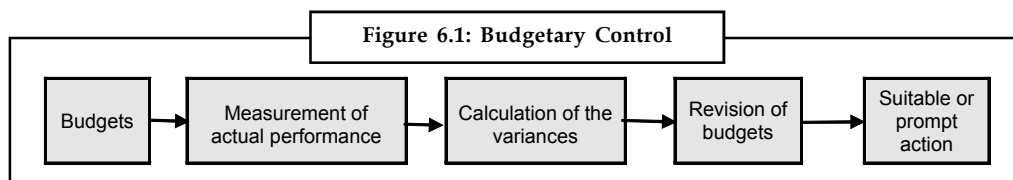
In the words of Niles, "budgetary control is an important tool of management. It is fact a tool of planning which reaches through coordination into control and ties the three aspects firmly together. It stimulates thinking in advance by requiring specific planning and the anticipation of operating problems."

J. A. Scott has defined budgetary control as, "the term budgetary control is applied to the system of management control and accounting in which all operations are forecast and so far as possible planned ahead, and the actual results compared with the forecast and planned ones."

In view of the above, the following steps are involved in budgetary control:

- (i) Preparation of budgets for each function of the organisation.
- (ii) Measurement of actual performance at the end of the budget period.
- (iii) Calculation of the variances and analysing the reasons for them.
- (iv) Revision of budgets in the light of changed circumstances, and
- (v) Taking suitable or prompt action to achieve the desired objective.

Budgetary control may be shown as under:



6.3.1 Objectives of Budgetary Control

After defining the term budgetary control, it is necessary to explain the objectives of it. The main objectives of a budgetary control can be stated in the following way:

- (i) To incorporate the ideas of all levels of management in preparing a budget.
- (ii) To lay down a plan to implement the policy of the organisation.
- (iii) To coordinate the activities of the departments of an organisation.
- (iv) To provide sufficient working capital for effective operation of the organisation.
- (v) To control direct and indirect expenses of the organisation.
- (vi) To execute capital expenditures in the most profitable manner.
- (vii) To control on output cost, production cost and economy.
- (viii) To ensure maximum profitability in output of organisation.

6.3.2 Essentials of a Successful Budgetary Control

The following are the essentials or prerequisite for the successful implementation of a sound system of budgetary control:

- (i) The business objectives, plans and policies should be clearly defined.
- (ii) The organisational chart should be clear with responsibility and authority.
- (iii) The budgeted output should be stated in clear terms.
- (iv) Budget committee should be setup for the establishment and efficient execution of the plan.
- (v) Budget centres should be established for cost control and all budgets should be related to cost centres.
- (vi) The budgetary control system should have full support of top management of the organisation.
- (vii) The accounting system should provide accurate and timely information.
- (viii) Staff of the organisation should be strongly and properly motivated towards the system.
- (ix) The budget should lay down the targets which are realistic and attainable, and
- (x) The budgets should be flexible nature for permit the adjustments in the light of changed operational circumstances.

Advantages of Budgetary Control

Budgetary control is advantageous for all types of organisations whether large or small. The advantages of budgetary control may be listed as under:

- (i) The most important advantage of a budgetary control is to enable management to conduct business in the most efficient manner.
- (ii) Budgetary control takes the help of different levels of management in the preparation of the budget.
- (iii) Budgetary control is helpful in reviewing current trends in the business and in determining further policy of the business.
- (iv) Budgetary control is a tool for comparing the actual results with that of the budget.
- (v) Budgets can be used as a tool of comparing actual performance in terms of budgeted performance.
- (vi) Budgetary control ensures that the capital employed at a particular level is kept at a minimum level.
- (vii) Budgetary control is a guide to the management in the field of research and development in future.
- (viii) An effective system of budgetary control results in coordinated effort of all persons involved.
- (ix) Budgetary control is a good guide to the management for making future plans.
- (x) Budgetary control provides advance information and financial position of the organisation.

Limitations of Budgetary Control

Notes

Budgetary control is a sound technique of control. But, it is not a perfect tool. The budgetary control as a management control device suffers from the following limitations:

- (i) Budgetary control is only technique of the management and is not a perfect tool of management.
- (ii) Budgetary control is time-consuming process. During the preparation period, the business conditions may change and estimates may go wrong by that time.
- (iii) In budgetary control, the managers may have to operate within budget limits even if circumstances require a change. Long-term budgets suffer from inflexibility.
- (iv) The successful operation and execution of budgets depends upon the efficiency of the executive personnel.
- (v) Budgetary control is an expensive technique.
- (vi) Budgets are prepared on the basis of forecasts and estimates about the future.
- (vii) Budgetary control is an essential tool of decision-making and it helps the management in taking sound decisions. But it cannot replace the management.

Self Assessment

Fill in the blanks:

1. A is a predetermined detailed plan of action developed as a guide for future operations.
2. refers to the management action of formulating budgets.
3. Budgetary control is a system of and controlling costs.
4. is the planning in advance of the various function of a business, so that business as a whole can be controlled.
5. The most important advantage of a budgetary control is to enable management to conduct business in the most manner.
6. Budgetary control is process.
7. Long-term budgets suffers from
8. Budgets are prepared on the basis of and estimates about the future.

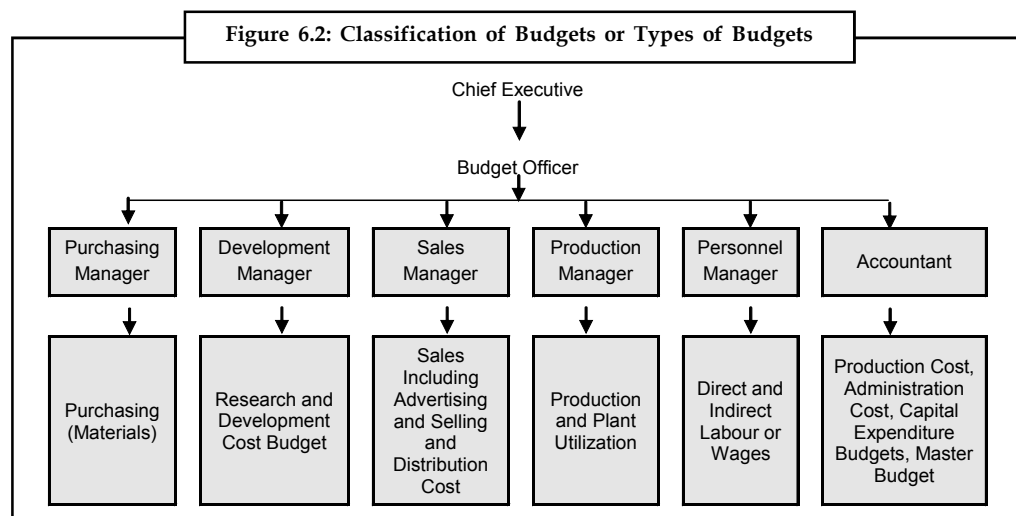
6.4 Classification of Budgets

Budgets may be classified into a number of categories. Classification of budgets is based on some features, connected with the operational activities of a business. Various budgets may be classified on following basis:

- (a) On the Basis of Time,
- (b) On the Basis of Functions,
- (c) On the Basis of Flexibility, and
- (d) On the Basis of New Technology.

Notes

The detailed discussion of classification of budgets is as follows:



(A) **On the Basis of Time:** On the basis of time, budgets may be classified into three categories:

- (a) **Long-term Budgets:** When budgets are prepared for a period of 5 to 10 years these are called long-term budget. These budgets help in business forecasting and forward planning.
- (b) **Short-term Budgets:** These are budgets for a short period of a year or two. These are prepared in the form of production plan in monetary term.
- (c) **Current Budgets:** A current budget can be defined as a budget which is related to the current conditions and is prepared for use over a short period of time. This budget is more useful than a basis budget, as a target it lays down will be corrected to current conditions.

(B) **On the Basis of Functions:** On the basis of functions, budgets may be classified into following categories:

- (a) Functional Budgets, and
- (b) Master Budget.
- (a) **Functional Budgets:** Functional budgets are:
 1. **Sales Budget:** The sales budget is a forecast of total sales which may be expressed in monetary and quantitative terms. In practice, quantitative budget is prepared first, then it is translated into monetary terms. The preparation of sales budget is generally the starting point in the operation of budgetary control because sales become, more often than not, the principal budget factor. However, sales budget is very difficult to prepare owing to the fact that many of the factors affecting this budget are beyond the scope of control by business.

A sales budget may be prepared under the following classifications:

- Products or Groups of products,
- Areas or Towns,
- Salesmen or Agents,
- Types of customers, and
- Periods, such as month, quarter, year, etc.

2. **Selling and Distribution Cost Budget:** The selling and distribution cost budget is a forecast of the cost of selling and distributing the goods during the budget period. This budget is generally based upon the sales volume as per sales budget. However, certain other related information should also be taken into consideration in the preparation of selling and distribution cost budget.



Example: Heavy amount for advertising may be planned for the budget period but its benefits may accrue mainly in subsequent budget periods.

The preparation of the selling and distribution cost budget is the responsibility of the sales manager. However, he will be assisted in this work by the advertising manager, distribution manager, sales office manager and the accountant.

Selling and distribution cost budget may be prepared by grouping the costs according to elements. The said budget may comprise the following groups of costs:

- (a) **Direct Selling Expenses:** Such as salaries, commissions and expenses of salesmen, motor car expenses, etc.
 - (b) **Sales Office Expenses:** These expenses are salaries, rent, rates, electricity, depreciation, postage, stationery, telephone, general expenses, etc.
 - (c) **Distribution Expenses:** Such as wages of warehouse staff, rent and rates of warehouse, electricity, lorry expenses, insurance, export duty, etc.
 - (d) **Advertising Expenses:** These expenses are viz. shop window display, radio, roadside, coupon offers, leaflets, etc.
3. **Production Budget:** Production budget is prepared by the production manager, showing the forecast of output. The objective is to determine the quantity of production for a budgeted period. It is in quantity of units to be produced during the budget period. Production budget is based on the sales budget. Production budget is divided into two parts, i.e., one part contains the volume of production and the other part shows the cost of production. Apart from the sales budget, optimum utilisation of plant, availability of raw materials, labour, etc., are to be considered. It must avoid overwork in rush reasons. It must maintain a minimum stock of finished goods.
 4. **Production Cost Budget:** The production budget, as it has been seen, determines the volume of output. The volume of output can be achieved, if the required cost for the purpose is incurred. As the budgeted production is an estimated figure, the cost to be incurred to carry out that volume of production is also to be estimated at the time of drawing out the production budget simultaneously. Thus, the production costs budget is an estimated cost of output planned for a budget period. It will show the detail estimate of costs to be incurred for the budget period and is classified into material, labour and overhead costs, as cost of production includes all these elements of costs.



Note Production cost budget is divided into material cost budget, labour cost budget and overhead cost budget. In fact, production cost budget is an aggregate of material cost budget, labour cost budget and overhead cost budget.

Notes

5. Purchase Budget: This budget represents the purchases to be made during the budget period. This will include direct and indirect materials and services. Where, however, finished goods are purchased for resale, the purchasing budget should take into consideration the requirements of finished goods for resale. The purchasing budget may be expressed in terms of quantity or money. Purchase budget is generally based upon:
 - (a) Sales and production budgets,
 - (b) Capital expenditure budget,
 - (c) Research and development cost budget,
 - (d) Purchase orders already placed,

6. Administration Cost Budget: Administration cost budget will show the total estimated cost of formulating the policy, directing the organisation and controlling the operations of an undertaking which is not related directly to research, development, selling, distribution and production activity or function. Most of the expenditures relating to administration will be of fixed nature within defined limits, and, therefore, the preparation of this budget is relatively easy as compared to other functional budgets. Thus, each department or budget centre will be responsible for preparation of its own budget and finally it will be incorporated in the administration cost budget. A specimen of administration cost budget is given below:

Figure 6.3: Administration Cost Budget

Administration Cost Budget							
Cost Centre:				Period:			
Department:							
Description	Total (₹)	Months					
		Jan. (₹)	Feb. (₹)	March (₹)	April (₹)	May (₹)	June (₹)
Indirect materials
Indirect wages and salaries
Depreciation
Repairs
Miscellaneous
Total

7. Capital Expenditure Budget: A business organisation with manufacturing activity, in particular, is required to undertake expenditure on fixed assets like plants and equipments. This is affected to materialise its objective of earning revenue through the sale of goods produced according to the production budget. This expenditure on fixed assets is known as capital expenditure. The budget that discloses the estimate of such expenditures of a business organisation of unit for future period is called the capital expenditure budget.

One should take note of it that the budget period, in the case of capital expenditure budget, summarily differs from that of all other budgets. Generally, capital expenditures are often planned well ahead of the actual

Notes

expenditure to be made to this effect. This is to say, this is usually planned 3 to 5 years in advance. For control purposes, it is broken down into convenient periods like years or months. It goes without saying that capital expenditures often involved a large quantum of investment and this sort of expenditure requires prior approval of the top level of management. Therefore, this budget is subject to strict control by the top level management. The plant engineer is to prepare this budget in consultation with the budget officer. In course of preparing the budget, capital costs, period of expenditure and the expected rate of return on the investment are to be taken into consideration. The capital expenditure budget will be prepared taking the following further points into consideration:

- (a) Proposal for purchase of new plants to add to the existing capacity,
- (b) Proposal for replacement of the existing plants as required,
- (c) Requirement of installing an improved machinery for reducing cost of production,
- (d) Overloading on the production facilities, as detailed in the plant utilisation budget, and
- (e) Meeting the requests for machinery and other assets, as the case may be, from the managers of production, service, transport departments and the accountant.

A specimen of capital expenditure budget is given below:

Figure 6.4: Capital Expenditure Budget

Capital Expenditure Budget													
Department:						Period:							
Project No.	Description	External Costs			Internal Cost			Grand Total (Total of External and Internal Costs) (₹)	Benefits Expected Rate of Return Cost Saving/ Cash In- flows (₹)	Asset to be Replaced		Remarks	
		Cost of Fixed Assets (₹)	Delivery Charges (₹)	Total Cost (₹)	Material (₹)	Labour (₹)	Overheads (₹)			Total (₹)	Estimated Life of the Assets		Description
	Fixed Assets												

- 8. Research and Development Cost Budget: A research and development cost budget is planned outlay on research and development. This budget will show in terms of money, the permissible limits within which activities are to be pursued and how they are to be taken up.

Notes



Caution Research and development is normally a long-term budget. It is prepared for each project separately and should be sub-divided into short-term budgets on annual basis. This budget is not a part of production budget. The research and development budget provide information regarding control of research and development cost.

9. Cash Budget: Cash budget is another important budget. Its object is to indicate the flow of funds and their requirements. It takes into account the amount received from Sales – cash sales and payments made by credit customers and the expenditure to be incurred in cash – both capital and revenue. The budget shows up whether and when arrangements should be made for overdraft, loans, etc.
- (b) *Master Budget*: It is defined as a budget which is prepared from and summarises, the functional budgets. The term summary budget is synonymous. In short, when all the functional budgets are prepared, they can be summarised to produce:
 - (a) Budgeted profit and loss account (including appropriations), and
 - (b) Budgeted balance sheet.

A master budget commonly takes the form of a budgeted profit and loss account and budgeted balance sheet. Budgeted funds flow may also form part of a master budget. Therefore, a master budget is an overall business plan and is akin to familiar financial statements, the major technical difference is that here one is dealing with expected future data rather than with historical data.

The budget committee will prepare the master budget on the basis of coordinated functional budgets. When it is approved by the committee, it becomes the target for the company during the budget period.

Advantages of Master Budget

Following are the main advantages of master budget:

- (a) It provides a summary of functional budgets,
 - (b) It projects the overall estimated profit of the business or organisation for the budget period,
 - (c) The summary helps in checking the accuracy of functional budgets as the information disclosed in functional budgets should agree with the information provided in the master budget,
 - (d) Forecast balance sheet can be prepared easily as the budget in question provides necessary information for the purpose, and
 - (e) The top management is often interested in having meaningful information of the organisation in summarised form.
- (C) *On the Basis of Flexibility*: On the basis of flexibility, the budgets may be classified into two categories as fixed budget and flexible budget.
- (a) Fixed Budget, and
 - (b) Flexible Budget.
- (a) *Fixed Budget*: A fixed budget means a budget which is prepared on the basis of a standard or fixed level of activity. According to CIMA terminology, the fixed budget is, "A budget which is designed to remain unchanged irrespective of the volume of

output or turnover attained." In other words, "fixed budget is prepared for one level of activity for a definite time period. It is also known as a static budget."

Notes

The main feature of a fixed budget is that it is not adjusted to actual levels of activity, when comparisons are made with actual results of operations. A fixed budget may be satisfactory when the company's or firm's activities can be estimated reasonable accurately. But at best it has limited usefulness as a control tool.



Did u know? Fixed budget is not going to highlight the cost variances due to the difference in the levels of activity. This type of budget is not of much use to the management as no adjustment is made to the costs for the difference in the activity level.

- (b) *Flexible Budget:* A flexible budget is also known as dynamic budget, sliding budget, variable budget, step or expenses control budget. A flexible budget means a budget which is prepared to give the budgeted cost for any level of activity.

6.5 Preparation of Cash Budgets

According to CIMA, London, "A detailed budget of cash inflows and outflows incorporating both revenue and capital items." In other words, cash budget is the budget of anticipated receipts and payment of cash during the budget period. This budget is considered as a nerve centre of the entire budgetary control system.



Note The most of the necessary details of this budget are available from sales budget, production budget, capital expenditure budget, and overhead budget.

Cash budgets can be prepared by using any one of the three methods:

- (a) Receipts and Payments Method,
- (b) Adjusted Profit and Loss Method, and
- (c) Balance-Sheet Method.

The receipts and payments method is usually used. While preparing the cash budget, the following factors are considered:

- (i) Estimated opening balance,
- (ii) Monthly sales value in the sales budget,
- (iii) Sales policy and credit policy,
- (iv) Monthly purchases, closing stock in the materials purchase budget and inventory budget,
- (v) Miscellaneous sales,
- (vi) Suppliers payment policy, credit terms and agreement,
- (vii) Dividend policy,
- (viii) Capital budget,
- (ix) Amount of salaries, wages and similar payments for the month,

- Notes**
- (x) Estimated amount of operating expenses on the basis of credit terms, agreement and timing of disbursement,
 - (xi) Minimum cash balance desired depending upon business needs and market conditions, and
 - (xii) Hire purchase and instalment sale agreement relating to instalment payments for purchase.

6.5.1 Role of Cash Budget

Efficient cash management through relevant and timely cash budgets may help:

- (i) Provide funds for normal growth,
- (ii) Secure optimum working capital needed for smooth and unhindered running of the operation and planning for payments to shareholders,
- (iii) Facilitate temporary investment of cash whenever, and to whatever extent, found in excess, and
- (iv) Ease strains of a cash shortage.

Problem 1:

From the following data, prepare a cash budget for the three months commencing from 1st June, 2007 when the bank balance was ₹ 1,00,000.

Months	Sales (₹)	Purchases (₹)	Direct Wages (₹)	Production Expenses (₹)	Administration Expenses (₹)
April	80,000	41,000	5,600	3,900	10,000
May	76,500	40,500	5,400	4,200	14,000
June	78,500	38,500	5,400	5,100	15,000
July	90,000	37,000	4,800	5,100	17,000
August	95,000	35,000	4,700	6,000	13,000

There is a two month credit period allowed to customers and received from suppliers. Direct wages, production expenses and administration expenses are payable in the following month.

Solution:

**Cash Budget
For June, 2007 to August, 2007**

Particulars	June, 07 (₹)	July, 07 (₹)	August, 07 (₹)
Opening balance	1,00,000	1,15,400	1,25,900
Add : Receipts :			
Collection from debtors	80,000	76,500	78,500
Total	1,80,000	1,91,900	2,04,400
Less : Payments :			
Paid to creditors	41,000	40,500	38,500
Direct wages	5,400	5,400	4,800
Production expenses	4,200	5,100	5,100
Administration expenses	14,000	15,000	17,000
Total	64,600	66,000	65,400
Closing Balance	1,15,400	1,25,900	1,39,000

Problem 2:

Notes

Prepare a cash budget from the following data for three months from 1st April, 2007.

Months	Credit Sales (₹)	Purchases (₹)	Direct Wages (₹)
February	1,80,000	1,24,800	12,000
March	1,92,000	1,44,000	14,000
April	1,08,000	2,43,000	11,000
May	1,74,000	2,46,000	10,000
June	1,26,000	2,68,000	15,000

50% to credit sales are realised in the month following the sales and the remaining 50% in the second month following.

Creditors are paid in the month following the month of purchase. Direct wages paid in the month itself. Cash at bank on April 1st, 2007, ₹ 25,000.

Solution:

**Cash Budget
for April, 2007 to June, 2007**

Particulars	April, 07 (₹)	May, 07 (₹)	June, 07 (₹)
Opening balance	25,000	56,000	(-) 47,000
Receipts : Collection from debtors	1,86,000	1,50,000	1,41,000
Total	2,11,000	2,06,000	94,000
Payments :			
Purchases	1,44,000	2,43,000	2,46,000
Direct wages	11,000	10,000	15,000
Total	1,55,000	2,53,000	2,61,000
Closing Balance	56,000	(-) 47,000 ⁽¹⁾	(-) 1,67,000 ⁽²⁾

Working notes:

- (1) Bank overdraft to be arranged for May is ₹ 47,000 (2,06,000 – 2,53,000).
- (2) Bank overdraft for June is ₹ 1,20,000 (1,67,000 – 47,000).



Task What are functional budgets? Which functional budgets are most commonly used by the management?

6.6 Preparation of Flexible Budget

ICMA, England defines a flexible budget as, "A budget designed to change in accordance with the level of activity actually attained."

In this context, it may be pointed out that the usefulness of a budget depends on how accurately the expenses are classified in it. Therefore, a flexible budget is prepared classifying all expenses, according to behaviour.

Notes



Caution According to the principles that guide the preparation of the flexible budget a series of fixed budgets are drawn for different levels of activity. The costs involved with the activities are analysed in terms of fixed, variable, semi-variable, etc.

6.6.1 Advantages of Flexible Budget

The flexible budget has the following advantages:

- (i) It helps in assessing the performance of all departmental heads as the same can be judged in terms of the level of activity attained by the business or firm,
- (ii) A flexible budget is prepared for various levels of activity. As such, costs can be ascertained at different levels of activity. So, it helps in fixation of price and placing quotations, and
- (iii) As the budget is adjusted in response to the changes in the levels of activity, the budget reckons every change in situations. As a matter of fact, the flexible budget is very useful for the purpose of budgetary control.

Problem 3:

Kartik Limited has prepared a budget for the production of 1,00,000 units of the only commodity manufactured by them for a costing period as under:

Raw materials	₹ 2.52 per unit
Direct labour	₹ 0.75 per unit
Direct expenses	₹ 0.10 per unit
Works overheads (60% fixed)	₹ 2.50 per unit
Administration overheads (80% fixed)	₹ 0.40 per unit
Selling overheads (50% fixed)	₹ 0.20 per unit

The actual production during the period was only 60,000 units. Calculate the revised budgeted cost per unit.

Solution:

Flexible Budget

Particulars	Original Budget (Output 1,00,000 Units)		Revised Flexible Budget (Output 60,000 Units)	
	Per unit (₹)	Amount (₹)	Per unit (₹)	Amount (₹)
Raw materials	2.52	2,52,000	2.52	1,51,200
Direct labour	0.75	75,000	0.75	45,000
Direct expenses	0.10	10,000	0.10	6,000
Prime Cost	3.37	3,37,000	3.37	2,02,200
Works overheads	2.50	2,50,000	3.50	2,10,000 ⁽¹⁾
Cost of Production	5.87	5,87,000	6.87	4,12,200
Administration overheads	0.40	40,000	0.61	36,800 ⁽²⁾
Selling overheads	0.20	20,000	0.27	16,000 ⁽³⁾
Cost of Sales	6.47	6,47,000	7.75	4,65,000

Working notes:**Notes**

- (1) 60% of works overheads (i.e., ₹ 1,50,000) are fixed. Therefore, remaining 40% of ₹ 2,50,000 (i.e., ₹ 1,00,000) is a variable cost.

Therefore, the works overheads for actual output of 60,000 units will be:

$$1,50,000 + 1,00,000 \times \frac{60,000 \text{ units}}{1,00,000 \text{ units}} = ₹ 2,10,000$$

- (2) 80% of ₹ 40,000 of administrative expenses is fixed.

Therefore, the administrative expenses for the actual output of 60,000 units will be:

$$32,000 + 8,000 \times \frac{60,000}{1,00,000} = ₹ 36,800$$

- (3) Selling overheads are fixed to the extent of 50%.

Therefore, selling overheads for the actual output of 60,000 units will be:

$$10,000 + 10,000 \times \frac{60,000}{1,00,000} = ₹ 16,000$$



Task Prepare a proforma of flexible budget of a manufacturing organisation for three imaginary capacity levels in a suitable form.



Caselet

Budget

A Manufacturing Company has the production capacity of 20,000 units per year. The expenses budgeted for 12,000 units for a period are as follows:

	Per unit (₹)
Direct materials	100
Direct wages (40% fixed)	20
Manufacturing expenses (40% fixed)	20
Administration expenses (fixed)	10
Selling and Distribution expenses (60% fixed)	10
Total Cost	160
Profit	40
Selling Price	200

Prepare a flexible budget showing 70% and 100% level of capacity. It is expected that the per unit selling price will remain constant up to 60% capacity, there after a 5% reduction is expected up to 90% capacity level. Above 90% a 2½% reduction in original price is expected for every 5% increase in volume.

Source: Cost Accounting Theory and Practice by K. S. Thakur

6.7 Performance Budget

The performance budgeting was first applied in the USA in 1920. It has little difference from the conventional budgeting technique. In conventional budgeting system, the performance of any organisation or company is considered in terms of financial aspects and generally physical aspects are not much emphasised to be taken into account. As a consequence, budgetary control in terms of physical volume and their associated costs cannot be affected. So, the performance budgeting is a concept evolved for removing this drawback.

6.7.1 Meaning of Performance Budgeting

The term performance implies results or outputs. These terms should, of course, be interpreted in a wider sense. They should include any identifiable, measurable consequences of a series of activities and expenditures. Thus, even if tangible goods are not sold, nor services supplied for a price, it should still be possible to discover alternative standards of accomplishment.



Did u know? Performance budgeting provides a meaningful relationship between estimated inputs and expected outputs as an integral part of the budgeting system.

According to J. Burikhead, "A performance budget is one which presents the purposes and objectives for which funds are required, the costs of the programmes proposed for achieving those objectives, and quantitative data measuring the accomplishments and work performed under each programme." Thus performance budgeting is a technique of presenting budgets for costs and revenues in terms of functions, programmes and activities and correlating the physical and financial aspects of the individual items comprising the budget.

6.7.2 Objectives of Performance Budgeting

The main objectives of performance budgeting are:

- (i) To improve the budget formulation at various levels of management,
- (ii) To facilitate performance audit and to make it more effective,
- (iii) To establish the relation between physical and financial aspects of each activity and programme,
- (iv) To measure the progress against both the short-term and long-term objectives,
- (v) To improve the review, decision-making and control at all levels of management, and
- (vi) With reference to government administration, to help in better appreciation and review by controlling authorities like legislature, PAC, Board of Trustee, etc.

6.7.3 Steps in Performance Budgeting

In preparing a performance budget, the following steps are necessary:

- (i) Goals, objectives and policies are to be set at the beginning,
- (ii) In attaining the goals and objectives, programmes are to be checked out,
- (iii) The budgeted course of activities are to be executed in response to responsibilities so as to achieve the target within the time specified and the costs so identified in the budget, and
- (iv) For implementing control over the performance and getting the budget updated according to requirements, a system of evaluation and appraisal is to be developed.

Traditional Budgeting vs. Performance Budgeting

Notes

The traditional budgeting gives more emphasis on the financial aspects than the physical aspects or performance. As a result, control of the performance in terms of physical units and the related costs is difficult to achieve.



Note Performance budget aims at establishing a relationship between the inputs and the outputs.

Traditional budgets are generally prepared with the main objectives or items of expenditure. In other words, the budget is structured in such a manner as to highlight the items of expenditure, namely, salaries, stores and materials, rates, rents and taxes, and so on. In brief, the effort is to show on what items the expenditure is to be incurred. But the main focus of the performance budget is the purpose for which the expenditure is being incurred and not the items of the expenditure. Therefore, in the latter, the emphasis is more on the functions of the organisation, the programmes to discharge these functions and the activities which will be involved in undertaking these programmes.

Self Assessment

Fill in the blanks:

9. A budget can be defined as a budget which is related to the current conditions and is prepared for use over a short period of time.
10. The preparation of budget is generally the starting point in the operation of budgetary control.
11. budget is another important budget its object is to indicate the flow of funds and their requirements.
12. A budget means a budget which is prepared on the basis of a standard or fixed level of activity.
13. A budget is also known as dynamic budget, sliding budget, variable budget, step or expenses control budget.
14. This is considered as a nerve centre of the entire budgetary control system.
15. Flexible budget is designed to in accordance with the level of activity actually attained."



Case Study

Budget Preparation

- The Kingdom of Imagination (Kol) was approved for a US \$ 101m Round 9 HIV grant. This grant is being consolidated under a Single Stream Funding with the Global Fund R8 HIV grant.
- The TRP recommended this proposal for funding on the condition that the total overhead and infrastructure budget of the Principal Recipient be critically reviewed

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Notes

with a view to finding additional savings. The following are the final TRP approved amounts.

	Year 1	Year 2	Phase 1	Year 3	Total
Original Board Approved Amount	33,500,000	34,750,000	68,250,000	32,750,000	101,000,000
TRP Recommended Amount	32,293,000	31,970,000	64,263,000	32,115,000	96,378,000

- The CCM nominated the Ministry of Health (MoH) to be the sole Principal Recipient. The nominated Sub Recipients are: International Non-Governmental Organisation (INGO) and national NGO (NGO). The MoH has been a PR for 5 years. During this time the PR has consistently underspent on its budgets by 30% and received either B1 or B2 ratings (the average programmatic rating was A2; however, ongoing significant FMS issues/SR oversight weaknesses led to the B1/B2 ratings).
- KoI is a dual currency environment with US\$ and Local Currency (LC).

Discussion Points

1. **Efficiency Savings/Funding Limitations:** The three-year budget of the R9 grant prepared by the PR (to be consolidated with R8 HIV grant) amounts to US\$ 94,272,875. The Year 3 budget was borrowed from Phase 2.
2. **HR:** The PR has its Project Management Unit (PMU) fully staffed. The base salaries are 20% higher than Government approved pay scales and include an additional 13 month payment.

NGO employs 15 local people. INGO employs 25 local staff in the country but the salaries are 25% higher than those proposed by the PR and the staff receives year-end bonuses at between 5 and 10% of annual salaries. INGO and NGO staff are paid in US\$, PR staff are paid in LC.

The PR wants to recruit additional 25 field workers in their budget.

Current Staffing at the PR's Office (All Local Staff)	Salary/Month/Person (US\$)
Country Director	1,240
2 Program Managers	970
Finance Manager	820
M&E Manager	630
PSM Manager	780
6 Project Officers	570
15 Finance staff	550
3 Project Assistants	400
40 Program staff	370
150 Field workers	350
2 Drivers	240

3. **Infrastructure and Equipment:** The PR wishes to construct 10 laboratories during Phase 1. Average floor space is 250 sq. m.; cost per sq. m. is stated as LC 121,400. The cost of equipment for each laboratory is estimated to be LC 2,500,000.

The PR wishes to purchase 150 vehicles which are to be used by staff at national and local levels. The roads in the KoI are variable with bad roads in rural areas only.

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Notes

Toyota Landcruisers are the budgeted vehicle at a unit cost of US\$ 50,000. The PR also wishes to procure 200 laptops for its own staff at a unit cost of US\$ 3,000.

NGO wishes to procure 60 microscopes locally at a unit cost of US\$ 4,500 plus a 5% procurement fee. The SR wishes to purchase these from a local supplier which is approved by the local Government. The microscopes will be used at 10 laboratories across the country with 40 staff.

4. **Technical Assistance:** Under technical assistance the PR budgeted two international financial experts, one HIV advisor and one M&E specialist. The packages paid to these persons include salaries, allowances and bonuses which appear to be excessive.

The NGO budgeted two local technical assistance persons in the areas of M&E and finance. The salaries are 35% less than those in the PR's budget.

And the INGO budgeted for one M&E advisor and one HIV specialist at rates equivalent to those used by the PR.

5. **Training:** The PR budgeted:

- ❖ Biannual training for field workers, which will be held locally, in the capital (each training course will be for 20 staff over 5 days); and
- ❖ Quarterly training for all program staff to be held locally over 5 days.

Per diems are paid to all staff attending trainings; the daily rates vary from US\$ 25 per day to US\$ 50. Travel allowances are fixed at US\$ 50 and are paid to all persons attending trainings.

6. **Overheads:** The INGO is charging 18% of the overall grant budget as an overhead fee which needs to be paid to their head office in New York. 4% of the fee is supposed to cover the salary of the local Country Director and the rent of the local office. The head office in New York provides considerable IT and programmatic technical assistance to the SR on a daily basis.

The NGO charges 13% overhead fees on their own budget.

7. **Tax:** The PR is in the process of obtaining tax exemption and an approval is expected within three months after the grant signing. The PR is 100% confident that the exemption will be obtained and has a confirmation letter from the Ministry of Finance. Currently, the budget includes VAT on procurement of all products/services. The budget for procurement is significant. The PR states that the budget should include the VAT because VAT has to be paid first and reclaimed/reimbursed afterwards.

Questions:

1. What should be the position of the PR regarding HR budget?
2. What is the proposed approach to budgeting for infrastructure and equipment?
3. What system the PR should have in order to follow-up on these costs during implementation?
4. How do you propose to approach the training activities and budget?
5. What supporting documents should be used for the budget and attached to it?

Source: theglobalfund.org

6.8 Summary

- A budget is a predetermined detailed plan of action developed as a guide for future operations. Budget also serves as a basis for performance evaluation and control and budgetary control is a system of controlling costs through budgets.
- Budgetary control is defined by the Institute of Cost and Management Accountants (ICMA) as "The establishment of budgets relating the responsibilities of executives to the requirements of a policy, and the continuous comparison of actual with budgeted results, either to secure by individual action the objective of that policy, or to provide a basis for its revision".
- Preparation of budgets involves study of business situations and understanding of management goals as also the capacity of the organisation.
- Budgets may be classified into a number of categories. Classification of budgets is based on some features, connected with the operational activities of a business.
- When budgets are prepared for a period of 5 to 10 years these are called long-term budget. These budgets help in business forecasting and forward planning.
- Short-term Budgets for a short period of a year or two. These are prepared in the form of production plan in monetary term.
- A current budget can be defined as a budget which is related to the current conditions and is prepared for use over a short period of time. This budget is more useful than a basis budget, as a target it lays down will be corrected to current conditions.
- A flexible budget is designed to change in accordance with the level of activity actually attained."
- Performance budgeting was first applied in the USA in 1920. It has little difference from the conventional budgeting technique.
- In conventional budgeting system, the performance of any organisation or company is considered in terms of financial aspects and generally physical aspects are not much emphasised to be taken into account. As a consequence, budgetary control in terms of physical volume and their associated costs cannot be affected. So, the performance budgeting is a concept evolved for removing this drawback

6.9 Keywords

Budget: It is an estimate of future needs arranged according to an orderly basis, covering some or all of the activities of an enterprise for definite period of time.

Budgetary Control: It is the planning in advance of the various function of a business, so that business as a whole can be controlled.

Budgeting: It is the principal tool of planning and control offered to management by accounting functions.

Cash Budget: It is the budget of anticipated receipts and payment of cash during the budget period.

Current Budgets: A current budget can be defined as a budget which is related to the current conditions and is prepared for use over a short period of time.

Fixed Budget: A fixed budget means a budget which is prepared on the basis of a standard or fixed level of activity.

Flexible Budget: A flexible budget is also known as dynamic budget, sliding budget, variable budget, step or expenses control budget.

Long-term Budgets: When budgets are prepared for a period of 5 to 10 years these are called long-term budget.

6.10 Review Questions

1. What is budgeting? What are the objectives of budgeting? Point out the advantages and limitations of introducing budgetary control.
2. What are the objectives of budgetary control? Discuss the importance of functional budgets in implementing budgetary control.
3. What is budgetary control? Explain briefly the salient features of sales budget, production budget, cash budget and flexible budget.
4. What is the purpose served by the introduction of a budgetary control system in any organisation having manufacturing and selling activities?
5. How would you proceed to frame budgets for research and development costs? What difficulties are normally faced?
6. What do you understand by a flexible budget? Under what circumstances would you recommend flexible budgeting?
7. What is performance budgeting? Enumerate steps in performance budgeting and its advantages.
8. Describe performance budgeting. How it is different from the conventional system of budgeting? Set out the main features of performance budgeting.
9. Describe the role of cash budgeting in ensuring overall financial management in a manufacturing cum-selling enterprise.
10. What is a cash budget? Give its importance. Also explain the different methods of preparing cash budget. Give an imaginary proforma of it.

Answers: Self Assessment

- | | |
|------------------|----------------------|
| 1. Budget | 2. Budgeting |
| 3. Planning | 4. Budgetary control |
| 5. Efficient | 6. time-consuming |
| 7. inflexibility | 8. forecasts |
| 9. Current | 10. Sales |
| 11. Cash | 12. Fixed |
| 13. Flexible | 14. Budget |
| 15. change | |

Notes

6.11 Further Readings



Books

Bhar. K.B. (2008) *Cost Accounting, Methods & Problem*, Academic Publishers.

Lal, Jawahar & Srivastava, Seema (2009) *Cost Accounting*, 4th Edition, Tata McGraw-Hill Education.

Nigam, Lal B.M. & Jain I. C. (2001) *Cost Accounting: An Introduction*, PHI Learning Pvt. Ltd.

Thakur. S.K, (2009). *Cost Accounting: Theory and Practice*, Excel Books.



Online links

<http://www.fao.org/docrep/W4343E/w4343e05.htm>

http://220.227.161.86/19729ipcc_ca_vol1_cp10.pdf

<http://www.slideshare.net/pankajmaini/what-is-budgetary-control>

<http://www.gntmasterminds.com/BUDGETARY.pdf>

Unit 7: Zero-based Budgeting

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Objectives

After studying this unit, you will be able to:

- Discuss the history of zero-based budgeting;
- Explain the meaning of zero-based budgeting;
- Discuss the advantages and disadvantages of zero-based budgeting;
- Describe the steps involved in the preparation of zero-based budgeting.

Introduction

In budgeting technique when the whole budget, from the beginning, is based on zero, it is called the 'Zero-based budgeting'. That is to say, the zero-based budget is that which is prepared without taking into account of the events related to the past budgeted activities including those expenses which are vital or unavoidable. It is based on the premise that the budget for a future period is to show scratch so long demand for any activity is not justified for basic convertible currency of a country. This is nicely corroborated by the definition of Charles T. Horgren. He defines Zero-based budgeting, "As an elaborate practice of having a manager justify activities from the ground up as though they were being launched for the first time." The principle behind this is not to allow any expenditure unless they are justified for the purpose. In case of the application of Zero-based budget, a manager is supposed to justify his requirements of funds by analysing the outcome of the activity he proposes to undertake. Therefore, a manager is to carry out "Cost-benefit analysis" of the activity under his control and will be responsible for the accomplishment of the same.

In brief, each item in the budget is considered as non-existent at the time of budget planning and has to be justified a new at all times of preparing a budget under Zero-based budgeting technique. The purpose is to cut down expenses and to find out updated solutions to the various problems to be faced in course of carrying out the proposed activity.

7.1 History of Zero-Based Budgeting

Government budgeting was established in Great Britain in the late 17th century. The enactment of the 1689 Bill of Rights gave taxing authority to Parliament as opposed to the King. Parliament gradually established spending programs and by the 1820s published detailed annual financial statements showing revenues and expenditures and a projected surplus or deficit. The usage of budgets by the United States government did not begin until 1800 when a law was passed for the Secretary of the Treasury to submit an annual financial report to Congress. This action was not taken by the Treasury department, and instead, federal government agencies developed their own reports and submitted them to the Treasury.

Several attempts were made in the early 1900s to implement federal budgeting and financial management, but each failed, even though 44 individual states had already passed laws concerning budgets. Congress passed the Budgeting and Accounting Act in 1921 along with the creation of a centralised Bureau of the Budget. Although created in 1921, it was not until the mid-1940s that the federal budget included identification of the major goals and program objectives, a systematic analysis of supplies and needs for both military and civilian purposes, and a long-range plan of projects.



Did u know? In the 1960s, the Planning-Programming-Budgeting System (PPBS) was adopted by President Lyndon B. Johnson to be implemented throughout the federal government.

The PPBS was short-lived, however. In the 1970s, every federal department except for the Defense Department abandoned the system. The concept of zero-based budgeting gained notoriety in 1977 when President Jimmy Carter announced he was introducing zero-based budgeting into the federal budgeting process. The term, "zero-based budgeting," and the techniques for carrying out these budgeting processes had been previously introduced in an article written by Peter A. Pyhrr in the Harvard Business Review in 1970, but former President Carter adopted this method at the federal level, zero-based budgeting began to spread more rapidly.

President Carter, while still governor of Georgia in 1973, contracted with Pyhrr to implement the system for the entire executive budget recommendations for the state of Georgia. However, when the system was applied to governmental budgeting, it failed due to the great amount of effort and time required development and implementation. With further refinement, however, zero-based budgeting was largely hailed as a success when introduced to Congress in 1977.

Early business budgets focused on controlling costs and little emphasis on measuring effectiveness. In the early 1900s, the use of budgets increased due to the necessity for industries to implement more careful factory planning. A systematic plan of budgeting arose from two areas: industrial engineering and cost accounting. Scientific methods were used by industrial engineers to arrive at production standards, which could then be used to estimate future operations and performance standards. Cost accountants used budgeting to establish standard costs and to estimate future expected costs in a budgetary form. Also at this time, texts on budgeting and managerial accounting began to emerge.

As zero-based budgeting gained traction in the 1970s among public budgeting constituents, it also gained popularity among private enterprises, and during this time a number of organisations modified and implemented the system. An example of an organisation successfully implementing

this system is the Florida Power and Light Company. In 1977 zero-based budgeting became required for all Florida Power and Light general office staff departments. Ben Dady, the company's director of management control, favoured the system because when managers develop the zero-based budget, they begin with nothing in terms of budgeted dollars, and have to justify or prove why they need to spend money on each activity or project for all the dollars they expect to spend. New and old problems are treated equally. Every managerial activity is properly identified and then evaluated by analysing more efficient ways and alternative levels of performing the same activity. These alternatives are then ranked and relative priorities are established.

The publicity in the 1970s surrounding zero-based budgeting gave the impression that the system was a relatively new technique, although the system was not new at all. Zero-based budgeting is quite similar to the Planning-Programming-Budgeting system, implemented in the 1960s. Both systems involve evaluating the inputs and outputs for specific activities, as opposed to the traditional line-item format.

Self Assessment

Fill in the blanks:

1. In the 1960s, the was adopted by President Lyndon B. Johnson to be implemented throughout the federal government.
2. used budgeting to establish standard costs and to estimate future expected costs in a budgetary form.

7.2 Meaning of Zero-based Budgeting

Zero-based Budgeting is the latest technique of budgeting. A budget is a representation of quantification of the firm's objectives. An accurate budget can be framed, when a relationship between the inputs and outputs can be established. In all the activities, such relationship cannot be established. In such areas, it is difficult to develop standard costs. Where it is difficult to compare the resources allocation with the output, ZBB is more appropriate in controlling.

The term 'Zero-based Budgeting' means starting from the scratch.

In Zero-based budgeting, justification of expenditure is to be made for the past as well as new projects. In the traditional budgeting, the figures of the previous years are taken as base and additions are made for the current year. But, in Zero-based Budgeting, even the running projects are to be justified for continuation. If the past projects were allowed to continue, without justification, the past inefficiencies would continue, automatically. So, the manager has to justify, why he wants to continue to spend.



Note In ZBB, the manager has to justify the essentiality of the new projects for their starting and continuation of previous projects, every year. Equally, the concerned manager has to justify the amount of spending, thereon, is reasonable.

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7.2.1 Differences between Traditional Budgeting and Zero-based Budgeting

The differences between the two are as under:

Table 7.1: Difference between Traditional Budgeting and Zero-based Budgeting

	Traditional Budgeting	Zero-Based Budgeting
Emphasis	Lays emphasis on 'How much'	Lays emphasis on 'Why'
Focus	Focus is on increase or decrease in expenditure.	Focus is on 'cost benefit analysis'.
Communication	Communication is, usually, vertical.	Communication is, usually, both vertical and horizontal.
Approach	Past is taken for granted and never questioned for continuation.	Past is questioned and justification needed for continuation and fund allocation.



Note Zero-based Budgeting can be applied successfully in State Government spending.

Self Assessment

State whether the following statements are true or false:

3. Zero-Based Budgeting is the latest technique of budgeting.
4. In Zero-Based Budgeting, the focus of management is on analysis and decision-making.
5. There is no difference between the conventional budgeting and Zero-Based Budgeting.
6. In Zero-Based Budgeting, zero is taken as base.

7.3 Steps for Preparation of Zero-based Budgeting

The following steps are involved in Zero-Based Budgeting:

- **Determining the Objectives:** Determination of the objectives is the first step. The objective can be cost reduction in staff overheads or dropping those projects that do not fit in the organisational objectives or focus.
- **Extent of Coverage:** It relates to the decision whether Zero-Based Budgeting is to be introduced in all areas or certain select areas on trail basis.
- **Developing Decision Units:** Decision Unit can be a functional department, a programme, a product-line or sub-line. Each decision unit must be independent. Then only, they come under consideration. Cost benefit analysis is to be done to the decision units. Decision is to be taken, whether the units are to be continued or dropped. If the cost benefit analysis is favourable, the decision unit can be implemented, otherwise can be dropped.



Caution Benefit should be more compared to the cost. Cost benefit analysis is the foundation of ZBB, which helps in ranking the projects. If the decision unit is dropped, no further thinking is needed about those activities.

- **Developing Decision Packages:** This is the most important step involved in the ZBB process. After decision for selection of the units, the concerned manager of the activity is given the freedom to come out with the alternatives to achieve. He does the cost-benefit analysis and selects the best course of alternative. He summarises the plans and resources required to achieve.
- **Preparation of Budgets:** This is the last stage involved in ZBB process. Once the top management has ranked the various decision packages keeping in view of the cost benefit analysis and availability of funds, a cut-off point is established. All packages (programs, products, etc), which come within the cut-off point are accepted and others rejected. The resources are then allocated to the different decision units and budgets relating to units are approved.



Did u know? Zero-based Budgeting is an extension of the cost benefit analysis method to the area of corporate budgeting.



Task

Justify Zero-Based Budgeting is superior to conventional budgeting.

Self Assessment

State whether the following statements are true or false:

7. Zero-Based Budgeting allows the continuation of ongoing projects, without any review and justification.
8. Non-manufacturing areas are suitable for implementation of Zero-Based Budgeting.
9. Cost benefit analysis is the foundation for Zero-Based Budgeting.
10. Zero-Based Budgeting cannot be applied in Government departmental budgets.

7.4 Advantages and Limitations of Zero-based Budgeting

ZBB is a revolutionary concept. The advantages are as under:

- **Proper Allocation of Funds:** Funds are scarce. Priority in allocation of funds is made on cost-benefit analysis.
- **Systematic Evaluation:** Manager has to justify the demand for resources, every year. So, it provides the organisation a systematic way to evaluate different programmes and operations undertaken. So, for the ongoing projects too, review is made, every year. Funds allocation for the ongoing projects is made, if there is justification to continue, further.
- In other words, there is no difference between the new projects and ongoing projects from the view-point of allocation of funds.
- **Links Budgets with Goals of Enterprise:** Those projects that do not fit within the overall goals of the enterprise are not continued, even if they were commenced. Goal oriented approach of the enterprise would be developed.
- **Zero-based Approach:** Zero is taken as the base, every time. Only those activities and programmes that are essential are undertaken, which improves the overall efficiency of

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the enterprise. Alternative courses of action are always studied. Economies are achieved, eliminating wastage. The focus of the management is on analysis and decision-making

- **Optimum use of Resources:** As cost-benefit analysis is the guiding principle in fixing priorities, resources are used to the optimum advantage of the organisation.
- **No Incremental Approach:** Normally, budgets are based on incremental approach. The usual feature of functional heads is to seek information from the accounts department for the previous year's expenditure, add 'something' for the current year and try to justify the increase. This incremental approach is not possible with Zero-Based Budgeting. Manager has to justify their activities and the funds requested.
- **Most Appropriate for Non-Manufacturing Areas:** Zero-Based Budgeting is very appropriate for the staff and support areas (Non-Manufacturing Areas). In these areas, the output of these areas is not, directly, related with the final output of the organisation.

Within the business world, ZBB can be applied to research and development, data processing, quality control, marketing and transportation, legal staff and personnel office.



Example: A separate training department may remain in an organisation. The utility of the continuation of the department may be studied, in comparison to conducting training outside the organisation. Training is a non-manufacturing area and its discontinuation within the organisation and providing diverse types of training to staff, outside the firm, may be more ideally suitable, while reducing the costs to the enterprise.

Limitations of Zero-based Budgeting

The main downside of zero-based budgeting is the exceptionally high level of effort required to investigate and document department activities; this is a difficult task even once a year, which causes some entities to only use the procedure once every few years, or when there are significant changes within the organisation. Another alternative is to require the use of zero-based budgeting on a rolling basis through different parts of a company over several years, so that management can deal with fewer such reviews per year. Other drawbacks are:

- **Bureaucracy:** Creating a zero-based budget from the ground up on a continuing basis calls for an enormous amount of analysis, meetings, and reports, all of which requires additional staff to manage the process.
- **Gamesmanship:** Some managers may attempt to skew their budget reports to concentrate expenditures under the most vital activities, thereby ensuring that their budgets will not be reduced.
- **Intangible justifications:** It can be difficult to determine or justify expenditure levels for areas of a business that do not produce "concrete," tangible results. For example, what is the correct amount of marketing expense, and how much should be invested in research and development activities?
- **Managerial time:** The operational review mandated by zero-based budgeting requires a significant amount of management time.
- **Training:** Managers require significant training in the zero-based budgeting process, which further increases the time required each year.
- **Update speed:** The extra effort required to create a zero-based budget makes it even less likely that the management team will revise the budget on a continuous basis to make it more relevant to the competitive situation.

Self Assessment

Notes

State whether the following statements are true or false:

11. Zero-Based Budgeting overcomes the weaknesses of government budgets.
12. Zero-Based Budgeting is ideal for implementation in non-manufacturing areas/
Government budgets.



Caselet

Zero-Based Budgeting: The Indian Scene

Zero-based budgeting has been adopted by departments of the Central Government from 1st April, 1987. This is intended to help in the judicious allocation of scarce national resources and in deriving optimum benefits out of the resources allocated. It will be applied to ongoing programmes as well as new programmes, developmental programmes as well as non-developmental programmes.

A circular dated 10th July, 1986, issued by the Secretary, Ministry of Finance, Government of India, calls upon the public sector undertakings to use Zero-based budgeting for revenue budgets initially, as for the capital budgets, there is already an elaborate system of evaluation at various levels.

The rationale for subjecting public expenditure to Zero-based budgeting is convincing in view of the resource constraint for implementing the Seventh five year plan. Some measures may also be taken to ensure that like public sector enterprises, it is also extended to private sector enterprises.

Source: Cost Accounting Theory And Practice 12th ed. by Bhabatosh Banerjee

7.5 Summary

- Budgets are zero unless managers make the case for resources-the relevant manager must justify the whole of the budget allocation.
- It means that each activity is questioned as if it were new before any resources are allocated to it.
- Each plan of action has to be justified in terms of total cost involved and total benefit to accrue, with no reference to past activities.
- Zero-based budgets are designed to prevent budgets creeping up each year with inflation.
- In Zero-based budgeting, justification of expenditure is to be made for the past as well as new projects.
- ZBB allows top-level strategic goals to be implemented into the budgeting process by tying them to specific functional areas of the organisation, where costs can be first grouped, then measured against previous results and current expectations.
- Zero-based budgeting may require an extensive amount of time, money, and paper work; but it does provide a systematic method of addressing an organisation's financial concerns, in turn enabling an organisation to better allocate its resources.

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7.6 Keywords

Budget: A budget is a predetermined statement of management policy during a given period which provides a standard for comparison with the results actually achieved.

Budgeting: The entire process of preparing the budgets is known as budgeting.

PPBS: Planning-Programming-Budgeting System

Zero-Based Budgeting: In budgeting technique, when the whole budget, from the beginning, is based on zero it is called the 'Zero-based budgeting'.

7.7 Review Questions

1. What is meant by zero-based budgeting?
2. Discuss the brief history of zero-based budgeting.
3. What are the different steps involved in ZBB and how is it useful to the business?
4. Explain the limitations of zero-based budgeting.
5. How does ZBB overcome the weaknesses of the conventional budgeting?
6. What are the differences between zero-based budgeting and traditional budgeting?
7. Enumerate the advantages of zero-based budgeting.

Answers: Self Assessment

- | | |
|---------------------|---|
| 1. Cost accountants | 2. Planning-Programming-Budgeting System (PPBS) |
| 3. True | 4. True |
| 5. False | 6. True |
| 7. False | 8. True |
| 9. True | 10. False |
| 11. False | 12. True |

7.8 Further Readings



Books

Bhar. K.B. (2008) *Cost Accounting, Methods & Problem*, Academic Publishers.

Lal, Jawahar & Srivastava, Seema (2009) *Cost Accounting*, 4th Edition, Tata McGraw-Hill Education.

Nigam, Lal B.M. & Jain I. C. (2001) *Cost Accounting: An Introduction*, PHI Learning Pvt. Ltd.

Thakur. S.K, (2009). *Cost Accounting: Theory and Practice*, Excel Books.

Notes



Online links

<http://www.investopedia.com/terms/z/zbb.asp#axzz2HGHhevZq>

<http://www.tutor2u.net/business/accounts/zero-based-budgeting.htm>

<http://www.accountingtools.com/zero-based-budgeting>

<http://www.enotes.com/zero-based-budgeting-reference/zero-based-budgeting>

Unit 8: Cost Audit

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Objectives

After studying this unit, you will be able to:

- Explain the meaning, objectives, scope and types of cost audit;
- Discuss the advantages and disadvantages of cost audit;
- Describe the appointment, eligibility, rights and responsibilities of a cost auditor;
- Interpret cost audit in India.

Introduction

With the emergence of accountability as an important aspect of business enterprise whether in the public sector or in the private sector, the auditing of accounts has assumed enormous significance. As such, different types of audit are in use, which are as under:

- Cost Audit,
- Financial Audit, and
- Management Audit.

Cost audit overcomes the limitations of financial and management audit. The cost audit is an important system in the auditing, because the cost audit is also a well-managed examination of books and accounts by the learned auditors. Some authors have defined the cost audit as:

According to ICWA, London, "Cost audit is the verification of cost accounts and a check on the adherence to the cost accounting plan."

ICWA, India defines cost audit as, "An audit of efficiency of minute details of expenditure while the work is in progress and not a post-mortem examination. Cost audit is mainly a preventive measure, a guide for management policy and decision, in addition to being a barometer of performance."

In other words, the term cost audit means examination of books of accounts and vouchers so as to ascertain their accuracy in the system.

8.1 Scope and Areas of Cost Audit

Cost audit is concerned mainly with propriety and efficiency audit. The company law is silent in respect of scope and areas of cost audit. Some of the areas/scopes which may be examined by the cost auditor are mentioned below:

- (a) **Raw Materials:** The cost auditor must make the following tests about raw materials:
- (i) Check the purchasing routine, the purchase order, stores indent, bills of payment etc.,
 - (ii) Verify the various levels of stock, i.e., maximum level, minimum level and average level,
 - (iii) Is the stock of raw material in conformity with the output activities? Exceeding the quantity necessary for the output reduces the liquidity of funds naturally increases the output costs,
 - (iv) Raw materials has been issued under signed acquisition cards by the authorised persons,
 - (v) Check the routine of storage, bin cards, stores ledger, disposal, wastage and damagers,
 - (vi) The different items related with the receipt, issue and balance have been the subject matter of adequate accounting in terms of quantity and price. The ledger of raw materials should be verified from the hand-over slips or receipt vouchers,
 - (vii) Check the issue of raw materials, pricing of issues, etc.
 - (viii) Effecting in purchasing raw materials, whether materials are purchased at economic buying quantity,
 - (ix) Reasonableness of losses, scraps, wastage, etc., arising out of manufacture,
 - (x) Adequacy of the procedure for posting stores ledger and bin card on a day-to-day basis,
 - (xi) The auditor must also see whether there exists any loophole by the theft of the raw material is possible, and
 - (xii) Reasonableness of the value of closing stock vis-à-vis opening stock and production programme.

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- (b) **Labour:** Proper utilisation of labour will lead to increase in efficiency and productivity. The auditor(s) duty will, therefore, be to assess performance efficiency of labour. In measuring actual performance, the auditor should:
- (i) Verify that the analysis of direct labour and indirect labour is correctly done,
 - (ii) Verify the physical checking of attendance and see that time cards are maintained,
 - (iii) Check the reconciliation to attendance time with effective time and idle time,
 - (iv) Confirm that the incentive bonus schemes are in operation,
 - (v) Examine job cards and idle time cards,
 - (vi) Examine whether inefficiencies are reported to the management in time so as to ensure maximum utilisation of labour,
 - (vii) Check and verify there any arrangement to keep the account of the extra-work done by the labours? Are written orders passed to get the extra work done?
 - (viii) Verify the labour cost is distributed properly into direct and indirect cost? In the division of cost of labour in various jobs work proper?
 - (ix) Check the manpower is used judiciously or the productivity of the labour satisfactory?
- (c) **Overheads:** The auditor must examine the overheads as follows:
- (i) Check all possible increases or decreases in overhead expenses,
 - (ii) Check whether allocation, apportionment, and absorption method are correct,
 - (iii) Legitimacy of payments made for overhead costs,
 - (iv) Correctness of calculation of overhead absorption rates,
 - (v) Adequacy and reasonableness of overhead costs compared to volume of production,
 - (vi) Method of valuation of closing stock to ensure that overhead costs are consistently included or excluded in record,
 - (vii) Check the actual overheads are excess of standard or budget overheads? If, yes, what are its effective reasons, and
 - (viii) Check the absorption has been done on various works and job adequately and on the due rate.
- (d) **Capital Expenditure:** The auditor must check and verify the capital expenditure as follows:
- (i) Maintenance of proper asset register,
 - (ii) Accounting of capital expenditure including charges for transport, etc., to capital heads,
 - (iii) Propriety and authority for a capital expenditure,
 - (iv) Correctness of depreciation rates and physical verification of fixed assets, and
 - (v) Collection of capital expenditure and comparison with budget regularly.
- (e) **Capacity Utilisation:** The auditor should examine the following:
- (i) General imbalance in production capacity and facilities,
 - (ii) Reasonableness of idle capacity and reasons for idle capacity,
 - (iii) Optimum utilisation of resources, and
 - (iv) Reasonableness of cost of maintenance, repairs, replacement, etc.

8.1.1 Objectives of Cost Audit

Notes

The broad objectives of cost audit may be as follows:

- (i) Detecting errors or ensuring that cost records are compiled correctly.
- (ii) To examine and verify the arithmetical exactness in the cost ledgers or cost books.
- (iii) Ensuring that the cost accounting routine laid down is properly carried out.
- (iv) To trace and check the errors and fraud in cost ledgers.
- (v) Verifying that cost accounts are correctly maintained in conformity with accepted cost accounting principles adopted in the enterprise or industry.
- (vi) To establish that the policies and procedures fixed by management for effective decisions are being pursued uniformly or not.
- (vii) The present use of capital is adequate or not. Whether it can be bettered.
- (viii) To see whether the determined policies, procedures, various reports and descriptions for presentation are adequate and appropriate or not.
- (ix) To check whether the adopted procedure is effective in carrying out managerial decisions or not.
- (x) In the event of cost plus contract, to verify the purity of output of cost.

Self Assessment

Fill in the blanks:

1. Cost is concerned mainly with propriety and efficiency audit.
2. Proper utilisation of labour will lead to increase in efficiency and
3. Cost auditor's objective is to verify that cost accounts are correctly maintained in conformity with accepted accounting principles adopted in the enterprise or industry.

8.2 Types of Cost Audit

The following are the main types of cost audit:

- (i) On the basis of Origin, and
- (ii) On the basis of Nature.
- (i) **On the basis of Origin:** On this basis of origin, the cost audit is divided into following categories:
 - (a) **Internal Cost Audit:** It means the audit under which the auditors are appointed to help the managerial decisions of enterprise taken by the top management. Internal cost audit can be further divided into:
 - ◆ **Continuous Internal Audit** continues for the year round with the cost accounts. This audit helps in tracing the faults and errors and provides ready time to correct them. Cost accounting is not left incomplete, therefore, whatever information is needed, is available at hand.
 - ◆ **Periodic Internal Audit** is done after a definite period of time, wherein the accounts of that period are checked and examined.

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Caution Whether the audit is internal or periodic, it aims at providing suggestions regarding improvements in effective cost account plan and reduces the additional cost audit work.

- (b) *Specific Cost Audit:* The specific cost audit is arranged by customers, business enterprises, government or special undertakings for some specific objectives. The objectives of specific cost audit can be divided into following categories:

Cost Audit on behalf of Government: The government may appoint a cost auditor to conduct cost audit where it is necessary:

- ◆ To do so in the opinion of the government under section 233B of the Companies Act, 1956,
- ◆ To ascertain correct cost of specific units when government is approached for protection or related help,
- ◆ To ascertain correct cost of contract given to private enterprise under 'cost plus' method, and
- ◆ To fix reasonable prices of products.

Cost Audit on behalf of a Customer: Sometimes, cost audit may be conducted on behalf of a customer when he agrees to pay price for a product on "cost plus" method. The customer in such a case gets cost accounts of the product concerned audited to establish correct cost so that he may be able to pay price on the basis of correct cost plus an agreed margin of profit.

Cost Audit on behalf of Trade Association: Sometimes, a trade association may appoint a cost auditor to conduct cost audit:

- ◆ To ascertain comparative profitability of association of members,
- ◆ To determine minimum price to avoid competition among its members, and
- ◆ To maintain prices at various levels.

Cost Audit on behalf of Tribunals: Sometimes, Labour Tribunals may direct the audit of cost accounts to settle trade disputes for more wages, bonuses, share in profit, etc. Similarly, Income-Tax Tribunals may also direct the audit of cost accounts to assess correct profit for tax purposes.

- (c) *Statutory Cost Audit:* Statutory cost audit means that audit which is arranged to fulfil the provisions of a certain statute. It may be both financial audit and cost audit. Such audit of the accounts of the government departments and statutory bodies is conducted by the representative of the CAG of India.

- (ii) *On the basis of Nature:* On the basis of nature, the cost audit is divided into following categories:

- (a) *Propriety Audit:* This audit is the audit of such actions and plans of management which have a bearing on the finance and expenses of the company or enterprise. The cost auditor has to examine the following activities:

- ◆ Whether the size and channels of expenses were designed to produce the best results,
- ◆ Whether the return from expenses on capital as well as current operations could not be bettered by some other alternative plan of action, and

- ◆ To examine the planning of expenses so as to ascertain whether possible result is obtained or not.
- (b) *Efficiency Audit*: It is the test of the efficiency of organisation. This is the valuation of the executed action. So that it is concluded that the effective efficient implementation of the predetermined plan has been carried on. It starts with the study of the plan and extends to the comparison of the actual performance against the budgeted performance and investigation into the reasons of variables. The main functions of efficiency audit are:
- ◆ To ensure that every investment in capital or other fields gives the optimum return,
 - ◆ In matters of work and financial matters, the adjustment has been made in such a way so that the optimum result is obtained, and
 - ◆ This audit is related with valuation and examination of profitability so it is known as performance or profitability audit.

Self Assessment

State whether the following statements are true or false:

4. The statutory cost audit is arranged by customers, business enterprises, government or special undertakings for some specific objectives.
5. Sometimes, Income tax Tribunals may direct the audit of cost accounts to settle trade disputes for more wages, bonuses, share in profit, etc.
6. Statutory cost audit means that audit which is arranged to fulfil the provisions of a certain statute.
7. Propriety audit is the audit of such actions and plans of management which have a bearing on the finance and expenses of the company or enterprise.



Caselet

Do Company Boards need Cost Audit?

Some boards have started looking into the cost audit report, but many do not pay the deserved attention to cost audit report.

In a recent debate in Forbes magazine in the context of the bankruptcy filing by the Monitor Group, which was formed by Michel Porter, many viewed 'sustainable competitive advantage' as a mirage in the current business environment. If a company can build sustainable competitive advantage, it continues to earn above average profit. According to Porter's thesis, a company should choose either of the two generic strategies: cost leadership or differentiation. A company that is cost leader earns a higher margin because of its cost advantage over competitors. A company that pursues the differentiation strategy earns a premium for its products and thus earns above average profit. A company that gets stuck in the middle cannot earn above average profit and may find growth or even survival difficult. However, Porter does not suggest that a company that peruses differentiation strategy should not pay attention to cost management.

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The view that the 'sustainable competitive advantage' is a mirage is true for most companies. In past companies that could build competitive advantage could maintain that for a long period. But in the fast changing business environment, it is difficult to maintain the same for long. There are companies that continue to earn their return higher than the average return primarily because they manage their intangible assets (not in accounting sense) and product and process innovation well. Although experts may differ, but Apple-Samsung rivalry shows that even a very strong company can face competition from a once unknown competitor. In the backdrop of this rivalry between Apple and Samsung, the survival and growth of other players depend largely on their ability to manage cost and innovation. Indian automobile industry presents another example how a leader can lose competitive advantage to other players.

In the above context it is imperative that every company should have an effective and efficient cost accounting system, which provides reliable information on operating costs and product cost and also provides support in strategic decision-making. Sophistication of the costing system depends on the complexity of the product, process and the business model.

Therefore, the board of directors should pay attention to the efficiency and effectiveness of the cost accounting system.

The government has ordered mandatory maintenance of cost accounting records by almost all companies that cross the threshold of specified turnover or net worth.

Most companies whose turnover exceeds ₹ 100 crores or whose securities are listed in a stock exchange are required to get cost record audited by a practicing cost accountant.

For long the boards paid attention to accounting ratios and did not enquire into the adequacy and effectiveness of the cost accounting system. However, after the government initiative, some boards have started looking into the cost audit report. But many do not pay the deserved attention to cost audit report and view it as compliance of another unnecessary law framed by the government. It is true that financial statements capture the overall performance of a company. Therefore, if a company is able to manage cost effectively, the financial statements and accounting ratios will capture it. But financial statements do not tell the whole story of cost management.

For example, the financial statements and related audit report fails to mention whether the company has optimised the resource utilisation. Similarly the financial audit report does not give the assurance that the product and customer profitability presented before the board is correct. This is so because determination of product cost for inventory valuation under financial accounting rules is guided by the principle of accounting prudence as understood by financial accountants.

The principles applied to determine the product cost might deviate from cost accounting principles. Moreover, audit of the market/customer profitability estimated by the cost accounting system is outside the scope of financial audit. Therefore, financial audit is not a substitute for the cost audit.

When I interact with cost auditors, I get a gloomy picture of the adequacy of the cost accounting systems prevailing in different companies. This is not surprising because the average maturity level in the use of cost and management accounting principles, methods and tools in India is low. It is the responsibility of the board to ensure that the company adopts best cost and management accounting practices. This will be a move towards optimal utilisation of resources. It will also help the company to get appropriate cost and revenue information necessary to formulate and implement strategies.

Contd...

The government has taken the right initiatives and now it is the responsibility of the boards of companies to take it forward.
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Source: <http://www.business-standard.com/india/news/asish-k-bhattacharyya-do-company-boards-need-cost-audit/495060/>

8.3 Advantages and Disadvantages of Cost Audit

The following are the main advantages and disadvantages of cost audit to management, cost accountant, shareholders, tax-payers, government and consumers:

8.3.1 Advantages

The advantages of cost audit are as follows:

- (i) It will help management in taking important decisions because prompt, accurate and reliable information is made available to management with the help of cost audit.
- (ii) It will bring more reliability on the costing data and hence can be more effectively used for inter-firm comparison. Management by exception is possible since cost audit separates efficient from inefficient operations and fixes individual responsibility for inefficient operations.
- (iii) Cost audit is very useful in public enterprises because it pinpoints the inefficiency of the employees. Thus, it will help in reducing cost of production of goods produced by such organisations.
- (iv) The existence of cost audit has a great moral influence on the employees, as a result of which the efficiency is increased.
- (v) Cost audit will establish the accuracy of cost ledgers or other accounts and will assist in prevention of errors and frauds. It will also help to improve cost accounting methods and techniques to facilitate prompt and reliable information to management.
- (vi) Cost audit reports raise the status of cost accountant. Being external, it helps in improving cost methods and can solve specific problems which ultimately raise the status of cost department.
- (vii) Analysis of variances is facilitated with cost audit because a comparison of actual production with standard production and sales is made. Hence, the systems of standard costing and budgetary control will be gainfully applied with the cost audit.
- (viii) Cost audit assists the financial auditor because he can safely rely on many important costing data such as cost of closing stock of raw materials, work-in-progress and finished goods.

In financial accounts, closing stock is valued at cost or market price, whichever is less. The actual cost of closing stock can be reliably taken from costing books. In other matters, like payment of commission, bonus to staff, etc., the data supplied by cost accounts and audited by cost auditor can be taken as correct by the financial auditor.

- (ix) It provides information relating to weak, inefficient or mismanaged units for taking proper corrective action. It also helps to identify the sickness in a unit.
- (x) The government and the trade associations may require cost audit for the purpose of fixing selling prices to prevent excessive profit making. The government also requires cost audit to give protection to certain industries in public interest. It contributes to the betterment of the economy by increasing productivity and performance.

Notes

8.3.2 Disadvantages

The disadvantages of cost audit are as follows:

- (i) Cost audit involves cost of products and this may not be suitable for small industries,
- (ii) Cost audit may create unnecessary problems in day-to-day official work,
- (iii) When the financial and other related accounts are audited, audit of cost accounts is unnecessary work in the audit practice,
- (iv) When the various cost and other accounts are prepared or maintained by a qualified accountant, there can be no reason for getting such accounts audited by another auditor, and
- (v) The cost auditor may be a qualified man, but he may not be always right and correct opinion regarding various accounts and its information.

8.3.3 Difference between Financial Audit and Cost Audit

In general, no difference between financial and cost audit is discernible. Both employ the similar methods, techniques and principles for examining the various accounts. Financial audit and Cost audit may be distinguished as follows:

Table 8.1: Difference between Financial Audit and Cost Audit

S. No.	Basis	Financial Audit	Cost Audit
(i)	Purpose	Financial audit is not necessary for a financial auditor to examine cost accounts except for the purpose of inventory valuation.	The cost auditor has to make a detailed checking of expenditures, particularly allocation and apportionment of overheads.
(ii)	Objective	The primary objective of financial audit is to see whether necessary accounts, records and documents have been maintained by the enterprise or organisation.	The primary objective of cost audit is to verify the cost records have been properly maintained by the accounts department or organisation.
(iii)	Compulsion	As per the Company Act, financial audit is compulsory for each company for every financial year.	As per the Company Act, statutory cost audit is only required for the financial year.
(iv)	Area	Financial audit is an audit of financial accounts, financial statements and documents.	Cost audit is an audit of cost accounts, cost statements and various cost plans.
(v)	Statutory audit	The statutory financial auditor cannot conduct a statutory cost audit in the organization.	The statutory cost auditor cannot also conduct a statutory financial audit in the financial year.
(vi)	Audit report	The financial auditor submits his report to the shareholders as per rule of the Company Act.	Cost auditor also submits his report to the Management. But in the case of statutory cost audit, the audit report is required to be submitted to the board of directors.
(vii)	Competent person	A chartered accountant is considered competent person for performing financial audit.	A qualified cost accountant is considered competent person for performing cost audit.
(viii)	Postmortem	Financial audit is somewhat a postmortem examination. It back to	Cost audit also refers to the past; it creates thinking for the future.

Contd...

		the past of company or organization.	
(ix)	Share-holders and management	Financial audit is essentially an audit on behalf of the share holders.	Cost audit is in the hands of management and also conducted on behalf of the management.
(x)	Inventory checking	In the matter of stock or inventory, the financial auditor has only to see whether all categories of stocks or inventories have been included in the accounts.	The cost auditor has to not only check the cost of each item of stock or inventory, but also see whether the inventories of materials have been included in the proper way.

Self Assessment

Fill in the blanks:

8. is very useful in public enterprises because it pinpoints the inefficiency of the employees.
9. Cost audit reports raise the status of
10. The government and the trade associations may require cost audit for the purpose of fixing selling prices to prevent excessive

8.4 Cost Auditor: Appointment, Eligibility, Rights and Responsibilities

The various rules with respect to cost auditor's appointment, eligibility, rights and responsibility are discussed below.

8.4.1 Appointment of Cost Auditor

The Cost Auditor has to be appointed by the board of directors under section 233-B of the Companies act subject to prior approval of the Company Law Board. This will be done on receipt of specific order from the Company Law Board for getting audited the Cost records and Cost statements of a financial year for specified products. For appointment of auditor, the board of directors is required to pass a resolution either in its meeting or by circulation with a condition that the same is subject to approval of the Central Government.

Appointment of cost auditor is made on the receipt of an order from Central Government within a specified period. The person to be appointed as cost auditor must hold a certificate of practice from the Institute of Cost and Works Accountants of India. Consent of the cost auditor should be obtained before making an appointment as cost auditor. Application in prescribed form as per rule is submitted to Central Government with the prescribed fee along with a copy of the boards' resolution.

Approval for appointment of cost auditor is communicated by the Central Government to the company after considering the application and the name of the auditor proposed subject to the condition that the cost auditor is not disqualified as per related section of the Companies Act, 1956 as amended. A copy of this communication will also be sent by the Central Government to the cost auditor. The company should issue a formal letter of appointment to the cost auditor after receiving the approval of the Central Government.

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Did u know? After receiving the letter of his appointment, the cost auditor should communicate with the previous auditor, if any, for his reaction. He must send his formal acceptance of the assignment to the company or board of directors.

8.4.2 Eligibility for Appointment of Cost Auditor

The following persons are eligible to be appointed as cost auditor:

- (i) Any such chartered accountant within the meaning of the chartered accountant act and has passed examination of the Institute of Chartered Accountants of India, or
- (ii) Cost accountant within the meaning of the cost and works accountants act, or
- (iii) Other person, as may hold the prescribed qualification for a cost auditor.

8.4.3 Rights of a Cost Auditor

A cost auditor has the same rights in relation to an audit conducted by him under section 233-B as an auditor of a company under section 227(1). The following are rights of a cost auditor:

- (i) He has a right to get all facilities and assistance from the related company or organisation to perform his duties as a cost auditor,
- (ii) He has a right of check at all times to the records, accounts and vouchers of the company,
- (iii) The company and every officer, in default of not providing the records, accounts, vouchers, information, explanations, etc., to the cost auditor,
- (iv) He has a right to get such information and explanations from the officers of the company or organisation as he may think necessary for the performance of his duties as a cost auditor.

8.4.4 Responsibilities of a Cost Auditor

The responsibilities and duties of a cost auditor have not been clearly given in the companies act. The cost auditor is also required to perform the duties as are expected from auditors in general. The main responsibilities of a cost auditor are:

- (i) He should maintain his working papers as an evidence of his having carried out his duties,
- (ii) He is responsible to answer any query required by the Central Government on a scrutiny of the cost audit report submitted by him,
- (iii) He is liable to the Company if he does not perform his duties properly or in right direction,
- (iv) He also owes a legal responsibility to third parties who might have been misled by his audit certificate.



Note Cost Auditor should not disclose any confidential information regarding company and should not use such information for personal gain or gain of some other party.

Self Assessment

Notes

Fill in the blanks:

11. The person to be appointed as cost auditor must hold a certificate of practice from the
12. The cost auditor is also required to perform the duties as are expected from in general.

8.5 Cost Audit in India

The cost audit was recommended to Indian industries by Vivian Bose Enquiry Commission. The cost audit is necessary for optimum and proper utilisation of resources by Indian industries. Section 223-B of the companies act provides for ordering of cost audit by Central Government. The Cost Audit (Report) Rules, 1968 laid down by the Central Government makes certain industries to get cost books compulsory audited in every financial year.

The following items included in the cost audit report:

- (i) General information regarding the company and the cost auditor,
- (ii) A brief about each type of product, production and utilisation of production capacity,
- (iii) Detailed information's about the wages and salaries of the employees,
- (iv) A detail note about the manufacturing process of the company,
- (v) A brief report on the present cost accounting system,
- (vi) Information regarding the financial position of the company of current and previous year,
- (vii) Detail report about the sales of product and fixation of selling price,
- (viii) A note on special expense which have been directly allocated to production process,
- (ix) The cost of raw materials both in terms of quantity and price or rate,
- (x) Details about the cost of power, steam and fuel used in the production process,
- (xi) Information about abnormal features affecting production process of the product during the financial year,
- (xii) Details about the stores and spare parts of the company, and
- (xiii) Details about depreciation policy and its implementation.

8.5.1 Cost Audit Report and Its Format

After carrying on cost audit, the cost auditor has to prepare a detail report on cost audit under rule 1968. Under rules, on a prescribed format, the cost auditor, has to present the report before the Company Law Board and its one copy should be sent to company to be presented on the date before the annual general meeting of the company in 60 days in advance. If any clarification is sought by the Company Law Board within a prescribed period of auditing, the cost auditor will have to clarify. If the auditor violates any of the provisions of company act, he may be fined maximum of ₹ 500.

Notes

Format of Cost Audit Report	
I (Name of cost auditor) Appointed as auditor of (Name of the company) in pursuance of provisions of the Companies Act, 1956 under section 233-B, the books of account maintained by the company pursuance to the rules made by the Central Government under section 209 (1) (d).	
I have conducted my-lour audit in accordance with the provision of this section and report that:	
(a)	I have obtained all information and explanations which to the best of my knowledge and belief were necessary for the purpose of audit.
(b)	In our opinion, proper cost account records required under section 209(1) (d) of Companies Act, 1956 have been kept by the company.
(c)	The required statements of the branches which are not audited by us have been received for the purpose of our audit/not received or available for our audit.
(d)	In our opinion, the cost accounts books give the information required by the Companies Act, 1956.
(e)	In my opinion, the cost audit records kept by the company in the properly manner with a true and fair view of cost of manufacturing and marketing.
With cost report, we are also enclosing notes and various policies of the company which is part of our audit report and these points are considered in our investigations.	
Date:
Place:	Signature of Cost Auditor

The Cost Audit Reports have great potential in government procurements especially in case of non-competitive procurements. There are no effective antitrust laws in India. This always leaves a scope for the traders/suppliers to charge exorbitant prices from the government supplies.



Example: 'Clayton Act' in USA clearly provides that any discrimination in price, services or facilities shall be unlawful in USA. It also prohibits the discrimination in rebates, discounts or underselling in particular localities. This 'Act' further provides that any differential in prices etc., shall have to be justified on the grounds of differences in the cost of manufacture, sale or delivery resulting from the differing methods or quantities in which such commodities are sold or delivered and the burden of rebutting the *prima-facie* case shall be upon the person charged with a violation of this act. The 'Clayton Act' also provides that it shall be unlawful for any person to induce or receive discrimination in price, which is prohibited under the act. In other words, each seller of product or service can charge a uniform price only in the USA.

	Task Write a note on the cost audit in India.
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Self Assessment

Fill in the blanks:

13. Section of the companies act provides for ordering of cost audit by Central Government.

14. After carrying on cost audit, the cost auditor has to prepare a detail report on cost audit under rule
15. The Cost Audit (Report) Rules, 1968 laid down by the Central Government makes certain industries to get cost books compulsory in every financial year.

Notes



Case Study

Is Multiplicity of Audit Bad?

Audit is not a welcome activity to the auditee. This is so because no one wants scrutiny of activities. Quite naturally when a new type of audit is added, managers grumble. Another reason for considering audit as a wasteful activity is that it is difficult to measure the benefits accurately while counting of costs is relatively easy.

Let us examine audit of financial statements (in short, financial audit), internal audit and cost audit. Financial audit is an age-old practice. Companies have learned to live with it. Most companies started appointing internal auditors just to comply with the 'Manufacturing and Other Companies (Auditor's Report) Order 1988' (popularly known as MAOCARO), which is now replaced by the Companies (Auditor's Report) Order 2003 (CARO). The order required the finance audit to report on whether the company has an internal audit commensurate with its size and nature of business. Only recently companies have started appreciating the value of internal audit. Cost audit is also in place for quite a long time. However, in the year 2011, the government has made the cost audit more pervasive and more regular than before. Companies view cost audit as an additional burden. The three audits have different objectives but they are complementary in nature.

Financial aims at enhancing the degree of confidence of intended users of financial statements. The auditor is legally accountable to shareholders and morally to all the stakeholders. Thus, financial audit is a value-added activity from the perspectives of investors and other stakeholders. Credibility of financial information reduces the cost of capital because the perceived risk of investment in the company gets reduced. Quality financial audit enhances the quality of financial information, which leads to appropriate valuation of securities in the capital market and enhances investors' confidence. This in turn attracts capital to the corporate sector and improves capital market efficiency. This is the reason why both regulators and the profession endeavour to protect the independence of the auditor and improve the audit quality.

An efficient and effective internal audit ensures that the exposure of assets to risks is within the 'risk appetite' decided by the board and protects the assets from undesirable use, waste and theft. It ensures that the internal control system is adequate and operating effectively. It acts as an internal consultant to the management. In a way it acts as the ears and eyes of the board of directors, particularly of independent directors and enhances the effectiveness of the board. Consequently, it enhances the quality of corporate governance. It adds value at the firm level as well as the macro level.

This is the reason why the Companies Bill 2011 empowers the government to prescribe appointment of the internal auditor for certain classes of companies to be decided by the government. The scope of internal audit is much wider than the financial audit. The management decides the scope of internal audit and has the opportunity to avoid duplication between financial audit and internal audit. A financial auditor relies on the work of the internal audit.

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They are complementary in nature. Firms make money by producing and/or selling goods and services at a cost that is lower than the price at which they can sell the same. Therefore, managers have an interest in installing an adequate and effective cost accounting system. On this assumption, managers argue that there is no need for cost audit. But reality is not which should logically happen. Many companies do not adopt the best management accounting practices. Managers often do not focus on cost management when the going is good. They take cost cutting as a project when company's performance in the product/service market declines sharply. At that time, in absence of a good cost accounting system they get bewildered and get misled by unsystematic and inaccurate cost and revenue information. Improvement in the use of resources should be a continuous process. Customers today look for 'cheaper and better' products and services. The starting point for introducing a continuous cost improvement culture is to establish a cost accounting system that will provide correct information on the product/service cost and revenue and the cost dynamics. Cost audit brings out the weaknesses in the cost accounting system and draws attention to wastes and thus, improves the competitiveness of the business. Thus, cost audit is complementary to the internal audit. Cost audit aims to improve the competitiveness of Indian companies and the economic productivity of the country. Therefore, cost audit adds value both at the firm level and the macro level.

Let us not crib for the multiplicity of audit because they are complementary in nature. Let all stakeholders work together to improve the audit quality.

Question:

Enumerate "Cost audit brings out the weaknesses in the cost accounting system and draws attention to wastes and thus, improves the competitiveness of the business".

Source: <http://www.business-standard.com/india/news/asish-k-bhattacharyya-is-multiplicityaudit-bad/496533/>

8.6 Summary

- With the emergence of accountability as an important aspect of business enterprise whether in the public sector or in the private sector, the auditing of accounts has assumed enormous significance.
- The cost audit is an important system in the auditing, because the cost audit is also a well-managed examination of books and accounts by the learned auditors.
- Whether the audit is internal or periodic, it aims at providing suggestions regarding improvements in effective cost account plan and reduces the additional cost audit work.
- The existence of cost audit has a great moral influence on the employees, as a result of which the efficiency is increased.
- Cost audit reports raise the status of cost accountant. Being external, it helps in improving cost methods and can solve specific problems which ultimately raise the status of cost department.
- The Cost Auditor has to be appointed by the board of directors under section 233-B of the Companies act subject to prior approval of the Company Law Board.
- Appointment of cost auditor is made on the receipt of an order from Central Government within a specified period. The person to be appointed as cost auditor must hold a certificate of practice from the Institute of Cost and Works Accountants of India.
- A cost auditor has the same rights in relation to an audit conducted by him under section 233-B as an auditor of a company under section 227(1).

- The responsibilities and duties of a cost auditor have not been clearly given in the companies act. The cost auditor is also required to perform the duties as are expected from auditors in general.
- The cost audit was recommended to Indian industries by Vivian Bose Enquiry Commission. The cost audit is necessary for optimum and proper utilisation of resources by Indian industries. Section 223-B of the companies act provides for ordering of cost audit by Central Government.

8.7 Keywords

Continuous Internal Audit: It continues for the year round with the cost accounts. This audit helps in tracing the faults and errors and provides ready time to correct them.

Cost Audit: It is the verification of cost accounts and a check on the adherence to the cost accounting plan.

Efficiency Audit: It is the test of the efficiency of organisation. This is the valuation of the executed action so that it is concluded that the effective efficient implementation of the predetermined plan has been carried on.

Internal Cost Audit: It means the audit under which the auditors are appointed to help the managerial decisions of enterprise taken by the top management.

Periodic Internal Audit: It is done after a definite period of time, wherein the accounts of that period are checked and examined.

Propriety Audit: This audit is the audit of such actions and plans of management which have a bearing on the finance and expenses of the company or enterprise.

Specific Cost Audit: The specific cost audit is arranged by customers, business enterprises, government or special undertakings for some specific objectives.

Statutory Cost Audit: Statutory cost audit means that audit which is arranged to fulfil the provisions of a certain statute.

8.8 Review Questions

1. What is cost audit? Distinguish between financial audit and cost audit. Explain in detail.
2. Describe the objectives, advantages and disadvantages of cost audit.
3. Describe various types of cost audit in detail.
4. Describe the scope or areas of the cost audit in detail.
5. What is cost audit report?
6. Explain the provisions regarding report and give the format of cost audit report.
7. Discuss the appointment, eligibility and responsibilities of a cost auditor.
8. Write short notes on the following:
 - (a) Internal cost audit,
 - (b) Specific cost audit, and
 - (c) Statutory cost audit.

Notes

Answers: Self Assessment

- | | |
|--|-------------------|
| 1. Audit | 2. Productivity |
| 3. Cost | 4. False |
| 5. False | 6. True |
| 7. True | 8. Cost audit |
| 9. cost accountant | 10. profit making |
| 11. Institute of Cost and Works Accountants of India | 12. auditors |
| 13. 223-B | 14. 1968 |
| 15. audited | |

8.9 Further Readings



Books

Bhar. K.B. (2008) *Cost Accounting, Methods & Problem*, Academic Publishers.

Lal, Jawahar & Srivastava, Seema (2009) *Cost Accounting*, 4th Edition, Tata McGraw-Hill Education.

Nigam, Lal B.M. & Jain I. C. (2001) *Cost Accounting: An Introduction*, PHI Learning Pvt. Ltd.

Thakur. S.K, (2009). *Cost Accounting: Theory and Practice*, Excel Books.



Online links

http://220.227.161.86/19372sm_aape_finalnew_cp16.pdf

<http://members.icwai.org/members/docs/practicekit/Procedur-for-cost-audit.pdf>

<http://www.caclubindia.com/articles/cost-audit-compliance-16232.asp#.UOp3Kulazfl>

<http://costaudit.org/>

Unit 9: Cost Accounting Records

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Objectives

After studying this unit, you will be able to:

- Discuss the prescription of cost accounting record rules;
- Explain cost accounting records rules and its applicability;
- Discuss general provision under the various cost accounting records rules;
- Explain the procedure for maintenance of records.

Introduction

Cost Accounting Record Rules are the prescribed details by the Central Government w.r.t. utilisation of material, labour or other items of cost in respect of a class of companies notified under the provisions of Companies Act, 1956. The Cost Accounting Record Rules are aimed at inducing the companies to have control over their operations and costs with a view to achieve optimum utilisation of resources in the economy. These Rules inculcate a system so that such records are maintained under generally accepted cost accounting principles in a systematic way and on a uniform basis among the various companies of an industry. This ensures the availability

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of uniform and authentic database with the industry, which can be helpful to the Government in taking appropriate decision, whenever required. So, before one can embark on a study of cost accounting records, it is absolutely vital to understand the concept of cost accounting records along with its prescription as well as understand the applicability of cost accounting rules in India. The purpose of this unit is to enable the students to comprehend basic expressions. Therefore, all such basic terms are explained and suitable illustrations are provided to define their meaning and scope.

9.1 Cost Accounting Records as per Companies Act

Section 642 of the Companies Act, 1956 confers powers on the Central Government to make rules, which form part of subordinate legislation of the Government. The nature of records to be maintained under Section 209(1)(d) are to be prescribed by the Central Government in exercise of the powers conferred on them by the provisions of Section 642 of the Companies Act.

The Central Government has the power under Section 209(1)(d) to prescribe particulars relating to utilisation of material, labour or other items of cost in respect of any class of companies engaged in production, processing, manufacturing or mining activities. This provision has been interpreted as meaning that the type of industry or exact nature of cost accounting record will have to be prescribed by the Central Government. Therefore, these requirements for maintaining the particulars relating to “utilisation of material, labour or other items of cost” are prescribed through Cost Accounting Records Rules.

Section 209(1)(d) also specifies that the rules are to be prescribed for any class of company engaged in production, processing, manufacturing or mining activities. The class of companies may represent companies manufacturing a particular product like sugar, vanaspati, motor vehicles, textiles, bulk drugs, etc. The cost accounting records rules are prescribed separately with respect to each class of companies manufacturing a particular product i.e., industry as a whole.

9.2 Prescription of Cost Accounting Record Rules

Identification of the class of companies manufacturing a product: The Central Government selects the products (class of company manufacturing a particular product) for which the cost accounting record rules are proposed to be notified. The Government generally considers the following factors in making the final selection:

- (i) Products/services of mass consumption i.e., consumer oriented;
- (ii) Products which are under statutory pricing mechanism or under some sort of statutory price control;
- (iii) Products which are very critical for infrastructural development or products which are basic industrial raw materials or inputs as any price increase in these products may affect the whole economy;
- (iv) Products which are very critical for economy and substantial subsidies are granted by the government;
- (v) Products which are subject to any ‘Regulatory Authority’ mechanism or where inputs are required by respective Regulatory Authority;
- (vi) Products which have a likely high profit margin or unfair trade practices due to limited competition in the market or cartelisation;
- (vii) Products, where government revenue needs to be protected;

- (viii) Any other product for which representations are received from Consumer Association, Chamber of Commerce etc. or assurance has been made in Parliament for prescription of Cost Accounting Records Rules.

9.2.1 Preparation of Preliminary Draft Rules

The officers of Cost Audit Branch visit the sample representative units in the industry to study and understand the manufacturing process, practices, different stages involved and type of records maintained by them etc. This is necessary to ensure that only bare minimum additional record is prescribed, if any required. The Cost Audit Branch prepares the first preliminary draft of Cost Accounting Records Rules and circulates them to the industry representatives, practicing cost accountants, experts in the field, Tariff Commission, Cost Accounts Branch under Ministry of Finance, Administrative Ministry and both the accounting bodies namely Institute of Cost & Works Accountants of India (ICWAI) and Institute of Chartered Accountants of India (ICAI) for their comments.

On receipt of the comments, all the suggestions and comments are studied in detail and the draft cost accounting records rules are revised and finally discussed in an Informal Advisory Committee Meeting inter-alia attended by reps. of all the aforesaid bodies namely Cost Accounts Branch, Tariff Commission, Administrative Ministry, ICAI, ICWAI, Expert, Industry Member etc. The final draft is agreed in this meeting.

The agreed draft rules are then put up for the approval of Union Minister in charge of Ministry of Corporate Affairs. After the receipt of administrative approval from the Union Minister, the rules are forwarded to Ministry of Law and Justice for legal vetting and clearance from the legal angle. If the finally vetted draft rules are at major variance from originally proposed rules, these rules are again put up for administrative approval. Otherwise, these rules are sent for Hindi translation.

After the receipt of Hindi translation, the rules are sent for printing or notification in Official Gazette to Government printing press. Generally, the rules provide that these shall come into effect from the day it is notified in the Official Gazette.



Note Each rule is given a GSR (General Statutory Rules) No. and date of publication in the Gazette.

Section 642 (3) of the Companies Act, 1956 provides that 'Every rule made by the Central Government under sub-Section (1) shall be laid as soon as may be after it is made before each House of Parliament while it is in session for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be, so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule'.

In view of aforesaid provision, the copies of the notified rules duly authenticated are placed in both Houses of Parliament for a total period of 30 days as required under Section 642(3) of the Companies Act, 1956. If both the Houses agree in making any modification in the rules, the rule shall thereafter have effect only in such modified form.

It may be seen from the above that specific prior approval of Parliament is not required for notifying the rules as it represent subordinate legislation. However, the rules shall have the

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same effect as an Act made by the Parliament and contravention of the same shall be punishable with fine as provided in the rules.

9.2.2 Cost Accounting Records Rules and its Applicability

The Cost Accounting Records Rules are applicable only to selected companies incorporated under the Companies Act, 1956 (whether private or public) and not to other forms of business such as partnership, proprietary, etc.

A wholly owned subsidiary of a company, to which Cost Accounting Records Rules are applicable, is also covered by the said record rules provided that the product of such subsidiary company forms a part/component of cost of production of the product or use of utility/services for the holding company.

In the case of company manufacturing a product covered by the record rules but the said product is entirely used as in-house input (captive consumption) for another end product not covered, it may be clarified that the relevant Cost Accounting Record Rules are applicable to such product (produced but not sold) and prescribed records have to be maintained with respect to said product under reference.

Self Assessment

Fill in the blanks:

1. The Government selects the products (class of company manufacturing a particular product) for which the cost accounting record rules are proposed to be notified.
2. The Branch prepares the first preliminary draft of Cost Accounting Records Rules.
3. The Cost Accounting Records Rules are applicable only to selected companies incorporated under the Companies Act, 1956 (whether private or public) and not to other forms of business such as

9.3 General Provisions under the Various Cost Accounting Records Rules

Although the Cost Accounting Records Rules prescribed for different industries differ from one another, the different provisions contained in such Records Rules can be broadly classified into following three parts:

- Part I:** Consisting of descriptive rules with short titles, commencement, definition, application clause, maintenance of records and penal provisions. In some of the Cost Accounting Records Rules, an Appendix has also been given containing the list of products/items for which the record rules shall apply.
- Part II:** Consisting of Schedule with detailed provisions in respect each element of cost like materials, salary and wages, utilities, depreciation, repairs and maintenance, other overheads, royalty or technical know-how fee, research & development expenses, interest and other borrowing costs, related party transactions etc.
- Part III:** Consisting of various cost statements or performa to be maintained for utilities, intermediate and final products. The prescribed cost statements in case of process industries require that the cost of production of each process be shown separately. Similarly, the rules prescribed in case of engineering industries require the cost

statements to indicate the costs of different components or sub-assemblies and then also show the cost of final assembly.

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The broad points covered by the respective Cost Accounting Records Rules for different industries are almost identical. For specific requirements of each industry, the relevant cost accounting record rules should be referred together with amendments made from time to time. The general provisions regarding short title, commencement, application, maintenance of records etc. are as follows:

9.3.1 Short Title and Commencement

These rules may be called Cost Accounting Records (Name of the Product) Rules. XXXX (Year of notification)

They shall come into force on the date of publication in the official gazette.

9.3.2 Application Clauses under Respective Cost Accounting Records Rules

The application clause as contained under respective cost accounting records rules is produced as under:

1. **Cement:** These rules shall apply to every company engaged in the production or manufacture of Clinker or Cement or both.
2. **Cycles:** They shall apply to every company engaged in the production or manufacture of cycles and components thereof excepting those companies falling under the category of small scale industrial undertakings.
3. **Tyres & Tubes:** They shall apply to every company engaged in the production or manufacture of rubber tyres and tubes or both for all types of vehicles. Except those companies falling under the category of small scale industrial units.
4. **Air-Conditioners:** They shall apply to every company engaged in the production or manufacturer of air conditioning system or device by which air is controlled for the fulfilment of required condition of the confined space through controlling temperature, humidity, air purity and air motion for human comforts excepting those companies falling under the category of small scale industrial units.
5. **Refrigerators:** They shall apply to every company engaged in the production or manufacture of refrigerators in any form excepting those companies falling under the category of small-scale industrial undertaking.
6. **Batteries other than Dry Cell Batteries:** They shall apply to every company engaged in the production or manufacturing of Batteries of all types other than Dry Cell Batteries excepting those companies falling under the category of "small scale industrial units."
7. **Electric Lamps:** They shall apply to every company engaged in the manufacture of electric lamps of all types excepting those companies falling under the category of "small scale industrial units."
8. **Electric Fans:** They shall apply to every company engaged in the production and manufacture of any type of Electrical Fans excepting those companies falling under the category of small scale industrial undertakings.
9. **Electric Motors:** They shall apply to every company engaged in the manufacture of any type of electric motor excepting those companies falling under the category of "small scale industrial units."

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10. **Motor Vehicles:** They shall apply to every company engaged in the manufacture of [motor vehicles, whether passenger or commercial including the manufacture of the following vehicles, namely:
 - (a) All types of passenger cars, jeeps and station wagons
 - (b) All types of commercial vehicles, delivery and pick-up vans
 - (c) Motorcycles, scooters, scooterettes and Mopeds
 - (d) Three-wheeler vehicles
 - (e) Any type of tractor
 - (f) Heavy earth moving equipments
11. **Aluminium:** They shall apply to every company engaged in the production, processing or manufacturing of any of the following products, namely:
 1. Alumina
 2. Aluminium
 3. Aluminium ingots in any form or alloy
 4. Aluminium rolled products including foil
 5. Aluminium extruded products
 6. Properzirod or Aluminium wire rod
 7. Any other Aluminium products or its alloy.

Excepting those companies falling under the category of small-scale industrial undertakings.
12. **Vanaspati:** These rules shall apply to every company, except the Small Scale Industrial Undertaking, engaged in production, processing and manufacturing of refined vegetable oils and vegetable oil products as also Industrial Hard Oil.
13. **Bulk Drugs:** They shall apply to every company engaged in the production, processing or manufacturing of bulk drugs under any system of medicine including Ayurvedic, Homeopathic, Siddha and Unani systems of medicine and intermediates thereof excepting those companies falling under the category of Small Scale Industrial Undertaking.
14. **Sugar:**
 - (1) These rules shall apply to every company engaged in the production or manufacture of Sugar by vacuum pan process and excludes jaggery and khandsari.
 - (2) The provision of sub-rule (1) shall not apply to a company:
 - (a) The aggregate value of the machinery and plant installed wherein does not exceed the limit as specified for a small scale industrial undertaking under the Industries (Development and Regulation) Act, 1951 (65 of 1951), as on the last date of the preceding financial year.
 - (b) The aggregate value of the turnover made by the company from the sale or supply of all its products during the preceding financial year does not exceed Rupees ten crores.
15. **Industrial Alcohol:** They shall apply to every company engaged in the production or manufacture of Industrial alcohol which includes any grade or grades in the following categories namely:

- (i) Absolute Alcohol;
- (ii) Rectified Spirit;
- (iii) Denatured and special denatured spirit.

Power Alcohol: Provided that these rules shall not apply to company:

- (a) The aggregate value of the machinery and plant installed wherein does not exceed the limit as specified for a small scale industrial undertaking under the Industries (Development and Regulation) Act, 1951 (65 of 1951), as on the last date of the preceding financial year.
 - (b) The aggregate value of turnover made by the company from the sale or supply of all its products during the preceding financial year does not exceed rupees ten crore.
16. **Jute Goods:** They shall apply to every company engaged in the production processing or manufacture of jute goods excepting those companies falling under the category of Small Scale Industrial Undertakings.
17. **Paper:** They shall apply to every company engaged in the production, processing or manufacturing of paper used for the purpose of printing, writing or wrapping, newsprint, paper board and exercise note books of companies manufacturing paper excepting those companies falling under the category of Small Scale Industrial units.
18. **Rayon:** They shall apply to every company engaged in the production, processing or manufacturing of any of the following rayon products:
- (i) Viscose Staple Fibre in all forms;
 - (ii) Viscose Filament Yarn;
 - (iii) Viscose Tyre Yarn/Cord/Fabric;
 - (iv) 100% Viscose Yarn Fabric;
 - (v) Acetate Yarn/Fibre; and
 - (vi) Rayon Film (Cellophane film) excepting those companies falling under the category of small scale industrial units.
19. **Dyes:** They shall apply to every company engaged in the producing, processing or manufacturing of dyes excepting those companies falling under the category of small scale industrial units.
- Definition:* In these rules unless the context otherwise requires:
- (a) *Dye (dyestuff):* means an organic compound which may be used to impart colour to a substance and may be classified as Acid Dyes, Basic Dyes, Direct Dyes, Sulphur Dyes, Vat Dyes, Azoic Dyes, Ingrained Dyes, Metal Complex Dyes, Disperse Dyes, Reactive Dyes, Oil Dyes, and Water Soluble Dyes.
 - (b) *Intermediate:* means any compound which is manufactured from primary or basic raw material and which is used in the production, processing or manufacturing of any dye.
20. **Polyester:**
- Application:* They shall apply to every company engaged in the production, processing or manufacturing any of the following Polyester products:
- (1) Polyester Fibre
 - (2) Polyester Filament Yarn

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- (3) Polyester chips
- (4) Polyester Fibre Fill (PFF)
- (5) Partially Oriented Yarn (POY)
- (6) Processed Polyester yarn (texturised, twisted, dyed, crimped, etc.)
- (7) 100% Polyester Fabric.

Except those companies falling under the category of small scale industrial units.

21. **Nylon:** They shall apply to every company, engaged in the production, processing or manufacturing any of the following Nylon products, namely:

- (1) Nylon chip
- (2) Nylon fibre
- (3) Nylon filament yarn
- (4) Nylon partially oriented yarn
- (5) Nylon tyre yarn or cord
- (6) Nylon tyre cord fabric
- (7) 100% Nylon fabrics.

Except those companies falling under the category of "small scale industrial units".

22. **Textiles:** These rules shall apply to every company engaged in the production, processing or manufacturing of any art silk cloth, cloth, cotton yarn or cotton cloth, processed yarn and processed cloth, man-made fibre yarn or man made fibre cloth, silk yarn or silk cloth, wool,woollen yarn or woollen cloth, yarn or other textiles products: Provided that these rules shall not apply to such of the above said companies as falling under the category of small scale industrial undertakings.

Definitions: In these rules, unless the context otherwise requires:

- (a) "Art silk cloth" means any fabric made wholly from art silk yarn or partly from silk, yarn and partly from any other yarn provided such fabric contains not less than 60 per cent of art silk yarn;
- (b) "Cloth" has the same meaning as in sub-clause (4) of Clause 3 Textiles (Development and Regulation) Order, 1993;
- (c) "Cotton yarn or cotton cloth" has the same meaning as in sub-clause (6) of clause 3 of the Textiles (Development and Regulation) Order, 1993;
- (d) "Man made yarn" and "man made fibre cloth" has the same meaning as in sub clause (10) of clause 3 of the Textiles (Development and Regulation) Order, 1993;
- (e) "Other textile products" has the same meaning as in sub-clause (14) of clause 3 of the Textiles (Development and Regulation) Order, 1993;
- (f) "Processed yarn and process of cloth" means and yarn and/or cloth as defined in sub clause (b) and (j) of this rule which has undergone one or more of the process such as bleaching, dyeing, printing, mercerising, finishing and the like.
- (g) This also includes the cloth processed by "processor" as defined in sub-clause (19) of clause 3 of the Textiles (Development and Regulation) Order, 1993;
- (h) "Silk yarn and silk cloth" has the same meaning as in sub-clause (21) of clause 3 of the Textiles (Development and Regulation) Order, 1993;

- (i) "Wool" " has the same meaning as in sub-clause (24) of clause 3 of the Textiles (Development and Regulation) Order, 1993;
- (j) "Yarn" " has the same meaning as in sub-clause (26) of clause 3 of the Textiles (Development and Regulation) Order, 1993;
- (k) "Yarn" " has the same meaning as in sub-clause (27) of clause 3 of the Textiles (Development and Regulation) Order, 1993;
23. **Dry Cell Batteries:** They shall apply to every company engaged in the production, processing or manufacturing of any type of dry cell batteries and components thereof, excepting those companies falling under the category of small scale industrial undertakings.
24. **Steel Tubes and Pipes:** These rules shall apply to every company engaged in the production, processing or manufacture of Steel Tubes and Pipes (including Stainless Steel) both black and galvanised and in various sizes, shapes and qualities excepting those companies falling under the category of 'Small Scale Industrial Units'.
25. **Engineering:** These Rules shall apply to every company engaged in the production, processing or manufacture of the classes of engineering goods as specified in the Appendix to the Cost Accounting Records (Engineering Industries) Rules, 1984 and those added thereto by the Central Government from time to time by notification in the Official Gazette excepting those companies falling under the category "Small Scale Industrial Units".
26. **Electric Cables and Conductors:** They shall apply to every company, except those falling under the category of small scale industrial unit, engaged in the production, processing or manufacturing of electrical cables, conductors, wires and strips of any type in the following categories, namely:
- (i) Power cables (All types-namely: PILC, PVC, XLPE etc.);
- (ii) VIR/Rubber covered cables and flexible wires of all types;
- (iii) PVC Insulated Cables, Flexible wires of all types including switch board wires and cables;
- (iv) Enamelled covered wires and strips;
- (v) Wire and strips covered with paper, glass, silk and any other types of insulating materials;
- (vi) AAC/ACSR conductors;
- (vii) Telecommunication cables.
27. **Bearings:** These rules shall apply to every company engaged in the production, processing or manufacture of bearings of various types viz. Ball and Roller Bearing, Needle Bearings and of various sizes, excepting those companies falling under the category of 'Small Scale Industrial Units'.
28. **Milk Food:** These rules shall apply to every company engaged in the production, processing or manufacture of Infant Milk Food or Milk Food as malted milk food, energy food or food drink under any brand name excepting those companies falling under the category of "Small Scale Industrial Units".

For the purposes of these rules:

- (a) "Infant Milk Food" includes all types of milk food intended for the routine, complementary or supplementary food of infants and children up to the age of five years and other types of modified milk foods for infants which are intended for the feeding of infants and children during the treatment of gastro-intestinal disorders;

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- (b) "Milk Food" means any food produced by mixing whole milk, partly skimmed milk or milk powder with ground barely malt or any other malted cereal grain, wheat flour or any other cereal flour or malt extract, with or without addition of flavouring agents and spices, edible common salt, sodium or potassium bicarbonate minerals and vitamins, cocoa powder, sugar or sweetening agents or other edible materials
29. **Chemicals:** These rules shall apply to every company engaged in the production, processing or manufacture of products as specified in the Appendix to these rules:
Provided that these rules shall not apply to a company,
- (a) Wherein, the aggregate value of machinery and plant installed as on the last date of the preceding financial year, does not exceed the limit as specified for a small scale industrial undertaking under the provisions of Industries (Development and Regulation) Act, 1951 (65 of 1951); and
- (b) The aggregate value of the turnover made by the company from sale or supply of all its products or activities during the preceding financial year does not exceed ten crores of rupees.
30. **Definitions:** In these rules unless context otherwise requires:
- (a) The expression "formulation" means a medicine processed out of or containing one or more bulk drugs with or without the use of any pharmaceutical aids for internal or external use for or in the diagnosis, treatment, mitigation or prevention of disease in human beings or animals and shall include
- (i) Any medicine included in any bonafide Ayurvedic (including Sidha) or Unani (Tibb) systems of medicines;
- (ii) Any medicine included in the Homeopathic system of medicine.
- (b) "Bulk drug" means any pharmaceutical, chemical, biological or plant product including its salts, esters, stereo-isomers and derivatives, which are used as such or as an ingredient in any formulation.
31. **Steel Plant:** These Rules shall apply to every company engaged in the production processing or manufacture of steel and steel products, Which includes Ingot steel, Blooms, Billets, Slabs (code as well as semi finished); steel products produced by backward integration like Coal based Sponge Iron, Gas based hot briquette Iron, steel products produced by forward integration like Beams, Angles, Tees, Sees, Channels, Pilings, Rails, Crane Rails, Joint Bars, Bars (Round Squares, Hexagonal, Octagonal, Flat, Triangular, Half Round); Wire, Wire ropes, Nails, Wire fabric, Plates, Pipe & Tubes, HR Coils/Sheets, CR Coils/ Sheets excepting those companies falling under the category of Small Scale Industrial Undertakings.
32. **Insecticides:** These Rules shall apply to every company engaged in the production, processing or manufacture of the classes of Insecticides as defined under clause (e) of Section 3 of the Insecticides Act. 1968 (46 of 1968) and included in the schedule annexed to the said Act and as amended from time to time, excepting those companies falling under the category of "Small Scale Industrial Undertaking".
33. **Fertilizers:** These Rules shall apply to every company engaged in the production, processing or manufacture of fertilizers whether nitrogenous, phosphates and/or complex (organic, inorganic and/or mixed) and includes all types of fertilizers as defined in clause (h) of Section 2 of the fertilizer (control) order, 1985, made under Section 3 of the Essential Commodities Act, 1955 (10 of 1955) and as amended from time to time, excepting those companies falling under the category of "Small Scale Industrial Undertakings."

34. **Soaps & Detergents:** These rules shall apply to every company engaged in the production, processing or manufacture of cleansing material used for cleaning, laundry/washing, bathing/toilet purposes and includes soaps and detergents (whether in the form of cake, powder or liquid), excepting those companies falling under the category of Small Scale Industrial Undertakings.
35. **Cosmetics & Toiletries:** These rules shall apply to every company engaged in the production/processing or manufacture of any article intended to be rubbed, poured, sprinkled or sprayed on, or introduced into or otherwise applied to the human body or any part thereof or otherwise for cleaning, beautifying, promoting attractiveness or altering the appearance and includes the classes of preparations as specified in the Appendix and those added thereto from time to time by notification the official Gazette, excepting those companies falling under the category of small scales industrial undertakings.
36. **Footwear:** These Rules shall apply to every company engaged in the production, processing or manufacture of the Foot wear including shoes, boots, sandals, chappals, slippers play shoes and moccasins.
- The provision of sub-rule (1) shall not apply to a company.
- The aggregate value of the machinery and plant installed wherein company does not exceed the limit as specified for a small scale Industrial undertaking under the Industries (Development and Regulation Act 1951(65 of 1951), as on the last date of the preceding financial year
 - The aggregate value of the turnover made by the company from the sale or supply of all its products during the preceding financial year does not exceed ten crore rupees.
37. **Shaving Systems:** These Rules shall apply to every company engaged in the production, processing or manufacture of the classes of shaving systems used for shaving purposes by human beings, whether electronic or electric or mechanical or manual, as specified in the appendix (annexed) to these rules: Excepting those companies falling under the category of small scales Industries under taking.
38. **Industrial Gases:** These rules shall apply to every company engaged in the production, or manufacture of the classes of the Industrial Gases specified in the appendix annexed to these rules:
- Provided that these rules shall not apply to a company:
- Aggregate value of machinery and plant installed wherein does not exceed the limit specified for a small scale industrial undertaking under the Industries (Development and Regulation) Act 1951 (65 of 1951), as on the last date of the preceding financial year; and
 - The aggregate value of the realisation made by the Company from the sale or supply of all its products during the preceding financial year does not exceed ten crore rupees.
39. **Mining and Metallurgy:** These rules shall apply to every company engaged in the mining, production, processing or manufacturing activities of any of the products (metals and non-metals, their minerals, ores and alloys) as specified in the Appendix to these rules: Provided that these rules shall not apply to a company,
- The aggregate value of the machinery and plant installed wherein, as on the last date of the preceding financial year, does not exceed the limits as specified for a small scale industrial undertaking under the provisions of Industries (Development and Regulation) Act, 1951 (65 of 1951); and

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- (b) The aggregate value of the turnover made by the company from sale or supply of all its products during the preceding financial year does not exceed ten crore rupees.
- These rules shall apply to every company engaged in the production, processing or manufacture of Electronic products and components thereof as specified in the Appendix to these rules: Provided that these rules shall not apply to a company:
- (a) The aggregate value of the machinery and plant installed wherein, as on the last date of the preceding financial year, does not exceed the limits as specified for a small scale industries undertaking under the provisions of the Industries (Development and Regulation) Act, 1951 (65 of 1951); and
- (b) The aggregate value of the turnover made by the company from sale or supply of all its products during the preceding financial year does not exceed ten crore rupees.
40. **Electricity:** These rules shall apply to every company engaged in any of the following activities, namely:
- (1) Generation of electricity from:
- (a) thermal power
- (b) gas turbine
- (c) hydro-electric power
- (d) atomic power
- (e) solar power
- (f) wind power
- (g) any other source of energy;
- (2) Transmission and bulk supply of electricity;
- (3) Distribution and retail supply of electricity: Provided that these rules shall not apply to a company,
- (a) The aggregate value of the machinery and plant installed wherein, as on the last date of the preceding financial year, does not exceed the limits as specified for a small scale industrial undertaking under the provisions of Industries (Development and Regulation) Act, 1951 (65 of 1951); and
- (b) The aggregate value of the turnover made by the company from sale or supply of all its products or activities during the preceding financial year does not exceed ten crores of rupees.
41. **Plantation Product:** These rules shall apply to every company engaged in production, processing or manufacture of product(s) as specified in the Appendix to these rules: Provided that these rules shall not apply to a company:
- (a) The aggregate value of machinery and plant installed wherein, as on the last date of the preceding financial year, does not exceed limit as specified for a small scale industrial undertaking under the provisions of Industries (Development and Regulation) Act, 1951 (65 of 1951); and
- (b) The aggregate value of the turnover made by the company from sale or supply of all its products during the preceding financial year does not exceed ten crores of rupees.
42. **Petroleum Industry:** They shall apply to every company engaged in production, processing and manufacturing of crude oil, gases (including Compressed Natural Gas or Liquefied

Natural Gas and regasification thereof) or any other petroleum products: Provided that these rules shall not apply to a company:

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- (a) The aggregate value of the machinery and plant installed wherein, as on the last date of the preceding financial year, does not exceed the limits as specified for a small scale industrial undertakings under the provisions of Industries (Development and Regulation) Act, 1951 (65 of 1951); and
- (b) The aggregate value of the turnover made by the company from the sale or supply of all its products during the preceding financial year does not exceed ten crore rupees.

43. **Telecommunication:** These rules shall apply to every company engaged in the processing of any one or more of the telecommunication activities, namely:

- (1) Basic telephony:
 - (a) Telephone access
 - (b) Local call
 - (c) Subscriber Trunk Dialling (STD)
 - (d) International Subscriber Dialling (ISD)
- (2) Cellular mobile;
- (3) Telex;
- (4) Telegraphy;
- (5) Voice mail/Audiotext service;
- (6) Internet operations including gateway service/E-mail;
- (7) Packet Switched Public Data Network (PSPDN) service;
- (8) Wireless in Local Loop (WILL) service;
- (9) Public mobile radio trunk service;
- (10) Very Small Aperture Terminal service;
- (11) Global mobile personnel communication services;
- (12) Leased circuits;
- (13) Internet ports;
- (14) National Long Distance Operator;
- (15) Internet Telephony;
- (16) Radio Paging;
- (17) Any other telecommunication service for commercial use.

Provided that these rules shall not apply to a company,

- (a) The aggregate value of the machinery and plant installed wherein, as on the last date of the preceding financial year, does not exceed the limits as specified for a small scale industrial undertaking under the provisions of Industries (Development and Regulation) Act, 1951 (65 of 1951); and
- (b) The aggregate value of the turnover made by the company from sale or supply of all its products or activities during the preceding financial year does not exceed ten crore rupees.

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Self Assessment

Fill in the blanks:

4. are exempted from maintenance of cost accounting records.
5. The expression means any vegetable oil subjected to a process of hydrogenation in any form or mixture thereof with any other substance for edible purposes.
6. means any compound which is manufactured from primary or basic raw material and which is used in the production, processing or manufacturing of any dye.
7. means any food produced by mixing whole milk, partly skimmed milk or milk powder with ground barely malt or any other malted cereal grain.
8. means any pharmaceutical, chemical, biological or plant product including its salts, esters, stereoisomers and derivatives, which are used as such or as an ingredient in any formulation.

9.4 Maintenance of Records

Every company to which the rules apply shall, in respect of each of its financial year commencing on or after the date of notification keep proper books of accounts relating to the utilisation of materials, labour and other items of cost in so far as they are applicable to any of the products or activities under reference.

It may be clarified that:

- (a) The Cost Accounting Records Rules merely refers to the maintenance of cost records. It does not mean that there has to be cost audit also.
- (b) Cost Audit Order is separately issued generally after the initial notification of cost accounting records rules. These cost audit orders are issued on selected companies only and some of the companies may never get an cost audit order despite being covered under the respective cost accounting records rules.
- (c) Even though the rules come into effect on the date notified in the official Gazette, it may not be possible to maintain cost accounting records for an incomplete year. Moreover, companies need time to design and implement a cost accounting system to meet the requirements of the law. It sometimes requires the change in their existing accounting system as well especially where Computerised Accounting System or SAP etc is installed. Therefore, the cost accounting records rules specify that they shall come into force on a company manufacturing a product only from the financial year commencing on or after the notification of the said rules. Thus in respect of a rule notified, say on 26.6.2008, it shall be applicable to a company whose financial year commences on or after 26.6.2008 or say 2009-2010 (financial year commencing on 1.04.2009 and obligation to maintain cost accounting records would arise only from 01.04.2009).
- (d) The rules also specify that the books of accounts have to be maintained on a “regular basis” so as to make it possible to calculate the cost of production and cost of sales of each type of product every quarter and also for the financial year as a whole. The word regular basis means that the direct cost will have to be recorded concurrently with the production of each type of product while apportionable costs have to be recorded on the basis of predetermined costs. However, it may not be necessary to have interlocking or integrated

books of accounts of both financial and cost accounts. It would be sufficient if cost accounts are maintained on a "proforma basis".

- (e) If any company is engaged in manufacturing of any other product(s) or is engaged in other activities also in addition to the products or activities under reference, the particulars relating to utilisation of materials, labour and other items of cost in so far as they are applicable to such other products or activities shall not be included in the cost of the product or activities under reference.
- (f) The rules also specify that the books of accounts and the proformae specified in the rules shall have to be completed within 90 days of the close of the financial year to which they relate. This period of ninety days was earlier incorporated in Cost Audit Report Rules also. But now that has been extended to 135 days under Cost Audit Report Rules, 2001 to allow companies to fill the various proformae prescribed under the Report Rules and get them authenticated.

9.4.1 Statistical and other Records

The Cost Accounting Records Rules require that the Statistical and other records shall be maintained in accordance with the provisions of the Schedule to the respective rules in such a manner as to enable the company to exercise, as far as possible, control over the various operations and costs with a view to achieve optimum economies in cost. These records shall also provide the necessary data required by the Cost Auditor to suitably report on all the points referred to in Cost Audit Report Rules, 2001 as amended from time to time.

Statistical records represent records like production data, capacity utilisation, machine utilisation, labour hour etc. The data maintained for the purpose of cost accounting records shall be reconciled with the report submitted to excise and/or custom department from time to time. Similarly under the Essential Commodities Act and other legislations on the subject, several reports have to be submitted to Government authorities in respect of industries like sugar, textiles, etc. The rules prescribe that the data in the cost accounting records should be reconciled with the returns submitted to Excise and Government authorities and any discrepancies would need explanation.

9.4.2 Penalty

If the records are not maintained, the company and every officer of the company who is in default including the persons responsible for compliance of the record rules, shall be punishable as provided under sub-Section (2) of Section 642 read with sub-Sections (5) and (7) of Section 209 of Companies Act, 1956 (1 of 1956).

Sub-Section (2) of Section 642 of the Companies Act provides with a fine which may extend to ₹ 5000 and where the contravention is a continuing one, a further fine may be imposed which may extend to ₹ 500 for every day during which such contravention continues.

Sub-Section (5) of Section 209 of Companies Act, 1956 provides that if persons responsible under the Act fails to take all reasonable steps to secure compliance or has caused any default by his own wilful act, he shall be punishable with imprisonment for a term which may extend to six months or with fine which may extend to ten thousand rupees or with both. This Section further provides that a person shall be sentenced to imprisonment for any such offence only if it was committed wilfully. Sub-Section (7) of the Companies Act, 1956 provides for similar penalties to a person in case of any default, if such person has been charged with the duty of seeing that the requirements of Cost Accounting Records Rules are complied with.

Notes

Self Assessment

Fill in the blanks:

9. The Cost Accounting Records Rules merely refers to the maintenance of Records.
10. Sub-Section (5) of Section of Companies Act, 1956 provides that if persons responsible under the Act fails to take all reasonable steps to secure compliance or has caused any default by his own wilful act, he shall be punishable with imprisonment for a term which may extend to six months or with fine which may extend to ten thousand rupees or with both.

9.5 Schedule I – Basic Provisions

Detailed provisions relating to materials, labour, overheads depreciation and other statistical information that are required to be maintained are given in Schedule. The entire Schedule is in a descriptive form and the companies have a discretion to maintain the data in whatever manner of form convenient to them with the only provision that all the required information specified in Schedule should be available. This has been made clear in the rules that the records will have to be maintained in a form either as specified in Schedule (earlier schedule I or II) or as “near thereto as practicable”.

Information prescribed under Schedule shall consist of:

- (i) **Materials:**
 - (a) Records shall be maintained separately for the receipts, issues and balances both in quantities and cost of each item of direct materials (including primary materials and consumable stores) required and used in production.
 - (b) The cost of materials shall include all direct charges up to works.
- (ii) **Salaries and Wages:**
 - (a) The company should maintain records of earnings of all employees. All direct wages and salaries should be charged to the respective cost centres namely, production or service cost centre. The cost for each cost centre should indicate the piece rate wages earned, incentive wages, production bonus, overtime and other earnings of casual labourers etc. separately.
 - (b) The cost idle time shall be recorded separately under classified headings indicating the reasons thereof and the method followed for accounting of the idle time payment shall be stated. Wages and salaries relating to capital works, shall be excluded from the cost of production.
 - (c) In the case of companies adopting standard costing system the method adopted for determining and adjusting the variances shall be indicated for arriving at the actual cost.
- (iii) **Service department expenses:** The service department’s costs like laboratory, transport, dispensary, township, fire fighting security etc., shall be collected separately. These expenses wherever significant and material shall be apportioned to relevant product or activities on equitable and reasonable basis and applied consistently. Where these services are utilised for other products or activities of the company also, the basis of apportionment of such expenses to the products or activities under reference and others shall be equitable and clearly indicated in the records and applied consistently.
- (iv) **Utilities:** Records relating to cost of utilities like water, power, compressed air etc. shall be maintained both in respect of quantity and value. The Cost Accounting Records Rules of

various industries prescribe proforma in which the cost of production of the utilities is to be maintained. The cost format given provide for furnishing on the cost of direct inputs, labour, depreciation and other items of allocable and apportion able costs in totals as well as in units. The details of quantities of utilities sold and consumed department-wise is also required to be maintained so that the cost of production as well as the charge to the various departments can be determined in a reasonable manner.

- (v) **Workshop, repairs and maintenance:** In respect of work done in workshops and tool rooms, the records shall indicate the basis of charging the workshop or tool room or repairs and maintenance expenses to different cost centres or departments or plant wise. Where maintenance work is done by direct workers of any production cost centre or department, the wages and salaries of such workers shall be treated as direct expenses of the respective cost centre or department. If the services are utilised for other products or activities also, the manner of charging a share to such products or activities shall be on equitable and reasonable basis and applied consistently.

The expenditure on major repair works from which benefit is likely to accrue for more than one financial year shall be deferred over the period expected to benefit on a reasonable and equitable basis and applied consistently. Such cost shall be shown separately and the method of accounting along with the basis of allocation of such costs shall also be clearly indicated in cost records.

- (vi) **Depreciation:** Records shall be maintained separately showing the specific block and apportioned block in respect of each item of asset relating to the product for which cost accounting records are to be maintained. If a company is manufacturing more than one product like bulk drugs, formulations and cosmetics for which common services are available the records should show separately, the assets relating to the product say bulk drugs and also the share of service department assets relating to the product. The basis on which depreciation is calculated and allocated or apportioned to various cost centres or departments and absorbed on all products shall be clearly indicated in the cost records.



Caution In case the amount of depreciation charged in the Cost Accounts is in excess of the depreciation chargeable under Schedule XIV to the Companies Act, the amount so charged in excess shall be indicated in the cost records, separately. However, the cumulative depreciation charged in the cost records, against any individual item of asset shall not, however, exceed the original cost of the respective asset.

- (vii) **Other overheads:** The records shall indicate the various items of overhead expenses chargeable to the cost centres. The expenses shall be analysed, classified and grouped under various functions viz. works, administration, selling and distribution.
- (viii) **Royalty or technical know-how fee or leasing charges:** The adequate records shall be maintained showing the royalty and/or technical know-how fee including other recurring or non-recurring payments of similar nature if any, made for the products or activities under reference to collaborators or technology suppliers in terms of agreements entered into with them. Such records shall be kept separately in respect of each such collaborator or supplier. The basis of charging such amount, including lump sum payment and its treatment shall be indicated in the cost records.



Caution In the case of leasing arrangements, proper records shall be maintained showing details of terms and conditions, leasing charges paid or payable as well as received or receivable.

Notes

- (ix) **Research and development expenses:** Records shall be maintained indicating the details of R&D expenses incurred by the company separately according to the nature of development of products i.e. existing or new product or processes, development of process of manufacture, existing and new, design and development of new plant facilities and market research for the existing and new products etc. The records shall also indicate the payments made to outside parties for the research and development work.
- (x) **Quality control:** The adequate records shall be maintained to indicate the expenses incurred in respect of quality control department or cost centre for products or activities under reference. Where these services are also utilised for other products of the company, the basis of apportionment to products or activities under reference and to other products shall be equitable and clearly indicated in the records and applied consistently.
- (xi) **Interest and other borrowing costs:** The proper records shall be maintained for money borrowed for each project and/or working capital and interest charge thereon. The amount of interest and other borrowing costs shall be allocated or apportioned to the products or activities under reference and other products or activities on a reasonable and equitable basis, and applied consistently. The basis of further charging of the share of the interest and other borrowing costs to the various types of such products shall also be reasonable and equitable and the same shall be followed consistently. The basis of such allocation or apportionment shall be spelt out clearly in the cost records and statements. Net interest and other borrowing costs incurred for Project under execution shall be capitalised for the period up to the date the project is ready to commence commercial activities. However, capitalisation of borrowing costs should be suspended during extended periods in which active development is interrupted.
- (xii) **Work in progress and finished stock:** The method followed for determining the cost of work in progress and finished stock of the outputs shall be indicated in the cost records so as to reveal the cost element that have been taken into account in such computation. The appropriate share of conversion cost up to the stage of completion shall be taken into account while computing the cost of work in progress. The method adopted for determining the cost of work in progress and finished goods shall be followed consistently.
- (xiii) **Captive consumption:** If the products under reference are used for captive consumption, proper records shall be maintained showing the quantity and cost of each item of output transferred to other department or work centres of the company for self-consumption and sold to outside parties separately. The rates at which the transfers are affected shall be at cost only.
- In the case of intermediates produced for captive consumption, details of cost of production shall be maintained and this should be transferred at cost.
- (xiv) **Packing (primary and secondary):** In case of packing of products under reference for retail sales or retail marketing, the proper records shall be maintained showing the quantity and cost of various packing materials and other expenses incurred on packing for marketing of product under reference. Where such expenses are incurred in common for other products also the basis of apportioning the expenses between the relevant products shall be clearly indicated in the cost records and applied consistently.
- (xv) **Expenses or incentives on exports:** The proper records showing the expenses incurred on the export sales, if any, of the product under reference shall be separately maintained so that the cost of export sales can be determined correctly. Separate cost statement shall be prepared for product exported giving details of export expenses incurred and incentive earned. In case, duty free imports of input materials are made, the cost statements should reflect this fact.

- (xvi) **Pollution control:** Expenditure incurred by the company on various measures to protect the environment like effluent treatment, control of pollution of air, water, etc., should be properly recorded.
- (xvii) **Human resources development:** Expenditure incurred by the company on the human resources development activity shall be recorded separately.
- (xviii) **Related party transactions:** In respect of related party transactions or supplies made or services rendered by a company to a company termed "related party relationship" as defined below and vice-a-versa, records shall be maintained showing contracts entered into, agreements or understanding reached in respect of:
- purchase and sale of raw materials, finished products, process materials and rejected goods including scraps, etc;
 - utilisation of plant facilities and technical know-how;
 - supply of utilities and any other services;
 - administrative, technical, managerial or any other consultancy services;
 - purchase and sale of capital goods including plant and machinery; and
 - any other payment related to production, processing or manufacturing of products under reference.

These records shall also indicate the basis followed for arriving at the rates charged or paid for such products or services so as to enable determination of the reasonableness of such rates in so far as they are in any way related to product under reference.

- (xix) **Cost statements:** The cost statements shall be prepared in the formats prescribed in Schedule of the rules. In the case of some products like Textiles, where the number of sorts is numerous, the rules provide for the maintenance of cost sheets on a consolidated basis, for those varieties of cloth which do not account for a sizable percentage of total production. Where the product is manufactured in more than one factory, the cost statements shall be prepared separately for each factory. Separate cost sheet shall be prepared in respect of products exported.



Note The output emerging from a process, which forms input for a subsequent process shall be valued at the cost of production up to the previous stage.

- (xx) **Production and sales records:** Quantitative records of all finished goods whether packed or unpacked, showing production, issues for sales and balances of different type of the product packs under reference, shall be maintained. The quantitative details of production shall be maintained separately for self manufactured, third party on job work, loan license basis etc. Separate details of sales shall be maintained for domestic sales at control price, domestic sales at market price, export sales under advance license, export sales under other obligations, export sales at market price, and sales to related party/inter unit transfer.
- (xxi) **Reconciliation of cost and financial books:** The Cost statements shall be reconciled with the financial statements for the financial year specifically indicating the expenses or incomes not considered in the cost records or statements so as to ensure accuracy and to adjudge the profit of the products or activities under reference with the overall profit of the company. The variations, if any, shall be clearly indicated and explained.

Notes

A statement showing the total expenses incurred and income received by the company under different heads of accounts and the share applicable to the other activities or products shall be prepared and reconciled with the financial statement.

- (xxii) **Adjustment of cost variances:** Where the company maintains cost records on any basis other than actual such as standard costing, the records shall indicate the procedure followed by the company in working out the cost of the activities and services under such system. The cost variances shall be shown against the separate heads and analysed into material, labour, and overheads and further segregated into quantity, price and efficiency variances. The method followed for adjusting the cost variances in determining the actual cost of the product shall be indicated clearly in the cost records. The reasons for the variances shall be duly explained in the cost records and statements.
- (xxiii) **Records of physical verification:** The records of physical verification in respect of all items held in stock be maintained indicating the method adopted for adjustment of shortages and surplus.
- (xxiv) **Statistical records:** Records shall be maintained in respect of:
- (a) Available machine hours, direct labour hours in each production department and actual utilisation.
 - (b) Records for consumption of idle time of machines.
 - (c) Statement showing the reasons for loss of production due to idle time of machines.
 - (d) Capital employed separately indicating the fixed assets and working capital for each item of product.

The adequate records shall be maintained to enable the company to identify the capital employed, net fixed assets and working capital separately for different products, activities and other products and other activities to the extent such elements are separately identifiable. Non-identifiable items shall be allocated on a suitable and reasonable basis to different products, activities and other products and other activities. Fresh investments on fixed assets that have not contributed to the production or processing of products or activities under reference during the relevant period shall be indicated in the cost records. The records shall, in addition, show assets added as replacement and those added for increasing existing capacity.

Whenever WTO provisions are attracted, proper records shall be maintained to identify the competitiveness of the product in the domestic as well as global market. Adequate statistical records shall also be maintained to identify the market share of the product manufactured and the likely impact thereon on account of competitive goods imported into the country.

9.5.1 Flexibility under the Records Rules

The nature of Cost Accounting Records Rules specified and required to be maintained is given in Schedules to the Rules. There are no cost accounting methods, which can be applied uniformly to all the units in the Industry. Therefore, based on the unique characteristics of respective company, Cost Accounting Records Rules allow a lot of flexibility to the companies.



Example: In the case of materials, the rules do not specify the manner in which the stock ledger has to be maintained.

The exact method of pricing of stores has not been stipulated. The method of payment of wages is left to the discretion of the company. They can adopt piece rate method, time rate, or a

combination of the two. Also production bonus and other incentives can also be fixed by the company. The cost centres namely production and service departments can be determined by the company taking into account the technical aspects of production relating to each factory. In respect of jobs carried out in the workshops, so long as proper method is available for absorption of the cost, the rules do not specify any other stipulation. The company is also free to adopt either straight-line method or written down value method of depreciation except that the depreciation charged should not be excess of what is specified under schedule XIV of the Companies Act. In the matter of allocation, apportionment and absorption of overheads, the company is free to adopt any method. In the matter of treatment of the 'by products' and 'joint products', the company has all the flexibility in adopting a rational method so long as it confirms to sound costing principles and is applied consistently. It may be seen that greater freedom and flexibility is given to a company to maintain the records in whatever form they require so long as the method adopted is reasonable, equitable and consistent.

Self Assessment

Fill in the blanks:

11. means a transfer of resources or obligations between related parties, whether or not a price is charged.
12. relationships means parties who are considered to be related if at any time during the reporting period one party has the ability to control the other party or exercise significant influence over the other party in making financial and/or operating decisions.
13. Holding company means a holding company within the meaning of Section of the Companies Act, 1956(1 of 1956).
14. Subsidiary means a subsidiary company within the meaning of Section of the Companies Act, 1956(1 of 1956).
15. subsidiary means a company is said to be a fellow subsidiary of another company if both are subsidiaries of the same holding company.

9.6 Summary

- Cost Accounting Record Rules are the prescribed details by the Central Government w.r.t. utilisation of material, labour or other items of cost in respect of a class of companies notified under the provisions of Companies Act, 1956.
- The Cost Accounting Record Rules are aimed at inducing the companies to have control over their operations and costs with a view to achieve optimum utilisation of resources in the economy.
- Section 642 of the Companies Act, 1956 confers powers on the Central Government to make rules, which form part of subordinate legislation of the Government.
- The nature of records to be maintained under Section 209(1)(d) are to be prescribed by the Central Government in exercise of the powers conferred on them by the provisions of Section 642 of the Companies Act.
- The Central Government has the power under Section 209(1)(d) to prescribe particulars relating to utilisation of material, labour or other items of cost in respect of any class of companies engaged in production, processing, manufacturing or mining activities. This provision has been interpreted as meaning that the type of industry or exact nature of cost accounting record will have to be prescribed by the Central Government.

Notes

- Section 209(1) (d) also specifies that the rules are to be prescribed for any class of company engaged in production, processing, manufacturing or mining activities.
- These rules contain the particulars relating to utilisation of material or labour or other items of cost as may be prescribed to include such details in the books of accounts.

9.7 Keywords

Associate: It means an enterprise in which an investing reporting party has significant influence and which is neither a subsidiary nor a joint venture of that party.

Bulk Drug: It means any pharmaceutical, chemical, biological or plant product including its salts, esters, stereo-isomers and derivatives, which are used as such or as an ingredient in any formulation.

Infant Milk Food: It includes all types of milk food intended for the routine, complementary or supplementary food of infants and children up to the age of five years and other types of modified milk foods for infants which are intended for the feeding of infants and children during the treatment of gastro-intestinal disorders.

Intermediate: It means any compound which is manufactured from primary or basic raw material and which is used in the production, processing or manufacturing of any dye.

Joint Venture: It means a contractual arrangement whereby two or more parties undertake an economic product, which is subject to joint control.

Milk Food: It means any food produced by mixing whole milk, partly skimmed milk or milk powder with ground barely malt or any other malted cereal grain, wheat flour or any other cereal flour or malt extract.

Related Party Transaction: It means a transfer of resources or obligations between related parties, whether or not a price is charged.

Significant Influence: It means participation in the financial or operating policy decisions of an enterprise, but not control of those policies.

9.8 Review Questions

1. Highlight the prescription of cost accounting record rules in brief.
2. Write a brief note on cost accounting records rules and it's applicability.
3. Discuss general provision under the various cost accounting records rules.
4. Explain the procedure for maintenance of records in brief.
5. What do you mean by statistical records? Discuss.
6. What do you mean by related party relationships?
7. With respect to materials discuss the information prescribed under Schedule I.
8. Discuss the factors considered by the government in making the final selection.

Answers: Self Assessment

1. Central
2. Cost Audit
3. partnership, proprietary, etc
4. Small scale companies

5. vegetable oil product	6. Intermediate:	Notes
7. Milk Food	8. Bulk drug	
9. Cost	10. 209	
11. related party transaction	12. related party	
13. 4	14. 4	
15. fellow		

9.9 Further Readings



Books

Bhar. K.B. (2008) *Cost Accounting, Methods & Problem*, Academic Publishers.

Lal, Jawahar & Srivastava, Seema (2009) *Cost Accounting*, 4th Edition, Tata McGraw-Hill Education.

Nigam, Lal B.M. & Jain I. C. (2001) *Cost Accounting: An Introduction*, PHI Learning Pvt. Ltd.

Thakur. S.K, (2009). *Cost Accounting: Theory and Practice*, Excel Books.



Online links

<http://www.caclubindia.com/articles/applicability-of-cost-accounting-records-and-compliance-certificate-14772.asp#.UO1Vkulazfl>

<http://bdoindia.co.in/uploadedfile/1/2/-Guidance%20Note%20on%20Maintenance%20of%20Cost%20Accounting%20Records.pdf>

<http://www.icwai.org/icwainew/docs/FAQ/FAQ1.pdf>

<http://www.icsi.edu/docs/portals/70/CARR1.pdf>

Unit 10: Cost Reduction and Cost Control

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Objectives

After studying this unit, you will be able to:

- Explain the concept of cost reduction;
- Discuss the difference between cost reduction and cost control;
- Describe the areas and scope of cost reduction;
- Discuss the advantages of cost reduction;
- State the techniques of cost reduction.

Introduction

A business organisation must survive, grow and prosper. The cost reduction refers to activities necessary for ensuring that the objectives are fulfilled. With the liberalisation of the Indian economy and globalisation, there is now a cut-throat competition from various corners of the world.

One of the main objectives of a business enterprise is to earn maximum profit. The profit may be increased through some important methods such as

- (i) Increasing the selling price of the products,
- (ii) Increasing the demand through sales promotion,
- (iii) Reducing the selling price on the basis of market demand and increase the sales turnover, and
- (iv) Reducing the cost of production for a given output or increasing the production for the same cost.

Though profits may be increased by one of above methods, yet the last method seems to be the best. Cost reduction is a systematic effort to improve profit margins by eliminating all forms of

wastage and unnecessary expenses without, at the same time, impairing the generation of revenue. Some commonly used synonyms for this activity are profit improvement, cost improvement and methods improvement.

10.1 Concept of Cost Reduction

The CIMA, London defines cost reduction as, “Cost reduction is to be understood as the achievement of real and permanent reductions in the unit cost of the products manufactured or services rendered without imposing their suitability for the use that is intended.” From this definition, it is clear that:

- (i) The cost reduction must be a real one in the course of manufacture or services rendered in that it must arise in the enterprises or organisation,
- (ii) It should not be at the cost of essential features and quality of the products or services rendered, and
- (iii) The reduction must be a permanent one.



Note The cost reduction must be confined to genuine savings in the costs of production, office administration, selling, distribution, research and development, brought about by the elimination of wasteful and inessential elements from the design of the product and from the methods and techniques carried out in connection therewith.

10.1.1 Distinction between Cost Control and Cost Reduction

The following are the main distinction between cost control and cost reduction:

- (i) Cost control is a preventive action. It tries to keep costs confined to the limits set by norms.
Cost reduction is a corrective action. It aims at permanent reduction in the cost of production or services.
- (ii) Cost control is the means to an end, namely cost reduction. Cost control is the initial step in achieving an ultimate objective.
Cost reduction, it must be pointed out, begins where cost control ends.
- (iii) Cost control emphasises the current or present and the past of costs.
Cost reduction lays stress partly on present costs and mainly on future costs.
- (iv) Cost control has limited applicability. It applies to items of cost, i.e., production function.
Cost reduction has universal applicability. It is possible to reduce costs in each and every area of production or business.
- (v) Cost control lacks an element of dynamism.
Incidentally, cost reduction is a dynamic concept.
- (vi) Cost control is exercised by establishing budget and initiating remedial action.
Cost reduction is accomplished by improving upon standards and the methods of production.

Notes

Self Assessment

Fill in the blanks:

1. Cost control is a action while cost reduction is a corrective action.
2. Cost control lacks an element of
3. Cost is to be understood as the achievement of real and permanent reductions in the unit cost of the products manufactured or services rendered without imposing their suitability for the use that is intended.

10.2 Scope and Areas of Cost Reduction

The scope and areas of cost reduction is so vast that every part of an organisation or industry is involved in this problem. A cost reduction method should be systematic investigation into the methods and techniques of production and other functions.



Did u know? Cost reduction involves an analysis of every aspect of the organisation with the objective of ascertaining the most efficient method of performing the various functions.

The broad scope and areas to be covered by the cost reduction are as follows:

- (i) Raw Materials,
 - (ii) Labour,
 - (iii) Overheads,
 - (iv) Marketing, and
 - (v) Finance.
- (i) **Raw Materials:** In most manufacturing organisation, the raw materials form a substantial portion of the total cost. A small percentage of cost reduction in raw material cost will lead to considerable savings to the organisation. The important areas on which raw material cost reduction can be attempted are as under:
- (a) **Purchasing:** Purchasing of raw materials is important particularly to a manufacturing organisation because it has its bearing on every vital factor concerning manufacture, i.e., quantity, quality, cost-efficiency, quality production, prompt delivery, etc. For efficiency buying, purchasing departments must be equipped with the list of various sources of supply and the latest prices ruling in the market for different materials. Ordering costs must be reduced as far as possible by purchasing in economic lot of size quantities.
 - (b) **Storage of Raw Materials:** After receiving the raw materials from the seller, they must be stored properly. The carrying cost must be reduced by keeping the inventory at optimum level. Various levels of materials, viz., maximum level, minimum level and reordering level must be fixed properly. Raw materials must be properly classified, coded and standardised. ABC analysis of material control is highly useful in cost reduction.
 - (c) **Design:** The raw material cost reduction should always begin at the design stage. The quality and quantity of raw material depends upon the design of the product. Continuous research should be undertaken in selecting the design. The effect of

introduction of any new design or improvement of existing design in relation to cost of production should be thoroughly investigated with the help of cost accountant.

- (d) *Production*: Production can be improved upon by training the employees, replacing the defective machines, using better quality of raw materials, providing adequate and proper techniques and tools, reducing the wastage, scrap and defective product.
- (e) *Transport*: External and internal transport costs must be reduced as far as possible. Costs must be reduced by eliminating or reducing empty or idle trips, the distance travelled by the vehicles and consumption of petrol and diesel. CPM method is useful for this purpose.
- (ii) **Labour**: According to the tradition theory, the direct labour is a variable cost. But, this does not hold good today. Cost reduction is possible if the right worker having the right attitude is employed to do the right work. Efficiency of employees of the industry or organisation can be increased by motivating them suitable to do their best for the organisation. By increasing the productivity, the labour cost can be reduced. It is possible through monetary and non-monetary incentive schemes, e.g., bonus schemes, profit sharing, good working conditions, better welfare facilities and safety measures, etc.
- (iii) **Overheads**: Overheads can be reduced by utilising the resources to the maximum capacity. The following are the methods which can be used by the management for reducing the overhead cost:
- (a) *Size of Business*: By the size of business, the overheads can be reduced. As some overheads are fixed in nature, they can be reduced by increasing the scale of production,
- (b) *Increasing the Production*: By undertaking the production on optimum scale, the costs can be decreased as the incidence of overheads chargeable to each unit of output declines. The idle capacity can be reduced by proper planning and control of business or organisation, and
- (c) *Extension of Market and Price*: Overheads can be reduced by extending the market area, increasing sales and charging suitable prices to attract different types of buyers for the products.
- (iv) **Marketing**: By careful thinking and co-operative efforts, much economy can be derived in this area also. The areas which can be brought under the cost reduction programme include market research, sales office, warehousing, advertisement, packing, distribution, sales services, etc.
- (v) **Finance**: Cost reduction may be extended even to the use of finance by better utilisation of fixed assets and working capital.

Self Assessment

Fill in the blanks:

4. can be reduced by utilising the resources to the maximum capacity.
5. According to the traditional theory, the direct labour is a cost.
6. The raw material cost reduction should always begin at the stage.
7. can be improved upon by training the employees, replacing the defective machines, using better quality of raw materials, providing adequate and proper techniques and tools, reducing the wastage, scrap and defective product.

10.3 Advantages of Cost Reduction

Following are the main advantages of cost reduction:

- (i) Advantages to the Concern,
- (ii) Advantages to the Industry, and
- (iii) Advantages to the Nation.

Let's discuss them one by one:

(i) ***Advantages to the Concern:***

- (a) Cost reduction improves the competitive capabilities of the organisation. The extent to which the costs are reduced becomes an index of efficiency attained by the industries or organisations,
- (b) Cost reduction enables improving the profits. This leads to distributing more dividends to the shareholders, paying better remuneration and bonus to the managerial staff, and
- (c) Improvement in the financial position provides the opportunities to invest the funds in research which eventually helps in providing the customers with improved quality products.

(ii) ***Advantages to the Industry:***

- (a) Reduced unit cost is an indicator of productivity and efficiency, and
- (b) Cost reduction benefits not only to the concern but to entire industry or organisation. If a department is running efficiency, other departments in the industry will have to follow and adopt the efficient practices.

(iii) ***Advantages to the Nation:***

- (a) Higher revenue may result in more spending on national building activities,
- (b) Higher profit will ensure more revenue to the government through taxes,
- (c) In international markets, cost reduction and concomitant reduction in prices of exports help in retaining the markets and gaining new buyers, and
- (d) Cost reduction also helps in combating inflation.

Self Assessment

Fill in the blanks:

- 8. Reduced cost is an indicator of productivity and efficiency.
- 9. The extent to which the costs are becomes an index of efficiency attained by the industries or organisations.



Caselet

Finance Leaders Consider Cost Control Top Priority

KARACHI: Most finance leaders around the world consider cost reduction, forecasting and financial controls as their top priorities, according to a survey of senior finance professionals recently released by the Association of Chartered Certified Accountants (ACCA) and the Institute of Management Accountants (IMA).

“These results reflect the continuing uncertainty and volatility in the global economy, with finance leaders recognising the need for continuing fiscal constraints,” the survey says. It is based on the input from 361 finance professionals – including Chief Financial Officers (CFOs), finance directors, vice presidents of finance and finance controllers – from 46 countries around the world. The ACCA Pakistan spokesperson did not provide The Express Tribune with the exact number of respondents, who participated in the survey from Pakistan.

While nearly half of the respondents believed cost reduction was a priority for them, less than 5% of them said the same thing about investor relations. Similarly, while over 40% of respondents said ensuring financial controls was their priority, less than 25% expressed the same view about following financial regulations.

“Relatively speaking, the regulatory agenda, corporate finance and tax issues are regarded as slightly lower priorities. Investor relations are also further down the priority list, as is corporate social responsibility reporting,” it stated.

At the top of the list of barriers inhibiting the finance function’s effectiveness is the existence of too many priorities for the finance function: more than 35% of respondents considered it as their primary challenge followed by a poor finance IT infrastructure, as many finance functions continue to work across multiple Enterprise Resource Planning (ERP) systems, spending more time manually reworking system data rather than providing insight into the implications of the numbers for the business.

The survey revealed that nearly 55% of respondents identified financial planning and analysis skills as their highest priority. This was followed by communication and influencing skills, knowledge of business and understanding business risks. The survey found that traditional finance skills, including finance technology skills, knowledge of regulatory and external reporting requirements and specialised skills in tax and treasury, were relatively less important for today’s finance leaders.

Perhaps the most interesting part of the survey was where finance leaders revealed who they see as the most important stakeholders. Most of them consider customers less important stakeholders than auditors and bankers, the survey reported. They also consider tax authorities, government, regulators and media less significant stakeholders than suppliers and investors, the survey revealed.

Source: <http://tribune.com.pk/story/482226/finance-leaders-consider-cost-control-top-priority/>

10.4 Techniques of Cost Reduction

Following are the important techniques of cost reduction:

- (i) Simplification,
- (ii) Standardisation,

Notes

- (iii) Value Analysis,
- (iv) Linear Programming,
- (v) Modernisation and Technological Advances,
- (vi) Labour Productivity, and
- (vii) Managerial Control.

All these are discussed in detail below:

- (i) **Simplification:** The basic principle of simplification is that a single item shall serve as many different applications as possible. Simplification means elimination of superfluous varieties, size, dimension and grades of raw materials and component parts. Reduction as it is essentially a reduction process, a cutting down of varieties of materials.
- (ii) **Standardisation:** Standardisation in a production sense means the reduction of a line of product to fixed types, sizes and characteristics. It's defined, "Standardisation primarily means setting up standards by which the extent, quantity, value, performance or service may be gauged or determined and is the crystallised best thought and practice of industry into definite forms for general use."
- (iii) **Value Analysis:** Value analysis is one important technique of cost reduction. This technique was first developed by Lawrence D. Miles of General Electric Company, USA. In a broad sense, it is a study of element wise cost of an item such as quality, design, methods and techniques of manufacture, etc., with a view of reduce the ultimate cost of product. Value analysis also means the determination of the value of items proposed to be sought with a view to examine the worth of money spent on buying the raw materials.



Caution Value analysis is based upon the quality of raw materials in relation to their functional value and price. This reduces the cost of purchase and enhances the profit of the industry or organisation.

- (iv) **Linear Programming:** Sometimes, it is possible to reduce the cost without making any substantial change in the design of the product or price or number of inventory. This is possible only through the use of linear programming technique. Linear programming is a quantitative technique which is used to solve problem such as inventory, scheduling, transportation problem, etc.
- (v) **Modernisation and Technological Advances:** Plant modernisation and technological advances in the production process is often associated with industrial automation. Improvements of this type can make it possible for organisation to break out of the cost, price and profit. Some improvements in technology also make possible the use of raw materials that formerly were not profitable to use.
- (vi) **Labour Productivity:** It is necessary to engage the right workman possessing the right attitude to do the right work. The efficiency of the workers can be increased by motivating them in a suitable manner. This can be done by introducing various incentive schemes, good working conditions and taking measures to increase their welfare and safety. In this manner, his productivity of labour would rise and thereby the cost of labour per unit would decline.
- (vii) **Managerial Control:** Organisations making an effort to reduce costs on a long range basis frequently install or upgrade various types of managerial control systems. Not only does such control draw attention to opportunities for cost reduction in many areas but, perhaps

more importantly, they help to sustain the gains created through economy measures. Among the control devices found most frequently in organisations are budgetary control, distribution cost control, standard cost control, responsibility reporting and internal auditing.

Notes

Self Assessment

Fill in the blanks:

10. means elimination of superfluous varieties, size, dimension and grades of raw materials and component parts.
11. in a production sense means the reduction of a line of product to fixed types, sizes and characteristics.
12. The of the workers can be increased by motivating them in a suitable manner.
13. Plant modernisation and technological advances in the production process is often associated with automation.
14. means the determination of the value of items proposed to be sought with a view to examine the worth of money spent on buying the raw materials.
15. Value analysis is based upon the of raw materials in relation to their functional value and price.



Task Take any company of your choice and discuss its cost reduction programme in detail.



Case Study

How the Internal Audit Function can Play a Key Role in Cost Reduction Efforts

Many organisations focus their cost reduction efforts around the numbers. This is the reason why cost reduction initiatives are regarded as the sole domain of the financial community. Cost cutting is often no more than a review of the budget, the introduction of a saving against each line item, and then monitoring actual versus planned spend. There is no problem with this approach if it is short-term cuts that are wanted. It is easy to reduce costs by a small amount on each line item by delaying expenditure into a future period. However, these are not real savings and the organisation loses the opportunity to review underlying business practices during difficult economic periods that have the potential to create sustainable cost savings. Once the pressure is off, these “so called” cost savings quickly come back into the budgets and management are none the wiser. This is the tactical response to cost cutting. It can be done and it does have benefits but these are mainly short term in nature.

On the other hand, organisations that approach their cost reduction efforts in a strategic manner have the opportunity to significantly strengthen their competitive position from a cost perspective rather than just survive the current economic downturn. Activity-based cost reduction is a strategic response to cost cutting that provides sustainable benefits.

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This means the focus shifts from the individual line items on the income statement or balance sheet toward the underlying activities that drive the expenditure. Once these underlying activities are understood, it is relatively easy to identify and prioritise improvements that will have a larger and longer-term impact on the business.

“Cost cutting is much more than just the elimination of expenses from a budget.”

The biggest risk for any major initiative is the ability of the organisation to sustain the benefits. In a survey of 115 multinationals taken from the Financial Times Stock Exchange’s top 350 companies, it was found that 70% could not sustain the benefits of their cost reduction efforts beyond two years. Often this is due to the fact that the changes introduced are not continuously re-enforced through regular, visible reporting of the key measures that determined success in the beginning. The organisation loses sight of those aspects that were considered essential when the program was first introduced. This is where the internal audit function can play a significant role.

The internal audit function should be an integral part of any strategic cost reduction program because it can ensure the redesigned business processes, activities and structures (if any) remain responsive to the risks, and are embedded in the business methods and practices.

The value that can be achieved by the inclusion of the internal audit function is immense, as it can support a number of strategic objectives, including the following:

1. Achieving buy-in to the cost reduction program from a broader group of stakeholders.
2. Improving visibility at management, executive and board levels by ensuring internal audit reports include commentary on the cost cutting initiatives.
3. Identifying the risks and implications of cost reduction initiatives.
4. Providing valuable input and insight into the key processes and activities that drive certain costs.
5. Identifying critical improvement drivers to keep the business focused on priority areas.
6. Bringing a process and control capability to the overall program.
7. Monitoring and evaluating key performance indicators on a continuous basis.
8. Developing regular reviews as part of the annual internal audit plan to support sustainability.
9. Providing an objective viewpoint on the proposed initiatives prior to, during and after the introduction of the cost cutting program.
10. Reporting on the benefits realised by the program.

As an example, overtime cost was considered to be excessive in one very large organisation. Certain employees were actually earning more by way of overtime pay than from their regular salaries. Management decided to cut this cost, especially as difficult economic circumstances were resulting in lower business activity levels. As a result of the increased focus on overtime pay together with more regular reporting, the cost began to show a reducing trend. However, as often happens, the moment the emphasis changed to other significant areas and the level of scrutiny reduced, the cost of overtime began to increase. This example highlights the need for much more effort in understanding and changing the underlying reasons for a particular cost rather than simply focusing on the cost itself.

A more strategic and sustained approach is recommended.

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For example, travel expenditure may be under review and the finance manager might request a saving of 20% in the following year's budget. One approach would simply be to cut the number of trips by an average of 20%, and the target would be achieved with no difficulty. Except during the following year, when the pressure is off, the costs will creep back into the system and the benefits of the saving will be short lived.

An alternative approach, in addition to the above action (which is a very good starting point), would be to review and redesign the underlying activities that drive travel expenditure in order to change the way the organisation operates. This would have the effect of sustaining the saving over a much longer term and ultimately gain the organisation competitive advantage. "Organisations that approach their cost reduction efforts in a strategic manner have the opportunity to significantly strengthen their competitive position." The following questions in relation to travel expenses should also be asked:

1. What is the breakdown of the travel expense? (In order to understand the makeup of the cost and where to focus improvement efforts)
2. What activities are performed that result in these costs being incurred?
3. Why do these activities need to be performed and do they add value to the business? And how can the benefit or value of the activity be determined?
4. What are the interdependencies and risks of changing these activities?
5. Is there a better way to achieve the same or even a better result, e.g., scenario or option planning?
6. What should the targeted cost be, taking into account potential improvements?
7. What needs to be done to redesign the approach to travel to enhance the process and reduce the cost?
8. What controls or performance measures need to be introduced to ensure sustainable success?
9. How will the performance of the activities be reported to ensure that the costs don't creep back into the system?

Source: http://performance.ey.com/wp-content/uploads/downloads/2011/09/Performance-4_1-v15-Article-1.pdf

10.5 Summary

- Cost reduction refers to activities necessary for ensuring that the objectives are fulfilled.
- Cost reduction is a systematic effort to improve profit margins by eliminating all forms of wastage and unnecessary expenses without, at the same time, impairing the generation of revenue.
- Cost reduction must be a real one in the course of manufacture or services rendered in that it must arise in the enterprises or organisation.
- Cost control has limited applicability. It applies to items of cost, i.e., production function.
- The scope and areas of cost reduction is so vast that every part of an organisation or industry is involved in this problem.
- A cost reduction method should be systematic investigation into the methods and techniques of production and other functions. It involves an analysis of every aspect of the organisation with the objective of ascertaining the most efficient method of performing the various functions.

Notes

- Cost reduction improves the competitive capabilities of the organisation. The extent to which the costs are reduced becomes an index of efficiency attained by the industries or organisations.
- Cost reduction benefits not only to the concern but to entire industry or organisation. If a department is running efficiency, other departments in the industry will have to follow and adopt the efficient practices.

10.6 Keywords

Cost Control: It is a preventive action. It tries to keep costs confined to the limits set by norms.

Cost Reduction: It is to be understood as the achievement of real and permanent reductions in the unit cost of the products manufactured or services rendered without imposing their suitability for the use that is intended.

Standardisation: Standardisation in a production sense means the reduction of a line of product to fixed types, sizes and characteristics.

Value Analysis: Value analysis is one important technique of cost reduction. It is a study of element wise cost of an item such as quality, design, methods and techniques of manufacture, etc., with a view of reduce the ultimate cost of product.

10.7 Review Questions

1. Define cost reduction.
2. Distinguish between cost control and cost reduction.
3. State the advantages of reducing cost in an organisation.
4. Explain the various areas covered by cost reduction programme in detail.
5. Discuss the various techniques of cost reduction.
6. Explain the scope of cost reduction.
7. Cost reduction lays stress partly on present costs and mainly on future costs. Comment.
8. Is cost reduction a preventive or corrective action? Give suitable reasons to support your answer.

Answers: Self Assessment

- | | |
|---------------------|--------------------|
| 1. Preventive | 2. Dynamism |
| 3. reduction | 4. Overheads |
| 5. Variable | 6. Design |
| 7. Production | 8. Unit |
| 9. reduced | 10. Simplification |
| 11. Standardisation | 12. efficiency |
| 13. industrial | 14. Value analysis |
| 15. quality | |

10.8 Further Readings

Notes



Books

Bhar. K.B. (2008) *Cost Accounting, Methods & Problem*, Academic Publishers.

Lal, Jawahar & Srivastava, Seema (2009) *Cost Accounting*, 4th Edition, Tata McGraw-Hill Education.

Nigam, Lal B.M. & Jain I. C. (2001) *Cost Accounting: An Introduction*, PHI Learning Pvt. Ltd.

Thakur. S.K, (2009). *Cost Accounting: Theory and Practice*, Excel Books.



Online links

http://220.227.161.86/19079comp_sugans_pe2_costacc_cp16.pdf

<http://www.managementaccountancy.com/2010/06/cost-control-and-reduction/>

<http://accountlearning.blogspot.in/2011/02/differences-between-cost-control-and.html>

http://performance.ey.com/wp-content/uploads/downloads/2011/09/Performance-4_1-v15-Article-1.pdf

Unit 11: Information System and Reporting to Management

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Objectives

After studying this unit, you will be able to:

- State the attributes of information system;
- Discuss the pattern of reports and apply these to decisions;
- Explain good reports;
- Discuss the need of reports;
- Interpret the use of reports for data base.

Introduction

Management Information System can be developed as an act of interrelated components that collect (or retrieve), process, store and distribute information to support decision-making, coordinate and control in an organisation. Information means data have been shaped into a form that is meaningful and useful to human being. Data are stream of raw facts reporting events occurring in organisation or physical environment before they have been organised and rearranged into a form that people can understand and use.

The purpose of reporting is to provide the information needed by the concerned party. The value of information is determined by how the information meets the needs of the users. This information creates an atmosphere for internal decision makers. The communication of the

information between two or more parties through reports is known as reporting. In this unit, we will discuss information system and the nature of reporting to management.

11.1 Attributes of Information

For information to be useful to managers, it must possess certain attributes. Some of the important attributes are accuracy, timeliness, relevance and completeness. The list of attributes and their significance is shown in table 11.1.

Table 11.1: Attributes of Information

Accuracy	Must be true and correct and must accurately describe the item or event.
Timeliness	Available when it is needed and without excessive delay.
Relevance	Pertains to the situation at hand. Information relevant at one time may not be relevant at another if it does not add to the knowledge needed by a decision maker.
Completeness	Provides the user with all details needed to understand a solution. Complete information (that is certainty) is rarely available.
Frequency	Prepared or presented to users often enough to be up-to-date.
Time horizon	Oriented toward past, present or future activities and events.
Scope	Broad or narrow in coverage of an area of interest.
Origin	May originate from sources within the organization or from external sources.
Form of presentation	Tables of numbers or graphic displays of information are the most common written or printed forms. May also include verbal presentation.

11.1.1 Information Needs of Managers

All managers require information to perform their managerial functions (mainly, planning and controlling) and make effective decisions. The information that managers require will vary, depending on the nature of the work they do and the tasks they seek to accomplish. Information needs also vary by levels in the organisational hierarchy (see Table 11.2). For instance, top level managers need far less detail (as a general rule) than lower level managers. Since top-level managers have to take a broad perspective of the organisation and its mission, they only need information that helps them develop or enhance the perspectives.

Information that originates within an organisation is referred to as internal information. This type of information is essential for managing day-to-day operations.



Example: Examples of internal information are:

1. Daily receipts and expenditures.
2. Quantity of an item in hand or in inventory.
3. Cost and selling price of the item.
4. Salespeople's quotas.

Information that originates outside the organisation is referred to as external information. Such information is often required by top level managers to plan and guide the organisation successfully.

Notes

Table 11.2: Information needs by Level of Organisation

Characteristic	Top Management	Middle Management	Operating Management
Planning focus	Heavy	Moderate	Minimum
Control focus	Moderate	Heavy	Heavy
Time frame	Long-term	Short-term	Day to Day
Nature of activity	Unstructured	Moderately structured	Highly structured
Level of complexity	Many open variables, complex	Better defined variables	Straightforward
Result of activity	Mission, Goals, Objectives	Action Plans	End products and services



Example: Examples of external information are:

1. Demand for new products or services.
2. Information describes customer satisfaction with products and services. Information describing change in policies of suppliers.
3. Knowledge of promotional campaigns, price changes, or products planned by competing firms.
4. Details of changes in government regulations.

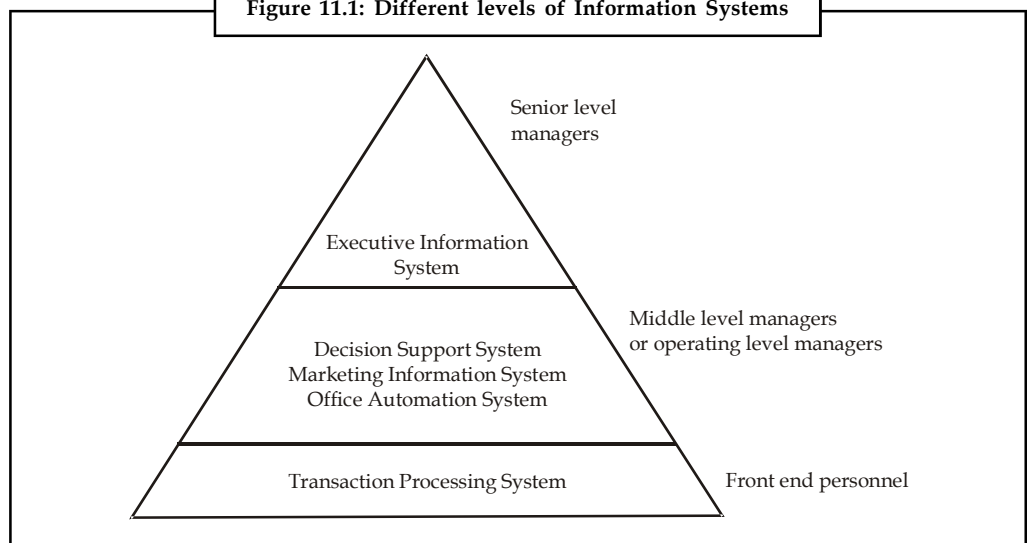
In many instances, firms have to provide information to external users. Some of these are:

1. Prices of items and services offered (to customers)
2. Quantity of items needed for manufacturing (to suppliers)
3. Sales revenues and profit earned (to the government).



Caution Only an effective information system can provide managers with both internal and external information that is timely and accurate.

Figure 11.1: Different levels of Information Systems



Self Assessment

Notes

Fill in the blanks:

1. The of the information between two or more parties through reports is known as reporting.
2. Information that originates within an organisation is referred to as information.
3. Only an information system can provide managers with both internal and external information that is timely and accurate.

11.2 Concept of Management Reporting

Report is the essence of the management information system. Report is a statement containing facts and if they contain accounting information and data they are called accounting reports. So, report may be known as process of providing accounting information to those who needs to make decisions. Report may be for the past, present and for the future developments. In this unit you will study about the objectives of reporting, need of reporting at different managerial levels, types and modes of reporting and essentials of a successful reporting.

Reporting can be defined as communication of statements with related information between the two parties. The process of providing information to the management is known as management reporting. These reports are provided to the various levels of management on regular basis to keep the management abreast about the effectiveness of their respective responsibility. Reporting is an important function of the management accountant as the efficient and smooth working of the business depends upon the good reporting. The effectiveness of reporting to management to a large extent depends upon the form and timing of its presentation.



Did u know? The process of reporting to management is concerned with proper selection of financial and operating data, arranging information in a proper form, analysing and interpreting the data and then reporting it to the management through an appropriate method.

11.2.1 Objectives of Reporting

Main objectives of reporting can be divided under the following heads:

- **Accounting reports consist of financial statistics:** Management cannot analyse all significant facts regarding its business especially in case of large scale production where the business operations are more complex in nature. Accounting reports help to get full information about the entire operative activity of the firm.
- **Providing accounting information:** Accounting reports consist of financial statistics. Management may not analyse all significant facts regarding its business operations especially in case of large scale production where the business operations are more complex in nature. Accounting reports help to get full information about its entire operative activity of the firm. Thus important objective of the reporting is to provide accounting information to operating and top level management in accurate form in understandable brief manner.
- **To take right decision:** To help the management in taking the right decisions with suitable statements provided by the management accountant.

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- **Acceptability of the decision by all:** Reporting leads to motivate people, increases efficiency and boosting the morale of the people engaged in the various aspects of the work of the enterprise.
- **Maximising the profits:** To achieve this ultimate goal of any business reporting at the right time, at right place to the right person in right manner becomes an essential feature.
- **For better control:** Abnormal events can be checked in time by obtaining the necessary information in respect of each operating activity. Control through reports become effective as compared to personal investigations.



Caselet

Business Reporting

The Client

MMG Limited is a mid-tier global resources company which explores, develops and mines base metal deposits around the world. Lane Xang Minerals Limited (LXML) is the registered name of the company which operates Sepon.

The Challenge

A detailed 'health check' was performed on the Supply Chain at Sepon and one of the major short-comings highlighted was the lack of operational and management reporting available to understand how the Supply Chain was performing across all areas. The initial attempt of addressing the reporting needs was to utilise Excel and rely on the Supply team to collate, manipulate and distribute information manually. This process was ineffective because of the huge effort, the short-coming of Excel based reporting and the changing business requirements. A decision was made to look for a complete solution, and the key requirements presented were:

- Deliver comprehensive management and operational reporting across the Supply Chain
- Deliver a cost and time effective solution
- Automate all daily, weekly and monthly reporting
- Provide periodic reports by 06:00 am on the first day following the period end
- Provide in-house training on solution
- Eliminate the need for manual processing in Excel

The Solution

The solution presented to Sepon was 'MySupply Reporting' which is a comprehensive and fully developed suite of reports against the Pronto ERP delivered using Rocket CorVu.

MySupply Reporting is a suite of reports delivering the full capability for managing the operation around Procurement, Warehousing and Inventory. MySupply Reporting offers the capability for presenting information, using graphical, tabular and analytical reports, and management packs. Management have the capability to view KPI's with the ability to drill down and analyse trends and information in more detail. The base reporting met the majority of the requirements and minor customisation was carried to deliver the complete solution.

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The Outcome

- MySupply Reporting was delivered at a fraction of the cost and time of developing the reporting from start, one that could not be delivered internally
- MySupply Reporting was easily customised for Sepon as the business changes
- Supply Management and Operational users now have up to date picture of their operation
- MySupply Reporting has highlighted issues with the data and process, enabling management to address with information at hand
- The analytical capability of MySupply Reporting now allows Sepon to analyse KPI's in a variety of ways
- Ability to develop own reports

The Benefits

The benefits of MySupply Reporting include:

- Massive cost saving by not having to develop the Supply Chain reporting solution from scratch
- Allows focus on interpretation rather than data collation
- Easily customised to changing business circumstances
- Identifies data issues in source system and highlights issues for corrective actions
- Low Total Cost of Ownership
- Web based solution allowing remote access
- Low infrastructure requirements

Source: http://www.fardatasolutions.com/uploaded/files/client_added/Case%20Study%20Documents/Sepon%20Pronto%20Supply%20Reporting%20Case%20Study.pdf

Self Assessment

Fill in the blanks:

4. Important objective of the reporting is to provide information to operating and top level management in accurate form in understandable brief manner.
5. The of reporting to management to a large extent depends upon the form and timing of its presentation.
6. Reporting can be defined as communication of statements with related information between the parties.

11.3 Reporting Needs at Different Managerial Levels

Reporting is the lifeline of the organisation. It helps in planning and control and works as a media of communication and stimulates corrective action. Accounting system becomes useless, if the business has no system of reporting because all decisions are normally based on reporting system.

Need of reporting differs at different management levels. This also differs to the user community also.

Notes

There are three levels of management and the reports can be classified according to the needs as follows:

1. Top-Level Management Reports
2. Middle Level Management Reports
3. Lower Level Management Reports

Each of these reports is discussed in detail below:

1. **Top Management Reports:** At this level reports are concerned with the following matters:

- ❖ For determining the aims of the enterprise;
- ❖ For formulation of policies and plans;
- ❖ For delegation of responsibility in successful manner to executives for the best utilisation of resources; and
- ❖ For formulating special significant plans.

It can be assumed that top brass of the business only needs reports for cost and operational control. The report submitted to the level should be brief or we can call it a summarised statement, which provides an overall view on the subject. Previously these reports used to be submitted within the time framework. The time framework may be monthly, quarterly or yearly. With the use of information technology and the real time accounting, the whole time framework has been changed and now these can be made available online.

Reports to top level management consist of the following:

- (a) Reports to the Board of Directors
- (b) Reports to the Chief Finance Officer
- (c) Reports to the Chief Production officer, and
- (d) Reports to the Chief Executive Marketing and Sales.

Let us study these reports in brief.

- (a) *Reports to the Board of Directors:* Generally, following reports are to be submitted to the Board of Directors and the Chief Executive Officer (C.E.O.):

- (i) Different budgets
- (ii) Machine utilisation statement
- (iii) Work force utilisation statement
- (iv) Cost analysis statement
- (v) Fund flow statement
- (vi) Cash flow statement, and
- (vii) Balance sheet and income statement


- (b) *Reports to the Chief Finance Officer:* Following reports are to be submitted to the Chief Finance Officer (C.F.O.):

- (i) Cash flow statement,
- (ii) Funds flow statement,
- (iii) Abstract of receipts and payments and

- (iv) Report regarding any special problem such as make or buy, replacement of old assets or any other.
 - (c) *Reports to the Chief Production Officer:* Following reports are to be submitted to the Chief Production Officer (C.P.O.):
 - (i) Cost analysis statement
 - (ii) Machine utilisation report
 - (iii) Work force utilisation statement
 - (iv) Materials statement
 - (v) Production statement showing budgeted and actual with variance and
 - (vi) Overheads cost statement
 - (d) *Report to the Chief Executive Marketing and Sales:* Following reports are to be submitted to the Chief Executive Marketing and Sales:
 - (i) Sales summary
 - (ii) Reports on credit collection
 - (iii) Reports of orders received and executed and outstanding orders
 - (iv) Report on stock of finished goods
2. **Middle Level Management Reports:** The middle level management consists of the heads of various departments. The reports at this level should show the efficiency and cost data relating to different departments. At this level execution of plans formulated by the top management is worked out and all the managers in each department are concerned with this. It is also the function of middle level management to coordinate different activities of different departments. The reports at middle level management consist of the following:
- (a) *Report to the General Manager:* The following Reports are to be submitted to the General Manager:
 - (i) Administration budget,
 - (ii) Cash and capital budget,
 - (iii) Salaries statement of staff and
 - (iv) Research and development budget
 - (b) *Report to the Finance Manager:* The reports to be submitted to the Finance Manager are:
 - (i) Funds flow statement
 - (ii) Cash flow statement
 - (iii) Cash and bank reports
 - (iv) Debtor's collection period reports
 - (v) Average payment period reports
 - (c) *Reports to the Purchase Manager:* The following reports are to be submitted to the Purchase Manager:
 - (i) Stock level of raw material,
 - (ii) Use of raw material,

Notes

- (iii) Raw material budget and actual purchases, and
- (iv) Budgeted cost and actual cost of purchases
- (d) *Reports to the Works Manager:* The reports submitted to the Works Manager are:
 - (i) Production cost report
 - (ii) Raw material budget and actual consumption
 - (iii) Production budget and actual production
 - (iv) Idle time report
- (e) *Idle capacity report Reports to the Sales and Marketing Managers:* The following reports are to be submitted to the Sales and Marketing Manager:
 - (i) Report of budgeted and actual sales,
 - (ii) Report of orders booked and executed,
 - (iii) Statement of sales,
 - (iv) Finished goods stock position and
 - (v) Position of collections and debtors.



Note With modernisation and adoption of computers in the business house, the reporting period has been reduced tremendously and the data are ready at hand and these can be used to prepare reports instantly. Middle level management is connected on line with the computers within the organisation, so preparation of reports has become easy.

- 3. **Lower Level Management Reports:** At this level foremen and supervisors are concerned at the floor and they prepare their reports physically without any expert opinion. They are concerned with the daily work and they infuse a certain amount of competitive spirit among the workers by comparing the output per man per hour in a similar job. These reports include the following factors:
 - (i) Workers efficiency report,
 - (ii) Daily production report,
 - (iii) Workers utilisation report and
 - (iv) Scrap report
 - (v) Over-time report
 - (vi) Material spoilage report
 - (vii) Accident report etc.

Self Assessment

Fill in the blanks:

- 7. The reports at level should show the efficiency and cost data relating to different departments.
- 8. With modernisation and adoption of in the business house, the reporting period has been reduced tremendously.
- 9. In case of foremen and supervisors are concerned at the floor and they prepare their reports physically without any expert opinion.

11.4 Types of Reports

Reports can be classified in various ways in which the different reports are presented to the management such as:

1. Users Reports
2. Reports Based on Information
3. Reports Based on Nature
4. Functional Classification of Reports

Let us study each of them in brief.

1. **Users Reports:** Depending upon users, reports can be classified as follows:
 - (i) Internal Users Report
 - (ii) Special Reports
 - (iii) Routine Reports
 - (iv) Management Level Reports
 - (v) External Users Reports

Reports can be prepared according to the users. They can be:

- (i) *Internal Users:* Reports, which are prepared for the use of different levels of management and for the use of the employees, are known as the reports for internal users. These are not public documents. These reports are aimed to different levels of management.
- (ii) *Special Reports:* These reports play a vital part in decision-making. They are prepared for specific reasons. While preparing this type of report the problem under study should be clearly defined and understood and effect of cost and income should be considered. Comparison of cost of study and estimation of cost and income relating to the problem should also be considered. These reports can be prepared for any of the problems relating to:
 - (i) Market analysis
 - (ii) Make or buy decisions
 - (iii) Problems of raw material
 - (iv) Technological changes
 - (v) Labour problems
 - (vi) Cost reduction schemes
- (iii) *Routine Reports:* These are only control reports and they are required only when a control system exists. These are prepared daily as per scheduled time regarding activities. Production operation reports, cost reports, research and development reports, various budget reports, utilisation of man, machine and material reports, report regarding customer default, sales and distribution report, administration reports, income statement and balance sheet and cash flow statement are included in this classification.
- (iv) *Management Level Reports*

Notes

- (v) *Reports for External Users:* These reports are prepared for the external users who have interest in the enterprise. They are the shareholders, debenture holders, creditors, bankers, other financial institutions, stock exchange and the Government. They may be interested in knowing the financial position, progress made, future-plans and growth of the company. While preparing these reports, the information regarding the interest of all the external users should be taken into consideration.



Example: The profit and loss account and balance sheet are prepared every year and these statements are to be filed with the Registrar of Companies and also stock exchange authorities.

- 2. **Reports Based on Information:** There are two types of information reports. They are: (i) Operating Reports, and (ii) Financial Reports.

- (i) *Operating Reports:* These reports convey the information regarding the operations of the business at different functional levels. These reports are used to review and control the total production and to improve the interdepartmental efficiency. Operating reports can further be classified as information reports and the control reports.

- ◆ **Information Reports:** The reports prepared for this purpose should be simple and clear in respect of various operating activities. These reports are of three types, viz., trend reports, analytical reports and activity report. In trend reports, comparative information is provided over a period regarding the direction or trend of different activities. Analytical reports are based on the horizontal comparison of results. This provides information in an analytical manner about comparison of different activities for a particular period. When reports are prepared for any particular activity of the business then they are known as activity reports. Segment reports are also information reports.

- ◆ **Control Reports:** These reports are prepared to help the managers in controlling the operations of the business. Various responsibility centres are established in every business to have an effective control. To know the performance of each responsibility centre reports are prepared for them. First important aspect regarding the performance of the centre manager and the other is concerned with the economic performance of the centre towards the goal or the business, are the main features of these reports. These reports can be current control reports or they can be summary control reports. Summary control reports can be master summary control reports or these can be subsidiary summary control reports.

- (ii) *Financial Reports:* Financial reports differ from control or information reports. They are necessary to know the success or failure of the management's responsibility to shareholders through the accounting. These reports can be of two types viz., dynamic financial reports and static financial reports. Dynamic financial reports show the changes took place during the year in the financial position of the business. These reports include report of financial change, financial control reports and effective use of funds reports. Static financial reports provide the information regarding the position of assets and liabilities. They include balance sheet and certain additional statements for individual items of the balance sheet.

- 3. **Reports Based on Nature:** There are three types of reports based on nature:

- (i) *Enterprise Reports:* These are the reports, which give a detailed description of the various operating activities and financial position of the business. They are generally

meant for the external users i.e. bankers, financial institutions, shareholders and government authorities. They are generally regular and include annual accounts, directors' reports, and auditors report. It is obligatory under Companies Act to furnish these reports.

- (ii) *Control Reports:* These reports have already been discussed under the head reports based on information.
 - (iii) *Investigative Reports:* These reports are specially prepared only when to investigate a particular problem. These types of reports contain findings and suggestions to solve the problem. These reports are helpful in taking a decision on a particular problem.
4. **Functional Classification of Reports:** These reports are normally for the particular function or for a particular department or for joint activity. They are also of two types:
- (i) *Individual Activity Report:* Report is prepared for the individual activity of a single department working under the supervision of one executive is known as individual activity report.
 - (ii) *Joint Activity Report:* This report is prepared when joint efforts are made in performing the activity. When the details are necessary then they should be included in appendix. Then the results of all the joint activities are considered under the supervision of the main supervisor.

Self Assessment

Fill in the blanks:

- 10. Reports, which are prepared for the use of different levels of management and for the use of the employees are known as the reports for users.
- 11. reports are only control reports and they are required only when a control system exists.
- 12. Operating Reports convey the information regarding the of the business at different functional levels.
- 13. reports are generally meant for the external users i.e. bankers, financial institutions, shareholders and government authorities.

11.5 Modes of Reporting

There are three modes of reporting: (1) Written (2) Graphic, and (3) Oral. These reports are further divided as depicted in table 11.3.

Table 11.3: Modes of Reporting

Written	Graphic	Oral
1. Financial Statements	1. Charts	1. Group meetings
2. Tabulated Information, Conferences and Individual Talks	2. Diagram and Pictures	2. Conferences and Individual talks
3. Accounting Ratios	3. Graphs	

- 1. **Written Reports:** Written reports are prepared in the different forms to provide information. These are as follows:

Notes

- *Financial Statements:* These statements provide the information regarding the data of actual performance with budgeted figures and comparative statements containing information over a period.
 - *Tabulated Information:* Information related with expenditure, production, sales and distribution is furnished in the form of tables so that the data can easily be analysed.
 - *Accounting Ratios:* Accounting ratios play a vital role for the interpretation of accounting and financial statements. Different liquidity ratios, profitability ratios, efficiency ratios and capital structure ratios may be used for this purpose.
2. **Graphic Reporting:** Graphic reporting is very common in these days to present information to the management. These reports can be submitted in the form of graphs, diagram, pictures and charts. They are prepared when quick action is needed.
- The common charts and diagrams usually included in a report are:
- (i) *Line Graphs:* To show, for example, cumulative actual sales against budget and/or against previous year's actuals;
 - (ii) *Bar Charts:* Generally used for showing comparison of month-wise sales and expenses - budgeted and actuals;
 - (iii) *Pie Charts:* Commonly used to show in a circular diagram the distribution of the total sales revenue among costs, profits as also the total costs among the different constituent elements.
3. **Oral Reporting:** Oral reporting may take place in the form of (1) Group meeting, (2) Conferences, and (3) Individual talks. These oral meetings cannot be part of important decisions, but they furnish a common platform to discuss the problems genuinely. For decision- making the written reports have an upper hand over all types of reports.

11.5.1 Essentials of Successful Reporting

Business report is a media of communication that contains factual, correct and clear information and it should be able to add to the knowledge of the recipient. It should be easy to understand the problem of the event reported to him. Accounting reports become ideal if they follow the following guidelines:

1. **Content and the shape:** While making a draft of the report the following heads should be kept in mind:
 - *Suitable title:* Title should be short and suitable to the content.
 - *Time:* It should give time and the person for whom it is prepared.
 - *Facts:* Report should contain facts and not the opinions.
 - *Totals:* Where statistics are required, only relevant data should be provided and details may be given in appendix.
 - *Objectives:* Contents should serve the purpose for which it is prepared.
 - *Synchronise:* The contents should be in logical sequence.
2. **Precise:** Report should not be lengthy. It should be precise, specific and concise. It should not contain irrelevant matter. If details are necessary then they should be included in appendix.
3. **Accuracy:** The information provided in the reports should be accurate.

4. **Comparable:** It should be prepared in such a manner that comparison with past and predetermined standards can be made.
5. **Simple:** Report should be simple and should not contain any ambiguity.
6. **Timeliness:** Reports should be prepared and presented in time, so that decisions can be taken promptly and further deviations checked.
7. **Consistency:** For comparison consistency is necessary. Uniform system of collection, classification and presentation of the information should be followed.
8. **Attractiveness:** The report should be eye-catching in the sense that it does not go unheeded by the users.
9. **Jargon:** All technical jargon should be avoided as far as possible since the reader may not understand these and, therefore, may become hostile to even the spirit of the report.
10. **Highlighting Deviations:** Report should highlight the variations and trouble spots which are significant to the organisation.
11. **Assumptions:** Assumptions used in the preparation of reports should be stated neatly, precisely and separately.
12. **Effective Communication:** Report that communicates effectively to all levels of management stimulates action and influence decisions. Detailed planning, codification and timely processing of data are the essential requisites for effective reporting.
13. **Figures and data:** These should be presented in a tabular form preferably in annexure at the end of the report.

Self Assessment

Fill in the blanks:

14. statements provide the information regarding the data of actual performance with budgeted figures and comparative statements containing information over a period.
15. are used for showing comparison of month-wise sales and expenses – budgeted and actuals.



Case Study

Deloitte, Management Reporting

Providing Management Information Faster and more Accurately

- Do you find preparing reports requires too much manual effort?
- Is your management more concerned with who has the right numbers rather than with searching for actions to improve the company's performance?
- Does it take longer than ten working days after the period end to complete your management reports?
- Are your management reports bundled up in thick files which make it difficult to identify what is behind your organisation's poor performance?
- Do your reports provide managers with information on how the organisation complies with its strategy?

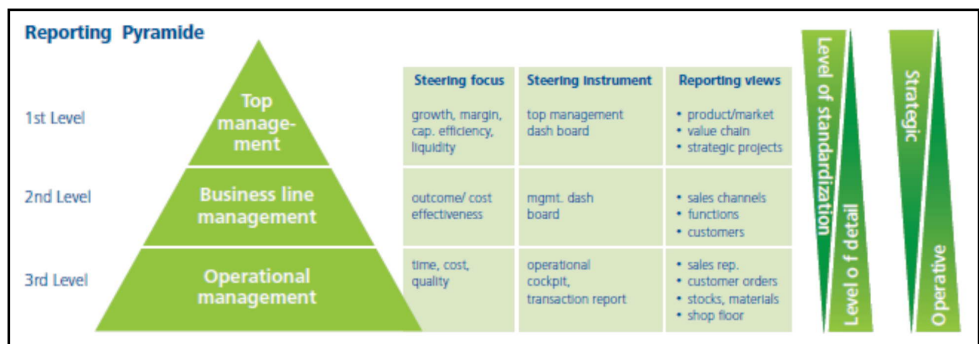
Contd...

Notes

Recent financial scandals have resulted in enormous pressure on finance divisions to provide trustful and reliable financial information, namely for external users. After restoring confidence in your company’s ability to produce reliable financial information by implementing control mechanisms such as Sarbanes-Oxley, reporting for internal management purposes becomes the focus of finance managers.

However, internal requirements vary significantly. Not only is a higher level of detail required, but the demand on speeding up the entire reporting process while maintaining its reliability and trustworthiness is also growing. This exposes finance managers to new challenges such as the need to provide consistent top quality reports designed for external users as well as detailed operating reports. Moreover, finance managers are also expected to act as strategic partners in making decisions on company projects and strategic initiatives.

External financial reporting controls are typically made in the same period when accounting books are closed and reports and analyses are prepared. The pressure on limited resources of finance department is further strengthened by increasing demands on internal support in managing company performance. Without having adequately designed process and sufficient technological support it is nearly impossible to survive in this pressure.



How to Drive More Value

A set of principles has been developed to guide our clients through successful processes of management reporting. Here are the most important of them.

Establish One Version of the Truth

Establish version and representation of the truth across the enterprise create consistent standards for report styles, content, quality timing and frequency, and design reports to focus on problem solving and decision making.

Meet Business User Needs

Ensure business user needs are met by design of management reports by providing support for the requirements of business users of the project solution.

Provide Easy to Use Reporting Capabilities

Provide reporting capabilities that are simple to use, easy to learn and contain standard tool for performing in - depth ad hoc analysis.

Distinguish between Accountability and Insight Reporting

Accountability reporting is primary intended to help management better measure performance against target, whereas, insight reporting is focused on providing information to help management better understand the business and react tactically and strategically.

Contd...

How can Deloitte help?

The scale and focus of the project may vary depending on the client needs, ranging from preparation of high level management reports in Excel focused on measuring implementation of corporate strategy (BSC approach) to large scale implementation of specialised reporting applications (i.e. Oracle, Hyperion, Cognos). Following, there are three typical examples of management reporting projects: Strategic Reporting, Fast close project and Management Information System (MIS) implementation.

Strategic Reporting gives the client information about the progress of corporate strategy implementation on a regular basis (usually monthly). The project phases are analysis of current corporate strategy, preparation of BCS map containing strategic goals and drivers, identification and definition of KPIs measuring strategic goals and drivers, design of reporting process ensuring regular information preparation and preparation of pilot reports for management.

Goal of the fast close project Reporting is to shorten the closing and reporting cycle, usually to 5th to 7th working day after month end. Typical project phases are analysis of current closing and reporting process, identification of bottlenecks and automation opportunities, support during regular monthly closure process and implementation of relevant tools (estimates, adjustments).

Management Information System (MIS) increases efficiency of management report preparation and distribution. Projects in MIS implementation consist of identification of management information needs, definition of MIS data model, selection of MIS platform, preparation of Business blueprint describing in detail calculation of KPIs from source data, implementation of MIS database and ETL routines (Extract, Transform and Load) and roll out of management reports or building a management portal.

Bottom-Line Benefits

- Correct, unambiguous and informative KPIs and reports.
- Increased efficiency of the reporting preparation and distribution process.
- Shorten time-delivery for management reporting and reduced costs.
- Improved decision support – faster and more relevant management information.
- Increased analytical capabilities and performance management support.

Questions:

1. Study and analyse the case.
2. Write down the case facts.
3. What do you infer from it?

Source: <http://www.deloitte.com/assets/Dcom-Latvia/Local%20Assets/Documents/MC%20product%20sheets/Finance%20transformation/Management-reporting-MC-products.pdf>

11.6 Summary

- One should be very clear about the objective of the report before preparing it.
- Manager should be able to clearly define and understand the problem for which the report is going to be presented.
- Needs of report differs at different management levels. So, this should be decided that which level of management will use the particular report.

Notes

- Mode of reporting is also important regarding the presentation.
- Report can be a users report or information report or any other type of report.
- Certain guiding principles such as brief, sequencing, consistency, comparability, timeliness, accuracy, attractiveness, simplicity, shape and contents are very important and these should be taken into mind while preparing a report.

11.7 Keywords

Dynamic Financial Report: The information regarding the change that took place in the position of assets and liabilities of a firm is contained in this.

Graphic Reports: Report containing information supplied in the form of charts, diagrams, pictures etc.

Information System: It is a set of elements joined together for a common objective. An information system can be defined as the means by which information is generated and communicated to managers at various levels to help them in the decision-making process.

Information: Information consists of data that have been retrieved processed or used for informative and inference purposes or as a base for forecasting or decision-making.

Operating Reports: It contains information regarding the operating of a business at different functional levels.

Reporting: It means providing information to the person concerned.

Static Financial Report: It provides information about the position of assets and liabilities of the concern.

11.8 Review Questions

1. What do you mean by accounting reports?
2. What are the different types of reports for internal use? Discuss each of them.
3. What are the special reports? What matters may be covered by the special reports?
4. Describe the reporting needs of different levels of management and how can a system of reporting satisfy it?
5. What are the essentials of a good report? Describe.
6. Explain the different types of reports that are used in an enterprise.
7. "Accounting reports are a matter of necessity for the management and not a matter of convenience." Discuss.

Answers: Self Assessment

- | | |
|-----------------------------------|---------------|
| 1. Communication | 2. Internal |
| 3. effective | 4. Accounting |
| 5. Effectiveness | 6. two |
| 7. Middle | 8. Computers |
| 9. Lower level management reports | 10. Internal |

- | | | |
|----------------|----------------|-------|
| 11. Routine | 12. Operations | Notes |
| 13. Enterprise | 14. Financial | |
| 15. Bar Charts | | |

11.9 Further Readings



Books

Bhar. K.B. (2008) *Cost Accounting, Methods & Problem*, Academic Publishers.

Lal, Jawahar & Srivastava, Seema (2009) *Cost Accounting*, 4th Edition, Tata McGraw-Hill Education.

Nigam, Lal B.M. & Jain I. C. (2001) *Cost Accounting: An Introduction*, PHI Learning Pvt. Ltd.

Thakur. S.K, (2009). *Cost Accounting: Theory and Practice*, Excel Books.



Online links

<http://financecareers.about.com/od/finance/a/Management-Reporting.htm>

<http://www.deloitte.com/assets/Dcom-Latvia/Local%20Assets/Documents/MC%20product%20sheets/Finance%20transformation/Management-reporting-MC-products.pdf>

<http://www.jstor.org/discover/10.2307/4382060?uid=3738256&uid=2129&uid=2&uid=70&uid=4&sid=21101512698073>

Unit 12: Standard Costing

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Objectives

After studying this unit, you will be able to:

- Explain the concept of standard, standard cost and standard costing;
- Discuss the advantages and disadvantages of standard costing;
- Describe the determination of standard costs;
- State the principles of analysis of variances (Material, labour and overheads).

Introduction

The success of an industrial organisation depends, to a greater extent, upon how effectively it has controlled its costs. In order to exercise proper control over the costs, historical system to costing provides a very little scope. Because, historical system to costing collects and records the costs in the various books of accounts after they have been incurred. Historical system serves only one purpose, viz., ascertainment of costs that again a post-mortem of the case. Costs in two

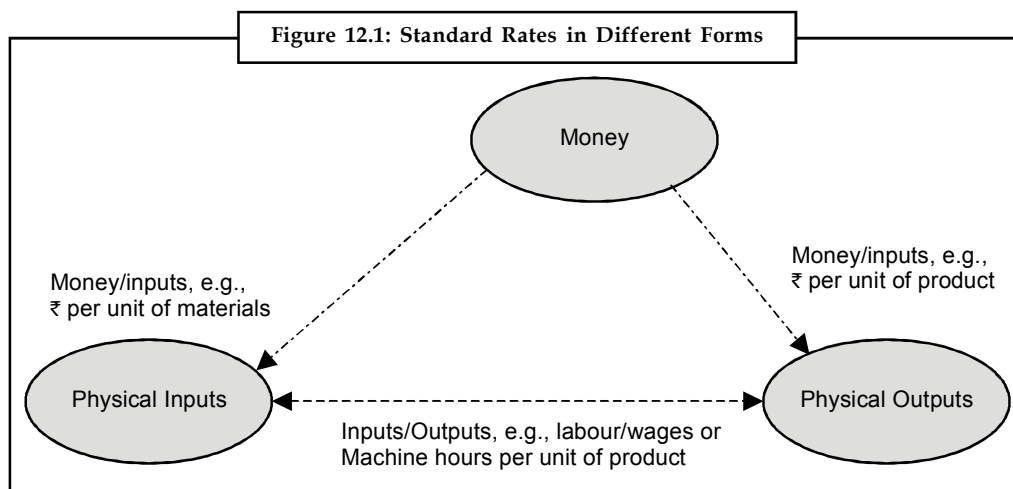
different periods or levels of activity may fluctuate widely and may adversely affect profit figure.

Historical costing does not help to detect mistakes and inefficiencies leading to variation in profit. The reasons for the cost fluctuation apart from volume variation may be detected by introduction of standard costing. Standard costing is a very important device of cost control, as it detects not only variation in volume but also variation in costs. That is to say, the standard costing will highlight what a product should cost, and the reasons for the excess of actual costs over that of what would have been. In brief, a standard costing helps in minimising costs as far as practicable to enhance efficiency in performance by setting up standard for expenses and performance of production.

12.1 Standard Cost and Standard Costing

In order to have a thorough understanding concepts related to standard cost and standard costing should be well understood. First of all, let's discuss the term 'standard'.

The standard refers to an indicator which is used to evaluate performance, quality etc. According to Eric L. Kohler, "Standard is a desired attainable objective, a performance, a good, a model." Usually, standard denotes a predetermined rate or amount against which actual performance in activity is compared as a measure to evaluate. Standard rates, that a firm or industry applies, are based on money, physical inputs and physical outputs of commodities. Standard are, therefore, set for production expenses. Thus, standard rates may be computed in three ways as shown below:



12.1.1 Standard Cost

Standard cost is a predetermined cost. It is a determination in advance of production, of what should be the cost. When standard costs are used for the purposes of cost-control, the technique is known as the standard costing. ICMA, London defines standard cost as, "A predetermined cost, which is calculated from management standards of efficient operations and, the relevant necessary expenditure. It may be used as a basis for price-fixing and for cost control through variance analysis." According to Walter Scott, "Standard costs are predetermined cost, i.e., they are costs calculated before production to cover the product to be manufactured."

According to the definitions, standard cost is a predetermined cost and refers to that amount which ought to be incurred. It is computed in advance of production on the basis of a specification of all the factors, influencing costs, required for production as inputs.

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12.1.2 Standard Costing

Standard costing is a cost accounting technique which compares the results of actual production with the basic standard, as anticipated, in terms of costs so as to determine the reasons for discrepancies between the anticipated and actual costs.

According to W W Bigg, "Standard costing discloses the cost deviations from standard and classifies these as to their causes, so the managements are immediately informed of the spheres of operations in which remedial action is necessary."

Standard costing is defined by ICMA, London terminology as, "the preparation and use of standard costs, their comparison with actual costs and the analysis of variances to their causes and points of incidence." Wheldon defines standard costing as, "a method of ascertaining the cost whereby statistics are prepared to show (a) standard cost, (b) the actual cost and (c) the difference between these costs which is termed the variance."

According to J. Batty, "Standard costing is the system of cost accounting which makes use of predetermined standard cost relating to each element of cost-materials, labour and expenses, for each line of product manufactured or service applied."

In other words, "Standard costing is a technique that uses standard costs which are predetermined and controls through detection of variances. It is an effective tool for evaluation of performances and for enforcing control over performances and costs as well involved in connection with such performances."

The technique of standard costing can be useful in all types of industries, but it is more commonly used in industries producing standardised products which are repetitive in nature.



Note Standard costing is more widely applied in process and engineering industries and is not suitable for job order industries.

Salient Features of Standard Costing

The salient features of standard costing are as follows:

- (i) Ascertainment of standard costs under each element of cost, i.e., material, labour and expenses,
- (ii) Comparison of actual cost with standard cost and finding out the variance of actual from standard,
- (iii) Recording of standard cost for various elements of total cost,
- (iv) Recording simultaneously actual cost,
- (v) Locating the factors responsible for such variances, and
- (vi) Reporting to management for taking proper action to maximise the efficiency.

Objectives of Standard Costing

The important objectives of standard costing are as follows:

- (i) The primary objective of standard costing is setting standards and requiring the personnel to achieve the predetermined aims,

- (ii) To provide a formal basis for assessing performance and efficiency,
- (iii) To exercise control over all the items of costs pertaining to production, administration, selling and distribution,
- (iv) To create cost-consciousness among the employees of the industry,
- (v) To develop team spirit among the human resources of the industry or organisation,
- (vi) To final and submit the various reports promptly to the managerial personnel regularly about the progress and also how the costs to-date compare with the corresponding standards. This is done with the objective of enabling the top management to take efficient and necessary decisions,
- (vii) To provide a basis for estimating, and
- (viii) To assists in setting budgets.

Self Assessment

Fill in the blanks:

1. denotes a predetermined rate or amount against which actual performance in activity is compared as a measure to evaluate.
2. Standard cost is a predetermined cost and refers to that amount which ought to be
3. is the system of cost accounting which makes use of predetermined standard cost relating to each element of cost-materials, labour and expenses, for each line of product manufactured of service applied.

12.2 Advantages and Disadvantages of Standard Costing

Standard costing is basically a tool of control in the hands of management. It helps management in many ways but it mainly helps in cost control and cost reduction. It also aids in evaluating the performance, measuring the efficiency and making correct predications.

In order to reap the full advantages or benefits of standard costing, the business organisation should also keep some points in their mind. These can be considered as precautions to be taken while adopting standard costing technique. If a business organisation fails to take note of these, the same will act as limitations or disadvantages.

12.2.1 Advantages of Standard Costing

The following are the advantages of standard costing:

- (i) Standard costing provides a valuable guidance to management in several managerial functions, such as in formulating policies, in determining prices, etc.,
- (ii) Standard costing helps to pinpoint the responsibility of variation in the cost. The system also identifies the specific reason therefore so that prompt remedial action could be taken,
- (iii) Standard costing, due to the stress of the standard cost and variance analysis, makes the whole industry or business organisation cost conscious, workers and foremen are encouraged to realise the importance of efficient operations,

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- (iv) Stock can be valued at standard cost and this will in turn reduce fluctuation of profits due to adoption of different methods for stock valuation,
- (v) It facilitates timely cost reports to management and a forward looking mentality is encouraged at all levels of the management. It is a basis for the implementation of an incentive system or method for the employees,
- (vi) It helps to exercise control over the costs as the variances can regularly be ascertained and corrective measures can be initiated at the right time,
- (vii) It helps to promote the labour efficiency and productivity,
- (viii) Management by exception is possible, since it is possible to separate the efficient from in efficient operations,
- (ix) Standard costing is of immense benefit for cost audit since if variances are satisfactorily explained, the accuracy of costing can be safely assumed,
- (x) Standard costing provides faster reporting of operating data. It is most important due to the fact that the value of any information declines as it relates to a period farther and farther in the past,
- (xi) Standard costing provides a common denominator for comparison between one period to another,
- (xii) Standard costing provides a stable product cost per unit. The actual cost of a product may vary from period to period due to many reasons. It cannot be used as a basis of price fixation of a product,
- (xiii) Standard costing helps in business or organisation planning, budgeting and marginal costing. It is very useful in planning and budgeting,
- (xiv) Standard costing simplifies the cost control procedure as the figures for control purposes are easily and directly obtained. Thus, there is saving in the accounting computation,
- (xv) It facilitates to reduce clerical and accounting cost and managerial time,
- (xvi) It reduces avoidable wastages and losses, and
- (xvii) Standard costing highlights areas of strengths and weakness.

12.2.2 Disadvantages or Limitations of Standard Costing

As every coin has two sides, standard costing is not bereft of disadvantages. The following are its limitations:

- (i) Ascertainment of standards requires high degree of technical skill and is, therefore, costly. That is why, small business organisations may find it difficult to establish standard costing owing to their limited financial resources,
- (ii) Standard costing is applied for planning and controlling manufacturing costs. Thus, it cannot be applied in a service organisation or industry,
- (iii) The managerial executives can only be held responsible for variances if such variances arise from actions which can be controlled by them. This means that for fixing responsibilities. The controllable and non-controllable portions of the variances should be separated. But the segregation of variances into controllable and non-controllable portions may often become a difficult task,
- (iv) Another disadvantage or limitation relates to the reliability of the standard set—both from the difficulty of establishing the standard and subsequently maintaining its accuracy,

- (v) Standard costing is not suitable for all types of business organisation. If the organisations deal with non-standardised products and jobs, they may find the system of standard costing unsuitable, and
- (vi) There may be an increase in the non-productive activities, e.g., measuring work, compiling forms, reporting of variances etc.

Self Assessment

Fill in the blanks:

4. Standard costing does not help in pinpointing the responsibility of in the cost.
5. Standard costing is applied for and controlling manufacturing costs.

12.3 Determination of Standard Costs

Setting up a standard costing system in an organisation, the following preliminary steps should be carefully considered on the basis of technical and operational aspects of the organisation, manufacturing industry and organisation process etc.

1. Establishment of Cost Centre,
 2. Classification and Codification of Accounts,
 3. Types of Standards, and
 4. Setting the Standards.
1. **Establishment of Cost Centre:** Cost centre has been defined as "A location, person or item of equipment (or group of these) in respect of which costs may be ascertained and related to cost units." The organisation or industry should be divided into cost centres so that responsibilities may be fixed and line of authority may be defined. An officer acting in charge of a cost centre should be conversant with his responsibility and the cost to be controlled by him.
 2. **Classification and Codification of Accounts:** Accounts are to be classified in order to facilitate collection and analysis. With this end in view, codes may be used. A code is a symbolic representation of any particular item of information. For example,

Direct materials	01 - 10
Direct labour	11 - 19
Direct expenses	20 - 29
Indirect materials	30 - 39
Indirect labour	40 - 49
Indirect expenses	50 - 59
 3. **Types of Standards:** Usually, the following standards are often found to be operative in the standard costing technique. Such standards are:
 - (i) **Basic Standard:** The terminology of ICMA defines basic standard as "A standard established for use over a long period from which a current standard can be developed."

Basic standard is standard established for use over a long period from which a current standard can be developed. The main disadvantage of basic standard is that

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because it has remained unaltered over a long period of time, it may be out of date. The main advantage is in showing the changes in trend of price of product and efficiency from year to year.

- (ii) *Current Standard:* According to ICMA, it is "A standard which is established for use over a short period of time and is related to current conditions."

Current standard is a standard established for use over a short period of time, related to current conditions. The problem with this type of standard is that it does not try to improve on current levels of efficiency.

- (iii) *Ideal Standard:* The terminology of ICMA defines ideal standard as, "A standard which can be attained under most favourable conditions. No provision is made, for example, for shrinkage, spoilage or machine breakdowns. Users believe that the resulting unfavourable variances will remind management of the need for improvement in all phases of operations. Ideal standards are not widely used in practice because they may influence employee motivation adversely."

Ideal conditions are seldom found to prevail. Consequently, if actual outcome is compared with a standard based on this concept, it would give rise to large adverse variances. This would have an adverse effect on the motivation, productivity and satisfaction of the employees. Generally, it is not used in practice as the information generated by a standard costing system using this standard has no practical utility.

- (iv) *Attainable Standard:* Attainable standard is a standard which can be attained if a standard unit of work is carried out efficiently, on a machine properly utilised or material properly used. Allowances are made for normal shrinkage, waste and machine breakdowns. The standard represents future performance and objectives which are reasonable attainable. Besides having a desirable motivational impact on employees, attainable standards serve other purposes, e.g., inventory valuation, cash budgeting and budgeting departmental performance. If correctly set attainable standards are the best type of standard to use, since they provide employees with a realistic target. Attainable standards have the greatest motivational impact on the workforce.

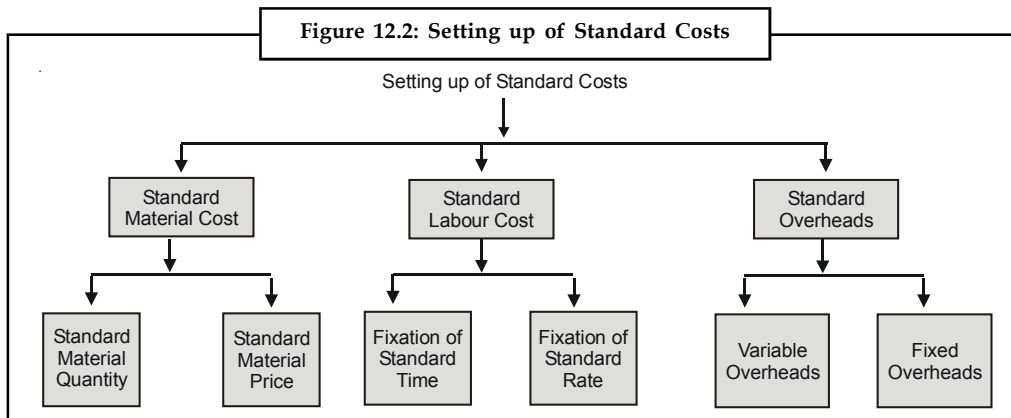
- 4. *Setting the Standards:* After choosing the standard, the setting of standard is vested with the standard committee. It is similar to the budget committee. It consists of:

- (i) The purchasing manager,
- (ii) The production manager,
- (iii) The production engineer,
- (iv) The personnel manager,
- (v) The sales manager, and
- (vi) The cost accountant and other functional heads of the organisation.

The cost accountant is more important than the others and he has to supply the necessary cost figures and coordinate the activity committee. He must ensure that the setting standards are accurate.

12.3.1 Setting up of Standard Costs

Standards in respect of various elements of costs and the process of their establishment only have been discussed here. Normally, standard costs are set in respect of the following:



(i) **Standard Material Cost:** The cost of materials for any product depends upon the quantity of materials and prices of materials. The setting of standard costs for direct materials involves:

- (a) Standard material quantity, and
- (b) Standard material price.

Standards set in respect of all these two combined together shall give standard values or costs of materials. Thus,

$$\text{Standard Cost of Material} = \text{Standard quantity} \times \text{Standard price}$$

$$\text{OR} \quad \text{SCM} = \text{SQ} \times \text{SP}$$

(ii) **Standard Labour Cost:** The standard labour cost is equal to the standard time for each operation multiplied by the standard labour rate. Setting of standard cost of direct labour involves:

- (a) Fixation of standard time, and
- (b) Fixation of standard rate.

Standard labour time or hours and standard labour rate will give standard labour cost. Thus,

$$\text{Standard Labour Cost} = \text{Standard labour hours} \times \text{Standard labour rate}$$

$$\text{OR} \quad \text{SLC} = \text{SH} \times \text{SR}$$

(iii) **Standard Overheads:** Setting of standard cost of overheads involves:

- (a) Determination of standard overhead costs,
- (b) Estimation of production, and
- (c) Computations of standard overhead rate are the problems of the fixation of standard overhead cost.

Overheads are divided into fixed, variable and semi-variable. Standard overhead rate is determined for these on the basis of past records and future trend of prices. It is calculated for a unit or for an hour.

$$\text{Standard Variable Overhead Rate} = \frac{\text{Standard variable overhead for the budget period}}{\text{Budgeted production units or budgeted hours for the budgeted period}}$$

Notes

$$\text{Standard Fixed Overhead Rate} = \frac{\text{Standard overheads for the budget period}}{\text{Budgeted production units or budgeted hours for the budgeted period}}$$

Standardisation of overhead costs can be done with reference to a particular level of activity.

12.3.2 Standard Hour

Standard hour is the quantity of output, or an amount of work, performed in one hour. The ICMA defines standard hour as, "The quantity of work achievable at standard performance expressed in term of a standard unit of work in a standard period of time."

The standard hour is a convenient measure of production. Whatever may be the type of product or their unit of measurement (e.g., units, tonne, kilogram, gallon, dozen, litres etc.) the standard hour is capable of measuring them. It is also useful in ascertaining overhead variances.

12.3.3 Revision of Standards

Standard cost is the resultant effect of a number of factors that vary from time to time in different situations, both internal and external. Standard cost may be established for a period – indefinite period. There are no definite rules fixed for the selection of a particular period. If the standard are fixed for a short period, it is expensive and frequent revision of standards will impair the utility and purpose for which standard is set. At the same, if the standard is set for a longer period or time, it may not be useful particularly in the days of high inflation and large fluctuations of rates in case of materials and labour. Standard may become unrealistic with the changing conditions, needs revision. Without revision, the standards become outmoded. If the changes are of an ad-hoc or temporary or minor nature, it is not advisable to revise the standards. Current standards are reviewed every year at the beginning of the accounting period under the following circumstances:

1. Changes in price level of materials, labour and overheads,
2. Change in specifications or designs of product,
3. Change in method or technique of production,
4. Errors in setting the standards, and
5. Technological advancement etc.

Apart from the above, basic standards are revised in the course of time under the following circumstances, when:

- (a) Plant capacity is changed,
- (b) There are permanent changes in the method or technique of production, and
- (c) There is a large variation between the standard and the actual.

12.3.4 Standard Cost Card or Standard Cost Sheet

On standard being established for each element of cost for a product, it is recorded in a card or sheet. This card or sheet is known as standard cost card or standard cost sheet. Thus, a standard cost card is a record of the standard material, labour, overhead costs. Standard card reveals the specified production or units, the quantity and price of each type of material consumed, the time and rate of labour to be employed, the overheads to be absorbed and the total costs.

Notes

A standard cost card or sheet should be used for each or every product showing total standard cost of output comprising various elements of costs. A specimen of standard cost card or standard cost sheet is given below:

Figure 12.3: Specimen of Standard Cost Card

Name of Product :		No. :		
Description :		Date of Setting Standard :		
S.No.	Particulars	Quantity or Hour	Rate (₹)	Standard Cost (₹)
(a)	Direct materials			
	Material - M	---	---	---
	Material - N	---	---	---
		---		---
	Less : Normal loss	---	Scrap value	---
	Normal Output	---		---
(b)	Direct labour	---	---	---
(c)	Overheads :			
	Fixed	---	---	---
	Variable	---	---	---
	Total Cost			---
	Profit			---
	Selling Price			---

Important Calculations:

- $$(1) \text{ Standard Cost Per Unit} = \frac{\text{Total cost}}{\text{Output}}$$
- $$(2) \text{ Standard Selling Price per Unit} = \text{Standard Cost per Unit} + \text{Profit per Unit}$$

Problems in Setting Standard Costs

The problems involved in setting standard costs, apart from the inevitable problems of forecasting errors, include the following:

1. The cost of setting up and maintaining a system for establishing standards,
2. Deciding how to incorporate inflation into planned unit costs,
3. Deciding on the quality of materials to be used, because a better quality of material will cost more, but perhaps reduce material wastage,
4. Estimating materials prices where seasonal price variations or bulk purchase discounts may be significant,
5. Deciding on the appropriate mix of component materials, where some change in the mix is possible,
6. Agreeing a labour efficiency standard, and
7. Possible behavioural problems. Managers responsible for the achievement of standards might resist the use of a standard costing control system for fear of being blamed for any adverse variances.

Notes

Self Assessment

Fill in the blanks:

6. has been defined as "A location, person or item of equipment (or group of these) in respect of which costs may be ascertained and related to cost units."
7. standard is a standard established for use over a short period of time, related to current conditions.
8. Ideal Standard is a standard which can be attained under most conditions.
9. standard is a standard which can be attained if a standard unit of work is carried out efficiently, on a machine properly utilised or material properly used.
10. The standard is a convenient measure of production.
11. Standard is the resultant effect of a number of factors that vary from time to time in different situations, both internal and external.

12.4 Analysis of Variances

When a comparison between the actual and the standard is made, some difference is normally found. The difference between the actual and the standard is called variance. When actual cost is less than standard cost or actual result is better than standard result, it is known as favourable variance. On the other hand, when actual cost exceeds standard cost or actual result is not up to standard, it is known as unfavourable or adverse variance. In accounting language, the unfavourable and favourable variances are known as debit and credit variances respectively. The analysis of variance will help to pinpoint responsibilities.



Example: The purchase manager will be held responsible for unfavourable material price variance, the production manager for unfavourable material usage variance, the sales manager for unfavourable sales volume variance, etc.

12.4.1 Principles of Analysis of Variance

A number of principles must be borne in mind at the time of calculation of standard cost variances. These are as follows:

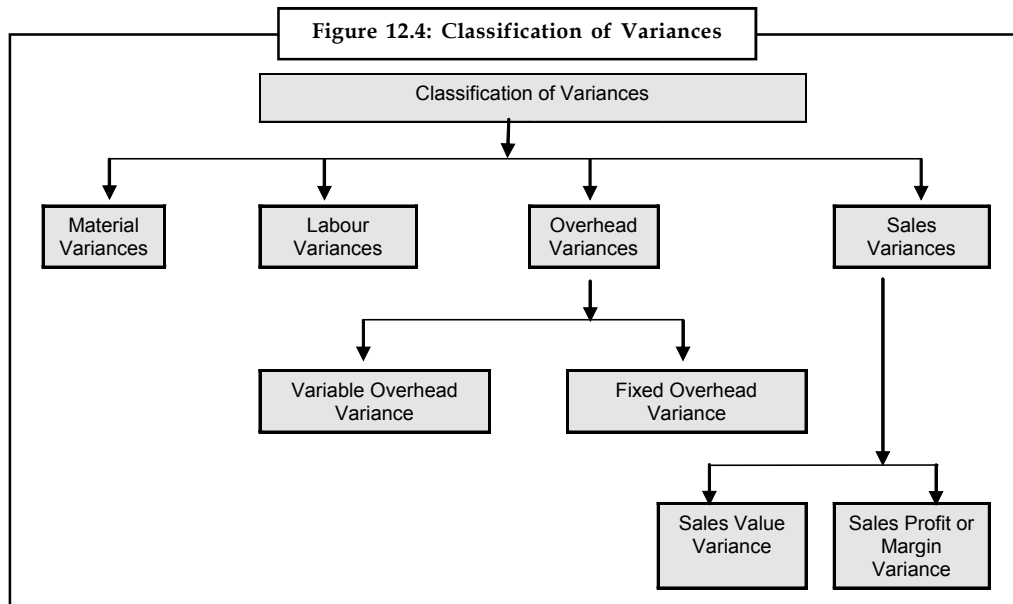
- (a) Variances should be stated in monetary terms. In other words, it should be expressed in the currency,
- (b) Variances should be analysed product-wise. In other words, it should be calculated for each product,
- (c) Variances could be favourable or unfavourable (adverse), and
- (d) Total cost variance happens to be the difference between the standard cost of actual output and the actual cost incurred.

12.4.2 Classification and Computation of Variances

The classification and computation of variances are the objectives of standard costing. Variances can be found out with respect to all the elements of cost, i.e., direct material, direct labour and overheads. For understanding of the classification and computation of variances, variances are classified into the following:

1. Material Variances,

2. Labour Variances,
3. Overhead Variances, and
4. Sales Variances.



Each of these variances is discussed elaborately in the following paragraphs:

Material Variances

In case of materials, the following may be the variances:

- (i) Material Cost Variance,
- (ii) Material Price Variance,
- (iii) Material Usage or Quantity Variance,
- (iv) Material Mix Variance, and
- (v) Material Sub-Uses or Yield Variance

The following figure shows the division and subdivision of material variances:

- (i) **Material Cost Variance:** The material cost variance is also called material total variance. Material cost variance is the difference between the standard cost of actual production and the actual cost of materials used. The material cost variance is calculated as follows:

$$\text{Material Cost Variance} = \text{Standard cost of materials} - \text{Actual cost of materials used}$$

$$\text{OR } \text{Material Cost Variance} = \text{Material price variance} + \text{Material usage or quantity variance}$$

$$\text{OR } \text{Material Cost Variance} = \text{Material price variance} + \text{Material mix variance} + \text{Material yield variance}$$

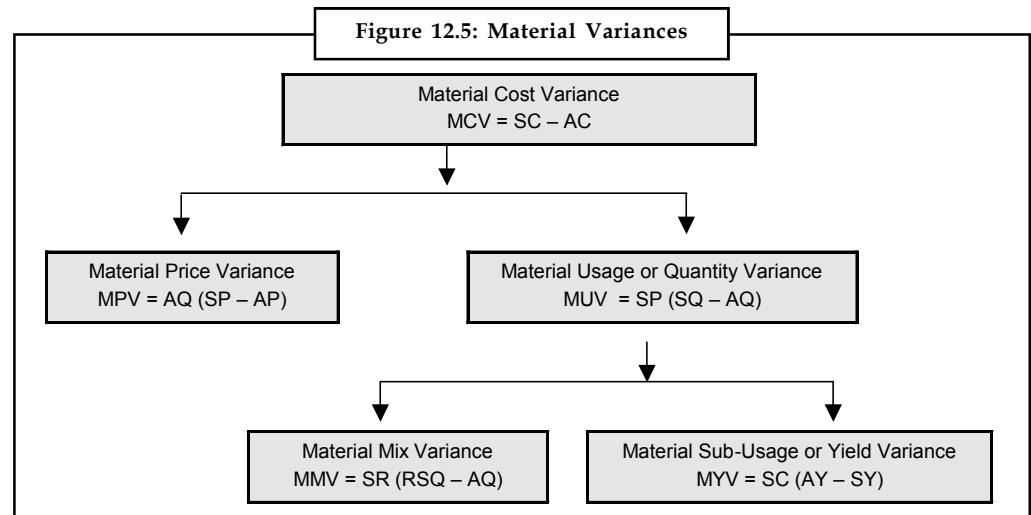
$$\text{OR } \text{Material Cost Variance} = \text{Standard cost of actual output} - \text{Actual cost}$$

$$\text{OR } \text{Material Cost Variance} = (\text{Standard quantity for actual output} \times \text{Standard price}) - (\text{Actual quantity} \times \text{Actual price})$$

$$\text{OR } \text{MCV} = (\text{SQ} \times \text{SP}) - (\text{AQ} \times \text{AP}) \quad \text{OR} \quad \text{MCV} = \text{SC} - \text{AC}$$

Notes

If the standard cost is more than the actual cost, the variance will be favourable and on the other hand, if the actual cost is more than the standard cost, the variance will be adverse or be unfavourable.



- (ii) **Material Price Variance:** The material price variance is the difference between the standard price and the actual purchase price for each unit of material multiplied by the actual quantity of material purchased.

It is preferable to base the price variance on the actual quantity of material purchased and not on the actual quantity used in order that price variances can be reported for control purposes as soon as possible i.e., when the materials are purchased. Material price variance is calculated as follows:

$$\text{Material Price Variance} = \text{Actual quantity} \times (\text{Standard price} - \text{Actual price})$$

OR $MPV = AQ \times (SP - AP)$

If actual price is more than standard price, there will be unfavourable or adverse variance and when actual price is less than standard price, the variance will be favourable.

Material price variance may be due to a number of reasons, e.g.,

- (a) Quality of materials being different from that of standard,
- (b) Changes in price policies,
- (c) Changes in the inward transport charges, and
- (d) Failure to obtain quantity discounts resulting in higher prices.

- (iii) **Material Usage or Quantity Variance:** It indicates the deviation caused from the standard due to difference in quantities used. It is that portion of the material cost variance which is due to the difference between the standard quantity of materials specified for the actual output and the actual quantity of materials used. It is calculated by multiplying the standard price with the difference between the actual and standard quantities. It may be expressed as:

$$\text{Material Usage Variance} = \text{Standard price} \times (\text{Standard quantity for actual output} - \text{Actual quantity})$$

OR $MUV = SP \times (SQ \text{ for actual output} - AQ)$

If actual quantity is less than standard quantity, there will be favourable variance. Otherwise, the variance will be adverse or unfavourable.

Notes

There may be a number of causes which may lead to usage or quantity variance. Some of them are mentioned below:

- (a) Changes in specifications or design of product,
- (b) Use of different grades of materials,
- (c) Change in labour performance,
- (d) Use of non-standard material mix,
- (e) Lack of proper tools and machines,
- (f) Defective production requiring further materials for rectification, and
- (g) Accounting errors.

The material usage or quantity variance can be further sub-divided into material mix variance and material yield variance.

- (iv) **Material Mix Variance:** It is that portion of the material usage variance which is due to the difference between standard and the actual composition of a mixture. In other words, this variance arises because the ratio of materials being changed from the standard ratio set. It is calculated as the difference between the standard price of standard mix and the standard price of actual mix.

This variance arises only when two types of materials are required to be consumed to produce a commodity. This can be computed as below:

- (a) When actual weight of mix and standard weight of mix are the same:

$$\text{Material Mix Variance} = \text{Standard rate} (\text{Standard quantity} - \text{Actual quantity})$$

If the standard is revised due to shortage of a particular type of material, the material mix variance is calculated as follows:

$$\text{Material Mix Variance} = \text{Standard rate} (\text{Revised standard quantity} - \text{Actual quantity})$$

$$\text{OR } \text{MMV} = \text{SR} (\text{RSQ} - \text{AQ})$$

$$\text{Revised Standard Quantity} = \frac{\text{Total weight of actual mix}}{\text{Total weight of standard mix}} \times \text{Standard quantity}$$

- (b) When the actual weight of mix and standard weight of mix differ from each other:

Material Mix Variance =

$$\left[\frac{\text{Total weight of actual mix}}{\text{Total weight of standard mix}} \times \text{Revised standard cost of standard mix} \right] - \text{Standard cost of actual mix}$$

If actual quantity is lower than RSQ, the variance will be favourable, otherwise, it is adverse.

- (v) **Material Sub-Usage Variance:** If there is difference between standard quantity for actual output (as used in usage variance) and revised standard quantity (as used in mix variance), their variance will be known as material sub-usage variance or material revised usage variance.

Notes



Caution It is clear that if there is no difference between standard quantity and revised standard quantity, there will be no revised usage variance. Revised usage and sub-usage variance will be calculated for each item of material used in the mix separately.

Material Sub-Usage or Revised Usage Variance = Standard price (Standard quantity for actual output - Revised standard quantity)

OR $MSUV = SP (SQ - RSQ)$

Material Yield Variance

It is that portion of the direct material usage variance which is due to the difference between the standard yield specified and the actual yield obtained. The variance arise is due to abnormal contingencies like spoilage, chemical reaction etc. Yield variance is also known as scrap variance or waste variance.

(a) When actual mix and standard mix are the same:

Material Yield Variance = Standard yield rate (Standard yield - Actual yield)

OR Material Yield Variance = Standard revised rate (Actual loss - Standard loss)

Here, Standard Yield Rate = $\frac{\text{Standard cost of standard mix}}{\text{Net standard output}}$

Net Standard Output = Gross output - Standard loss

(b) When the actual mix and the standard mix differ from each other:

Material Yield Variance = Standard rate (Actual standard yield - Revised standard yield)

Here, Standard Rate = $\frac{\text{Standard cost of revised standard mix}}{\text{Net standard output}}$

In case, actual yield is more than the standard yield, the material yield variance is favourable and, if the actual yield is less than the standard yield, the material yield variance is adverse or unfavourable.

Problem 1:

The standard material required manufacturing one unit of product A is 10 Kg. and the standard price per Kg. of material is ₹ 2.50. The cost accounts records, however, reveal that 11,500 Kg. of materials costing ₹ 27,600 were used for manufacturing 1,000 units of product A. Calculate the material cost, material price and material usage variances.

Solution:

Standard price of material per Kg. = ₹ 2.50

Standard usage per unit of Product A = 10 Kg.

∴ Standard usage for an actual output of 1,000 units of product A = 1,000 × 10 Kg. = 10,000 Kg.

Actual usage of material = 11,500 Kg.

Actual cost of materials = ₹ 27,600

Actual price of material per Kg. = $\frac{27,600}{11,500} = ₹ 2.40$

(i) Material Cost Variance:

$$\begin{aligned} \text{MCV} &= \text{Standard cost of material} - \text{Actual cost of material} \\ &= (10,000 \text{ Kg.} \times ₹ 2.50) - (11,500 \text{ Kg.} \times ₹ 2.40) \\ &= ₹ 25,000 - ₹ 27,600 \\ &= ₹ 2,600 \text{ (Adverse)} \end{aligned}$$

(ii) Material Price Variance:

$$\begin{aligned} \text{MPV} &= \text{Actual quantity (Standard price} - \text{Actual price)} \\ &= 11,500 \text{ Kg.} (₹ 2.50 - ₹ 2.40) \\ &= 11,500 \times 0.10 \\ &= ₹ 1,150 \text{ (Favourable)} \end{aligned}$$

(iii) Material Usage Variance:

$$\begin{aligned} \text{MUV} &= \text{Standard price (Standard quantity} - \text{Actual quantity)} \\ &= ₹ 2.50 (10,000 \text{ Kg.} - 11,500 \text{ Kg.}) \\ &= 2.50 \times 1,500 \\ &= ₹ 3,750 \text{ (Adverse)} \end{aligned}$$

Verification:

$$\begin{aligned} \text{Material cost variance} &= \text{Material price variance} + \text{Material usage variance} \\ ₹ 2,600 \text{ (Adverse)} &= ₹ 1,150 \text{ (Fav.)} + 3,750 \text{ (Adverse)} \\ ₹ 2,600 \text{ (Adverse)} &= ₹ 2,600 \text{ (Adverse)} \end{aligned}$$

Labour Variances

The labour variances can be computed and analysed in the same way as material variances have been carried out. Labour variances can be analysed in the following way:

- (i) Labour Cost Variance,
- (ii) Labour Rate Variance,
- (iii) Labour Efficiency or Time Variance,
- (iv) Labour Mix Variance,
- (v) Labour Idle Time Variance, and
- (vi) Labour Yield Variance.

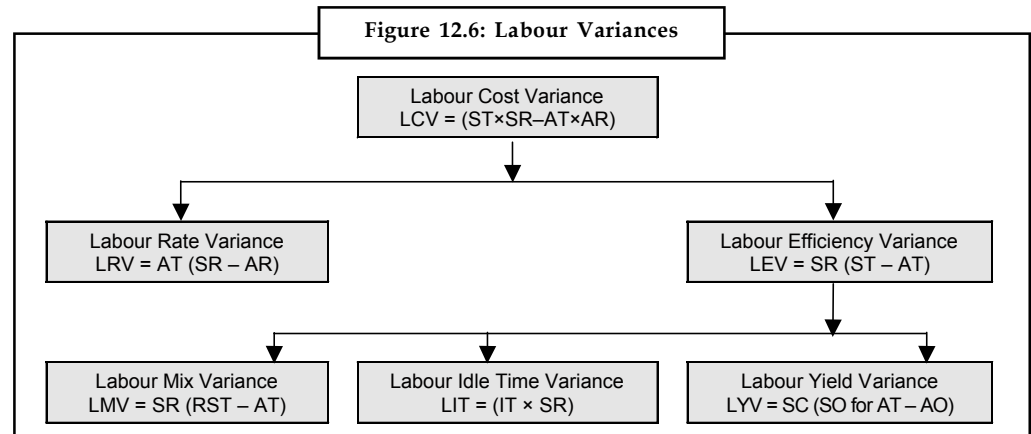
The following figure shows the division and subdivision of labour variances:

- (i) **Labour Cost Variance:** Labour cost variance represents the difference between the standard labour costs and the actual labour costs. The terminology of ICMA defines labour cost variance as, "the difference between the standard labour cost and actual labour cost incurred for the production achieved". Labour cost variance can be calculated with the help of the following formula:

$$\begin{aligned} \text{Labour Cost Variance} &= \text{Standard cost of labour} - \text{Actual cost of labour} \\ \text{LCV} &= (\text{Standard time} \times \text{Standard rate}) - (\text{Actual time} \times \text{Actual rate}) \\ \text{OR} \quad \text{LCV} &= (\text{ST} \times \text{SR}) - (\text{AT} \times \text{AR}) \end{aligned}$$

Notes

If the actual labour cost is lower than the standard labour cost, the variance is favourable. On the other hand, if the actual labour cost is higher than the standard labour cost, the variance will be adverse.



- (ii) **Labour Rate Variance:** It is the difference between the standard and the actual direct labour rate per hour for the total hours worked. ICMA defines labour rate variance as, “the portion of the wages variance which is due to the difference between the standard rate specified and actual rate paid.” This variance is similar to material price variance; labour rate variance is calculated as follows:

$$\text{Labour Rate Variance} = \text{Actual time} \times (\text{Standard rate} - \text{Actual rate})$$

$$\text{OR } \text{LRV} = \text{AT} \times (\text{SR} - \text{AR})$$



Did u know? If the actual rate is lower than the standard rate, the variance is favourable. Otherwise, the variance will be adverse.

Labour rate variance may arise due to any one of the following reasons:

- (a) Payment at a rate higher or lower than the standard rate,
 - (b) Change in the method of payment of remuneration,
 - (c) Grades of employees changed, and
 - (d) Inclusion of new workmen.
- (iii) **Labour Efficiency Variance:** The labour efficiency variance is the difference between the actual hours taken to produce the actual output and the standard hours that this output should have taken, multiplied by the standard rate per hour. The terminology of ICMA defines labour efficiency variance as, “the difference between the standard hours for the actual production achieved and the hours actually worked, valued and the standard labour rate”. This variance can be calculated with the help of the following formula:

$$\text{Labour Efficiency Variance} = \text{Standard rate} \times (\text{Standard time} - \text{Actual time})$$

$$\text{OR } \text{LEV} = \text{SR} \times (\text{ST} - \text{AT})$$

If actual time is less than standard time or actual production is more than standard production, the variance will be favourable and vice-versa.

The variance may be favourable or adverse because of the following reasons:

Notes

Favourable Reasons:

- (a) Improved method of production,
- (b) Employment of more efficient workers,
- (c) Introduction of new and improved tools,
- (d) Good working condition,
- (e) Use of best quality materials, and
- (f) Right man at right work.

Adverse Reasons:

- (a) Unsatisfactory working conditions,
- (b) Improper supervision,
- (c) Employment of less skilled workers,
- (d) Less material specification leading to difficulty in operation,
- (e) Inferior quality of materials,
- (f) Lack of cooperation between labours, and
- (g) Failure of power supply during the working hours.

- (iv) **Labour Mix Variance:** This variance is similar to material mix variance and it arises whenever there is a deviation in the grade of labour employed from the standard labour mix. That means, when the actual composition of labour force is not in accordance with the standard mix, this variance arises. It is calculated as below:

Labour Mix Variance = Standard rate × (Revised standard time - Actual time)

OR $LMV = SR (RST - AT)$

Revised Standard Time = $\frac{\text{Total actual time}}{\text{Total standard time}} \times \text{Standard time}$

- (v) **Labour Idle Time Variance:** The idle time variance represents the difference between hours paid and hours worked, i.e., idle hours multiplied by the standard wage rate or labour rate per hour. This variance may arise due to illness, machine breakdown, holdups on the production line because of lack of material. The formula is:

Labour Idle Time Variance = Abnormal idle time × Standard rate per hour

OR $LITV = IT \times SR$

Idle time variance will be always unfavourable or adverse.

- (vi) **Labour Yield Variance:** It is similar to material yield variance. It is the difference between the standard labour output and actual output or yield. It is calculated as below:

Labour Yield Variance = Standard cost per unit × (Standard output for actual time - Actual output)

OR $LYV = SC \times (SO \text{ for } AT - AO)$

If the actual production is more than standard production, it would result in a favourable variance and vice-versa.

Notes

Problem 2:

Given the following particulars, calculate the labour variances.

Standard hours : 40 @ ₹ 3 per hour

Actual hours : 50 @ ₹ 4 per hour

Solution:

- (a) Labour Cost Variance = (ST × SR) - (AT × AR)
 $LCV = (40 \times 3) - (50 \times 4) = 120 - 200$
 $LCV = ₹ 80$ (Adverse)
- (b) Labour Rate Variance = AT (SR - AR)
 $LRV = 50 (3 - 4) = 50 \times 1$
 $LRV = ₹ 50$ (Adverse)
- (c) Labour Efficiency Variance = SR (ST - AT)
 $LEV = 3 (40 - 50) = 3 \times 10$
 $LEV = ₹ 30$ (Adverse)

Verification:

$$LCV = LRV + LEV$$

$$₹ 80 (A) = ₹ 50 (A) + ₹ 30 (A)$$

Problem 3:

Find out different labour variances.

	Standard	Actual
Output	1,000 units	1,200 units
Rate of payment	@ ₹ 6 per unit	Wages paid with bonus ₹ 8,000
Time taken	50 hours	40 hours

Solution:

- (1) Calculation of Standard Rate and Actual Rate

$$SR = \frac{1,000 \times 6}{50} = ₹ 120 \text{ per hour}$$

$$AR = \frac{8,000}{40} = ₹ 200 \text{ per hour}$$

- (2) Calculation of Standard Hours for 1,200 Units Actually Produced:

$$SH = \frac{50}{1,000} \times 1,200 = 60 \text{ hours}$$

- (a) Labour Cost Variance = (ST × SR) - (AT × AR)
 $LCV = (60 \times 120) - (40 \times 200)$
 $LCV = 7,200 - 8,000$
 $LCV = ₹ 800$ (Adverse)

- (b) Labour Rate Variance = AT (SR - AR)
- $$\text{LRV} = 40 (120 - 200) = 40 \times 80$$
- $$\text{LRV} = ₹ 3,200 \text{ (Adverse)}$$
- (c) Labour Efficiency Variance = SR (ST - AT)
- $$\text{LEV} = 120 (60 - 40) = 120 \times 20$$
- $$\text{LEV} = ₹ 2,400 \text{ (Favourable)}$$

Notes

Verification:

$$\text{LCV} = \text{LRV} + \text{LEV}$$

$$₹ 800 \text{ (A)} = ₹ 3,200 \text{ (A)} + ₹ 2,400 \text{ (F)}$$

Overhead Variances

As is known very well, overhead expenses include indirect material cost, indirect labour cost and other indirect expenses. These expenses pertain to all the three major functions of the company. Overhead variances therefore relate to production overhead expenses, administrative overhead expenses, selling and distribution overhead expenses. It may be noted here that these expenses include both variable and fixed elements. For the purpose of computing overhead variances, overhead expenses are classified into variable and fixed overhead expenses on the basis of their behaviour to the levels of activity.

Overhead Cost Variance

Overhead cost variance can be defined as the difference between the standard cost of overhead allowed for the actual output and the actual cost of overhead incurred for the actual output achieved. Overhead cost variance may be either 'under absorption of overheads' or 'over absorption of overheads'. The formula used for calculating overhead cost variance is as follows:

$$\text{Overhead Cost Variance} = (\text{Actual output} \times \text{Standard overhead rate per hour}) - \text{Actual overhead cost}$$

OR

$$\text{OCV} = (\text{Standard hours for actual output} \times \text{Standard overhead rate per hour}) - (\text{Actual overhead cost})$$

Overhead variances are divided into two broad categories:

1. Variable Overhead Variance, and
2. Fixed Overhead Variance.

The following figure shows the division and subdivision of overhead variances:

1. **Variable Overhead Variance:** The variable overhead variance is a total or aggregate variance and does not tell us much about the causes of variance. It is the difference between the standard variable overhead allowed for actual production and the actual variable overhead incurred. The method of computation is as follows:

$$\text{Variable Overhead Variance} = (\text{Standard variable overhead rate} \times \text{Actual production}) - (\text{Actual variable overhead})$$

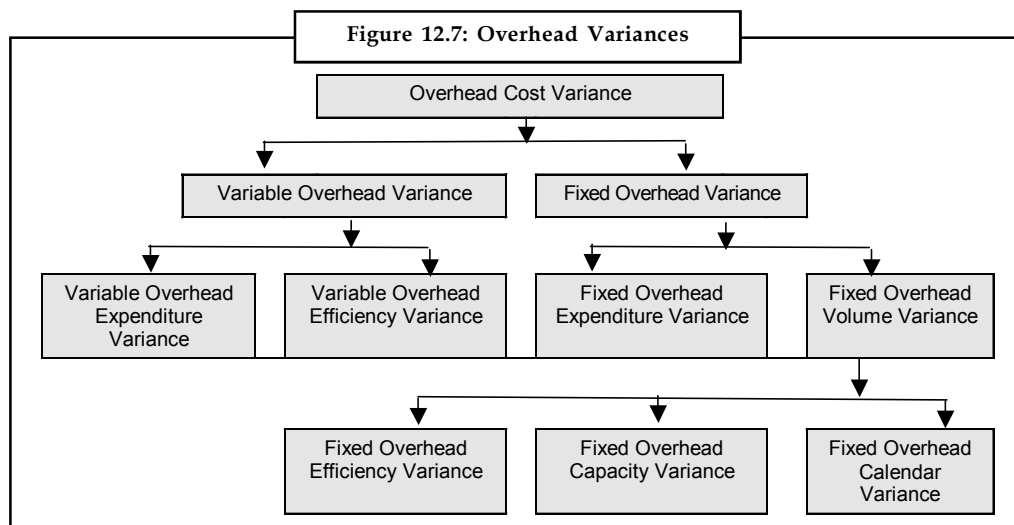
OR

$$\text{VOV} = (\text{Standard variable overhead}) - \text{Actual variable overhead}$$



Note Standard Variable Overhead Rate = OR VOV = Variable overhead expenditure variance + Variable overhead efficiency variance

Notes



The variable overhead variance may be classified into the following types for the purpose of planning and control:

- (a) Variable Overhead Expenditure Variance, and
- (b) Variable Overhead Efficiency Variance.

(a) *Variable Overhead Expenditure Variance:* Variable overhead expenditure variance is the difference between the standard variable overhead rate and the actual variable overhead rate duly multiplied by actual hours. It highlights the cost incidence of the difference between the expenditure allowed and the actual expenditure incurred.

Variable overhead expenditure variance represents efficiency in the use of services or excess costs. An unfavourable variance indicates excessive use of services or increase in the cost of services. On the other hand, a favourable variance denotes use of services in an economical manner or savings in costs incurred. It is calculated as under:

$$\text{Variable Overhead Expenditure Variance} = (\text{Standard variable overhead rate per hour} \times \text{Actual hours worked}) - (\text{Actual variable overheads})$$

$$\text{OR } \text{VOEV} = (\text{Recovered variable overheads}) - (\text{Actual variable overheads})$$

(b) *Variable Overhead Efficiency Variance:* The variable overhead efficiency variance is calculated by taking the difference in standard output and actual output multiplied by the standard variable overhead rate. The variable overhead efficiency variance is calculated as under:

$$\text{Variable Overhead Efficiency Variance} = (\text{Standard variable overhead rate} \times \text{Standard quantity}) - (\text{Actual quantity})$$

$$\text{OR } \text{Variable Overhead Efficiency Variance} = (\text{Standard time for actual production} \times \text{Standard variable overhead rate per hour}) - (\text{Actual hours worked} \times \text{Standard variable overhead rate per hour})$$

$$\text{OR } \text{Variable Overhead Efficiency Variance} = \text{Standard rate} \times (\text{Standard quantity} - \text{Actual quantity})$$

2. *Fixed Overhead Variance:* Fixed overhead variance is that portion of total overhead cost variance which is due to the difference between the standard costs of fixed overhead allowed for the actual output achieved and the actual fixed overhead cost incurred.

The method of computation is shown as:

Notes

Fixed Overhead Variance = (Standard fixed overhead rate × Actual output) – (Actual fixed overheads)

OR $FOV = \text{Actual output} \times (\text{Fixed overhead rate} - \text{Actual fixed overheads})$

The fixed overhead variance may be classified into the following types for the purpose of planning and control:

- (i) Fixed Overhead Expenditure Variance, and
- (ii) Fixed Overhead Volume Variance.
 - (a) Fixed Overhead Efficiency Variance,
 - (b) Fixed Overhead Capacity Variance, and
 - (c) Fixed Overhead Calendar Variance.
- (i) *Fixed Overhead Expenditure Variance*: This variance is also called budget variance, obtained by comparing the total fixed overhead cost actually incurred against the budgeted fixed overhead cost.

$\text{Fixed Overhead Expenditure Variance} = \text{Budgeted fixed overheads} - \text{Actual fixed overheads}$

- (ii) *Fixed Overhead Volume Variance*: The volume variance is computed by taking the difference between overhead absorbed on actual output and those on budgeted output. It is calculated as under:

$\text{Fixed Overhead Volume Variance} = (\text{Actual output} \times \text{Standard rate}) - (\text{Budgeted fixed overheads})$

OR $FOVV = \text{Standard rate} \times (\text{Actual output} - \text{Standard output})$

OR $FOVV = \text{Standard rate per hour} (\text{Standard hours produced} - \text{Budgeted hours})$

- (a) **Fixed Overhead Efficiency Variance**: The efficiency variance arises due to the difference between budgeted efficiency to production and the actual efficiency is achieved. It is calculated as under:

$\text{Fixed Overhead Efficiency Variance} = \text{Standard rate per hour} \times (\text{Actual hours worked} - \text{Standard hours for actual output})$

OR $FOEV = \text{Standard rate} \times (\text{Actual output in units} - \text{Standard output in units})$

- (b) **Fixed Overhead Capacity Variance**: The capacity variance represents the part of volume variance which arises due to working at higher or lower capacity than standard capacity. It is calculated as under:

$\text{Fixed Overhead Capacity Variance} = \text{Standard rate} \times (\text{Budgeted quantity} - \text{Standard quantity})$

OR $FOCV = \text{Standard rate} \times (\text{Revised budgeted quantity} - \text{Standard quantity})$

OR $FOCV = \text{Standard rate} \times (\text{Revised budgeted hours} - \text{Budgeted hours})$

- (c) **Fixed Overhead Calendar Variance**: The calendar variance arise due to the volume variance which is due to the difference between the number of working days anticipated in the budget period and the actual working days in the period to which the budget is applied. It is calculated as:

Notes

Fixed Overhead Calendar Variance = Standard fixed overhead rate × (Budgeted quantity - Revised budgeted quantity)

OR = (Standard No. of working days - Actual No. of working days) ×

$$\frac{\text{Total fixed overheads in the budget period}}{\text{Std.No. of days in the budget period}}$$

OR = Standard rate per hour or per day × Excess or deficit hours or days worked

Verification:

Overhead Variance = Variable overhead variance + Fixed overhead variance

Variable Overhead Variance = Expenditure variance + Volume variance

Fixed Overhead Variance = Expenditure variance + Volume variance

Fixed Overhead Volume Variance = Efficiency variance + Capacity variance + Calendar variance

Problem 4:

From the following data, calculate overhead variances:

Materials handling	₹ 8,325
Idle time	₹ 850
Re-work	₹ 825
Overtime premium	₹ 250
Supplies	₹ 4,000
Total	<u>₹ 14,250</u>

Fixed overhead items: (Actual)

Supervision	₹ 1,700
Depreciation on plant	₹ 2,000
Depreciation on equipment	₹ 5,000
Rates	₹ 1,150
Insurance	₹ 350
Total	<u>₹ 10,200</u>

Normal capacity 10,000 standard hours, budgeted rate ₹ 1.70 per standard hour for variable overhead and ₹ 1 per standard hour for fixed overhead. Actual level: 8,000 standard hours.

Solution:

Variable and Fixed Overhead Variances:

(a) **Variable Overhead Cost Variance:**

$$\text{VOCV} = (\text{Recovered variable overheads} - \text{Actual variable overheads})$$

$$\text{VOCV} = (8,000 \times 1.70) - 14,250$$

$$= 13,600 - 14,250$$

$$= ₹ 650 (A)$$

(b) **Fixed Overhead Cost Variance:**

$$\text{FOCV} = (\text{Recovered fixed overheads} - \text{Actual fixed overheads})$$

$$= (8,000 \times 1) - 10,200$$

$$= ₹ 2,200 (A)$$

(c) **Fixed Overhead Expenditure Variance:**

$$\text{FOEV} = (\text{Budgeted fixed overheads} - \text{Actual fixed overheads})$$

$$= (10,000 \times 1) - 10,200$$

$$= ₹ 200 (A)$$

(d) **Fixed Overhead Volume Variance:**

$$\text{FOVV} = (\text{Recovered fixed overheads} - \text{Budgeted fixed overheads})$$

$$= 8,000 - 10,000$$

$$= ₹ 2,000 (A)$$



Task Describe the procedure of establishing standard costs within the divisions of material, labour and overhead costs.



Case Study

Effect of Assumed Standard Levels

Harden Company has experienced increased production costs. The primary area of concern identified by management is direct labour. The company is considering adopting a standard cost system to help control labour and other costs. Useful historical data are not available because detailed production records have not been maintained.

To establish labour standards, Harden Company has retained an engineering consulting firm. After a complete study of the work process, the consultants recommended a labour standard of one unit of production every 30 minutes, or 16 units per day for each worker. The consultants further advised that Harden's wage rates were below the prevailing rate of \$ per hour.

Harden's production vice-president thought that this labour standard was too tight, and from experience with the labour force, believed that a labour standard of 40 minutes per unit or 12 units per day for each worker would be more reasonable.

The president of Harden Company believed the standard should be set at a high level to motivate the workers and to provide adequate information for control and reasonable cost comparison. After much discussion, management decided to use a dual standard. The labour standard of one unit every 30 minutes, recommended by the consulting firm, would be employed in the plant as a motivation device, while a cost standard of

Contd...

Notes

40 minutes per unit would be used in reporting. Management also concluded that the workers would not be informed of the cost standard used for reporting purposes. The production vice-president conducted several sessions prior to implementation in the plant, informing the workers of the new standard cost system and answering questions. The new standards were not related to incentive pay but were introduced when wages were increased to \$7 per hour.

The standard cost system was implemented on January 1, 19 - . At the end of six months of operation, these statistics on labour performance were presented to executive management:

	January	February	March	April	May	June
Production (units)	5,100	5,000	4,700	4,500	4,300	4,400
Direct labour hours	3,000	2,900	2,900	3,000	3,000	3,100
Quantity Variances:						
Variance based on labour standard (one unit each 30 minutes)	\$3150 U*	\$2,800 U	\$3,850 U	\$5,250U	\$5,950 U	\$6,300 U
Variance based on cost standard (one unit each 40 minutes)	\$2,800 F	\$3,033 F	\$1,633 F	-0-	\$933U	\$1,167 U

*U = Unfavourable; F = Favourable

Materials quality, labour mix, and plant facilities and conditions have not changed to any great extent during the six month period.

Questions:

1. Discuss the impact of different types of standards on motivations, and specifically the likely effect on motivation of adopting the labour standard recommended for Harden Company by the engineering firm.
2. Evaluate Harden Company's decision to employ dual standards in its standard cost system.

Source: http://accounting4management.com/standard_costing_variance_analysis_case_study.htm

Self Assessment

Fill in the blanks:

12. The overhead variance is a total or aggregate variance and does not tell us much about the causes of variance.
13. Variance indicates the deviation caused from the standard due to difference in quantities used.
14. Rate Variance is the difference between the standard and the actual direct labour rate per hour for the total hours worked.
15. variance is the difference between the standard cost of actual production and the actual cost of materials used.

12.5 Summary

- Standard costing is a very important device of cost control, as it detects not only variation in volume but also variation in costs. That is to say, the standard costing will highlight

what a product should cost, and the reasons for the excess of actual costs over that of what would have been. In brief, a standard costing helps in minimising costs as far as practicable to enhance efficiency in performance by setting up standard for expenses and performance of production.

- Standard is a desired attainable objective, a performance, a good, a model. Usually, standard denotes a predetermined rate or amount against which actual performance in activity is compared as a measure to evaluate.
- Standard cost is a predetermined cost and refers to that amount which ought to be incurred. It is computed in advance of production on the basis of a specification of all the factors, influencing costs, required for production as inputs.
- Standard costing is the system of cost accounting which makes use of predetermined standard cost relating to each element of cost-materials, labour and expenses, for each line of product manufactured or service applied.
- The technique of standard costing can be useful in all types of industries, but it is more commonly used in industries producing standardised products which are repetitive in nature.
- Standard costing is basically a tool of control in the hands of management. It helps management in many ways but it mainly helps in cost control and cost reduction. It also aids in evaluating the performance, measuring the efficiency and making correct predications.
- Standard costing provides a stable product cost per unit. The actual cost of a product may vary from period to period due to much reason. It cannot be used as a basis of price fixation of a product,
- Attainable standard is a standard which can be attained if a standard unit of work is carried out efficiently, on a machine properly utilised or material properly used.
- The standard hour is a convenient measure of production. Whatever may be the type of product or their unit of measurement (e.g., units, tonne, kilogram, gallon, dozen, litres etc.) the standard hour is capable of measuring them. It is also useful in ascertaining overhead variances.
- Standard cost is the resultant effect of a number of factors that vary from time to time in different situations, both internal and external.
- On standard being established for each element of cost for a product, it is recorded in a card or sheet. This card or sheet is known as standard cost card or standard cost sheet. Thus, a standard cost card is a record of the standard material, labour, overhead costs.

12.6 Keywords

Basic Standard: The terminology of ICMA defines basic standard as “A standard established for use over a long period from which a current standard can be developed.”

Current Standard: According to ICMA, it is “A standard which is established for use over a short period of time and is related to current conditions.”

Ideal Standard: The terminology of ICMA defines ideal standard as, “A standard which can be attained under most favourable conditions. No provision is made, for example, for shrinkage, spoilage or machine breakdowns.

Standard Cost Card: It is a record of the standard material, labour, overhead costs.

Notes

Standard Cost: It is a predetermined cost. It is a determination in advance of production, of what should be the cost.

Standard Costing: It is the system of cost accounting which makes use of predetermined standard cost relating to each element of cost-materials, labour and expenses, for each line of product manufactured or service applied.

Standard Hour: It is the quantity of output, or an amount of work, performed in one hour.

Standard: It refers to an indicator which is used to evaluate performance, quality etc.

Variance: The difference between the actual and the standard is called variance.

12.7 Review Questions

1. Discuss the utility of variance analysis in cost control. What are the major causes for efficiency, volume, capacity and calendar variance?
2. Point out the differences between standard costing and historical costing. Give in brief the advantages and disadvantages of the two systems.
3. If cost information is limited to an analysis of actual costs, state how this would effect cost control.
4. Discuss the basic principles in any standard costing system.
5. What are the several types of standards and what are the assumptions as to the factors on which these standards are based?
6. Define 'standard cost' and 'standard costing'. In what type of industries, standard costing is employed? State the advantages of standard costing.
7. Describe the process of determining standard costs.
8. State the various classifications of variances. How are these variances computed?
9. Differentiate between material and overhead variances.
10. Enumerate the different types of material variances and write a brief note on each one of them.

Answers: Self Assessment

- | | |
|--------------------------------|----------------|
| 1. Standard | 2. Incurred |
| 3. Standard costing | 4. Variation |
| 5. planning | 6. Cost centre |
| 7. Current | 8. Favourable |
| 9. Attainable | 10. Hour |
| 11. cost | 12. Variable |
| 13. Material Usage or Quantity | 14. Labour |
| 15. Material cost | |

12.8 Further Readings

Notes



Books

Bhar. K.B. (2008) *Cost Accounting, Methods & Problem*, Academic Publishers.

Lal, Jawahar & Srivastava, Seema (2009) *Cost Accounting*, 4th Edition, Tata McGraw-Hill Education.

Nigam, Lal B.M. & Jain I. C. (2001) *Cost Accounting: An Introduction*, PHI Learning Pvt. Ltd.

Thakur. S.K, (2009). *Cost Accounting: Theory and Practice*, Excel Books.



Online links

<http://classes.bus.oregonstate.edu/spring-07/ba422/Management%20Accounting%20Chapter%2010.htm>

<http://www.accountingcrosswords.com/standard-costing.php>

<http://www.accountingcoach.com/online-accounting-course/30Xpg01.html>

http://220.227.161.86/19740ipcc_ca_vol2_cp11.pdf

Unit 13: Activity-based Costing

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Objectives

After studying this unit, you will be able to:

- Discuss the limitations of traditional costing system;
- Explain the concept of activity-based costing including its features, benefits and limitations;
- Explain concepts like activity-based budgeting;
- Differentiate between activity-based management and activity-based accounting.

Introduction

The main objective of any costing system is to determine scientifically the cost of a product or service. For facilitating the calculation, costs are divided into direct and indirect. Direct costs are the costs which are traceable to the products/services offered. On the other hand, indirect costs which are also called as 'overheads' are not traceable to the products/services. Hence these costs are first identified, classified, allocated, apportioned wherever allocation is not possible, reapportioned and finally absorbed in the products/services. Charging the direct costs to the products is comparatively a simple procedure and can be done with remarkable accuracy. However, the indirect costs present problems in charging them to the products and there is a possibility of distortion of costs though the basis of charging them is quite logical. This is one of the limitations of the traditional costing system. For example, one of the methods of absorption of overheads is direct labour cost and this method is quite satisfactory when the overhead costs

of indirect activities is a small percentage compared to direct labour component in actual making of products. However, the increased technology and automation has reduced the direct labour considerably and so the indirect activities have assumed greater importance. Therefore, using the direct labour as a basis for absorbing the overheads can lead to distortions in the costs. Distortions in the costs resulting into incorrect cost calculations may lead to following wrong decisions.

- Errors in fixation of selling prices.
- Wrong decisions regarding deciding of product mix.
- Ignoring customer orientation.
- Missing of profitable opportunities.

In order to overcome the limitations of traditional costing systems, activity-based Costing has been introduced.

Before we proceed to the other aspects of Activity-based Costing, let us see the limitations of traditional costing system. A brief mention of the same has already been made in the above paragraph. Some more points are discussed below.

13.1 Limitations of Traditional Costing System

The following are the limitations of traditional costing system.

- In a traditional costing system, overheads i.e. indirect costs are allocated, apportioned and finally absorbed in the cost units. There can be distortion in computing costs due to the basis selected for absorption.



Example: Suppose a manufacturing company is producing two products, A and B. The direct material cost for the products is ₹ 1,00,000 and ₹ 2,00,000 respectively. The total overheads are ₹ 1,50,000 and the company adopts direct material cost as the basis for absorption. The absorption percentage of overheads will be 50% of the direct material. [$1,50,000/3,00,000 \times 100 = 50\%$] Thus the overheads absorbed in the product A will be ₹ 50,000 and for B, they will be ₹ 1,00,000 [50% of the overheads] Product B has a larger share of the overhead costs as the material costs are higher than that of A. However, actually product B may be requiring lesser efforts in the indirect activities than A, but only because it has a higher material costs, it will be charged with larger amount of overheads. Thus there is a distortion in the total cost. This distortion in costs may lead to wrong decisions in several areas like make or buy, pricing decisions, acceptance of export offer etc.

- Another limitation of traditional costing system is the division between fixed and variable may not be realistic as there are many complications due to the complexity of the modern business.
- There should be linkage between the activities and the costs. Similarly the information should be available simultaneously which means that information should be made available while the activities are going on. Information available after the activity is over will not be of much use.



Did u know? The Activity-based Costing system has been developed due to the limitations of the traditional costing system.

Notes

Self Assessment

Fill in the blanks:

1. costs are the costs which are traceable to the products/services offered.
2. In a costing system, overheads are allocated, apportioned and finally absorbed in the cost units.
3. The limitation of traditional costing system is the division between as there are many complications due to the complexity of the modern business.

13.2 Activity-based Costing - An Overview

CIMA defines Activity-based Costing as, 'cost attribution to cost units on the basis of benefit received from indirect activities e.g. ordering, setting up, assuring quality.'

One more definition of Activity-based Costing is, 'the collection of financial and operational performance information tracing the significant activities of the firm to product costs.'

The objectives of Activity-based Costing will be discussed in the subsequent sub section.

13.2.1 Objectives of Activity-based Costing

The objectives of Activity-based Costing are discussed below:

- To remove the distortions in computation of total costs as seen in the traditional costing system and bring more accuracy in the computation of costs of products and services.
- To help in decision making by accurately computing the costs of products and services.
- To identify various activities in the production process and further identify the value adding activities.
- To distribute overheads on the basis of activities.
- To focus on high cost activities.
- To identify the opportunities for improvement and reduction of costs.
- To eliminate non value adding activities.

Self Assessment

Fill in the blanks:

4. Activity-based costing is defined as the attribution to cost units on the basis of benefit received from indirect activities e.g. ordering, setting up, assuring quality.
5. Activity-based costing is, 'the collection of financial and performance information tracing the significant activities of the firm to product costs.'
6. The objectives of is to remove the distortions in computation of total costs as seen in the traditional costing system and bring more accuracy in the computation of costs of products and services.

13.3 Working of Activity-based Costing

Notes

The working of Activity-based Costing is explained below:

- **Understanding and analysing manufacturing process:** For installation of any costing system, study of manufacturing process is essential. For Activity-based Costing system also, it is necessary to study the manufacturing process and ascertain various stages involved in the same so that 'activities' involved in the same can be identified.
- **Study of the Activities involved:** The next step is to study the activities involved in the manufacturing process. This step is very crucial as the entire Activity-based Costing is based on identification of activities. In this step, the activities involved in a process are identified. For example, in a bank, opening of an account is one of the services offered to customers. In this service, activities involved are studied. It may be revealed that opening of a new account involves activities like issuing the application form, verification of the same and accepting the initial amount required for opening of an account. Similarly in case of a manufacturing company, purchase procedure may involve activities like receiving of purchase requisition for concerned department or the stores department, inviting quotations from various suppliers, placing of an order, follow up of the same and finally receiving and inspection of the goods. In case of an educational institute, activities in a library may include activities like issue of books, receipt of books, ordering new books, giving accession numbers, stock taking, removing obsolete and outdated books, identification of slow moving and fast moving items etc. In this manner, whether in manufacturing or in service sector, activities are identified and the next step is to divide the activities into value adding and non value adding. The objective behind this is that attention can be focused on the value adding activities while non value adding activities can be eliminated in the future.
- **Activity Cost Pool:** Cost pool is defined by CIMA as, 'the point of focus for the costs relating to a particular activity in an activity-based costing system.'



Example: In case of a library, the cost of issue and receipts, cost of ordering, stock taking costs etc. can be identified with 'Library Cost'. In other words, 'Library' will be the cost pool in which all the costs mentioned above may be clubbed. In case of a manufacturing organisation, as regards to stores, cost of classification, cost of issue of stores requisitions, inspection costs etc. can be pooled under the heading 'stores'.

Thus, cost pool concept is similar to the concept of cost centre. The cost pool is the point of focus or in other words, it is the total cost assigned to an activity. It is the sum of all the cost elements assigned to an activity.

- **Cost Drivers:** According to CIMA, 'cost driver is any factor which causes a change in the cost of an activity, e.g. the quality of parts received by an activity is a determining factor in the work required by that activity and therefore affects the resources required. An activity may have multiple cost drivers associated with it.' In other words, cost driver means the factors which determine the cost of an activity. For example, if we repeat the example of library, the number of receipts and issue of books will be cost drivers, in stores, no. of stores requisitions will be cost drivers, in customer order processing the no. of customers as well as no. of orders will be cost drivers. Thus a cost driver is an activity which generates cost.

Notes



Note Activity-based Costing is based on the belief that activities cause costs and therefore a link should be established between activities and product. The cost drivers, thus, are the link between the activities and the cost.

- **Identification of costs with the products:** The final stage in Activity-based Costing is to identify the cost with the final products which can also be called as cost objects. Cost objects include, products, services, customers, projects and contracts. As mentioned earlier, direct costs can be identified easily with the products but the indirect costs can be linked with the products by identifying activities and cost drivers. Thus Activity-based Costing is the process of tracing costs first from resources to activities and then from activities to specific products.

It can be concluded that the Activity-based Costing is a costing system which tries to charge the indirect costs to the products and services fairly accurately. However for effective implementation there is a need of involvement of the staff and their training on continuous basis.

Similarly there is a need to review the working of the system at periodic intervals and keep a follow up of the feedback received. These actions will ensure effective implementation of the system. Support of top management is also required for effective implementation of this system. Activity-based costing system is definitely a better system but much depends on the implementation of the same.

13.3.1 Limitations of Activity-based Costing

Though this system is quite effective, it suffers from some limitations. These limitations are given below:

- Activity-based Costing is a complex system and requires lot of records and tedious calculations.
- For small organisations, traditional cost accounting system may be more beneficial than Activity-based Costing due to the simplicity of operation of the former.
- Sometimes it is difficult to attribute costs to single activities as some costs support several activities.
- There is a need of trained professionals who are limited in number.
- This system will be successful if there is a total support from the top management.
- Substantial investment of time and money is required for the implementation of this system.

Self Assessment

State whether the following statements are true or false:

7. Activity-based Costing is the process of tracing costs first from resources to activities and then from activities to specific products.
8. Cost pool is any factor which causes a change in the cost of an activity.
9. Cost driver is defined by CIMA as, 'the point of focus for the costs relating to a particular activity in an activity-based costing system'.

13.4 Activity-based Budgeting

A budget is a statement expressed in quantitative/monetary/both terms prepared prior to a defined period of time for the policy to be pursued during that period for the purpose of achieving a given objective. In other words, a budget is always prepared ahead of time, it is expressed either in quantitative terms or monetary terms or both, it reflects the objective to be achieved during that period and hence the policy to be followed during that period is put in the budget. Budget helps in planning for the future. It also helps in controlling as there is a continuous comparison of actual with budget. Any deviation between the two is identified for taking suitable action.

The traditional budgeting is based on traditional cost accounting i.e. on the basis of allocation, apportionment and absorption of overheads in the products. However, the Activity-based Budgeting is different from the traditional budgeting in the sense that it provides a strong link between the objectives of organisation and objectives of a particular activity. In other words, it involves identification of activities and dividing them in value adding and non value adding activities. The non-value adding activities are eliminated in due course of time. Activity-based Budgeting, thus, requires identification of activities of the organisation, establishing the factors which cause costs, the cost drivers and then collecting the costs of the activities in cost pools. The following are the features of Activity-based Budgeting.

- It uses the activity analysis to relate costs to activities.
- It identifies cost improvement opportunities.
- There is a clear link between strategic objectives and planning and the tactical planning of the ABC process.

13.4.1 Activity-based Management

The activity-based Management is a tool of management that involves analysing and costing activities with the goal of improving efficiency and effectiveness. Though it is closely related to the Activity-based Costing, still it differs from the same in its primary goal. The activity-based Costing focuses on activities with the object of measuring the cost of products/services. It tries to compute the cost as accurately as possible. On the other hand, activity-based Management focuses on managing the activities themselves. In activity-based Costing resources are traced to the activities for the purpose of computing the costs while in activity-based Management, resources are traced to activities for evaluation of the activities themselves. In other words, efforts are made to improve the activities further. Thus, activity-based Management is a set of actions that management can take, based on information from an activity-based costing system, to increase/improve profitability.

For continuous improvement, activity-based-management attempts the following analysis.

- **Cost Driver Analysis:** The factors that cause activities to be performed need to be identified in order to manage activity costs. Cost driver analysis identifies these casual factors. For example, in a stores department, it may be observed that slow moving and obsolete stock is not disposed of in time, the reason being the staff in the stores is not trained properly in this area. Managers have to address this cost driver to correct the root cause of this problem and take proper action.
- **Activity Analysis:** Activity analysis identifies value added and non value added activities. This analysis identifies the activities in the organisation and the activity centres that should be used in Activity-based Costing system. In Activity-based Management, as said above, identification of activities into value adding and non value adding is made and efforts are made to eliminate the non value adding activities.

Notes

- **Performance Analysis:** Performance analysis involves the identification of appropriate measures to report the performance of activity centres or other organisational units consistent with each unit's goals and objectives. Performance Analysis aims to identify the best ways to measure the performance of factors that are important to organisations in order to stimulate continuous improvement.

13.4.2 Difference between Activity-based Costing and Activity-based Management

Activity-based Costing is logical distribution of overheads, i.e. overheads are distributed on the basis of the consumption of resources. It helps to avoid distortion of costs of products/services. On the other hand, Activity-based Management, on the other hand, is a discipline that focuses on efficient management so as to value of services rendered to customers. This focus on activities is being used effectively for cost reduction, business process re-engineering, and benchmarking and performance measurement. Activity-based Management brings about a change in viewing at the objective by incorporation of financial perspective, internal business perspective, innovation and learning perspective.

13.5 Activity-based Accounting

Activity-based accounting is a broader term which involves in, 'collection, recording, analysis, controlling and reporting of activity related costs rather than departmental or cost centres related costs.' It involves several activities like Activity-based Budgeting, Cost management based on activities, performance measurement of activity, reducing the costs through elimination of non value adding activities and also initiating innovative measure for reduction of costs.

Solved Problems

1. The budgeted overheads and cost driver volumes of XYZ are as follows.

Cost Pool	Budgeted Overheads (₹)	Cost Driver	Budgeted Volume
Material procurement	5,80,000	No. of orders	1,100
Material handling	2,50,000	No. of movements	680
Set-up	4,15,000	No. of set ups	520
Maintenance	9,70,000	Maintenance hours	8,400
Quality control	1,76,000	No. of inspection	900
Machinery	7,20,000	No. of machine hours	24,000

The company has produced a batch of 2,600 components of AX-15, its material cost was ₹ 1,30,000 and labour cost ₹ 2,45,000. The usage activities of the said batch are as follows.

Material orders - 26, maintenance hours - 690, material movements - 18, inspection - 28, set ups - 25, machine hours - 1,800

Calculate - cost driver rates that are used for tracing appropriate amount of overheads to the said batch and ascertain the cost of batch of components using Activity-based Costing.

Solution:

The cost driver data will be determined as given below.

Cost driver data - The rate will be determined by dividing the amount by relevant factors. The calculations are shown below.

Notes

Particulars	Details	Rate of Cost Drivers
Material procurement	₹ 5,80,000 / 1100	₹ 527
Material handling	₹ 2,50,000 / 680	₹ 368
Set up	₹ 4,15,000 / 520	₹ 798
Maintenance	₹ 9,70,000 / 8400	₹ 115
Quality control	₹ 1,76,000 / 900	₹ 195
Machine	₹ 7,20,000 / 24,000	₹ 30

Calculation of a Batch of 2,600 components of AX - 15

Particulars	Details	Amount in ₹
Direct Materials		1,30,000
Direct Labour		2,45,000
Prime Cost - Direct Materials + Direct Labour		3,75,000
Add: Overheads		
Material Procurement	26 × ₹ 527	13,702
Material handling	18 × ₹ 368	6,624
Set-up cost	25 × ₹ 798	19,950
Maintenance	690 × ₹ 115	79,350
Quality control	28 × ₹ 195	5,460
Machine	1,800 × ₹ 30	54,000
Total		5,54,086



Note From the above calculations, it is clear that by using Activity-based Costing, there can be substantial accuracy in the overhead absorption. The overheads are charged on the basis of cost drivers and not on the basis of absorption rate.

2. A company manufactures two products, X and Y. The product X is a low volume and its sales are only ₹ 5,000 p.a. Product Y is high volume and labour intensive, its sales are 25,000 units pa. Product X takes 6 labour hours to make one unit but Y requires 8 hours per unit. Details of costs for materials and labour for each product are as follows.

Particulars	Product X	Product Y
Direct Materials - ₹	200	100
Direct Labour -@ ₹ 10 per hour	60	80
Total	260	180

The company works 1,00,000 direct labour hours p.a. Total manufacturing overhead costs are ₹ 17,50,000 p.a. You are required to compute per unit cost of each product using,

- Direct labour hour rate method for absorption of overhead costs and
- Activity-based Costing technique for absorption of overhead costs

Notes

Solution:

Firstly, we will calculate the Product Cost based on Direct Labour Hour Rate. The calculations are shown below.

Direct Labour Hour Rate = Total manufacturing overheads/Total direct labour hours ₹ 17,50,000/1,00,000 = ₹ 17.50

Absorption of manufacturing overheads:

Particulars	Product X	Product Y
Manufacturing Overheads	₹ 17.50 × 6 Direct Labour Hours = ₹ 105	₹ 17.50 × 8 Direct Labour Hours = ₹ 140

Overheads based on Activity-based Costing:

Identification of Activities and Rate for each Activity:

Particulars	Total Overheads	Details of Activity	Rate per Activity [₹]
Machine Set up	4,50,000	10,000	45 per set up
Quality inspection	3,00,000	15,000	20 per inspection
Production order	1,80,000	600	300 per order
Machine hours worked	6,25,000	50,000	12.5 per hour
Material receipts	1,95,000	1,500	130 per receipt
Total overheads	17,50,000		

Allocation of overheads to Products on the basis of Activity Rates:

Particulars	Frequency of Activity	Rate per Activity	Product X ₹	Product Y ₹
Machine Set up	10,000	45	6,000 X ₹ 45 = ₹ 2,70,000	4,000 X ₹ 45 = ₹ 1,80,000
Quality inspection	15,000	20	10,000 X ₹ 20 = ₹ 2,00,000	5,000 X ₹ 20 = ₹ 1,00,000
Production order	600	300	200 X ₹ 300 = ₹ 60,000	400 X ₹ 300 = ₹ 1,20,000
Machine hours worked	50,000	12.5	12,000 X ₹ 12.5 = ₹ 1,50,000	38,000 X ₹ 12.5 = ₹ 4,75,000
Material receipts	1,500	130	300 X ₹ 130 = ₹ 39,000	12,000 X ₹ 130 = ₹ 1,56,000
Total overhead costs			7,19,000	10,31,000
Units produced			5,000	25,000
Overhead cost per unit			143.80	41.24

Computation of Total Cost under Traditional Cost Accounting and Activity-based Costing:

Particulars	Product X - Activity Based Costing	Product Y - Activity Based Costing	Product X - Traditional Costing	Product Y - Traditional Costing
Direct Material	200	100	200	100
Direct Labour	60	80	60	80
Manufacturing overheads	143.80	41.24	105	140
Total cost of Manufacture	403.80	221.24	365	320

From the above comparative analysis it is clear that, under Traditional Costing, Product X is charged with ₹ 105 per unit as manufacturing overheads while in case of Product Y, the share of overhead cost is ₹ 140. Under Activity-based Costing the amount is ₹ 143.80 and ₹ 41.24 per unit. Thus due to Activity-based Costing, the distortion in cost is avoided.



Caselet

Costing

A

company manufacturing two products furnishes the following data for a year.

Product	Annual Output [Units]	Total Machine Hours	Total Number of Purchase Orders	Total Number of Setups
A	5,000	20,000	160	20
B	60,000	1,20,000	384	44

The annual overheads are as under

Particulars	Amount in ₹
Volume related activity costs	5,50,000
Set up related costs	8,20,000
Purchase related costs	6,18,000
Total costs	19,88,000

You are required to calculate the cost per unit of each Product A and B, based on,

- Traditional method of charging overheads
- Activity-based costing method.

Source: http://www.myciwai.com/StudyMaterial/Cost_Mgmt_Ac.pdf

Self Assessment

Fill in the blanks:

10. A is a statement expressed in quantitative/monetary/both terms prepared prior to a defined period of time.
11. Activity-based is a tool of management that involves analysing and costing activities with the goal of improving efficiency and effectiveness.
12. Activity analysis identifies and non-value added activities.
13. analysis involves the identification of appropriate measures to report the performance of activity centres or other organisational units consistent with each unit's goals and objectives.
14. Cost Analysis cause activities to be performed need to be identified in order to manage activity costs. Cost driver analysis identifies these casual factors.
15. In Activity-based Management, identification of activities into value adding and non value adding is made and efforts are made to eliminate the activities.

Notes



Case Study

Activity-based Costing

Ferris Corporation makes a single product – a fire resistant commercial filing cabinet – that it sells to office furniture distributors. The company has a simple ABC system that it uses for internal decision making. The company has two overhead departments whose costs are listed below:

Manufacturing overhead	\$5,00,000
Selling and administrative overhead	\$300,000
Total overhead costs	\$8,00,000

The company’s activity-based costing system has the following activity cost pools and activity measures:

Activity Cost Pool	Activity Measures
Assembling units	Number of units
Processing orders	Number of orders
Supporting customers	Number of customers
Other	Not applicable

Costs assigned to the “other” activity cost pool have no activity measure; they consist of the costs of unused capacity and organisation-sustaining costs - neither of which are assigned to products, orders or customers.

Ferris Corporation distributes the costs of manufacturing overhead and of selling and administrative overhead to the activity cost pools based on employee interviews, the results of which are reported below:

Distribution of Resource Consumption Across Activity Cost Pools

	Assembling Units	Processing Orders	Supporting Customers	Other	Total
Manufacturing overhead	50%	35%	5%	10%	100%
Selling and administrative overhead	10%	45%	25%	20%	100%
Total activity	1,000 units	250 orders	100 customers	--	--

Required:

Perform the first stage allocation of overhead costs to the activity cost pools.

Compute activity rates for the activity cost pools.

Office Mart is one of the Ferris Corporation’s customers. Last year Office Mart ordered filing cabinets four different times. Office Mart ordered a total of 80 cabinets during the year. Construct a table showing the overhead costs of these 80 units and four orders

Source: http://accounting4management.com/activity_based_costing_example.htm

13.6 Summary

- The main objective of any costing system is to determine scientifically the cost of a product or service. For facilitating the calculation, costs are divided into direct and indirect. Direct costs are the costs which are traceable to the products/services offered. On the other hand, indirect costs which are also called as ‘overheads’ are not traceable to the products/services.

- In order to overcome the limitations of traditional costing systems Activity-based Costing has been introduced.
- Activity-based Costing as, 'cost attribution to cost units on the basis of benefit received from indirect activities e.g. ordering, setting up, assuring quality.'
- One more definition of Activity-based costing is, 'the collection of financial and operational performance information tracing the significant activities of the firm to product costs.'
- A budget is a statement expressed in quantitative/monetary/both terms prepared prior to a defined period of time for the policy to be pursued during that period for the purpose of achieving a given objective.
- The Activity-based budgeting is different from the traditional budgeting in the sense that it provides a strong link between the objectives of organisation and objectives of a particular activity.
- The Activity-based management is a tool of management that involves analysing and costing activities with the goal of improving efficiency and effectiveness. Though it is closely related to the Activity-based Costing, still it differs from the same in its primary goal.

13.7 Keywords

Activity Analysis: Activity analysis identifies value added and non-value added activities.

Activity-based Accounting: It is a broader term which involves in, 'collection, recording, analysis, controlling and reporting of activity related costs rather than departmental or cost centres related costs.'

Activity-based Costing: It is the collection of financial and operational performance information tracing the significant activities of the firm to product costs.

Activity-based Management: It is a tool of management that involves analysing and costing activities with the goal of improving efficiency and effectiveness.

Budget: It is a statement expressed in quantitative/monetary/both terms prepared prior to a defined period of time.

Cost Driver: It is any factor which causes a change in the cost of an activity, e.g. the quality of parts received by an activity is a determining factor in the work required by that activity and therefore affects the resources required.

Cost Pool: It is defined by CIMA as, 'the point of focus for the costs relating to a particular activity in an activity-based costing system.'

Performance Analysis: Performance analysis involves the identification of appropriate measures to report the performance of activity centres or other organisational units consistent with each unit's goals and objectives.

13.8 Review Questions

1. What is activity-based Costing? Why is it needed?
2. What is a 'Cost Driver'? What is the role of cost driver in tracing cost to products?
3. Discuss the steps in applying activity-based costing in a manufacturing company.
4. How are activities grouped in a manufacturing company?

- Notes**
5. Distinguish between traditional costing system and activity-based costing.
 6. What are the benefits of activity-based costing?
 7. Enumerate the limitations of activity-based costing.

Answers: Self Assessment

- | | |
|-----------------------|---------------------------|
| 1. Direct | 2. Traditional |
| 3. fixed and variable | 4. Cost |
| 5. Operational | 6. activity-based costing |
| 7. True | 8. False |
| 9. False | 10. Budget |
| 11. Management | 12. value added |
| 13. Performance | 14. Driver |
| 15. non-value adding | |

13.9 Further Readings



Books

- Bhar. K.B. (2008) *Cost Accounting, Methods & Problem*, Academic Publishers.
- Lal, Jawahar & Srivastava, Seema (2009) *Cost Accounting*, 4th Edition, Tata McGraw-Hill Education.
- Nigam, Lal B.M. & Jain I. C. (2001) *Cost Accounting: An Introduction*, PHI Learning Pvt. Ltd.
- Thakur. S.K, (2009). *Cost Accounting: Theory and Practice*, Excel Books.



Online links

- http://accounting4management.com/activity_based_costing_example.htm
- <http://hafeezrm.hubpages.com/hub/CASE-STUDY-ACTIVITY-BASED-COSTING>
- http://www.cimaglobal.com/Documents/Thought_leadership_docs/6Activity-based-costing-China.pdf
- <http://www.accountingcoach.com/online-accounting-course/35Xpg01.html>

Unit 14: Emerging Concepts in Cost Management

Notes

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Objectives

After studying this unit, you will be able to:

- Explain the concept of value chain analysis;
- Describe target costing in detail;

Notes

- Discuss the concept of Kaizen costing;
- Explain product life cycle.

Introduction

A strategic tool to measure the importance of the customer's perceived value is value chain analysis. By enabling companies to determine the strategic advantages and disadvantages of their activities and value creating processes in the market place, value chain analysis becomes essential for assessing competitive advantage. When a company wants to introduce a new product, it must determine the price to be charged based on products already on the market of similar function and quality. A target cost is the maximum manufactured cost for a product and is calculated by subtracting required margin on sale from expected market price. Target costing is a system under which a company plans in advance for the product price points, product costs, and margins that it wants to achieve. If it cannot manufacture a product at these planned levels, then it cancels the product entirely. With target costing, a management team has a powerful tool for continually monitoring products from the moment they enter the design phase and onward throughout their product life cycles.

14.1 Value Chain Analysis

The idea of a value chain was first suggested by Michael Porter (1985) to depict how customer value accumulation along a chain of activities, that lead to an end product or service.

He described the value chain as the internal processes or activities a company perform "to design, produce, market, deliver and support its product". He further stated that "a firm's value chain and the way it performs individual activities are a reflection of its history, its strategy, its approach of implementing its strategy and the underlying economics of the activities themselves".

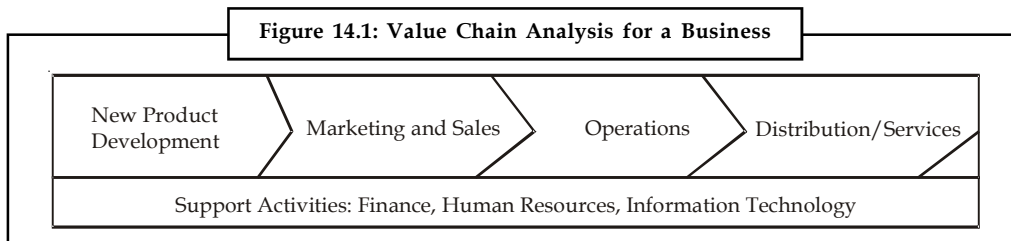
Porter classified business activities under two heads viz. primary activities line activities and support activities. Primary activities are directly involved in transforming inputs into outputs and delivery and after-sales support to output. In other words, they include material handling and warehousing, transforming inputs into final product, order processing and distribution; communication, pricing and channel management, and installation, repair and parts replacement.

Support activities are the activities which support primary activities. They are handled by the organisation's staff functions and include the following:

1. Procurement – purchasing raw materials, supplies and other consumable items as well as assets.
2. Technology development know-how, procedures and technical inputs needed in every value chain activity.
3. Human resource management – selection, promotion and placement, appraisal, rewards; management development; and labour/employee relations.
4. Firm infrastructure - general management, planning, finance, accounting, legal, government affairs and quality management.

The value chain for a typical organisation is shown in Figure 14.1.

The value chain disaggregates the firm into its distinct strategic activities. Value chain analysis seeks to determine, within the company's operations - from new product development to distribution - how customer value can be enhanced or costs lowered.



For each value added activity, the key questions are:

1. Can we reduce costs in this activity, holding revenue value constant?
2. Can we increase revenue in this activity, keeping the costs constant?
3. Can we reduce assets in this activity keeping costs and revenues constant?
4. Most importantly, can we do (1), (2) and (3) simultaneously?

By systematically analysing costs, revenues and asset in each activity, the business unit can achieve cost cum differentiation advantage.

To execute a company's competitive strategy, all the above functions play a role, and each must develop its own strategy. Here, strategy refers to what each process or function will try to do particularly well.

A product development strategy specifies the portfolio of new products that the company will try to develop. It also decides whether the development effort will be made in-house or outsourced. A marketing and sales strategy specifies how the market will be segmented and how the products will be positioned, priced and promoted. A supply chain strategy determines the nature of procurement of raw materials, transportation of materials to and from the company, manufacturer of the product or operation to provide the service, and distribution of the product to the customer, along with any follow-up service and a specification of whether these processes will be performed in-house or outsourced. Given that firms are rarely completely vertically integrated, it is important to recognise that the supply chain strategy defines not only what processes within the firm should do well but also what role played by each supply chain entity is. Supply chain strategy includes a specification of the broad structure of the supply chain and what many traditionally call "supplier strategy", "operations strategy", and "logistics strategy".



Note The value chain emphasises the close relationship between the functional strategies within a company. Each function is crucial if a company is to satisfy customer needs profitability. Thus, the various functional strategies cannot be formulated in isolation. They are closely intertwined and must fit and support each other if a company has to succeed.

14.1.1 Competitive Advantage and Customer Value

In order to prosper and survive in industry, firms meet two criteria viz., they must supply what customers want to buy, and they must survive competition. A firm's overall competitive advantage derives from the difference between the value it offers to customers and its cost of creating that customer value.

Competitive advantage with regard to product and services takes two possible forms. The first one is an offering or differentiation advantage. If customers perceive a product or service as

Notes

superior, they become more willing to pay a premium price relative to the price they will have to pay for competitive offerings. The second is a relative low-cost advantage, under which customers gain when a company's total costs undercut those of its average competitor.

Differentiation Advantage: The primary focus is to differentiate the product of the business unit by creating something that is perceived by customers as being unique. Approaches to product differentiation include brand loyalty (Coca Cola and Pepsi Cola in soft drinks), superior customer service, dealer network, product design and product features and technology.



Example: BMW in automobiles, Rolex in wrist watches, Mont Blanc in pens.

Low-cost Advantage: Cost leadership can be achieved through economies of scale, experience curve effects, tight cost, control and cost minimisation.



Example: Hyundai in automobiles.

Self Assessment

Fill in the blanks:

1. By systematically analysing costs, revenues and asset in each activity, the business unit can achieve cum differentiation advantage.
2. The emphasises the close relationship between the functional strategies within a company.

14.2 Low-cost Provider Strategies

A low-cost leader's basis for competitive advantage is lower overall costs than competitors. Successful low-cost leaders are exceptionally good at finding ways to drive costs out of their businesses. For maximum effectiveness, companies enjoying a low-cost provider strategy need to achieve their cost advantage in ways difficult for rivals to copy or match. If rivals find it relatively easy or inexpensive to imitate the leader's low-cost methods, then the leader's advantage will be too short-lived to yield a valuable edge in the marketplace.

A company has two options for translating a low-cost advantage over rivals into attractive profit performance.

Option 1: Out manage rivals in the efficiency with which value chain activities are performed and in controlling the factors that drive the costs of value chain activities.

Controlling the Cost drivers: There are nine major cost drivers that come into play in determining a company's costs in each activity segment of the value chain:

1. **Economies or Diseconomies of scale:** Economies of scale arise whenever activities can be performed more cheaply in larger volumes than smaller volumes and from the ability to spread out certain costs like R&D and advertising over a greater sales volume.
2. **Learning and experience curve effects:** The cost of performing an activity can decline over time as the experience of company personnel builds. Learning-curve economies can stem from debugging and mastering newly introduced technologies, finding ways to improve plant layout and work flows and making product design modifications that streamline the assembly process.
3. **The cost of key resource inputs:** the cost of performing value chain activities depends in part what a firm has to pay for key resource inputs. Input costs are a function of four factors

– union versus non-union labour; bargaining power vis-à-vis suppliers; locational variables in terms of wage levels, tax rates, energy costs, inbound and outbound shipping and freight costs and so on; supply chain management expertise.

4. **Link with other activities in the company or industry value chain:** Costs can be managed downward by making sure that linked activities are performed in cooperative and coordinated fashion.
5. **Sharing opportunities with other organisational or business units within the enterprise:** such combining of like activities and sharing of resources across sister units can create significant cost savings.
6. The benefits of vertical integration versus outsourcing.
7. Timing considerations associated with first-mover advantages and disadvantages.
8. The percentage of capacity utilisation.
9. Strategic choices and operating decisions – a company's costs can be driven up or down by a fairly wide assortment of managerial decisions:
 - ❖ Adding/cutting the services provided to buyers.
 - ❖ Incorporating more/fewer performance and quality features into the product.
 - ❖ Increasing/decreasing the number of different channels utilised in distributing the firm's product.
 - ❖ Lengthening/shortening delivery times to customers.
 - ❖ Putting more/less emphasis than rivals on the use of incentive compensation, wage increases, and fringe benefits to motivate employees and boost worker productivity.
 - ❖ Raising/lowering the specifications for purchased materials.

Option 2: Revamp the firm's overall value chain to eliminate or bypass some cost-producing activities. The primary ways companies can achieve a cost advantage by reconfiguring their value chains include:

- Making greater use of Internet technology applications
- Using direct-to-end-user sales and marketing approaches
- Simplifying product design
- Stripping away the extras
- Shifting to a simple, less capital-intensive, or more streamlined or flexible technological process-computer-assisted design and manufacture, or other flexible manufacturing systems, can accommodate both low-cost efficiency and product customisation.
- Bypassing the use of high-cost raw materials or component parts.
- Relocating facilities-moving plants closer to suppliers, customers, or both can help curtail inbound and outbound logistics costs.
- Dropping the 'something for everyone' approach-pruning slow-selling items from the product lineup and being content to meet the needs of most buyers rather than all buyers can eliminate activities and costs associated with numerous product versions.
- Re-engineering core business processes to consolidate processes to consolidate work steps and cut out low value-added activities.

Notes



Did u know? Success in achieving cost advantages over rivals comes from exploring all avenues for reducing costs and pressing for continuous cost reductions across all aspects of the company's value chain year after year.

A competitive strategy predicated on low-cost leadership is particularly powerful when:

1. Price competition among rival sellers is especially vigorous.
2. The products of rival sellers are essentially identical and supplies are readily available from any of several eager sellers.
3. There are few ways to achieve product differentiation that have value to buyers.
4. Most buyers use the product in the same ways.
5. Buyers incur low costs in switching their purchases from one seller to another.
6. Buyers are large and have significant power to bargain down prices.
7. Industry newcomers use introductory low prices to attract buyers and build customer base.

The pitfalls of a low-cost provider strategy are:

1. The biggest pitfall of a low-cost provider strategy is getting carried away with overly aggressive price cutting and ending up with lower, rather than higher, profitability.
2. A second pitfall is not emphasising avenues of cost advantage that can be kept proprietary or that relegate rivals to playing catch-up. The value of cost advantage depends on its sustainability. Sustainability, in turn, hinges on whether the company achieves its cost advantage in ways difficult for rivals to copy or match.
3. A third pitfall is becoming too fixated on cost reduction. Low cost cannot be pursued so zealously that a firm's offering ends up being too-features-poor to generate buyer appeal.
4. A company driving hard to push its cost down has to guard against misreading or ignoring increased buyer interest in added features or service, declining buyer sensitivity to priced or new developments that start to alter how buyers use the product.

Self Assessment

State whether the statements are true or false:

3. Success in achieving cost advantages over rivals comes from exploring all avenues for reducing costs and pressing for continuous cost reductions across all aspects of the company's value chain year after year.
4. The biggest pitfall of a low-cost provider strategy is getting carried away with overly aggressive price cutting and ending up with lower, rather than lower, profitability.

14.3 Differentiation Strategies

The essence of a differentiation strategy is to be unique in ways that are valuable to customers and that can be sustained.

Successful differentiation allows a firm to:

- Command a premium price for its product, and/or

- Increase unit sales (because additional buyers are won over by the differentiating features), and/or
- Gain buyer loyalty to its brand (because some buyers are strongly attracted to the differentiating features and bond with the company and its products).

Differentiation enhances profitability whenever the extra price the product commands outweighs the added costs of achieving the differentiation. Company differentiation strategies fail when buyers don't value the brand's uniqueness enough to buy it instead of rivals' brands and/or when a company's approach to differentiation is easily copied or matched by its rivals, thus eliminating the basis of differentiation.

14.3.1 Types of Differentiation Themes

Companies can pursue differentiation from many angles: unique taste (Dr. Pepper, Listerine); multiple features (Microsoft Windows, Microsoft Office; wide selection and one-stop shopping (Amazon.com), superior service (FedEx in the next-day delivery); spare parts availability (Caterpillar guarantees 48 hour spare parts delivery to any customer anywhere in the world or else the part is furnished free); more for money (McDonald's, Wal-Mart); Engineering design and performance (Mercedes, BMW); prestige and distinctiveness (Rolex in watches) etc.

The most appealing approaches to differentiation are those that are hard or expensive for rivals to duplicate. This is why sustainable differentiation usually has to be linked to core competencies, unique competitive capabilities, and superior management to value chain activities.

Where along the value chain to create the differentiating attributes: Differentiation opportunities can exist in activities all along an industry's value chain; possibilities include:

1. Purchasing and procurement activities that ultimately spill over to affect the performance or quality of the company's end product.
2. Product R&D activities that aim at improved product designs and performance features, expanded uses and application, more frequent first-on-the market victories, wider product variety and selection, added user safety, greater recycling capability or enhanced environmental protection.
3. Production R&D and technology-related activities that permit custom-order manufacture at an efficient cost; make production methods safer for the environment; or improve product quality, reliability and appearance.
4. Manufacturing activities that reduce product defects, prevent premature product failure, extend product life, allow better warranty coverage, improve economy of end use, result in more end-user convenience, or enhance product appearance.
5. Outbound logistics and distribution activities that allow for faster delivery, more accurate order filling, and fewer warehouse and on-the-shelf stock-outs.
6. Marketing, sales, customer service activities that result in superior technical assistance to buyers, faster maintenance and repair services, more and better product information provided to customers, more and better training materials for end users, better credit terms, quicker order processing, or greater customer convenience.

Achieving a Differentiation-based Competitive Advantage

Any of four basic approaches can be used:

1. First is to incorporate product attributes and user features that lower the buyer's overall costs of using the company's product.

- Notes**
2. A second approach is to incorporate features that raise the performance a buyer gets out of the product.
 3. A third approach is to incorporate features that enhance buyer satisfaction in non-economic or intangible ways.
 4. A fourth approach is to compete on the basis of capabilities – to deliver value to customers via competitive capabilities that rivals don't have or can't afford to match.

Importance of Received Value and Signalling Value

A firm whose differentiation strategy delivers only modest extra value but clearly signals that extra value may command a higher price than a firm that actually delivers higher value but signals it poorly.

Keeping the cost of differentiation in line: Company efforts to achieve differentiation usually increases costs. The trick to profitable differentiation is either to keep the costs of achieving differentiation below the price premium the differentiating attributes can command in the market place (thus increasing the profit margin per unit sold) or to offset thinner profit margins with enough added volume to increase total profits.

When a Differentiation Strategy Works Best

Differentiation strategies tend to work best in market circumstances where:

- There are many ways to differentiate the product or service and many buyers perceive these differences as having value.
- Buyer needs and uses are diverse – some buyers prefer one combination of features and other buyers another.
- Few-rival firms are following a similar differentiation approach.
- Technological change and product innovation are fast-paced and competition revolves around rapidly evolving product features.

Pitfalls of a Differentiation Strategy

To build competitive advantage through differentiation a firm must search out sources of uniqueness that are time-consuming or burdensome for rivals to match. Other common pitfalls and mistakes in pursuing differentiation include:

- Trying to differentiate on the basis of something that does not lower a buyer's cost or enhance a buyer's well-being, as perceived by the buyer
- Over differentiating so that price is too high relative to competitors that product quality or service levels exceed buyers' needs
- Trying to charge too high a price premium (the bigger the price differential the harder it is to keep buyers from switching to lower-priced competitors)
- Ignoring the need to signal value and depending only on intrinsic product attributes to achieve differentiation
- Not understanding or identifying what buyers consider as value.

14.4 Strategic Frameworks for Value Chain Analysis

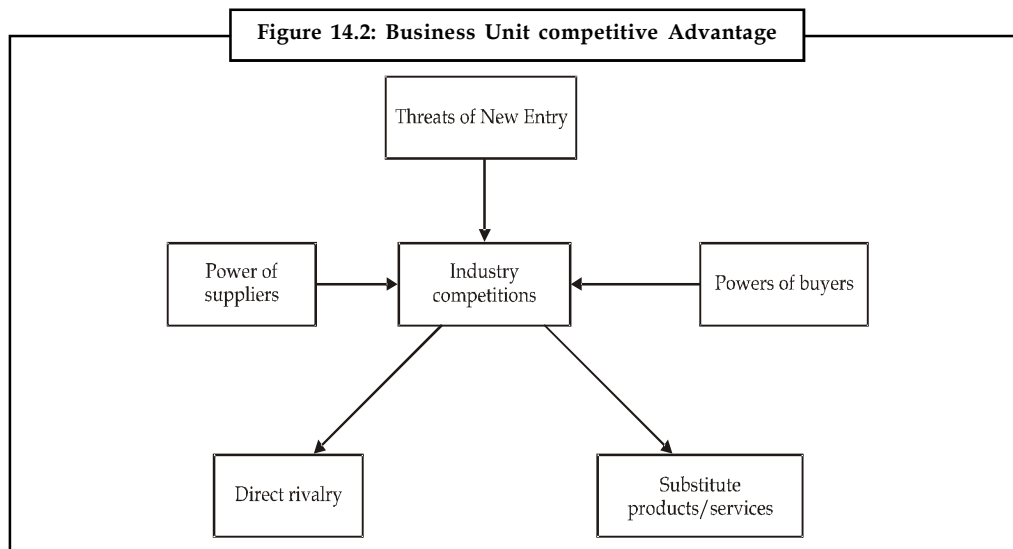
Value chain analysis requires a strategic framework or focus for organising internal and external information, for analysing information, and for summarising findings and recommendations.

Three useful strategic frameworks for value chain analysis are:

- Industry structure analysis
- Core competencies
- Segmentation analysis

14.4.1 Industry Structure Analysis

Michael E Porter (Competitive Advantage, New York, Free Press 1985) states that the structure of an industry should be analysed in terms of collective strength of five competitive forces as given in Figure 14.2.



Analysing the structure of industries in terms of the collective strength of five competitive forces:

1. **The intensity of rivalry among existing competitors:** Factors affecting direct rivalry are industry growth, product differentiability, number and diversity of competitors, level of fixed costs, intermittent capacity and exit barriers.
2. **The bargaining powers of buyers:** i.e. no. of buyers, buyers' switching cost, buyers' ability to integrate backward, impact of the buyers' units, product on buyers' total costs, impact of the buyer units' product on buyers' quality/performance and significance of the business units volume to buyers.
3. **The bargaining powers of suppliers:** Factors affecting power of the supplier are no. of suppliers, suppliers' ability to integrate forward, presence of substitute inputs and importance of the business unit's volume to suppliers.
4. **Threat from substitutes:** Factors affecting substitute threat are: Relative price/performance of substitutes, buyers' switching costs, and buyer's propensity to substitute.
5. **The threat of new entry:** Factors affecting entry barriers are: Capital requirements, access to distribution channels, economies of scale, product differentiation, expected retaliation from existing firms and government policy.

The more powerful the five forces are the less profitable, industry is likely to be (example in steel industry, threat from substitutes is high). In industries, where average profitability is high, the five forces are weak.

Notes

Depending upon the relative strength of the five forces, the key strategic issues facing the business units will differ from one industry to another.



Note Understanding the nature of each force helps the firm to formulate effective strategies. As for example, the relative bargaining power of several buyers, groups with facilitate selection of target buyers.

14.4.2 Core Competencies

Industry structure analysis must be supplemented by an equally explicit core competency focus. Organisations need to be reviewed as a bundle of a few core competencies, each supported by several individual skills.

Core competencies are created by superior integration of technological, physical and human resources. They represent distinctive skills as well as intangible, invisible, intellectual assets and cultural capabilities. Cultural capabilities refer to the ability to manage change, the ability to learn and team working.



Example: Microsoft's only factory asset is its human imagination. The company has excelled in inventing new ways of using information technology for a wide variety of end users.

A core competence is identified by the following tests:

- Can it be leveraged?
- Does it provide potential access to a wide variety of markets?
- Does it enhance customer value?
- Does it make a significant contribution to the perceived customer benefits of the end product?
- Can it be imitated?
- Does it reduce the threat of imitation by competitors?

Applying the value chain approach to core competencies for competitive advantage includes the following steps:

1. **Validate core competencies in current businesses:** Core competencies should tie together the portfolio of end products and help a firm excel in dominating its industry.



Example: Proctor & Gamble's R&D expertise and marketing/distribution skills provide a significant competitive advantage in a wide range of mass consumer products (e.g. Ivory, Tide, Folgers, Crisco, and Pampers).

2. **Export or leverage core competencies to the value chain of other existing businesses:** The same set of core competencies can be exploited in multiple businesses by exporting core competencies to the value chain of the existing businesses.



Example: One of Honda's core competencies is designing and producing small engines. By exporting this core competence to a wide variety of business lines, the company seeks to have six Hondas in every garage: autos, motor cycles, snowmobiles, lawnmowers, snow blowers,

chain saws and power tools. Other Honda core competencies are dealership management and shorter product development cycles.

3. **Use core competencies to reconfigure the value chain of an existing business:** While firms may manage their existing value chains better than their competitors, sophisticated firms work harder on using their core competencies to reconfigure the value chain to improve payoffs. Otherwise, competitors may exploit opportunities.



Example: Japanese watchmaker's side-stepped traditional distribution channels in favour of mass merchandisers such as department store chains.

Tetra-Pak is an excellent example of a firm that reconfigured the value chain in the packing industry for dairy products and orange juice. Tetra Pak designed filling machine for its aseptic packages and changed the packaging industry.

4. **Use core competencies to create new value chains:** With strong core competencies in its existing businesses, an organisation can seek new customers by developing new value chains.



Example: Federal Express (FedEx) transferred its expertise in the delivery of small packages to contract new business with L.L.Bean for overnight distribution. Disney has exported its people-moving skills to urban mass transit for Oakland, California.

14.4.3 Segmentation Analysis

Industries are sometimes collections of different market segments. Vertical integrated industries are good examples of a string of natural businesses from the source of raw materials to the end use by the final consumer. Several firms in the paper and steel industries are vertically integrated. Not all firms in an industry participate in all segments.

Differences in structural and competition among segments may also mean differences in key success factors among segments.

Using the value chain approach for segmentation analysis, Grant (1991) recommended five steps:

1. **Identify segmentation variables and categories:** There are many ways to divide the market into segments. Typically, an analysis considers between five to ten segmentation variables. These variables are evaluated on the basis of their ability to identify segments for which different competitive strategies are (or should be) pursued.

The selection of the most useful segment-defining variables is rarely obvious, industries may be subdivided by product lines, type of customer, channels of distribution and region/geography. The most common segmentation variables considered are type of customer and product related as illustrated below:

The first category of variables describes segments in terms of general characteristics unrelated to the product involved. Thus, a bakery might be concerned with geographic segments, focusing on one or more regions or even neighbourhoods. It might also divide its market into organisational types such as at-home customers, restaurants, dining operations in schools, hospitals and so on.

The second category of segment variables includes those that are related to the product. One of the most frequently employed is usage. A bakery may employ a very different strategy in serving restaurants that are heavy users of bakery products than restaurants that use fewer bakery products.

Notes

Table 14.1: Approaches to Defining Segmentation Variables

Customer Characteristics	
Geographic	Small communities as markets for discount stores
Type of organization	Computer needs of restaurants versus manufacturing forms versus banks versus retailers
Size of the firm	Large hospital versus medium versus small
Life style	Jaguar buyers tend to be more adventurous, less conservative than buyers of Mercedes-Benz and BMW
Sex	The Virginia slims cigarettes for women
Age	Cereals for children versus adults
Occupation	The paper copier needs of lawyers versus bankers versus dentists
Product Related Approaches	
Use type	Appliance buyer-home builder, re-modeller, homeowner
Usage	The heavy potato user-the fast food outlets
Benefits sought	Dessert caters-those who are calorie-conscious versus those who are more concerned with convenience
Price sensitivity	Price sensitive Honda civic buyer versus the luxury Mercedes-Benz buyer
Competitor	Those competitor users now committed to IBM
Application	Professional users of chain saws versus the home owner
Brand loyalty	Those committed to IBM versus others

2. **Construct segmentation matrix:** After customer and product related variables have been selected for identifying different segments, a segmentation matrix can be developed. Two or more dimensions may be used to partition an industry.



Example: Restaurants could be divided into four dimensions; types of cuisine, price range, type of service (e.g. sit-down, buffet, cafeteria, take-out, fast food) and location.

A segmentation matrix for the British frozen foods industry is presented. Five types of product and five channels of distribution are used to construct the two-dimensional segmentation matrix consisting of 25 potential segments. However, not every cell in the matrix may be relevant. Empty cells may represent future opportunities for products or services.

Table 14.2: Segmenting the British Frozen Food Industry

P R O D U C T T Y P E		Distribution channels				
		Supermarkets		Independent Grocery Retailers	Specialist Freezer Stores	Caterers
		Producers' Brands	Retailers' Brands			
	Vegetables					
	Fruits					
	Meat products					
	Desserts					
	Convenience Ready meals					

3. **Analyse segment attractiveness:** Competitive assessments using industry structure analysis or core competencies analysis can also be used to evaluate the profitability of different segments. However, the competitive focus shifts to an analysis of the different segments.



Example: In the frozen foods industry segmentation, independent grocers and caterers may be willing to substitute within the segments and from outside sources must be carefully examined.

In addition, the interrelationship among segments must be carefully considered. For example, caterers may purchase frozen food items from super markets at bargain prices. Segments may be natural buyers, sellers or substitutes for one another.

4. **Identify key success factors for each segment:** Quality, delivery, customer satisfaction, market share, profitability and return on investment are common measures of corporate success. In this regard, each segment must be assessed using the most appropriate key success factors. Cost and differentiation on advantages should be highlighted by these measures.
5. **Analyse attractiveness of broad versus narrow segment scope:** A wide choice of segments for an industry requires careful matching of a firm's resources with the market. The competitive advantage of each segment may be identified in terms of low cost and/or differentiation.

Sharing costs across different market segments may provide a competitive advantage. For example, Gillette broadened its shaving systems to include electric shavers through its 1970 acquisition of Braun. Lipton recently entered the bottled iced-tea market.

A segment justifying a unique strategy must be worthwhile size to support a business strategy. Furthermore, that business strategy needs to be effective with respect to the target segment in order to be cost effective.

14.4.4 Limitations of Value Chain Analysis

There are several limitations to the implementation and interpretation of value chain analysis. These are given below:

- The internal data on costs, revenues and assets used for value chain analysis are derived from one period's financial information. For long-term strategic decision-making, changes in cost structures, market prices and capital investments from one period to the next may alter the implications of value chain analysis.
- Identifying stages in an industry's value chain is limited by the ability to locate at least one firm that participates in a specific stage. Breaking a value stage into two or more stages when an outside firm does not compete in these stages is strictly judgement.
- Fining the costs, revenues and assets for each value chain activity sometimes presents serious difficulties.
- Isolating cost drivers for each value-creating activity, identifying value chain linkages across activities and computing supplier and customer profit margins present serious challenges.



Caution Despite the calculation difficulties, experiences indicate the performing value chain analysis can yield firms invaluable information for their competitive situation, cost structure, and linkages with suppliers and customers.

Notes

Organisational and Managerial Accounting Challenges

Value chain analysis offers an excellent opportunity to integrate strategic planning with management accounting to guide the firm to growth and survival.

The most significant challenge for senior management and management accountants is to recognise that the traditional, functional, internally oriented information system is inadequate for the firm engaged in global competition.

Another challenge for management accountants is to bring the importance of customer value to the forefront of management strategic thinking. For many managers and firms, this requires a great deal of education and awareness.

Although value chain analysis requires expertise in internal operations and information, it demands a great deal of external information. Management accountants must seek relevant financial and non-financial information from sources outside the organisation.

Management accountants must integrate databases and potential sources of timely information on competitive forces confronting the business. This calls for innovation and creativity in gathering and analysing information for management decisions.

Designing internal and external information systems to assist managers in planning, monitoring and improving value-creating processes is another challenge facing management accountants.

Value chain analysis requires the cooperation of all managers involved in value chain processes, including engineers, designers, production managers, marketing managers and distribution managers. Leadership from the CEO is vital to successful cooperation of managers. The management accountant should ensure that the CEO is committed to value chain analysis and the organisational changes necessary for its successful implementation.

14.4.5 Value Chain Analysis vs. Conventional Management Accounting

Information generated from the traditional management accounting systems, including cost accounting is generally unsuitable for value chain analysis for a variety of reasons. The Box below provides a comparison between value chain analysis and traditional management accounting.

	Traditional Management Accounting	Value Chain analysis in the strategic Framework
Focus	Internal	External
Perspective	Value-added	Entire set of linked activities from suppliers to end-use customers
Cost driver concept	Single cost driver (cost is function of volume) Application at the overall firm level (cost-volume-profit analysis)	Multiple cost drivers - Structural drivers (e.g. scale, scope, experience, technology and complexity) - Execution drivers (e.g. participative management, total quality management and plant layout) A set of unique cost drivers for each value activity)
Cost containment philosophy	"Across the board" cost reductions	Value cost containment as a function of the cost drivers regulating each value activity. Exploit linkages with suppliers.

Contd...

		Exploit linkages with customers Exploit process linkages within the firm "Spend to save"	Notes
Insight for strategic decisions	Somewhat limited	Identify cost drivers at the individual activity level, and develop cost/ differentiation advantage either by controlling those drivers better than competitors by reconfiguring the value chain (e.g. Federal Express in mail delivery and MCI in long distance telephone) For each value activity, ask strategic questions pertaining to - Make versus buy - Forward/backward integration Quantify and assess "supplier power" and "buyer power" and exploit linkages with suppliers and buyers.	

Self Assessment

Fill in the blanks:

5. enhances profitability whenever the extra price the product commands outweighs the added costs of achieving the differentiation.
6. Company efforts to achieve differentiation usually costs.
7. Core competencies are created by superior integration of technological, physical and resources.



Caselet

Value Analysis of Procter and Gamble

Value Chain Analysis of Procter and Gamble case study Value Chain Analysis describes the activities that take place in a business and relates them to an analysis of the competitive strength of the business. Value Chain Analysis is one way of identifying which activities are best undertaken by a business and which are best outsourced. It suggests that the activities of a business could be grouped under two headings: primary activities and supporting activities.

Primary Activities: those that are directly concerned with creating and delivering a product (e.g. component assembly).

1. **Sourcing and Procurement (sourcing, supply planning, materials procurement):** Relating this model to P&G's case study, it could be implied that P&G's raw materials are sourced and/or procured from all over the world, wherever it would be cost-effective. It is thus no surprise that for a number of years it had focused on ways to improve supply chain efficiency and costs. It now has a powerful industrial network linking electronically to major suppliers and customers. This is to the extent that it changed companies when efforts to reduce inventory levels only produced marginal improvements. This led to the introduction of agent-based modelling.
2. **Operations (assembly, branch operations):** P&G's operations had four business units: health and beauty, babies, snacks and beverages, and fabric and home care. It offered

Contd...

Notes

more than 300 products including major brands like Tide. It has been aggressively using product lifecycle management software since 2000 for new product development. The company uses MatrixOne software for mechanising and automating the knowledge components, and flow components, within the bringing-a-product-to market phases. In addition, the company is planning to expand its use of agent-based modelling to actually run important aspects of its operations so that end-to-end replenishment cycle for products could be shortened drastically.

3. **Outbound Logistics (warehousing, shipping, fulfilment):** P&G's largest customer was Wal-Mart that had a reputation for requiring suppliers to coordinate their supply chain processes with its powerful just-in-time continuous inventory replenishment system. A database is used to hold information about work processes vital for creating, reviewing, approving, and distributing products. This enabled the company to lower its costs on item such as pigments and chemicals, and to reduce development time.
4. **Sales and Customer Service (sales, order processing, customer support):** According to the case study, Wal-Mart was P&G's largest customer, accounting for nearly 20 percent of its sales and could be responsible for one-third of P&G global sales by 2010. Wal-Mart capitalised on this position to force P&G to sell wares to them at the cheapest prices possible. With the coming of a new CEO in 2000, the company began to find new ways of selling its major brands in more flexible, innovative and cost-conscious ways. This was apparently because they were not meeting sales targets, and had to rely on price increase to do so.

Support Activities, which whilst they are not directly involved in production, may increase effectiveness or efficiency (e.g. human resource management). It is rare for a business to undertake all primary and support activities.

1. **Financial Management (financing, planning, investor relations):** The company's introduction of agent-based modelling saved them \$300 million annually on an investment less than 1 percent of that amount. This is because it was able to perform "what-if" analyses on inventory levels, in-store stock outs, and transportation costs to find out alternate rules to existing ones being analysed, such as ordering and shipping frequencies or product allocation in distribution centres. It was discovered that trucks should be often dispatched before fully loaded. Although transportation costs would be higher using partially loaded trucks because of both driver time and fuel to deliver fewer goods, the simulation showed that retail store stock outs would occur less often, thus reducing the amount of lost sales which would make up for the higher distribution costs.
2. **Research and Development (product design, testing, process design, material research):** P&G came to be seen as unimaginative, even stodgy. It seemed weak in developing new products, and had developed just one product in 15 years. This gave the chance for traditional competitors and makers of generic versions of their branded products to grab market share. It established an Intranet called InnovationNet, which was used to bring people together who are working on similar problems in order to generate synergy for new product ideas and product development. Using the same intranet, P&G allows outsiders like research scientists and entrepreneurs to search for new, innovative products worldwide. Further, it uses a very small information technology group called Virtual Learning @ Procter and Gamble to develop the concepts, designs, and packaging for potential new products.

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3. **Facilities Management (physical plant, IT services, office equipment):** The case study shows the introduction of several information technology services and systems for the various departments of the company.
 - (a) MatrixOne; used to manage and integrate other IT systems and work processes.
 - (b) InnovationNet, and intranet which is used to provide access to published information such as documents, reports, charts and videos.
 - (c) zTelligence; to conduct market research and online surveys
 - (d) Marketing resource management software to enable marketers “focus on creative results-oriented marketing”
4. **Human Resource Management (recruiting, training, compensation):** P&G began to use information systems to support how learning occurred within the company. It created an intranet through which new employees could network with experts, learn from projects and receive answers to pertinent questions. This system encouraged experts to share their knowledge with ‘newbies’ through an implicit compensation or reward system. Further, human resource was provided with tools they needed to enhance their trade. For example, marketing personnel were given a platform where they could access data, marketing principles and tools in order to make sound judgement about a situation.
5. **Marketing and Advertising (market research, promotion, advertising):** The company employed the use of knowledge systems to manage marketing. It also uses a very small information technology group called Virtual Learning @ Procter and Gamble to develop the marketing for potential new products. Further, it works with marketing company called Cre8 to put together virtual presentations that demonstrate new concepts to rapidly prototype new features for current products, and even test how consumers react to alternative shelf-space designs. Using information technology in marketing had been ignored in the past because they saw it as complex. P&G’s various brands, product lines, customers, and even different marketing groups each used their own independent software for some functions, including email and marketing campaign management. Currently, using zTelligence, P&G does much of its market research and surveying online.

Source: <http://vivauniversity.files.wordpress.com/2011/09/pg-case-analysis.pdf>

14.5 Target Costing

Target costing is a market-driven design methodology and involves estimating a cost for a product and then designing the product to match the cost.

Target costing is a cost management tool for reducing product costs over its entire life cycle. It becomes an important reference point for cost management. Target costing includes actions management must take to establish reasonable target costs, develop methods for achieving those targets and develop means by which to test the cost effectiveness of different cost-cutting scenarios.

14.5.1 Several Stages to the Methodology

1. **Conception (planning) phase:**
 - (a) Competitive products should be analysed with regard to price, quality, service and support, delivery and technology. Then it is necessary to establish the features

Notes

customers' value in this type of product and the important features that are lacking. Consumers would be asked what features they would like to have in the product.

- (b) After preliminary testing, the company should be able to pinpoint a market niche it believes, is under supplied and which might have some competitive advantage. Only then a company can set a target cost close to competitor's products of similar functions and value.

2. **Development phase:**

- (a) The design department should subject the most competitive product on the market to reverse engineering analysis. This study will detail materials used, manufacturing process needs and the design department can estimate the competitors cost structure. By gaining further information on the different parts that make up the product, the company can also start conducting make or buy analysis.
- (b) After trying to identify the cost structures of the competitor, the company should develop estimates for the internal cost structure based on internal costs of similar products being produced by the company.
- (c) After preliminary analysis of the cost structures of both competition and itself, the company should further define these cost structures in terms of cost drivers. Analysis of cost drivers will give a better idea of the manufacturing process and can help reducing waste, improve quality, minimise non-value added activities and identify ineffective product design.

3. **Production phase:** Target costing is most effective in the development and design phases of new products but it is also useful in the later stage of the product life cycle. In these stages, target costing becomes a tool for reducing cost of existing products. The search for better, less expensive products should continue in the framework of continuous improvement.

- (a) ABC can be beneficial as a tool for target costing of existing products. Using ABC, a Company can attack the root causes of costs (through cost driver analysis). Target costing at the activity level makes opportunities for cost reduction highly visible.
- (b) Consumer survey can give features they prefer in products priority wise. These surveys help management do cost-benefit analysis on different features of a product and then try to reduce costs on features that are not ranked highly.
- (c) Target costing also provides incentives to move towards less expensive means of production, as well as production techniques that provide a more even-flow of goods.

14.5.2 Benefits of Target Costing

The following are the benefits of target costing:

- 1. The target costing provides detailed information on the costs involved in producing a new product as well as better way of testing different cost scenarios through the use of ABC.
- 2. Target costing reduces the development cycle of the product.
- 3. Target costing greatly increases the profitability of new products, through promoting reduction in costs while maintaining or improving quality. Target costing also promotes the requirements of consumers and therefore find better acceptance than existing products.

4. Target costing is also used to forecast future costs and provides motivation to meet future cost goals.
5. Target costing is used to control costs before the company incurs any production costs which save a great deal of time and money. Furthermore, target costs may be used continually to control costs throughout the production life cycle.

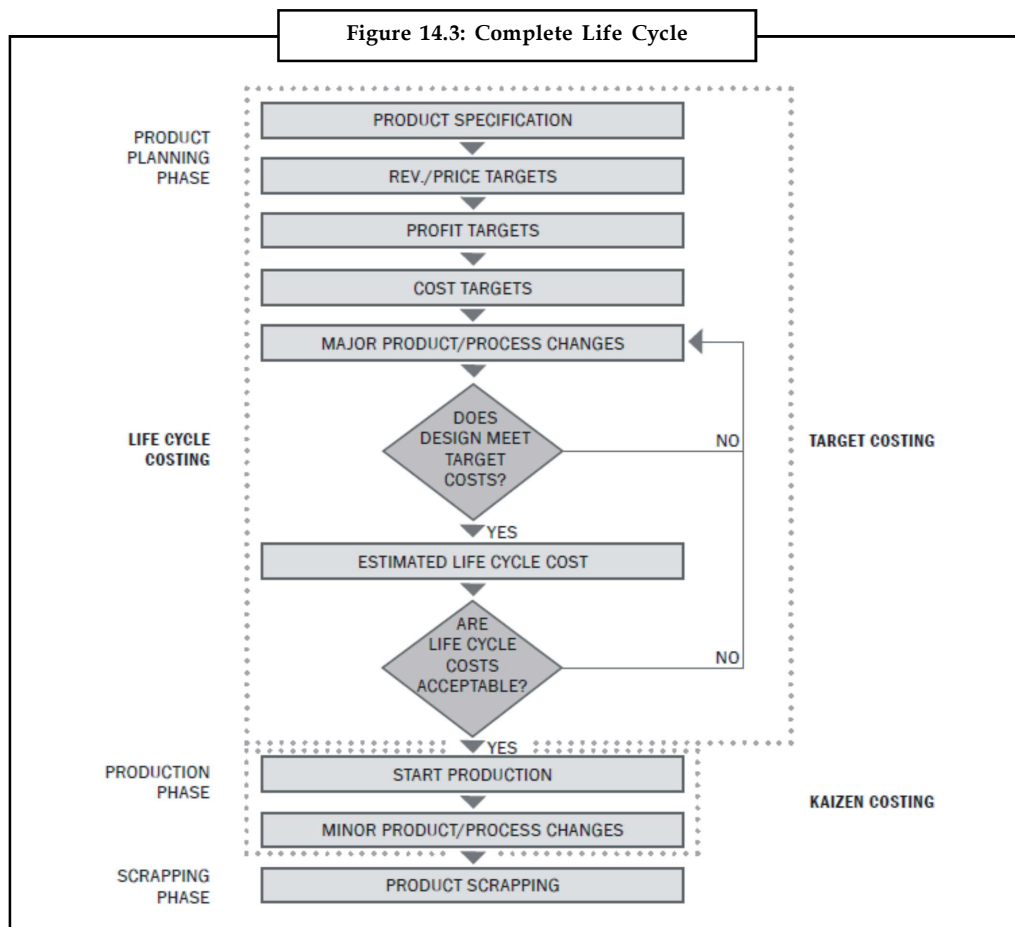
Self Assessment

Fill in the blanks:

8. is a market-driven design methodology and involves estimating a cost for a product and then designing the product to match the cost.
9. Target costing is most effective in the and design phases of new products.

14.6 Kaizen Costing

Today, companies in industries such as electronics, automotive and high-tech are under increasing pressure to cut costs. Faced with ever-growing competition, these industries are beginning to open up their supply chains to take further steps to meet market demands for lower prices. Now, they consider it about time that suppliers began to pull their weight. An increasingly well-developed outsourcing strategy means that suppliers achieve greater added value while manufacturers, with declining added value, become extremely sensitive to price changes.



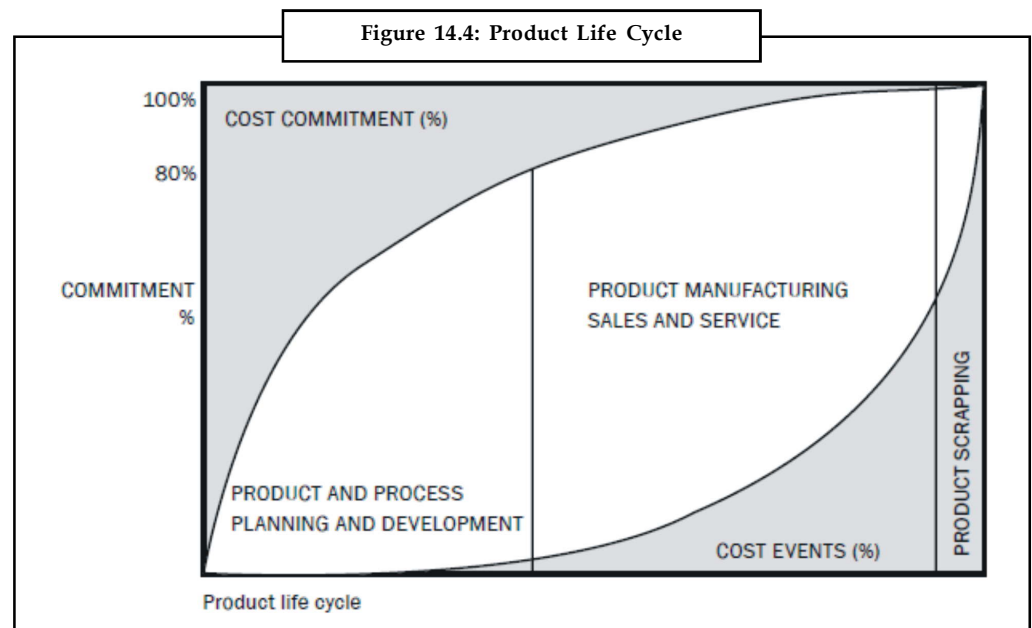
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Therefore, the question is what suppliers can do to continuously lower prices. They can, of course, cut prices by cutting profit margins or by lowering costs. Stockholders, however, are unlikely to want to cut profit margins. Instead they want higher profits, higher dividends and a more attractive stock. So in addition to demands for a decrease in costs, suppliers are also confronted with stockholders' demands for greater profit.

Because of this, the challenge facing suppliers is to get better results at lower costs to enable price cuts and higher profit. There are numerous possibilities here. These include the introduction of new technology, organisational changes, competence development, marketing measures, product development, logistics, costs, etc. Realising all these possibilities requires sound methodology and knowledge of how to implement them because changes don't always produce the results that were envisioned.

In concrete terms, there is already a product, a customer, an agreement, and an infrastructure related to the component that the supplier makes its living from. How then is the supplier to realise the required cost trend without changing anything? It's not certain that the detailed specification that forms the basis for the supplier's component cannot be altered despite the demand for price cuts. A major complication arises; the supplier should lower costs without changing the conditions.

Let us look at how product costs build up throughout the lifecycle. According to experts, as much as 80% of lifecycle costs are determined when production begins. Therefore, Kaizen Costing can be a suitable method for achieving cost reductions.



14.6.1 Kaizen Estimates in Practice

When planning, a cost target is set and a gap occurs. Then it's a matter of trying to establish why the goal was set and what the possibilities are of reaching the target. Major cost reductions can be broken down into smaller reductions and form their own activities where they are easier to handle. The activity is planned for a particular day when the change should be made and the new cost applies. Individual activities have a status in that the activity is either initiated, preliminary, final, verified, or rejected. Each activity bears its own investment and contribution according to an investment estimate. The activity does not commence until the investment estimate has been approved and resources with the appropriate competence have been allocated and planned.

Figure 14.5: Kaizen Estimates

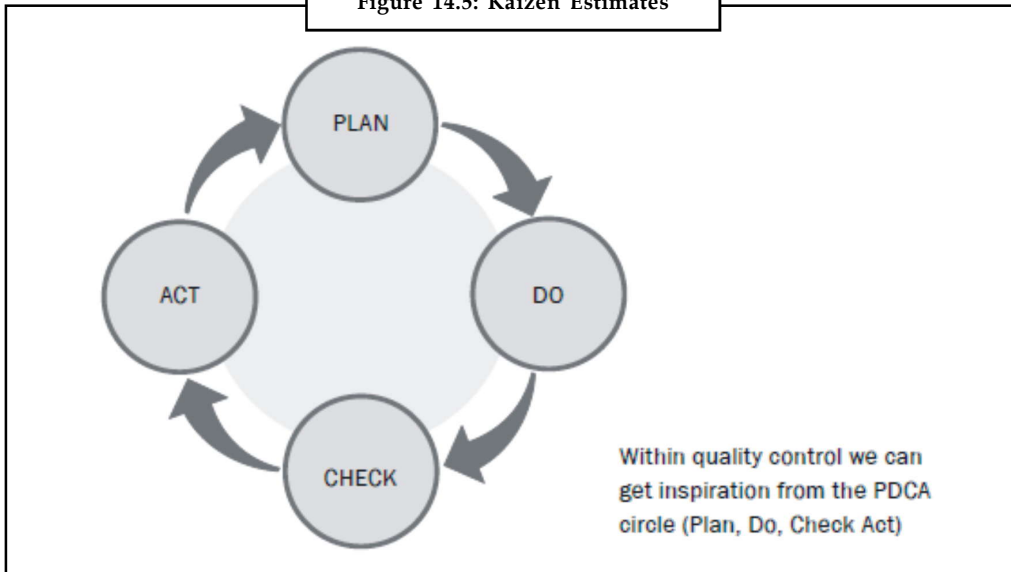
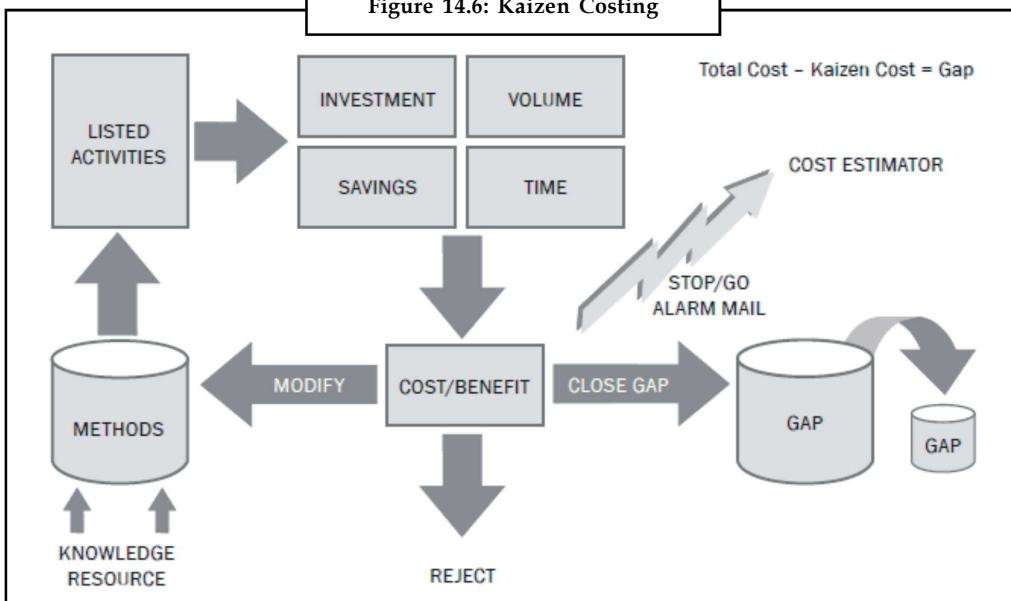


Figure 14.6: Kaizen Costing



- Who are the suppliers for the component in question and how great is their added value? If a few of the suppliers own a large amount of the purchase value, it might be wise to test their willingness to work on costs.
- Are there blank spaces in the specification where there is a lack of experience and the final product specification consisted of an ad hoc technical solution?
- What can be done concerning logistics, packaging, investment, etc.?
- Can improvements be made in the purchasing function?
- What about production, maintenance, planning, etc.?
- Can the work be organised differently?
- Do we have the right customers?

Notes

The ability to report the amount of product value that is shared with other product families with respect to production items and purchased items provides useful information about the amount of a product's items that can be recycled.



Did u know? Recycling levels of items explain how modularisation has been implemented or whether there is a platform concept for the product. This is a way to develop higher volumes of the items that are used by the company.

14.6.2 Benefits of Kaizen Costing

Kaizen Costing creates a dialog and respect for those whose task is to cut costs, which can often be viewed as reactionary and not value adding. The investment estimate is now available since the basis for making the estimate is determined in advance. Therefore it's simply a matter of entering the relevant values, which can be done by the implementing group. Competence development is long-term and is directed toward events that occur earlier in the process. The result generates the ability to survive in the short term.

Within a given framework, the investment estimate is distributed to those who are working with the issues so that they can focus at an earlier stage on the challenges that bear financial fruit. This also provides a solution to the problem of rewarding the group working with cost rationalisation. Normally, the question is who contributed to what? The operator develops the idea, the designer implements the changes, and the buyers negotiate the new purchase price. Who has contributed to what? Who should get a bonus? With Kaizen Costing, every activity will be supported by a work team that shares the result.

Self Assessment

Fill in the blanks:

- 10. Costing creates a dialog and respect for those whose task is to cut costs, which can often be viewed as reactionary and not value adding.
- 11. Kaizen Costing can be a suitable method for achieving

14.7 Life Cycle Costing

Life cycle costing as its name implies, costs the cost object i.e. product, project, etc. over its projected life. It is used to describe a system that tracks and accumulates the costs and revenues and attributes to cost object from its inception to its abandonment. The profitability of any given object can, therefore, be determined at the end of its economic life.

Life cycle costing is different from traditional cost accounting system which report cost object profitability on a calendar basis i.e. monthly, quarterly and annually. In contrast, life cycle costing involves tracing cost and revenue on a product to product basis over several calendar periods. Costs and revenue can be analysed by time period, but the emphasis is on cost revenue accumulation over the entire life cycle of each product.

14.7.1 Product Life Cycle

Each product has a life cycle, which varies from few months to several years. For example, in case of camera, photocopying machines, etc. the life is more than 100 years whereas in the case of black and white TV/VCR, it is for few years only. Product life cycle is thus a pattern of

expenditure, sale level, revenue and profit over the period from new idea generation to the deletion of product from product range.

Phases of Product Life Cycle: The life cycle of a product consists of four phase viz. Introduction, Growth, Maturity and Decline.

During introductory phase, a product is launched into the market, its customers are innovators. Competition is almost negligible and profits are non-existent. Under growth phase, sales and profits rise, at a rapid pace. Competitors enter the market often in large numbers. As a result of competition, profits starts declining near the end of the growth phase.

During the phase of maturity sales continue to increase, but at a decreasing rate. When sales level off, profits of both producers and middlemen decline. The main reason is intense price competition; some firms extend their product lines with new models.

Decline in sales volume characterises the last phase of the product life cycle. The need or demand of the product disappears. Availability of better and less costly substitutes in the market accounts for the arrival of this phase.

Characteristics of Product Life Cycle: The major characteristics of product life-cycle concept are as follows:

1. The products have finite lives and pass through the cycle of development, introduction, growth, maturity, decline and deletion at varying speeds.
2. Product cost, revenue and profit patterns tend to follow predictable courses through the product life cycle. Profits first appear during the growth phase and after stabilising during the maturity phase, decline thereafter to the point of deletion.
3. Profit per unit varies as products move through their life cycles.
4. Each phase of product life cycle poses different threats and opportunities that give rise to different strategic actions.
5. Products require different functional emphasis in each phase such as an R&D emphasis in the development phase and cost control emphasis in the decline phase.
6. Finding new uses or new users or getting the present uses to increase their consumption, this may extend the life of the product.

14.7.2 Various Stages of Product Life Cycle

Typically the life cycle of a manufactured product will consist of the following stages:

1. **Market research:** This usually means that market research will establish what product the customer wants, how much he is prepared to pay for it and how many he will buy.
2. **Specification:** When market research has established what is to be made, the design specification will give such details as required life, maximum permissible maintenance costs, maximum permissible manufacturing cost, the number required, the delivery date, the required performance of the product.
3. **Design:** With a precise specification, the designers can produce the drawings and process schedules which define the geometry of the product and some of the manufacturing processes.
4. **Prototype manufacture:** From the drawings it will possible to manufacture a small number of the product. These prototypes will be used to develop the product and eventually to demonstrate that it meets the requirements of the specification.

Notes

5. **Development:** When a product is first made it rarely meets the requirements of the specification and changes have to be made. This method of testing and changing is development.
6. **Tooling:** Tooling up for production can mean building a production line costing several lakhs of rupees, building expensive jigs, buying special purpose machine tools or, in some other say, making a very large investment.
7. **Manufacture:** The manufacture of a product involves the purchase of the raw materials, the purchase of bought-out components, the use of labour to make and assemble the product and the use of supervisory labour.
8. **Selling:** When the product is fit to sell and available, it may be necessary to spend money on a campaign to sell the product.
9. **Distribution:** In the process of selling the product, it must be distributed to the sales outlets and to the customers.
10. **Product support:** The manufacturer or supplier will have to make sure that spares and expert servicing are available for the life of the product. The manufacturer or the supplier may even have to offer free servicing and parts replacement during the early life of the product.
11. **Decommissioning or replacement:** When a manufacturing product, comes to an end, the plant used to build the product must be reused, sold, scrapped, or decommissioned in a way that is acceptable to society.

14.7.3 Product Life Cycle Costing

The thrust of product life cycle costing is on the distribution of costs among categories changes over the life of the product, as does the potential profitability of a product. Hence, it is important to track and measure costs during each stage of a product's life cycle.

Features of Product Life Cycle Costing: Product life cycle costing is important due to the following features:

1. Product life cycle costing involves tracing of costs and revenues of each product over several calendar periods throughout their entire life cycle. Costs and revenues can be analysed by time periods, but the emphasis is on cost and revenue accumulation over the entire life cycle for each product.
2. Product life cycle costing traces research and design and development costs, etc. incurred to individual products over their life cycles, so that the total magnitude of these costs for each individual product can be reported and compared with product revenues generated in alter periods.

Benefits of Product Life Cycle Costing: The benefits of product life cycle costing are summarised as follows:

1. The product life cycle costing results in earlier actions to generate revenue or to lower costs than otherwise might be considered. There are a number of factors that need to be managed in order to maximise return on a product.
2. Better decisions should follow from a more accurate and realistic assessment of revenues and costs, at least within a particular life cycle stage.
3. Product life cycle thinking can promote long-term rewarding in contrast to short-term profitability rewarding.

4. It provides an overall framework for considering total incremental costs over the entire life span of a product, which in turn, facilitates analysis of parts of the whole where cost effectiveness might be improved.

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Self Assessment

Fill in the blanks:

12. The thrust of product life cycle costing is on the of costs among categories changes over the life of the product.
13. provides an overall framework for considering total incremental costs over the entire life span of a product.
14. Product life cycle costing involves tracing of costs and of each product over several calendar periods throughout their entire life cycle.
15. The of a product involves the purchase of the raw materials, the purchase of bought-out components, the use of labour to make and assemble the product and the use of supervisory labour.



Case Study

Conceptual Framework for Launching and Implementing Target Costing in Automotive Industry

Cost management method used by automakers must be useful for the production of new products which meets the customer's demand at lowest cost as well as an aid to cost reduction of existing product by eliminating wastes. To achieve this, automakers need the total cost management system which includes target costing. Environmental changes in automotive industry for example: the shortening of product life cycle, diversification of customer's demands and highly competition in automotive industry are inevitable. With such changes, cost management method used, must be useful for production of new products which meets customer's demands at lowest cost. On account of this, automakers have come to need total cost management which includes product development and design activities as well as product activities. This contrasts with traditional cost management which focused on cost control in the production stage. In fact the most of the costs in the production stage are determined in the stage of new product development and design indicated the need for total cost management. Target costing is an activity which is aimed at reducing the life-cycle costs of new products, while ensuring quality and customer requirements, and by examine all possible ideas for cost reduction at the product planning, research and development, and the prototyping phases of production. Target costing is an important tool because it promotes cost consciousness and focuses on profit margin, both of which strengthen an organisation's competitive position.

Advantages of Target Costing for Automotive Industry

As seen in the target costing history, automotive sector is the one which has applied the elements of target costing extensively since 1970s, and it is not surprising that there are case studies that exhibit the benefits of target costing in automotive sector. For example, in the study of Cooper and Chew (1996); the authors conducted a case-study in Japanese Isuzu and highlighted that target costing was an efficient strategy versus the pressure of

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lean competitors that reacted in a very short time. Although the new product design stage offers significant reduction opportunities for target costing process, Shank and Fisher (1999) argues that target costing might be applied to existing products and also at the manufacturing stages of the product life cycle. To this end, target costing may provide significant benefits even for those automakers that did not have an effective cost management system. Basically the major characteristics or advantages of target costing as mentioned in are listed below:

1. Target costing will provide management methods and analytical techniques for developing new products and services whose costs support strategic objectives for market position and profit.
2. New product's costs will be defined from the customer's viewpoint; they will include functionality, cost of ownership and manner of delivery.
3. Target costing is a critical component of new product development teams and concurrent engineering.
4. Target costing will incorporate as wide a range of costs and life cycle phases for the new product or service as can be logically assigned and organisationally managed.
5. Target costing will provide analytical techniques to indicate where cost reduction efforts on parts and processes will have most impact, and where commonality and simplification can be increased.
6. The quality of cost data will be consistent with the responsiveness and level of detail required at various development phases. The system will use the logic and benefits of activity-based costing
7. The achievement of market-driven product attributes will be protected from cost reduction ambitions.
8. Targets for product cost will be set for various life cycle phases in development and production.
9. Target costing will aim for appropriate simplicity, relevance and ease of use by new product development teams; it avoids unnecessary complexity of language and time consumption in cost assessments.

Impact of Target Costing on Profitability in Automotive Industry

Target costing can have a startlingly large positive impact on profitability for automakers, depending on the commitment of management to its use, the constant involvement of cost accountants in all phases of a product's life cycle, and the type of strategy which automakers follow. Target costing improves profitability in two ways as follow:

First: It places such a detailed continuing emphasis on new product costs throughout the life cycle of every product that it is unlikely that an automaker will experience runaway costs; also, the management team is completely aware of costing issues since it receives regular reports from the cost accounting members of all design teams.

Second: It improves profitability through precise targeting of the correct prices at which the automaker feels it can field a profitable product in the marketplace that will sell in a robust manner. This is opposed to the more common cost-plus approach under which an automaker builds a product, determines its cost, tacks on a profit and then does not understand why its resoundingly high price does not attract buyers. Thus, target costing results not only in better cost control but also in better price control.

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Is Automaker Ready for Target Costing?

The seven questions below are excerpted from the book "Target Costing," by Shahid L. Ansari and Jan E. Bell, (Irwin Professional Publishing, Chicago, 1997). They can help reveal how prepared automakers are to launch on a target costing program. If the automaker answers "no" to most of these questions, then it should take a harder look at more serious preparation before attempting to launch a target costing program.

1. Have the automaker made the reason for target costing clear? Is its connection to its business strategy clear?
2. Does top management support target costing?
3. Is this the right time to introduce target costing?
4. Are people ready for change?
5. Is there a readiness to accept the key principles of target costing?
6. Is the organisation ready to commit the necessary resources?
7. Are all management levels ready to respond quickly to the changes target costing will bring?

Process of Target Costing in Automotive Industry

Process of target costing for new product design in automotive industry is described in the following steps:

1. **Consider strategic and financial goals:** Top management sets long-term goals for the complete corporation and new product should be designed to help the automaker to achieve these goals.
2. **Determine the customer attributes or demands:** This process involves conducting thorough automotive market analysis and customer surveys to determine what the customer's needs and demands are for a given product.
3. **Consider costs and processes while designing:** This step must result in the design specification of the new product. The major tools used to obtain the design specification of a new product are (a) Pugh Method and (b) QFD.
4. **Determine the target price:** Target price is the price which a customer is willing to pay for the new product. Thorough automotive market analysis must be conducted to determine the target price.
5. **Determine the target cost:** Target cost, also known as the allowable manufacturing cost, is calculated by subtracting the profit required (ROS can be used to determine the profit required from the new product) from the target price.

$$\text{Target Cost} = \text{Target Price} - \text{Desired Profit}$$

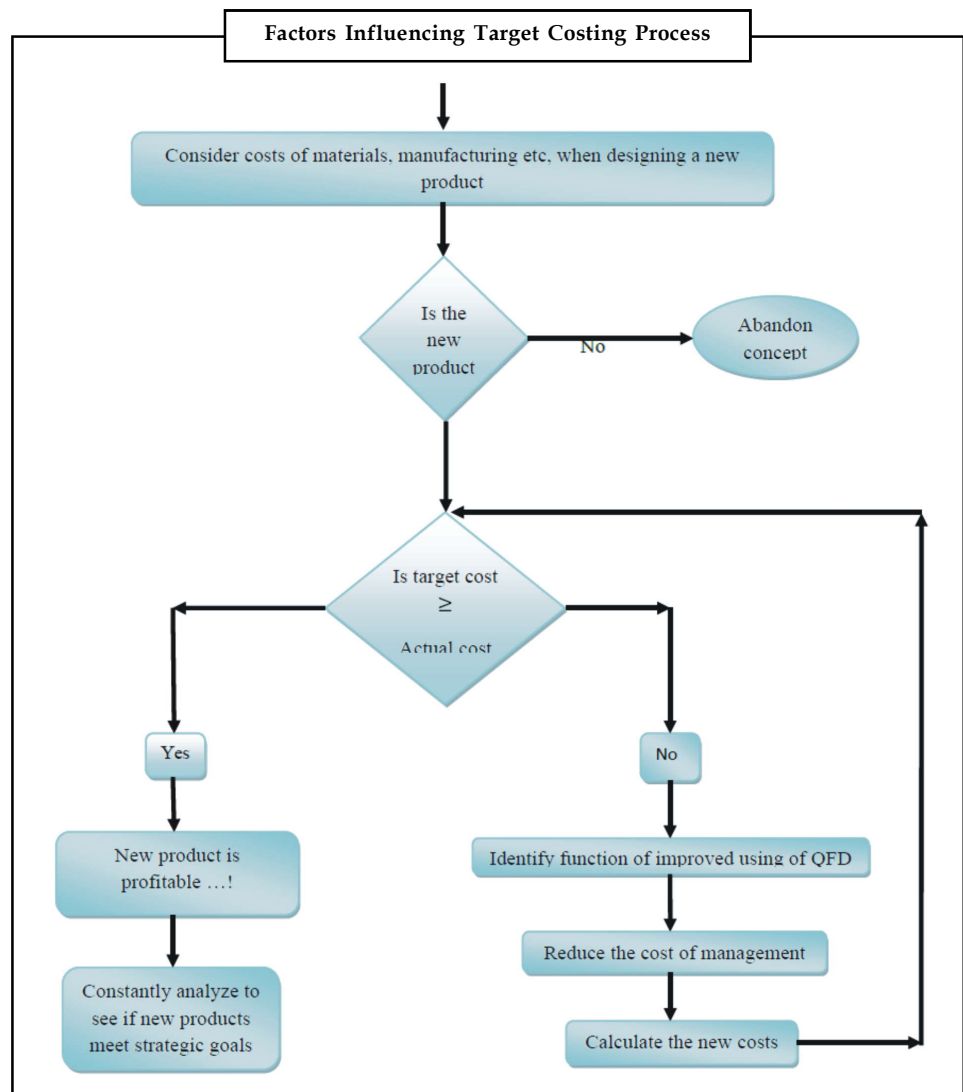
6. **Determine the drifting cost and product feasibility:** Drifting cost, also known as the actual cost of manufacturing is the present cost of manufacturing the new product and this is calculated with the help of the engineering department. It is also analysed to see if all the desired functions can be provided in the new product. A good costing system like ABC (Activity Based Costing) will assist in determining accurate costs.
7. **Process Improvements:** If the designed product yields the required profit, the new product can be manufactured. If the new product does not yield the required profit, the new product needs to be re-designed or the process of manufacturing should be

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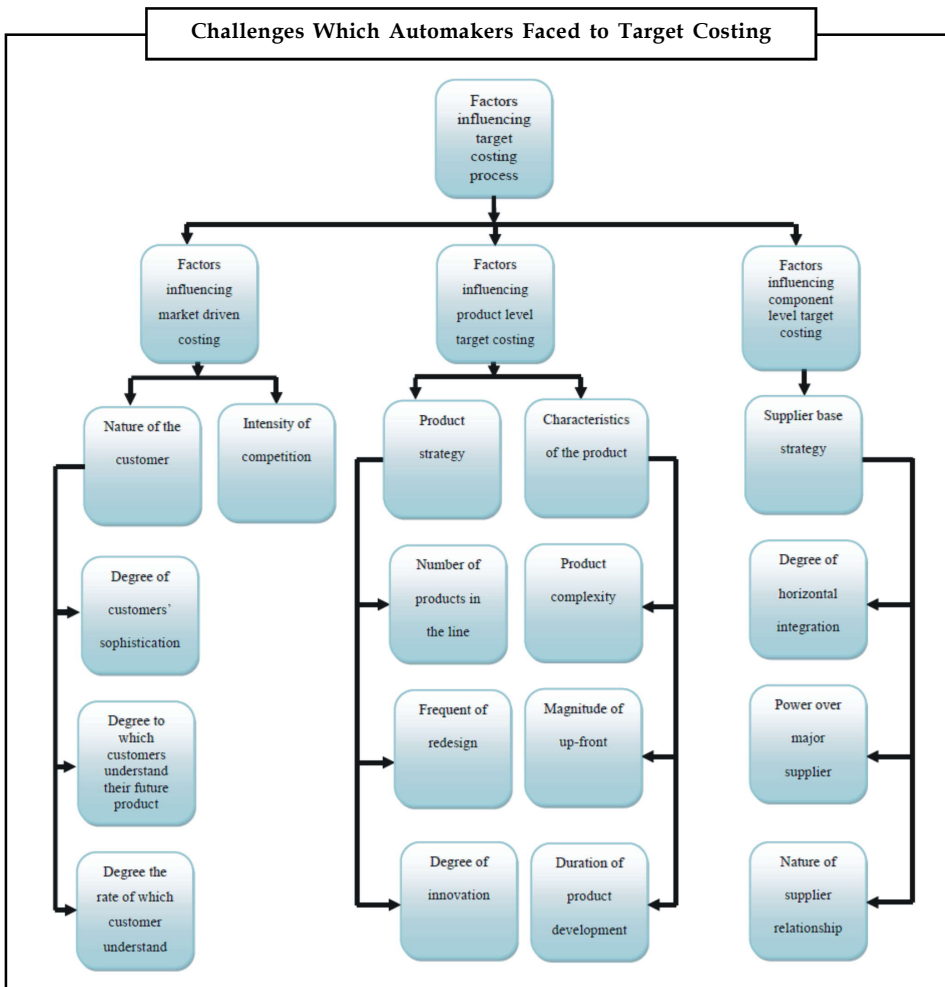
improved to yield the required profit. Some tools like value engineering can be used to associate costs to components or functions in order to determine their cost efficiency. The components or functions that are cost inefficient should be redesigned to reduce costs. If the products are found not to meet the financial profit requirements, they should be abandoned.

8. **Implementing/evaluating long term effects:** It is essential to make sure that the new product will yield the required profits through its complete life and the product mix must be regularly adjusted to meet the strategic goals of the automaker. The process of target costing is illustrated in following figure and it is based on the cardinal rule, "If we cannot make the desired profit we should not launch for the new product."



Target costing has a number of implementation challenges include: lack of understanding, cultural barriers against cross-functional cooperation; organisational barriers to team oriented work (difficult to achieve in a functional structure); and a perceived irrelevance about the effects. Still other barriers may include the organisations information systems and its lack of total system integration. To share cost reductions, supply chain partners must be able to share initial cost and production data.

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I. Lack of Understanding or Relevance

Nicolini, Tomkins, Holti, Oldman, and Smalley (2000) agree the target costing concept as Japanese in origin. The Japanese name for the process Genka Kikaku expresses an overall strategic approach to cost reduction. Even the continuous improvement or “kaizen costing” is very much a Japanese approach that has found common usage in quality literature yet the approach to costing is not a mainstream business term. The shortening life cycles make the development, planning, and other phases of a product critical to understanding its costs (Choe, 2002). While target costing has a straight forward logic, the implications in practice are more difficult, particularly when the culture has previously embraced a cost-plus approach to pricing. The cost plus approach is often quicker and does not involve an iterative, inclusive approach to reducing the gap between current costs and target cost as in target costing. The cost-plus approach also does not have a strong market orientation that is a prerequisite for target costing. The term also is seen as limited to the accounting domain and traditionally accountants have not been used to implement production changes, even though they have access to the cost data.

In addition to costs, automakers must understand what consumers really want and are willing to pay for. In the traditional approach to new product development and cost-plus pricing, the result is an array of over engineered products that do not meet the customer’s needs and are incorrectly priced. Burscher and Laker (2000) call this flawed process an

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“inside-out” approach and argue the cost of the product cannot be established until the final product is ready to be launched. In addition to greater understanding of target costing, the authors urge for implementation in the initial stages of new product development where modifications can be made cheaper and easier.

II. Team and Cross-Functional Barriers

The logic of target costing is easy to understand, yet a number of automakers continue to use the prevailing cost-plus approach. This may be due in part to lack of understanding of costs throughout the supply chain and not having tightly linked, communicating supply chain partners. Workers will learn faster and better understand costs and the organisation as a whole will adopt target costing as information flows faster and with a greater frequency of reporting. Zsidisin, Ellram, and Ogden (2003) agree the ability for all individuals to fully participate in cost management activities can lead to the development of valuable knowledge. They urge, however, the process takes an extensive degree of time and commitment. Target costing, implemented correctly, will engage all the key functions in the organisation. They further assert the cross-functional teams formed between purchasing and supplier organisations can help reduce supply chain costs. When using target costing within the supply chain, the importance of trust and cooperation is crucial. Transferring previous in-house functions to partners or outsourcing can be a risk due to the inability to monitor or control the output of the desired function. When functions are performed at the manufacturer’s plant, expectations and standards are communicated and understood, but these communications are often lost when the function is transferred to one of the partners in the chain. One way to control this problem is by the placement of one of the manufacturer’s employees within the supplier’s plant to monitor and aid the activities of the supplier.

III. Irrelevance or Fear of the Effects

For many automakers, target costing sounds like another buzz word or accounting term with little relevance to manufacturing or marketing. Yet, the concept of target costing is identical to the lean concepts implemented in manufacturing to reduce non-value added, irrelevant activities that do not contribute to a new product’s value. These terms, in practice, are attempting to reach a similar end. Quality, sole sourcing, and reducing wastes are part of a life cycle of continuous improvement of which target costing is an important component. On the fear side, cost setting negotiations must take place and often one or more groups feel that they are shouldering too much of the cost reduction pressure, particularly smaller partners with less power within the chain. Design changes and cost cutting measures may even cause employees to fear for their jobs and work against the target costing process. This is overcome through training and ongoing education about the process and its importance and working to ensure job security as possible.

Question:

Discuss the various problems faced in Automotive Industry.

Source: <http://www.mairec.org/IJRIM/June2012/2.pdf>

14.8 Summary

- The unit discusses in detail the new concepts for decision making – Kaizen costing, Value chain Analysis, Target costing and Life Cycle Costing.
- A strategic tool to measure the importance of the customer’s perceived value is value chain analysis.

- When a company wants to introduce a new product, it must determine the price to be charged based on products already on the market of similar function and quality.
- Target costing is a system under which a company plans in advance for the product price points, product costs, and margins that it wants to achieve.
- The idea of a value chain was first suggested by Michael Porter (1985) to depict how customer value accumulation along a chain of activities, that lead to an end product or service.
- Kaizen Costing creates a dialog and respect for those whose task is to cut costs, which can often be viewed as reactionary and not value adding.
- Life cycle costing as its name implies, costs the cost object i.e. product, project, etc. over its projected life. It is used to describe a system that tracks and accumulates the costs and revenues and attributes to cost object from its inception to its abandonment.
- Life cycle costing is different from traditional cost accounting system which report cost object profitability on a calendar basis i.e. monthly, quarterly and annually. In contrast, life cycle costing involves tracing cost and revenue on a product to product basis over several calendar periods.

14.9 Keywords

Differentiation: It enhances profitability whenever the extra price the product commands outweighs the added costs of achieving the differentiation.

Economies or Diseconomies of Scale: Economies of scale arise whenever activities can be performed more cheaply in larger volumes than smaller volumes and from the ability to spread out certain costs like R&D and advertising over a greater sales volume.

Kaizen Costing: It is a cost reduction system. Yashihuro Moden defines kaizen costing as “the maintenance of present cost levels for products currently being manufactured via systematic efforts to achieve the desired cost level.”

Life Cycle Costing: Life cycle costing as its name implies, costs the cost object i.e., product, project, etc. over its projected life. It is used to describe a system that tracks and accumulates the costs and revenues attributes to cost object from its inception to its abandonment.

Target Costing: Target costing is a market-driven design methodology and involves estimating a cost for a product and then designing the product to match the cost.

Tooling: Tooling up for production can mean building a production line costing several lakhs of rupees, building expensive jigs, buying special purpose machine tools or, in some other say, making a very large investment.

Traditional Cost Accounting System: It which reports cost object profitability on a calendar basis i.e. monthly, quarterly and annually.

Value Chain Analysis: The value chain can be described as the internal processes or activities a company perform “to design, produce, market, deliver and support its product”.

14.10 Review Questions

1. Briefly describe the primary difference between a job-order cost system and a process cost system.
2. What are the factors that led to the emergence of target costing system?

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3. What are the limitations of traditional cost systems?
4. What is kaizen costing? Give the outline of the kaizen costing system.
5. What are the principal differences between traditional and activity based costing system?
6. What are the benefits of Kaizen costing? How is Kaizen costing information useful on decision making?
7. Define target costing. What are its benefits?
8. What are the different stages to the methodology of target costing?

Answers: Self Assessment

- | | |
|------------------------|-------------------|
| 1. Cost | 2. value chain |
| 3. True | 4. False |
| 5. Differentiation | 6. Raise |
| 7. human | 8. Target costing |
| 9. Development | 10. Kaizen |
| 11. cost reductions | 12. Distribution |
| 13. Product life cycle | 14. Revenues |
| 15. manufacture | |

14.11 Further Readings



Books

- Bhar. K.B. (2008) *Cost Accounting, Methods & Problem*, Academic Publishers.
- Lal, Jawahar & Srivastava, Seema (2009) *Cost Accounting*, 4th Edition, Tata McGraw-Hill Education.
- Nigam, Lal B.M. & Jain I. C. (2001) *Cost Accounting: An Introduction*, PHI Learning Pvt. Ltd.
- Thakur. S.K, (2009). *Cost Accounting: Theory and Practice*, Excel Books.



Online links

- <http://www.scribd.com/doc/3163586/Kaizen-costing>
- http://www.exportacademy.net/resource/file/2012%20newsletter/newsletter_july12.pdf
- http://www.econbiz.de/archiv/ei/kuei/controlling/control_measures_kaizen_costing.pdf
- <http://www.wbsgroup.com/downloads/Website%20WBS%20Target%20Costing.pdf>

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