

NATIONAL OPEN UNIVERSITY OF NIGERIA

SCHOOL OF MANAGEMENT SCIENCES

COURSE CODE: SMS206

COURSE TITLE: INTRODUCTION TO COST AND MANAGEMENT ACCOUNTING

INTRODUCTION TO COST AND MANAGEMENT ACCOUNTING

SMS206

Course Guide

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INTRODUCTION

You are holding in your hand the course guide to SMS206 (Introduction to Cost and Management Accounting). The purpose of the course guide is to relate to you the basic structure of the course material you are expected to study as a Student in National Open University of Nigeria. Like the name 'course guide' implies, it is to guide you on what to expect from the course material and at the end of studying the course material.

COURSE CONTENT

The course content basically focuses on the basic concepts underlying cost and management accounting. The course contained the different meanings of cost and the principles underlying the preparation and presentation of cost accounts.

COURSE AIM

The aim of the course is to enable you learn about cost and management accounting as a preparatory course in handling cost issues in the work place.

COURSE OBJECTIVES

At the end of studying the course material, among other objectives, you should be able to:

- Describe the nature of cost and management accounting;
- Describe the scope of cost and management accounting;
- Outline the functions of cost and management accounting;
- Explain the purpose of costing;
- Mention and describe the essentials of cost accounting system;
- State the advantages of cost accounting various interested parties.
- Explain production, administration and selling and distribution costs;
- Explain controllable and uncontrollable cost;
- Explain shutdown and sunk cost;
- Explain relevant and irrelevant cost;
- Explain differential cost;
- Explain opportunity cost Distinguish between direct and indirect expenses;
- Explain overhead cost analysis;
- Explain the treatment of under and over absorption of overhead;
- Classify overhead;
- Calculate overheads absorption rates using six methods; and
- Make accounting entries with respect to overhead.

COURSE MATERIAL

The course material package is composed of:

The Course Guide

The study units

Self-Assessment Exercises

Tutor Marked Assignment

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THE STUDY UNITS

The study units are as listed below:

MODULE 1 BASIC PRINCIPLES OF COST AND MANAGEMENT ACCOUNTING

Unit 1 Nature, Scope and Functions of Cost Accounting

Unit 2 Nature, Scope and Functions of Management Accounting

Unit 3 Cost Accounting versus Management Accounting

Unit 4 Principles underlying the Preparation and Presentation of Cost Accounts for various types of Business

MODULE 2 COST CONCEPTS

Unit 1 Different Meanings of Cost

Unit 2 cost Unit and Cost Centre

Unit 3 Elements of Cost

Unit 4 Classification of Cost I

Unit 5 Classification of Cost II

MODULE 3 COSTING CONCEPTS

Unit 1 Accounting for Materials

Unit 2 Stock/Inventory Control

Unit 3 Accounting for Labour

Unit 4 Accounting for Overheads

Unit 5 Job and Process Costing

MODULE 4 COSTING, BUDGETARY CONTROL AND BREAK-EVEN ANALYSIS

Unit 1 Elements of Marginal Costing, Standard Costing and Budgetary Control

Unit 2 Control and Cost reduction

Unit 3 Nature and Uses of Accounting Ratios

Unit 4 Elements of Break-Even Analysis

ASSIGNMENTS

Each unit of the course has a self assessment exercise. You will be expected to attempt them as this will enable you understand the content of the unit.

TUTOR MARKED ASSIGNMENT

The Tutor Marked Assignments (TMAs) at the end of each unit are designed to test your understanding and application of the concepts learned. Besides the preparatory TMAs in the course material to test what has been learnt, it is important that you know that at the end of the course, you must have done your examinable TMAs as they fall due, which are marked electronically. They make up 30 percent of the total score for the course.

SUMMARY

Cost and management accounting is an important course to an accountant and management team. This is because a good knowledge of cost and management accounting would help management in making right decisions that would enhance meeting organisation’s goal. Therefore, it is very important that you commit adequate effort to the study of the course material for maximum benefit.

INTRODUCTION TO COST AND MANAGEMENT ACCOUNTING

SMS206

Main Content

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MODULE 1 BASIC PRINCIPLES OF COST AND MANAGEMENT ACCOUNTING

Unit 1 Nature, Scope and Functions of Cost Accounting

Unit 2 Nature, Scope and Functions of Management Accounting

Unit 3 Cost Accounting versus Management Accounting

Unit 4 Principles underlying the Preparation and Presentation of Cost Accounts for various types of Business

UNIT 1: NATURE, SCOPE AND FUNCTIONS OF COST ACCOUNTING

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    3.1 Nature of Cost Accounting
    3.2 Scope of Cost Accounting
    3.3 Functions of Cost Accounting
4.0 Conclusion
5.0 Summary
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1.0 INTRODUCTION

In this unit, we shall be discussing the nature, scope and functions of cost accounting. Cost accounting is a process of collecting, analyzing, summarizing and evaluating various alternative courses of action. Its goal is to advise the management on the most appropriate course of action based on the cost efficiency and capability. Cost accounting provides the detailed cost information that management needs to control current operations and plan for the future.

2.0 OBJECTIVES

After studying this unit, you should be able to:

- Describe the nature of cost accounting;
- Describe the scope of cost accounting; and
- Outline the functions of cost accounting.

3.0 MAIN CONTENT

3.1 NATURE OF COST ACCOUNTING

Let us discuss the nature of cost accounting under the following headings:

1. Cost accounting is a branch of knowledge:
Though cost accounting is considered as a branch of financial accounting, it is one of the important branches of knowledge, that is, it is a discipline by itself. It is an organized body of knowledge consisting of its own principles, concepts and conventions. These principles and rules vary from industry to industry.

2. Cost accounting is a science:
Cost accounting is a science as it is a body of systematic knowledge relating to not only cost accounting but relating to a wide variety of subjects such as law, office practice and procedure, data processing, production and material control, etc. It is necessary for a cost accountant to have intimate knowledge of all these field of study in order to carry on his day-to-day activities. But it is to be admitted that it is not a perfect science as in the case of natural science.

3. Cost accounting is an art:
Cost accounting is an art in the sense it requires the ability and skill on the part of cost accountant in applying the principles, methods and techniques of cost accountancy to various management problems. These problems include the ascertainment of cost, control of costs, ascertainment of profitability, etc.

4. Cost accounting is a profession:
In recent years cost accounting has become one of the important professions which have become more challenging. This view is evident from two facts. First, the setting up of various professional bodies such as the Institute of Chartered Accountants of Nigeria (ICAN) in Nigeria, National Association of Accountants (NAA) in USA. The Institute of Cost and Management Accountants in UK, the Institute of Cost and Works Accountants in India and such other professional bodies both in developed and developing countries have increased the growing awareness of costing profession among the people. Secondly, a large number of students have enrolled in these institutes to obtain certificates and memberships for earning their livelihood.

SELF ASSESSMENT EXERCISE
In your own words describe cost accounting as a branch of knowledge.

3.2 SCOPE OF COST ACCOUNTING
The scope of cost accounting is very wide. There are lots of techniques, tools, procedures, processes, programs used in cost accounting for calculating cost and its control. But basically, we will divide its scope into three major parts:

1. Cost Ascertainment
In this region of cost accounting, cost accounting collects product's material, labor and overhead cost and try to calculate total and per unit cost of product. This total cost calculation will be based on historical or standard or estimated basis. After this, cost accountant will use any method of costing like specific order costing, operation costing, and direct costing technique. These techniques and methods may be used for calculating different nature products in the same organization.

2. Cost Records
In this part of cost accounting, cost accountant maintains cost books, vouchers, ledgers, reports

and other cost related documents for future comparison and reference. It will also be under the scope of cost accounting to ensure proper records are kept.

3. Cost Control
This appears to be the boundary in describing the scope of cost accounting. In this division, cost accountant used different techniques and methods for controlling the cost. So, Cost accountant uses budgetary control, standard costing, break-even point analysis and many other techniques for controlling the cost.

SELF ASSESSMENT EXERCISE
Mention and describe the three areas in which the scope of cost accounting could be classified.

3.3 FUNCTION OF COST ACCOUNTING

The main functions of cost accounting are:

1. To serve as a guide to price fixing of products;
2. To disclose sources of wastage in process of production;
3. To reveal sources of economy in production process;
4. To provide for an effective control on factors of production;
5. To exercise effective control on factors of production;
6. To ascertain the profitability of each product;
7. To suggest management of future expansion policies;
8. To present and interpret data for management decisions;
9. To organize cost reduction programmes;
10. To facilitate planning and control of business activity;
11. To supply timely information for various decisions; and
12. To organize the internal audit systems

SELF ASSESSMENT EXERCISE
Outline five functions of cost accounting.

4.0 CONCLUSION
Cost accounting systems and reports, unlike financial accounting that is expected to keep to the rules and standards, are not subject to rules and standards like the Generally Accepted Accounting Principles. Consequently, there is wide variety in the cost accounting systems of the different companies and sometimes even in different parts of the same company or organization.

5.0 SUMMARY

In this unit, you would recall that we discussed the nature, scope and functions of cost accounting. We described the nature of cost accounting as a branch of knowledge, as a science, as an art and as a profession. You would recall that we stated that although the scope of cost accounting is wide, we describe the scope of cost accounting by classifying it into three

categories which are cost ascertainment, cost record and cost control. We concluded by outlining the functions of cost accounting.

6.0 TUTOR MARKED ASSIGNMENT

1. Describe the nature of cost accounting; and

2. State ten functions of cost accounting.

7.0 REFERENCES/FURTHER READING

Barfield, J. T., Raiborn, C. A. & Kinney, M. R. (1994). *Cost accounting: traditions and innovations*. New York, NY: West Publishing Company.

Eldenburg, L. G. & Wolcott (2005). *Cost management: measuring, monitoring and motivating performance*. United States of American, USA: Susan Elbe

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UNIT 2: NATURE, SCOPE AND FUNCTIONS OF MANAGEMENT ACCOUNTING

CONTENT

1.0 Introduction
2.0 Objectives
3.0 Main Content
    3.1 Nature of Management Accounting
    3.2 Scope of Management Accounting
    3.3 Functions of Management Accounting
4.0 Conclusion
5.0 Summary
6.0 Tutor Marked Assignment
7.0 References/Further Reading

1.0 INTRODUCTION

In this unit, we shall be discussing the nature, scope and functions of management accounting. Management accounting is concerned with the provisions and use of accounting information to managers within organizations, to provide them with the basis to make informed business decisions that will allow them to be better equipped in their management and control functions.

2.0 OBJECTIVES

After studying this unit, you should be able to:

- Describe the nature of management accounting;
- Describe the scope of management accounting; and
- Explain the functions of management accounting.

3.0 MAIN CONTENT

3.1 NATURE OF MANAGEMENT ACCOUNTING

1. No Fixed Norms Followed

In financial accounting, we follow different norms and rules for creating ledgers and other account books. But there is no need to follow fixed norms in management accounting. Management accounting tool may be different from one organization to other organization. Using of different tools of management accounting is fully dependent on the persons who are using it. So, business policy of each organization affects rules and regulation of applying management accounting.

2. Increase in Efficiency

It is the nature of management accounting that it is used for increasing in the efficiency of organization. It scans the points of inefficiency through analysis of accounting information. By taking action for improving, organization can increase the efficiency.

3. Supplies Information not Decisions

Management accountant supplies accounting facts and information and also provides interpretation, but decision making is fully dependent on higher authorities. Management accounting is just guide.

4. Concerned with Forecasting

It is the temperament of management accounting that it is fully concerned with forecasting. In management accounting, historical accounting information is analyzed through common size financial statement, ratio analysis, fund flow analysis and accounting data tendency for knowing the probability of next fact. So, all these things are especially useful for forecasting.

These forecasting may be related with following things

a) sales forecasting
b) production forecasting
c) earnings forecasting
d) cost forecasting

SELF ASSESSMENT EXERCISE
Mention and explain two features to describe the nature of management accounting.

3.2 SCOPE OF MANAGEMENT ACCOUNTING

The scope or field of management accounting is very wide and broad based and it includes a variety of aspects of business operations. The main aim of management accounting is to help management in its functions of planning, directing, controlling and areas of specialization included within the ambit of management accounting. The scope of management accounting can be studied as follows:

1. Financial Accounting
Financial accounting forms the basis for analysis and interpretation, for furnishing meaningful data to the management. The control aspect is based on financial data and performance evaluation, on recorded facts and figures. So, management accounting is closely related to financial accounting in many respects.

2. Cost Accounting
Cost accounting is the process and techniques of ascertaining cost. Planning, decision making and control are the basic managerial functions. The cost accounting system provides the necessary tool for carrying out such functions efficiently. The tools include standard costing, inventory management, variable costing etc.

3. Budgeting and Forecasting
Budgeting means expressing the plans, policies and goals of the firm for a definite period in future. Forecasting on the other hand, is a prediction of what will happen as a result of a given set of circumstances. Forecasting is a judgment whereas the budgeting is an organizational object. These are useful for management accounting in planning.

4. Inventory Control
Inventory is necessary to control from the time it is acquired till its final disposal as it involves large sum. For controlling inventory, management should determine different level of stock. The inventory control technique will be helpful for taking managerial decisions.

5. Statistical Method
Statistical tools not only make the information more impressive, comprehensive and intelligible but also are highly useful for planning and forecasting.

6. Interpretation of Data
Analysis and interpretation of financial statements are important part of management accounting. After analyzing the financial statements, the interpretation is made and the reports drawn from this analysis are presented to the management. Interpreting the accounting data to the authorities in the management is the principal task of management accounting.

7. Reporting To Management
The interpreted information must be communicated to those who are interested in it. The report may cover Profit and Loss Account, Cash Flow and Funds Flow statements etc.

8. Internal Audit and Tax Accounting
Management accounting studies all the tax matters to assist the management in investment decisions vis-a-vis tax planning as a resource to enjoy tax relief.
Internal audit system is necessary to judge the performance of every department. Management is able to know deviations in performance through internal audit. It also helps management in fixing responsibility of different individuals.

9. Methods of Procedures
This includes maintenance of proper data processing and other office management services. It may have to deal with filing, copying, duplicating, communicating and management information system and also may have to report about the utility of different office machines.

SELF ASSESSMENT EXERCISE
Mention and describe five aspects of business operations that management accounting may relate with.

3.3 FUNCTIONS OF MANAGEMENT ACCOUNTING

The basic function of management accounting is to assist the management in performing its functions effectively. The functions of the management are planning, organizing, directing and controlling. Management accounting helps in the performance of each of these functions in the following ways:

(i) Provides data:
Management accounting serves as a vital source of data for management planning. The accounts and documents are a repository of a vast quantity of data about the past progress of the enterprise, which are a must for making forecasts for the future.

(ii) Modifies data:
The accounting data required for managerial decisions is properly compiled and classified. For example, purchase figures for different months may be classified to know total purchases made during each period product-wise, supplier-wise and territory-wise.

(iii) Analyses and interprets data:
The accounting data is analyzed meaningfully for effective planning and decision-making. For this purpose the data is presented in a comparative form. Ratios are calculated and likely trends are projected.

(iv) Serves as a means of communicating:
Management accounting provides a means of communicating management plans upward, downward and outward through the organization. Initially, it means identifying the feasibility and consistency of the various segments of the plan. At later stages it keeps all parties informed about the plans that have been agreed upon and their roles in these plans.

(v) Facilitates control:
Management accounting helps in translating given objectives and strategy into specified goals for attainment by a specified time and secures effective accomplishment of these goals in an efficient manner. All this is made possible through budgetary control and standard costing which is an integral part of management accounting.

(vi) Uses also qualitative information:
Management accounting does not restrict itself to financial data for helping the management in decision making but also uses such information which may not be capable of being measured in monetary terms. Such information may be collected form special surveys, statistical compilations, engineering records, etc.

SELF ASSESSMENT EXERCISE
Mention and explain five functions of management accounting.

4.0 CONCLUSION

In contrast to financial accounting information, management accounting information is:

- primarily forward-looking, instead of historical
- model based with a degree of abstraction to support decision making generically, instead of case based;
- designed and intended for use by managers within the organization, instead of being intended for use by shareholders, creditors, and public regulators;
- usually confidential and used by management, instead of publicly reported;
- computed by reference to the needs of managers, often using management information systems, instead of by reference to general financial accounting standards

5.0 SUMMARY

In this unit, you would recall that we discussed the nature, scope and functions of management accounting. The nature of management accounting was described based on; no fixed norm followed; increased in efficiency; supplies information not decisions; and concerned with forecasting.

The scope of management accounting relates with financial accounting, cost accounting, revaluation accounting, budgetary control, inventory control, statistical methods, interim reporting, taxation, office services, and internal audit.

We also discussed the function of management accounting as management accounting helps to provide data, modifies data, analyses and interprets data, serves as a means of communication, facilitates control and finally uses qualitative information.

6.0 TUTOR MARKED ASSIGNMENT

The basic function of management accounting is to assist the management in performing its functions effectively. What are the functions that management accounting help to perform?

7.0 REFERENCES/FURTHER READING

Barfield, J. T., Raiborn, C. A. & Kinney, M. R. (1994). *Cost accounting: traditions and innovations*. New York, NY: West Publishing Company.

Eldenburg, L. G. & Wolcott (2005). *Cost management: measuring, monitoring and motivating performance*. United States of American, USA: Susan Elbe

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UNIT 3: COST ACCOUNTING VERSUS MANAGEMENT ACCOUNTING

CONTENT

1.0 Introduction
2.0 Objectives
3.0 Main Content
    3.1 Branches of Accounting
    3.2 Difference between Cost and Management Accounting
4.0 Conclusion
5.0 Summary
6.0 Tutor Marked Assignment
7.0 References/Further Reading

1.0 INTRODUCTION

In this unit, we shall be discussing accounting as segmented parts. When you hear the word 'accounting', most often what comes to mind is financial accounting. If you are asked to explain accounting, it is normal to expect you to start explaining what you understand as accounting based on financial accounting.

As time passes, accounting has evolved to show various segments of accounting as a piece of knowledge that demands attention. It would be in the light of this unit to describe various branches of accounting and most specifically state the difference between cost and management accounting as simple as possible.

2.0 OBJECTIVES

After studying this unit, you should be able to:

- Describe the branches of accounting; and
- State the difference between cost and management accounting.

3.0 MAIN CONTENT

3.1 BRANCHES OF ACCOUNTING

There are seven branches of accounting:-

a) Financial Accounting:

This is called original accounting, which is mainly confined to the preparation of financial statements for the various concern parties and financial institutions.

b) Cost Accounting:

The process of accounting for cost which begins with the recording of income and expenditure or the bases on which they are calculated and ends with the preparation of periodicals statements and reports for ascertaining and controlling cost.

c) Management Accounting:

Management accounting is a distinctive form of resource management which facilitates management's 'decision making' by producing information for managers within organization.

d) Inflation Accounting:

This accounting system does not consider the cost constant at every time because the prices of a commodity change with time due to inflation and decline purchasing power of money.

e) Social Accounting:

This deals with the application of double entry system of book keeping to socio-economic analysis at the preparation, estimation and interpretation of nation and international income and balance sheet.

f) Value –Added Accounting:

In this system, income is measured by the value added by a firm in a particular period. It is the difference between the value of the product and the cost of raw material, stores and any brought out component used for production.

g) Human Resource Accounting:

Human Resource accounting is the measurement of the cost and value of people for the organization or it is the process of identifying and measuring data about human resources and communicating this information to interested parties.

SELF ASSESSMENT EXERCISE

In few sentences describe the term 'value-added accounting'.

3.2 DIFFERENCE BETWEEN COST ACCOUNTING AND MANAGEMENT ACCOUNTING

Usually the terms, Cost accounting and Management accounting, are used interchangeably and are used in one and the same sense. However, there are differences between these two terms conceptually and in application.

Cost accounting, which is sometimes also referred to as cost method of accounting, involves forecasting the cost per unit of a good or service. The per unit cost derivation is not restricted to one unit of good, but is also used to compute the expenditure of running one line of production, calculation of materials consumed by one machine, etc. The different expenditures that are involved in production of every unit are computed.

Management accounting is the recording, regeneration, planning, and analysis of incomes and expenditures. It is basically a financial management function. Management accounting is done to provide a certain logical money-based mathematics to managerial decisions. It thus involves comparison, analysis, and business logic to process information regarding transactions. Simply put, management accounting is about getting the information from cost accountants and then uses it for decision making purposes.

Practically speaking, cost accounting involves computation of cost per unit with different angles. For example, cost accounting in a steel mill will principally involve the computation of cost of one ton of steel. For this, a foreman's salary that contributed to the production of that ton of steel is computed. The coke, power, workman's salary, premises, and factory machinery cost are some other items that are adding to prime costs (cost of raw material which in this case is iron and other metals). Management accounting goes one step forward, and makes a further comparative analysis and statements of figures that are derived by financial accounting and costing. Other managerial accounting functions include the analysis of every possible transaction and projecting the trend of transactions. Basically, management accounting factions deal with internal and external forces of transactions that influenced the businesses entity, to find out answers to the

questions such as 'what is the monetary productivity of the factory?', or 'how costly has raw material become?', or 'what can we cut down on costs?', or 'how can we maximize profit?', or 'where does the market or our competitors stand?'

Having discussed the difference between cost accounting and management accounting, let us outline in simple term some of the differences between cost and management accounting.

1. Cost accounting deals with ascertainment, allocation, apportionment accounting aspect of costs. Management accounting deals with the effect and impact of costs on the business.

2. Cost accounting provides a base for management accounting whereas management accounting is derived from cost accounting and financial accounting.

3. Cost accounting does not include financial accounting, tax planning and tax accounting. Management accounting includes financial and cost accounting, tax accounting and tax planning.

4. Cost accounting is concerned with short term planning. Management accounting is concerned with short range and long range planning.

5. Cost accounting merely assists the management with functioning. Management accounting assists and evaluates the management performance.

6. Cost accounting can be installed with management accounting but management accounting cannot be installed without cost and financial accounting.

SELF ASSESSMENT EXERCISE
Outline four differences between cost accounting and management accounting.

4.0 CONCLUSION
Cost accounting supports management accounting and management accounting in turn pushes cost accounting further according to the needs of the management. Because of this strong tie between cost accounting and management accounting they appear to show a relationship stronger than what other branches of accounting have.

5.0 SUMMARY
In this unit, we discussed the topic Cost Accounting versus Management Accounting. This topic was discussed under two sub-units which are the Branches of Accounting and the Difference between Cost Accounting and Management Accounting.

You would recall that accounting has seven branches which are financial accounting, cost accounting, management accounting, social accounting, inflation accounting, value-added accounting and human resources accounting. Cost accounting deals with calculation and measurement of resources utilized for different business activities usually production and service provision. It relates to calculation of per unit cost using different costing techniques.

On the other hand Management accounting relates to the use of all such information gathered and processed by cost accounting by management. Management accounting is about getting the information from cost accountants and then uses it for decision making purposes.

6.0 TUTOR MARKED ASSIGNMENT

1. Mention and describe four branches of accounting.

2. State four differences between cost accounting and management accounting.

7.0 REFERENCES/FURTHER READING

Barfield, J. T., Raiborn, C. A. & Kinney, M. R. (1994). *Cost accounting: traditions and innovations*. New York, NY: West Publishing Company.

Eldenburg, L. G. & Wolcott (2005). *Cost management: measuring, monitoring and motivating performance*. United States of American, USA: Susan Elbe

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UNIT 4: PRINCIPLES UNDERLYING THE PREPARATION AND PRESENTATION OF COST ACCOUNTS FOR VARIOUS TYPES OF BUSINESS

CONTENT

1.0 Introduction
2.0 Objectives
3.0 Main Content
    3.1 The Purpose of Cost
    3.2 Essentials of Cost Accounting System
    3.3 Advantages of Cost Accounting
4.0 Conclusion
5.0 Summary
6.0 Tutor Marked Assignment
7.0 References/Further Reading

1.0 INTRODUCTION

In this unit, we shall be discussing some of the principles underlying the preparation and presentation of cost accounts for various types of business. We shall be discussing the purpose of costing in order to be familiar with the idea of cost and costing, the essentials of cost accounting system and the advantages of cost accounting. This is to help you appreciate the principles and concepts facilitating the preparation and presentation of cost accounts in various organizations.

2.0 OBJECTIVES

After studying this unit, you should be able to:

- Explain the purpose of costing;
- Mention and describe the essentials of cost accounting system; and
- State the advantages of cost accounting various interested parties.

3.0 MAIN CONTENT

3.2 THE PURPOSE OF COSTING

Costing serves number of purposes among which the following are considered to be most important:

1. Ascertainment of cost:

This was considered to be the primary objective of cost accounting in the initial stages of its development. However, in modern times this has assumed the secondary objective of cost accounting. Cost ascertainment involves the collection and classification of expenses at the first instance. Those items of expenses which are capable of charging directly to the products manufactured are allocated. Then the other expenses which are not capable of direct allocation are apportioned on some suitable basis. Thus the cost of production of goods manufactured is ascertained. In this process, cost accounting involves maintenance of different books to record various elements of cost. Cost of production is ascertained by using any of the costing technique such as historical costing, marginal costing, etc.

2. Cost control:

At one time cost control was considered as secondary objective of cost accounts. But in modern times it constitutes the primary purpose because of its utmost importance in all business undertakings. Cost control is exercised at different stages in a factory, viz., acquisition of materials, recruiting and deployment of labour force, during the production process and so on. As such we have material cost control, labour cost control, production control, quality control and so on. However, control over cost is exercised through the techniques of budgetary control and standard costing. The control techniques enable the management in knowing the operating efficiency of a business.

3. Determination of selling price:

Every business organisation aims at maximizing profit. Total cost of production constitutes the basis on which selling price is fixed by adding a margin of profit. Cost accounting furnishes both the total cost of production as well as cost incurred at each and every stage of production. No doubt other factors are taken into consideration before fixing price such as market conditions, the area of distribution, volume of sales, etc. But cost plays the dominating role in price fixation.

4. Frequent preparation of accounts and other reports:

The management of every business constantly relies upon the reports on cost data in order to know the level of efficiency relating to purchase, production, sales and operating results. Financial accounting provides information only at the end of the year because closing stock value is available only at the end of the year. But cost accounts provide the value of closing stock at frequent intervals by adopting a "continuous stock verification" system. Using the value of closing stock it is possible to prepare final accounts and know the operating results of the business.

5. To provide a basis for operating policy:

Cost data to a great extent helps in formulating the policies of a business and in decision-making. As every alternative decisions involve investment of capital outlay, costs play an important role in decision-making. Therefore availability of cost data is a must for all levels of management. Some of the decisions which are based on cost are (a) make or buy decision, (b) manufacturing by mechanisation or automation, (c) whether to close or continue operation in spite of losses.

SELF ASSESSMENT EXERCISE

Explain the purpose of costing.

3.3 ESSENTIALS OF COST ACCOUNTING SYSTEM

The following are the essentials of an ideal cost accounting system:

1. Accuracy:

The system of cost accounting must provide for accuracy in terms of both cost ascertainment and presentation. Otherwise it will prove to be misleading.

2. Simplicity:

Cost accounting system involves detailed analysis of cost. To avoid complications in the procedure of cost ascertainment an elaborate system of costing should be avoided and every care must be taken to keep it as simple as possible.

3. Elasticity:

The costs accounting system should be capable of adapting itself to the changing situations of business. It must be capable of expansion or contraction depending upon the needs of the business.

4. Economy:
The cost of operating costing system must be less. It must result in increased benefit when compared to the expenditure incurred in installing it.
5. Comparability:
The records to be maintained must facilitate comparison over a period of time. The past records must serve as a basis to guide the future.
6. Promptness:
An ideal costing system is one which provides cost data in an analytical form to the management. So all the departments of a factory must analyse and record the relevant items of cost promptly in order to furnish cost information on a regular basis to various levels of management. This helps in checking up the progress of the business on a regular basis.
7. Periodical preparation of accounts:
With a view to facilitate the comparison of results frequently, it is desirable to prepare accounts periodically. Constant comparison of actual result with standard result enables to spot out areas of inefficiency. This can be set right by taking remedial measures.
8. Reconciliation with financial accounts:
The system of cost accounts must be capable of reconciling with financial accounts so as to check accuracy of both the system of accounts.
9. Uniformity:
The various forms and documents used under costing system must be uniform in size and quality of paper. Printed forms must be used to avoid delay in the preparation of reports. This also reduces the burden of clerical staff. Forms of different colours can be used to distinguish different documents.
10. Equity:
The basis of apportioning indirect expenses to products, departments or jobs must be fair and equitable.

SELF ASSESSMENT EXERCISE
Mention and describe five essentials of cost accounting system.

3.4 ADVANTAGES OF COST ACCOUNTING

A good costing system serves the needs of a large section of people. The advantages of cost accounting are discussed below:

Advantages of Cost Accounting to Management
1. Fixation of responsibility:
Whenever a cost centre is established, it implies establishing a kind of relationship between superior and subordinates. Thus, responsibilities are fixed on every individual who is concerned with incurrence of cost.
2. Measures economic performance:
By applying cost control techniques such as budgetary control and standard costing it helps in knowing the performance of business.
3. Fixation of price:
By providing cost data it helps management to fix the selling price in advance. Hence, quotations can be supplied to prospective customers to secure orders.

4. Aids in decision-making:
It helps management in making suitable decisions such as make or buys, replace manual labour by machines, shut down or continue operations based on cost reports.
5. Helps in the preparation of interim final accounts:
By the process of continuous stock taking it enables to know the value of closing stock of materials at any time. This facilitates preparation of final accounts wherever desired.
6. Helps in minimising wastages and losses:
Cost accounting system enables to locate the losses relating to materials, idle time and under utilisation of plant and machinery.
7. Facilitates comparison:
It facilitates cost comparison in respect of jobs, process, and departments and also between two periods. This reveals the efficiency or otherwise of each job, process or department.
8. Assists in increasing profitability:
Costing reports provide information about profitable or unprofitable areas of operation. The management can discontinue that product line or those departments which are responsible for incurring losses and only profitable line of activities alone are retained.
9. Reconciliation with financial accounts:
A well maintained cost accounting system facilitates reconciliation with financial accounts to check the arithmetical accuracy of both the systems.
10. It guides future production policy:
Cost data help management in determining future production policy. Any expansion or contraction of production for the future is based on past cost data.

Advantages of Cost Accounting to Employees
1. Cost accounting system enables employees to earn better wages through overtime wages and incentive systems of wage payment.
2. By providing better facilities it ensures job security to employees.
3. Employees benefit by merit rating techniques which is conducted by scientific process.

Advantages of Cost Accounting to Creditors
1. It increases the confidence of creditors in the capital employed in the business.
2. The frequent preparation of reports and statements help in knowing solvency position of the business.

Advantages of Cost Accounting to Government
1. It helps government in formulating policies regarding export, import, taxation, price control measures, wage fixation, etc.
2. It helps in assessing excise duty, sales tax and income tax of the business.
3. Costing information helps in preparing national plans.

Advantages of Cost Accounting to Society
1. Cost reduction and cost control programmes go to minimise cost of production of goods and services. A portion of the reduced cost of production is shared by customers by paying lesser price for goods and services.
2. It offers employment opportunities in the cost accounting department in the capacity of cost accountants and cost clerks.

SELF ASSESSMENT EXERCISE
Outline three advantages of cost accounting as it relates to the government.

4.0 CONCLUSION
Accounting principles serve as bases in preparing, presenting and interpreting of financial data.

They provide a foundation to prevent misunderstandings between and among the preparers and users of such accounting information.

5.0 SUMMARY
In this unit, you would recall that we discussed the principles underlying the preparation and presentation of cost accounts for various types of business. We discusses the purpose of costing, the essentials of cost accounting system and the advantages of cost accounting as it affects various interest groups.

6.0 TUTOR MARKED ASSIGNMENT
What are the advantages of cost accounting to the management of an organisation?

7.0 REFERENCES/FURTHER READING

Barfield, J. T., Raiborn, C. A. & Kinney, M. R. (1994). *Cost accounting: traditions and innovations*. New York, NY: West Publishing Company.

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MODULE 2 COST CONCEPTS

Unit 1 Different Meanings of Cost

Unit 2 cost Unit and Cost Centre

Unit 3 Elements of Cost

Unit 4 Classification of Cost I

UNIT 1: THE DIFFERENT MEANINGS OF COST

CONTENT

1.0 Introduction
2.0 Objectives
3.0 Main Content
    3.1 Cost Concept
    3.2Types of Cost
    3.3 Cost for Planning and Control
4.0 Conclusion
5.0 Summary
6.0 Tutor Marked Assignment
7.0 References/Further

1.0 INTRODUCTION

In this unit, we shall be discussing the different meanings of cost starting with the concept of the word 'cost' to make it easier to understand the different types of cost.

2.0 OBJECTIVES

After studying this unit, you should be able to:

- Define cost in business and accounting;
- Describe cost from the view point of the buyer and seller;
- Identify various types of cost; and
- Describe different types of cost
- Explain cost for planning and control

3.1 COST CONCEPT

What is cost?

In business and accounting, cost is the monetary value that a company has spent in order to produce something. Cost denotes the amount of money that a company spends on the creation or production of goods or services. It does not include the mark-up for profit.

From a *seller's point of view*, cost is the amount of money that is spent to produce a good or a product. If a seller sold his products at the production price, he would break even, meaning that he would not lose money on his sales. However, he would not make a profit either.

From a *buyer's point of view* the cost of a product can be called the price. This is the amount that the seller charges for a product, and it includes both the production cost and the mark-up cost, which is added by the seller in order for him to make a profit.

Cost in accounting

In accounting, the term cost refers to the monetary value of expenditures for raw materials, equipment, supplies, services, labor, products, etc. It is an amount that is recorded as an expense in bookkeeping records.

Planning for costs

When a new company's business plan is developed, organizers will often create cost estimates. These are used to assess whether the benefits and revenues of a proposed business will more than cover the costs. This is called a cost-benefit analysis.

SELF ASSESSMENT EXERCISE
From the view point of the seller, what is cost?

3.2 TYPES OF COST

Fixed Costs (FC) - These are the costs which do not vary with changing output. Fixed costs might include the cost of building a factory, insurance and legal bills. Even if your output changes or you do not produce anything, your fixed costs stay the same.

Variable Costs (VC) - These are costs which depend on the output produced. For example, if you produce more cars, you have to use more raw materials such as metal. This is a variable cost.

Semi-Variable Cost - Semi-variable cost is an expense which contains both a fixed-cost component and a variable-cost component. The fixed cost element shall be a part of the cost that needs to be paid irrespective of the level of activity achieved by the entity. On the other hand the variable component of the cost is payable proportionate to the level of activity. Labour might be a semi-variable cost. If you produce more cars, you need to employ more workers; this is a variable cost. However, even if you did not produce any car, you may still need some workers to look after empty factory.

Total Costs (TC) - Total cost is the combination of fixed cost and Variable Costs.

Marginal Costs – Marginal cost is the cost of producing an extra unit. If the total cost of producing two pairs of shoes is N1,600, and the total cost of producing three pairs of shoes is N1,900. The marginal cost of the third pair of shoes is 300.

Economic Cost. Economic cost includes both the actual direct costs (accounting costs) plus the opportunity cost. For example, if you take time off work to a training scheme which may cost you a deduction of N3,000 from your salary because your organization does not approve such absenteeism. And you are requires to pay direct cost N15,000 for that training scheme. The economic cost for that training scheme would N3000 plus N15,000 making a total of N18,000.

Economic costs are related to future. They play a vital role in business decisions as the costs considered in decision - making are usually future costs. They have the nature similar to that of incremental, imputed explicit and opportunity costs.

Accounting Costs – This is the monetary outlay for producing a certain good. Accounting costs will include your variable and fixed costs you have to pay.

Avoidable Costs – These are Costs that can be avoided. If you stop producing cars for instance, you do not have to pay for extra raw materials and electricity. Sometimes this is known as an escapable cost.

Actual Cost
Actual cost is defined as the cost or expenditure which a firm incurs for producing or acquiring a good or service. The actual costs or expenditures are recorded in the books of accounts of a business unit. Actual costs are also called as "Outlay Costs" or "Absolute Costs" or "Acquisition Costs". Examples are Cost of raw materials, Wage Bill etc.

Opportunity Cost
Opportunity cost is concerned with the cost of forgone opportunities/alternatives. In other words, it is the return from the second best use of the firm's resources which the firm forgoes in order to avail of the return from the best use of the resources. It can also be said as the comparison between the policy that was chosen and the policy that was rejected. The concept of opportunity cost focuses on the net revenue that could be generated in the next best use of a scare input. Opportunity cost is also called as "Alternative Cost".

If a firm owns a land, there is no cost of using the land (i.e. the rent) in the firms account. But the firm has an opportunity cost of using the land, which is equal to the rent forgone by not letting the land out on rent. Another example is if you invest one million naira in developing a farm camp, the opportunity cost is that you cannot use that money to invest in developing food processor.

Sunk Cost
Sunk costs are those do not alter by varying the nature or level of business activity. Sunk costs are generally not taken into consideration in decision - making as they do not vary with the changes in the future. Sunk costs are a part of the outlay/actual costs. Sunk costs are also called as "Non-Avoidable costs" or "Inescapable costs". For example, all the past costs are considered

sunk costs. The best example is amortization of past expenses, like depreciation.

Incremental Cost

Incremental costs are addition to costs resulting from a change in the nature of level of business activity. As the costs can be avoided by not bringing any variation in the activity, they are also called "Avoidable Costs" or "Escapable Costs". More ever, incremental costs resulting from a contemplated change in the Future are also called "Differential Costs". For example, change in distribution channels adding or deleting a product in the product line.

Explicit Cost

Explicit costs are those expenses/expenditures that are actually paid by the firm. These costs are recorded in the books of accounts. Explicit costs are important for calculating the profit and loss accounts and guide in economic decision-making. Explicit costs are also called "Paid out costs". For example, interest payment on borrowed funds, rent payment, wages, utility expenses etc.

Implicit Cost

Implicit costs are a part of opportunity cost. They are the theoretical costs. That is, they are not recognised by the accounting system and are not recorded in the books of accounts but are very important in certain decisions. They are also called the earnings of those employed resources which belong to the owner himself. Implicit costs are also called "Imputed costs".
For examples, rent on idle land, depreciation on dully depreciated property still in use, interest on equity capital etc.

Book Cost

Book costs are those business costs which do not involve any cash payments but a provision is made in the books of accounts in order to include them in the profit and loss account and take tax advantages, like provision for depreciation and for unpaid amount of the interest on the owners capital.

Out Of Pocket Costs

Out of pocket costs are those costs which are current payments to the outsiders of the firm. All the explicit costs fall into the category of out of pocket costs. For example, rent paid, wages, salaries, interest etc

Accounting Costs

Accounting costs are the actual or outlay costs that point out the amount of expenditure that has already been incurred on a particular process or on production. And as such, accounting costs facilitate for managing the taxation need and profitability of the firm. For example, all Sunk costs are accounting costs.

Direct Cost

Direct costs are those which have direct relationship with a unit of operation like manufacturing a product, organizing a process or an activity etc. In other words, direct costs are those which are directly and definitely identifiable. The nature of the direct costs is related with a particular product/process. They vary with variations in them. Therefore, all direct costs are variable in

nature. It is also called "traceable costs". For examples, in operating railway services, the costs of wagons, coaches and engines are direct costs.

Indirect Costs

Indirect costs are those which cannot be easily and definitely identifiable in relation to a plant, a product, a process or a department. Unlike the direct costs, indirect costs do not vary. That is, they may or may not be variable in nature. However, the nature of indirect costs depends upon the costing under consideration. Indirect costs are both the fixed and the variable type as they may or may not vary as a result of the proposed changes in the production process etc. Indirect costs are also called 'Non-traceable costs'. For example, the cost of factory building, the track of a railway system etc., are fixed indirect costs and the costs of machinery, labour etc.

SELF ASSESSMENT EXERCISE

Explain the term 'opportunity cost'.

3.3 COSTS FOR PLANNING AND CONTROL

Controllable cost: The terminology of CIMA defines controllable cost as "a cost which can be influenced by the action of specified member of an undertaking". It refers to those costs which may be regulated at a specified level of authority (management) within a specified time period. The term "controllable costs" means variable costs. Cost-control factor depends on time factor and level of managerial authority. If the time period is sufficiently long, cost can be well controlled. Proper delegation of authority with responsibility facilitates the task of control of costs.

Uncontrollable costs: Uncontrollable cost is defined as the "cost which cannot be influenced by the action of a specified member of an undertaking". This cost is not subject to control at any level.

The difference between the terms is important for the purpose of cost control, and responsibility accounting costs which are not subject to the control of a person should not be charged to that person. For instance, a foreman should not be charged with the plant superintendent salary. The foreman should be charged only with such items as usage of materials, direct labour, supplies. Further, it must be noted that the distinction between controllable and uncontrollable cost is not absolute. It is made in relation to a given member of an organization. A cost which is considered uncontrollable by a manager can be controlled by a higher official. Examples of uncontrollable cost: rent, salary of staff, depreciation.

Budget: A budget is a plan for a future period. It is expressed in monetary terms. The terminology of CIMA defines a budget as "a plan quantified in monetary terms, prepared and approved prior to a defined period of time usually showing planned income to be generated and/or expenditure to be incurred during that period and the capital to be employed to attain a given objective". It is also a tool of control.

Standard costs: Standard costs are closely related to budgets, and both are said to be complementary to each other. It is a basic accounting tool. A standard cost is a predetermined calculation of how much costs should be under specific working conditions. It is built up from an assessment of the value of cost elements and correlates technical specifications and quantification of material, labour and other costs to the prices and/or wage raves expected to apply during the period in which standard cost is intended to be used. Its main purposes are to provide bases for control through variance accounting, for valuation of stock, and work-in-progress and in some cases, for fixing selling prices.

SELF ASSESSMENT EXERCISE
What is the meaning of standard cost?

4.0 CONCLUSION

At this point, let us conclude this unit by defining cost accounting again to emphasize the concept of cost and types of cost. Cost accounting is the process of collecting information about the costs incurred by a company's activities, assigning selected costs to products and services and other cost objects, and evaluating the efficiency of cost usage. It is mostly concerned with developing an understanding of where a company earns and loses money, and providing input into decisions to generate profits in the future.

5.0 SUMMARY

In this unit, we discussed the different meanings of cost. We discussed the concept of cost and the various definitions of cost which described the different types of cost.

6.0 TUTOR MARKED ASSIGNMENT

Mention and describe ten types of cost that you know.

7.0 REFERENCES/FURTHER READING

Barfield, J. T., Raiborn, C. A. & Kinney, M. R. (1994). *Cost accounting: traditions and innovations*. New York, NY: West Publishing Company.

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UNIT 2: COST UNIT AND COST CENTRES

CONTENT

1.0 Introduction
2.0 Objectives
3.0 Main Content
    3.1 Cost Unit
    3.2 Cost Centre
4.0 Conclusion
5.0 Summary
6.0 Tutor Marked Assignment
7.0 References/Further Reading

1.0 INTRODUCTION

You would recall that we discussed the different meanings of cost in the previous unit. In this unit, we shall discuss cost unit and cost centre.

2.0 OBJECTIVES

After studying this unit, you should be able to:

- Explain cost unit; and
- Explain cost centre.

3.0 MAIN CONTENT

3.1 COST UNIT

While preparing cost accounts, it becomes necessary to select a unit with which expenditure may be identified. The quantity upon which cost can be conveniently allocated is known as a unit of cost or cost unit. The Chartered Institute of Management Accountants (CIMA), London defines a unit of cost as a unit of quantity of product, service or time in relation to which costs may be ascertained or expressed.

Unit selected should be unambiguous, simple and commonly used. Following are the examples of units of cost:

(i) Brick works	per 1000 bricks made
(ii) Collieries	per ton of coal raised
(iii) Textile mills	per yard or per lb. of cloth manufac- tured or yarn spun
(iv) Electrical companies	per unit of electricity generated
(v) Transport companies	per passenger km.
(vi) Steel mills	per ton of steel made

SELF ASSESSMENT EXERCISE

Explain the term ‘cost unit’.

3.2 COST CENTER

According to the Chartered Institute of Management Accountants, London, cost center means “a location, person or item of equipment (or group of these) for which costs may be ascertained and used for the purpose of cost control.” Thus, cost center refers to one of the convenient units into which the whole factory or an organization has been appropriately divided for costing purposes. Each such unit consists of a department, a sub-department or an item or equipment or machinery and a person or a group of persons. Sometimes, closely associated departments are combined together and considered as one unit for costing purposes. For example, in a laundry, activities such as collecting, sorting, marking and washing of clothes are performed. Each activity may be considered as a separate cost center and all costs relating to a particular cost center may be found out separately.

Cost centers may be classified as follows:

- Productive, unproductive and mixed cost centers
- Personal and impersonal cost centers
- Operation and process cost centers

Productive cost centers are those which are actually engaged in making products. Service or unproductive cost centers do not make the products but act as the essential aids for the productive centers. The examples of such service centers are as follows:

- Administration department
- Repairs and maintenance department
- Stores and drawing office department

Mixed costs centers are those which are engaged sometimes on productive and other times on service works. For example, a tool shop serves as a productive cost center when it manufactures dies and jigs to be charged to specific jobs or orders but serves as servicing cost center when it does repairs for the factory.

Impersonal cost center is one which consists of a department, a plant or an item of equipment whereas a personal cost center consists of a person or a group of persons. In case a cost center consists of those machines or persons which carry out the same operation, it is termed as operation cost center. If a cost center consists of a continuous sequence of operations, it is called process cost center.

In case of an operation cost center, cost is analyzed and related to a series of operations in sequence such as in chemical industries, oil refineries and other process industries. The objective of such an analysis is to ascertain the cost of each operation irrespective of its location inside the factory

4.0 CONCLUSION

Cost unit is device for the purpose of breaking up cost in to smaller sub-divisions. Ordinarily cost unit is the expression in the form of count, weight, dimension etc. Cost unit is the unit of

measurement of different types of products. For example, ton in case or coal, Yards in case of cloth, Liter in case of petrol etc.
Cost centres are the smallest segment of activity or area of responsibility for which costs are accumulated or ascertained. Cost centres are the natural division of the organisation in to convenient units for the purpose of cost ascertainment and control. These are the department of the organisation, but sometimes a department may also contain several cost centres.

5.0 SUMMARY

In this unit, you would recall that we discussed cost unit and cost centre. According to CIMA, cost unit was defined as "a unit of quantity of product, service or time in relation to which costs may be ascertained or expressed" while cost center was defined as "a location, person or item of equipment (or group of these) for which costs may be ascertained and used for the purpose of cost control".

6.0 TUTOR MARKED ASSIGNMENT

What do you understand by the term 'cost centre'?

7.0 REFERENCE/FURTHER READING

Barfield, J. T., Raiborn, C. A. & Kinney, M. R. (1994). *Cost accounting: traditions and innovations*. New York, NY: West Publishing Company.

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UNIT 3: ELEMENTS OF COST

CONTENT

1.0 Introduction
2.0 Objectives
3.0 Main Content
    3.1 Materials as an Element of Cost
    3.2 Labour as an Element of Cost
    3.3 Expenses as an Element of Cost
4.0 Conclusion
5.0 Summary
6.0 Tutor Marked Assignment
7.0 References/Further Reading

1.0 INTRODUCTION

Management accounting techniques break costs into two major cost classifications, product costs, those costs related to manufacturing, and period costs, which are all non-manufacturing costs. Product costs are then broken down into the elements of cost. These elements, labor, materials and overhead, make up the cost of products at nearly every company. Understanding accounting cost classifications can help you make sure that you are accounting for production at your company in the correct manner. There are broadly three elements of cost - (1) material, (2) labour and (3) expenses.

2.0 OBJECTIVES

After studying this unit, you should be able to:

- Describe material as a cost elememt;
- Describe labour as a cost element; and
- Describe expenses as a cost element.

3.0 MAIN CONTENT

3.1 MATERIALS AS AN ELEMENT OF COST

The substance from which the product is made is known as material. It may be in a raw state-raw material, e.g., timber for furniture and leather for shoe, etc. It may also be in manufactured state-components, e.g., battery for car, speaker for radio, etc, Materials can be direct and indirect.

Direct Material: All materials which become an integral part of the finished product, the cost of which are directly and completely assigned to the specific physical units and charged to the prime cost, are known as direct material. The following are some of the materials that fall under this category:

(a) Materials which are specifically purchased; acquired or produced for a particular job, order or process.

(b) Primary packing material (e.g. carton, wrapping, cardboard, etc.)

(c) Materials passing from one process to another as inputs.

In order to calculate the cost of material, expenses such as import duties, dock charges, transport cost of materials are added to the invoice price.

Material considered direct at one time may be indirect on other occasion. Nail used in manufacturing wooden box is treated as direct material, but treated as indirect material when used to repair the factory building.

Indirect Material: All materials, which cannot be conveniently assigned to specific physical units, are termed as 'indirect material'. Such commodities do not form part of the finished products. Consumable stores, lubrication oil, stationery and spare parts for the machinery are termed as indirect materials.

SELF ASSESSMENT EXERCISE
What is direct material?

3.2 LABOUR AS AN ELEMENT OF COST

Human efforts used for conversion of materials into finished products or doing various jobs in the business are known as labour. Payment made towards the labour is called labour cost. It can also be direct and indirect.

Direct Labour: Direct labour is all labour expended and directly involved in altering the condition, composition or construction of the product. The wages paid to skilled and unskilled workers for manual work or mechanical work for operating machinery, which can be specifically allocated to a particular unit of production, is known as direct wages or direct labour cost. Hence, 'direct wage' may be defined as the measure of direct labour in terms of money. It is specifically and conveniently traceable to the specific products. Wages paid to the goldsmith for making gold ornament is an example of direct labour.

Indirect Labour: Labour employed to perform work incidental to production of goods or those engaged for office work, selling and distribution activities are known as 'indirect labour'. The wages paid to such workers are known as 'indirect wages' or indirect labour cost.

Example: Salary paid to the driver of the delivery van used for distribution of the product.

SELF ASSESSMENT EXERCISE
What is the difference between direct and indirect labour?

3.3 EXPENSES AS AN ELEMENT OF COST

All expenditures other than material and labour incurred for manufacturing a product or rendering service are termed as 'expenses'. Expenses may be direct or indirect.

Direct Expenses: These are expenses which are specifically incurred and can be directly and wholly allocated to a particular product, job or service are termed as 'direct expenses'. Examples of such expense are: carriage inward, royalty, interest on loan used in the manufacturing process, etc. These are also known as 'chargeable expenses'.

Indirect Expenses: All expenses excluding indirect material and indirect labour, which cannot be directly and wholly attributed to a particular product, job or service, are termed as 'indirect expenses'. Some examples of such expenses are: repairs to machinery, insurance, lighting and rent of the buildings.

SELF ASSESSMENT EXERCISE
What are indirect expenses?

4.0 CONCLUSION

The three elements of cost are material, labour and expenses.

5.0 SUMMARY

In this unit, you would recall that we discussed the elements of cost. The three elements of cost are material, labour and expenses. The substance from which the product is made is known as material. Human efforts used for conversion of materials into finished products or doing various jobs in the business are known as labour. All expenditures other than material and labour incurred for manufacturing a product or rendering service are termed as 'expenses'.

6.0 TUTOR MARKED ASSIGNMENT

Mention and explain the elements of cost.

7.0 REFERENCES/FURTHER READING

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UNIT 4: CLASSIFICATION OF COST I

CONTENT

1.0 Introduction
2.0 Objectives
3.0 Main Content
    3.1 Classification by Change of Activities
    3.2 Classification by Association
    3.3 Classification by Traceability

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 References/Further Reading

1.0 INTRODUCTION

In this unit, we shall be discussing the classification of cost. Cost may be classified into different categories depending upon the purpose of classification. Some of the important categories in which the costs are classified are explained in the various sub-units.

2.0 OBJECTIVES

After studying this unit, you should be able to:

- Explain fixed cost, variable cost and semi-fixed cost;
- Explain product cost and period cost;
- Explain direct and indirect cost;

3.0 MAIN CONTENT

3.1 CLASSIFICATION BY CHANGE OF ACTIVITIES

VARIABLE COST

The cost which varies directly in proportion with every increase or decrease in the volume of output or production is known as variable cost. Variable costs are sometimes referred to as "direct costs" in system of direct costing. Some of its examples are as follows:

- Wages of laborers

- Cost of direct material
- Power

In some circumstances, variable costs are classified into the following:

- Discretionary cost
- Engineered cost

The term discretionary costs are generally linked with the class of fixed cost. However, in the circumstances where management has predetermined that the organization would spend a certain percentage of its sales for the items like research, donations, sales promotion etc., discretionary costs will be of a variable character.

Engineered variable costs are those variable costs which are directly related to the production or sales level. These costs exist in those circumstances where specific relationship exists between input and output. For example, in an automobile industry there may be exact specifications as one radiator, two fan belts, one battery etc. would be required for one car. In a case where more than one car is to be produced, various inputs will have to be increased in the direct proportion of the output.

Thus, an increase in discretionary variable costs is due to the authorization of management whereas an increase in engineered variable costs is due to the volume of output or sales.

SELF ASSESSMENT EXERCISE
Distinguish between discretionary costs from engineering costs.

FIXED COST

The cost which does not vary but remains constant within a given period of time and a range of activity in spite of the fluctuations in production is known as fixed cost. Some of its examples are as follows:

- Rent or rates
- Insurance charges
- Management salary

Fixed costs are sometimes referred to as “period costs” in system of direct costing. Fixed costs can be further classified into:

- Committed fixed costs
- Discretionary fixed costs

Committed fixed costs consist largely of those fixed costs that arise from the possession of plant, equipment and a basic organization structure. For example, once a building is erected and a plant is installed, nothing much can be done to reduce the costs such as depreciation, property taxes, insurance and salaries of the key personnel etc. without impairing an organization's competence to meet the long-term goals.

Discretionary fixed costs are those which are set at fixed amount for specific time periods by the management in budgeting process. These costs directly reflect the top management policies and have no particular relationship with volume of output. These costs can, therefore, be reduced or entirely eliminated as demanded by the circumstances. Examples of such costs are research and development costs, advertising and sales promotion costs, donations, management consulting fees etc. These costs are also termed as managed or programmed costs.

SELF ASSESSMENT EXERCISE
Explain the term committed fixed costs

SEMI-VARIABLE COST

The cost which does not vary proportionately but simultaneously does not remain stationary at all times is known as semi-variable cost. It can also be named as semi-fixed cost. Some of its examples are as follows:

- Depreciation
- Repairs

3.2 CLASSIFICATION BY ASSOCIATION

Product Costs

The costs which are a part of the cost of a product rather than an expense of the period in which they are incurred are called as "product costs." They are included in inventory values. In financial statements, such costs are treated as assets until the goods they are assigned to are sold. They become an expense at that time. These costs may be fixed as well as variable, e.g., cost of raw materials and direct wages, depreciation on plant and equipment etc.

Period Costs

The costs which are not associated with production are called period costs. They are treated as an expense of the period in which they are incurred. They may also be fixed as well as variable. Such costs include general administration costs, salaries salesmen and commission, depreciation on office facilities etc. They are charged against the revenue of the relevant period. Differences between opinions exist regarding whether certain costs should be considered as product or period costs. Some accountants feel that fixed manufacturing costs are more closely related to the passage of time than to the manufacturing of a product. Thus, according to them variable

manufacturing costs are product costs whereas fixed manufacturing and other costs are period costs. However, their view does not seem to have been yet widely accepted.

SELF ASSESSMENT EXERCISE

Explain product cost.

3.3 CLASSIFICATION BY TRACEABILITY

Direct Costs

The expenses incurred on material and labor which are economically and easily traceable for a product, service or job are considered as direct costs. In the process of manufacturing of production of articles, materials are purchased, laborers are employed and the wages are paid to them. Certain other expenses are also incurred directly. All of these take an active and direct part in the manufacture of a particular commodity and hence are called direct costs.

Indirect Costs

The expenses incurred on those items which are not directly chargeable to production are known as indirect costs. For example, salaries of timekeepers, storekeepers and foremen. Also certain expenses incurred for running the administration are the indirect costs. All of these cannot be conveniently allocated to production and hence are called indirect costs.

Traceable, Untraceable or Common Costs

The costs that can be easily identified with a department, process or product are termed as traceable costs. For example, the cost of direct material, direct labor etc. The costs that cannot be identified so are termed as untraceable or common costs. In other words, common costs are the costs incurred collectively for a number of cost centers and are to be suitably apportioned for determining the cost of individual cost centers. For example, overheads incurred for a factory as a whole, combined purchase cost for purchasing several materials in one consignment etc.

Joint cost is a kind of common cost. When two or more products are produced out of one material or process, the cost of such material or process is called joint cost. For example, when cottonseeds and cotton fibers are produced from the same material, the cost incurred till the split-off or separation point will be joint costs.

SELF ASSESSMENT EXERCISE

What are direct costs?

4.0 CONCLUSION

The classification of cost explained above does not show the totality of cost classification. We have earlier noted in the introduction that costs are classified according to the purpose for which the costs are made. Hence, further discussion of classification of cost would be seen in the next unit.

5.0 SUMMARY

In this unit, you will recall that we discussed the classification of cost I, which focused on fixed cost, variable cost, semi-variable cost, period cost, product cost, direct and indirect cost.

The cost which varies directly in proportion with every increase or decrease in the volume of output or production is known as variable cost. The cost which does not vary but remains constant within a given period of time and a range of activity in spite of the fluctuations in production is known as fixed cost. The cost which does not vary proportionately but simultaneously does not remain stationary at all times is known as semi-variable cost. The costs which are a part of the cost of a product rather than an expense of the period in which they are incurred are called as product costs. The costs which are not associated with production are called period costs. The expenses incurred on material and labour which are economically and easily traceable for a product, job, service are considered as direct costs. The expenses incurred on those items which are not directly chargeable to production are known as indirect costs.

6.0 TUTOR MARKED ASSIGNMENT

Explain the following terms

a. Variable cost;
b. Fixed cost;
c. Product cost;
d. Period cost;
e. Direct cost; and
f. Indirect cost.

7.0 REFERENCES/FURTHER READING

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UNIT 5: CLASSIFICATION OF COST II

CONTENT

1.0 Introduction
2.0 Objectives
3.0 Main Content
    3.1 Classification by Controllability
    3.2 Classification by Function
    3.3 Classification by Decision-making Costs and Accounting Costs

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 References/Further Reading

1.0 INTRODUCTION

We have started discussing the classification of cost in the previous unit where we discussed the classification by changes of activities, classification by association and classification by traceability.

In this unit, we shall be discussing the completing part of classification of cost. In this unit, we shall be discussing the classification by controllability, classification by function and the classification by decision-making costs and accounting costs.

2.0 OBJECTIVES

After studying this unit, you should be able to:

- Explain production, administration and selling and distribution costs;
- Explain controllable and uncontrollable cost;
- Explain shutdown and sunk cost;
- Explain relevant and irrelevant cost;
- Explain differential cost; and
- Explain opportunity cost.

3.0 MAIN CONTENT

3.1 CLASSIFCATION BY CONTROLLABILITY

Controllable and Uncontrollable Costs

Controllable costs are those costs which can be influenced by the ratio or a specified member of the undertaking. The costs that cannot be influenced like this are termed as uncontrollable costs.

A factory is usually divided into a number of responsibility centers, each of which is in charge of a specific level of management. The officer in charge of a particular department can control costs only of those matte$ which come directly under his control, not of other matte$. For example, the expenditure incurred by tool room is controlled by the foreman in charge of that section but the share of the tool room expenditure which is apportioned to a machine shop cannot be controlled by the foreman of that shop. Thus, the difference between controllable and uncontrollable costs is only in relation to a particular individual or level of management. The expenditure which is controllable by an individual may be uncontrollable by another individual.

Avoidable or Escapable Costs and Unavoidable or Inescapable Costs

Avoidable costs are those which will be eliminated if a segment of a business (e.g., a product or department) with which they are directly related is discontinued. Unavoidable costs are those which will not be eliminated with the segment. Such costs are merely reallocated if the segment is discontinued. For example, in case a product is discontinued, the salary of a factory manager or factory rent cannot be eliminated. It will simply mean that certain other products will have to absorb a large amount of such overheads. However, the salary of people attached to a product or the bad debts traceable to a product would be eliminated. Certain costs are partly avoidable and partly unavoidable. For example, closing of one department of a store might result in decrease in delivery expenses but not in their altogether elimination.

It is to be noted that only avoidable costs are relevant for deciding whether to continue or eliminate a segment of a business.

SELF ASSESSMENT EXERCISE
What are controllable and uncontrollable costs?

3.2 CLASSIFICATION BY FUNCTION

Production, Administration and Selling and Distribution Costs

A business organization performs a number of functions, e.g., production, selling and distribution, research and development. Costs are to be curtained for each of these functions. The Chartered Institute of Management accountants, London, has defined each of the above costs as follows:

i. **Production Cost**

The cost of sequence of operations which begins with supplying materials, labor and services and ends with the primary packing of the product. Thus, it includes the cost of direct material, direct labor, direct expenses and factory overheads.

ii. **Administration Cost**

The cost of formulating the policy, directing the organization and controlling the operations of an undertaking which is not related directly to a production, selling, distribution, research or development activity or function.

iii. **Selling Cost**

It is the cost of selling to create and stimulate demand (sometimes termed as marketing) and of securing orders.

iv. **Distribution Cost**

It is the cost of sequence of operations beginning with making the packed product available for dispatch and ending with making the reconditioned returned empty package, if any, available for reuse.

v. **Research Cost**

It is the cost of searching for new or improved products, new application of materials, or new or improved methods.

vi. **Development Cost**

The cost of process which begins with the implementation of the decision to produce a new or improved product or employ a new or improved method and ends with the commencement of formal production of that product or by the method.

vii. **Pre-Production Cost**

The part of development cost incurred in making a trial production as preliminary to formal production is called pre-production cost.

SELF ASSESSMENT EXERCISE

Explain the following terms:

a. production cost;
b. distribution cost;
c. development cost; and
d. Administration cost

3.3 CLASSIFICATION BY DECISION-MAKING COSTS AND ACCOUNTING COSTS

Decision-making Costs and Accounting Costs

Decision-making costs are special purpose costs that are applicable only in the situation in which they are compiled. They have no universal application. They need not tie into routine-financial accounts. They do not and should not conform the accounting rules. Accounting costs are compiled primarily from financial statements. They have to be altered before they can be used for decision-making. Moreover, they are historical costs and show what has happened under an existing set of circumstances. Decision-making costs are future costs. They represent what is expected to happen under an assumed set of conditions. For example, accounting costs may show the cost of a product when the operations are manual whereas decision-making cost might be calculated to show the costs when the operations are mechanized.

Shutdown and Sunk Costs

A manufacturer or an organization may have to suspend its operations for a period on account of some temporary difficulties, e.g., shortage of raw material, non-availability of requisite labor etc. During this period, though no work is done yet certain fixed costs, such as rent and insurance of buildings, depreciation, maintenance etc., for the entire plant will have to be incurred. Such costs of the idle plant are known as shutdown costs.

Sunk costs are historical or past costs. These are the costs which have been created by a decision that was made in the past and cannot be changed by any decision that will be made in the future. Investments in plant and machinery, buildings etc. are prime examples of such costs. Since sunk costs cannot be altered by decisions made at the later stage, they are irrelevant for decision-making.

An individual may regret for purchasing or constructing an asset but this action could not be avoided by taking any subsequent action. Of course, an asset can be sold and the cost of the asset will be matched against the proceeds from sale of the asset for the purpose of determining gain or loss. The person may decide to continue to own the asset. In this case, the cost of asset will be matched against the revenue realized over its effective life. However, he/she cannot avoid the cost which has already been incurred by him/her for the acquisition of the asset. It is, as a matter of fact, sunk cost for all present and future decisions.

Example

Jolly Ltd. purchased a machine for N30,000. The machine has an operating life of five years without any scrap value. Soon after making the purchase, management feels that the machine should not have been purchased since it is not yielding the operating advantage originally contemplated. It is expected to result in savings in operating costs of N18,000 over a period of five years. The machine can be sold immediately for N22,000.

To take the decision whether the machine should be sold or be used, the relevant amounts to be compared are N18,000 in cost savings over five year and N22,000 that can be realized in case it is immediately disposed. N30,000 invested in the asset is not relevant since it is same in both the cases. The amount is the sunk cost. Jolly Ltd., therefore, sold the machinery for N22,000 since it would result in an extra profit of N4,000 as compared to keeping and using it.

Relevant and Irrelevant Costs

Relevant costs are those which change by managerial decision. Irrelevant costs are those which do not get affected by the decision. For example, if a manufacturer is planning to close down an unprofitable retail sales shop, this will affect the wages payable to the workers of a shop. This is relevant in this connection since they will disappear on closing down of a shop. But prepaid rent

of a shop or unrecovered costs of any equipment which will have to be scrapped are irrelevant costs which should be ignored.

Imputed or Hypothetical Costs

These are the costs which do not involve cash outlay. They are not included in cost accounts but are important for taking into consideration while making management decisions. For example, interest on capital is ignored in cost accounts though it is considered in financial accounts. In case two projects require unequal outlays of cash, the management should take into consideration the capital to judge the relative profitability of the projects.

Differentials, Incremental or Decrement Cost

The difference in total cost between two alternatives is termed as differential cost. In case the choice of an alternative results in an increase in total cost, such increased costs are known as incremental costs. While assessing the profitability of a proposed change, the incremental costs are matched with incremental revenue.

Out-of-Pocket Costs

Out-of-pocket cost means the present or future cash expenditure regarding a certain decision that will vary depending upon the nature of the decision made. For example, a company has its own trucks for transporting raw materials and finished products from one place to another. It seeks to replace these trucks by keeping public carriers. In making this decision, of course, the depreciation of the trucks is not to be considered but the management should take into account the present expenditure on fuel, salary to drive$ and maintenance. Such costs are termed as out-of-pocket costs.

Opportunity Cost

Opportunity cost refers to an advantage in measurable terms that have foregone on account of not using the facilities in the manner originally planned. For example, if a building is proposed to be utilized for housing a new project plant, the likely revenue which the building could fetch, if rented out, is the opportunity cost which should be taken into account while evaluating the profitability of the project.

Conversion Cost

The cost of transforming direct materials into finished products excluding direct material cost is known as conversion cost. It is usually taken as an aggregate of total cost of direct labor, direct expenses and factory overheads.

SELF ASSESSMENT EXERCISE

What is conversion cost?

4.0 CONCLUSION

Like we have earlier discussed, the classification of cost is based on the purpose of the cost. We have discussed other costs as they would be classified.

5.0 SUMMARY

In this unit, you would recall that we discussed classification of cost II. This unit was a continuation from the previous unit. We discussed classification by controllability, classification by function and classification by decision-making costs and accounting costs.

6.0 TUTOR MARKED ASSIGNMENT

1. Explain classification by function
2. Explain the following terms:
    a. Opportunity cost;
    b. Differential cost; and
    c. Sunk cost.

7.0 REFERENCE/FURTHER READING

Barfield, J. T., Raiborn, C. A. & Kinney, M. R. (1994). *Cost accounting: traditions and innovations*. New York, NY: West Publishing Company.

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MODULE 3 COSTING CONCEPTS

Unit 1 Accounting for Materials

Unit 2 Stock/Inventory Control

Unit 3 Accounting for Labour

Unit 4 Accounting for Overheads

Unit 5 Job and Process Costing

UNIT 1: ACCOUNTING FOR MATERIALS

CONTENTS

1.0 Introduction
2.0 Objectives
3.0 Main Content
    3.1 Basic Classification of Materials
    3.2 Stores – Functions and Activities
    3.3 Factors that Facilitate Effective Material Cost Control
    3.4 Valuation of Stock
    3.5 Stock Management
4.0 Conclusion
5.0 Summary
6.0 Tutor-Marked Assignment
7.0 References/Further Reading

1.0 INTRODUCTION

In manufacturing organizations materials constitute over sixty percent of cost of production. To minimize cost, material cost control is germane to any organization that depends on materials for its production process.

Some manufacturing organizations invest so much on research and development in other to proffer ways of obtaining the maximum and efficient use of their raw materials. This chapter therefore outlines mechanism for controlling material cost and provides a structure for determining material cost.

2.0 OBJECTIVES

After studying this chapter, you should be able to:

- Mention the basic classification of stocks
- Explain the basic functions and activities of the store
- List the factors that facilitate effective material cost control
- State the methods of stock valuation
- Differentiate between physical stocktaking and periodic stocktaking

3.0 MAIN CONTENT

3.1 Basic Classification Of Materials:

Materials also referred to as stock includes all the tangible material assets of an organization other than its fixed assets. They consist of the following:

a. raw materials
b. work-in-progress
c. finished goods
d. merchandise ready for sale
e. any parts of materials to be incorporated into a finished product (component parts)
f. consumable such as – stationary, oil card, grease, fuel, gas
g. jigs, fixtures and special tooling
h. by product, scrap,
i. works supplies and
j. packaging

3.2 The Stores - Functions and Activities

3.2.1 Purchasing:

a. identifying and defining need for items of stores and supplies
b. identifying and evaluating available suppliers of these items
c. negotiating with selected suppliers, and
d. making contracts and placing orders for the needed items to be supplied.

3.2.2 Operating the Store:

a. receiving and accepting (rejecting) the items ordered

b. holding or keeping the items until they are used

c. issuing out the items for use.

3.2.3 Stock Control

a. recording the stock

b. checking stock

c. planning replenishment of stock

d. valuation of stock

3.2.4 Summarized overview of stores functions

a. The purchasing function

   i. requisition for stock

   ii. supplier analysis and selection

      - ❖ negotiation with suppliers and
      - ❖ placing orders

b. Operating the store:

   i. receipt of orders and

   ii. materials handlings comprising

      - ❖ holding stock
      - ❖ issuing stock for use

c. Stock control

   i. Stock records

   ii. Stock audits, and

   iii. re-ordering of stocks

SELF ASSESSMENT EXERCISE

Explain the function and activities of the store.

3.3 Factors That Facilitate Effective Material Cost Control

The following factors are important for an effective material control system.

- A budget of material usage and purchases
- The handling of purchases by competent and qualified personnel
- Availability of sufficient and effective storage facilities
- An effective classification and coding of materials
- Effective use of standard form for proper documentation.

- An effective co-ordination among all departments involved in materials handling e.g. buying, receiving storage and usage.
- The institution of a working internal control system / audit.

3.4 Valuation of Stock

There is usually a challenge in ascertaining the price by which stock should be issued out of the store because they are usually purchased at varying prices from time to time. There are several methods that could be employed to price issues.

3.4.1 Methods of Valuing Stock

(a) First-In-First-Out (FIFO)

(b) Last-In-First-Out (LIFO)

(c) Simple Average Method (SAM)

(d) Weighted Average Method (WAM)

(e) Standard Price

(f) Replacement price

(g) Specific identification

(h) Retail method

Some of the objectives of material pricing are:

a. to charge to producing on a consistent and realistic basis, the cost of materials used;

b. to provide a satisfactory basis of valuing stock at the end of the period.

SELF-ASSESSMENT EXERCISE

What are the factors that facilitate effective material cost control.

3.5 Stock Management

Stock management involves materials planning and material control. The major reasons why organizations engage in stock management is to avoid the negative effect of stock-out and overstocking.

Stock-out is a situation where an organization has sufficient materials required for production. Overstocking is a situation where a business organization maintains more materials than is necessary at any given time. There are basically two (2) ways to control stock:

1. Perpetual Inventory System
2. Physical Stock-Taking

3.5.1 Perpetual Inventory System

This is a method of controlling physical stock level by ensuring that the amount of stock level of every item is accounted for at all times. This normally involves detailed recording of all receipts, issues and balances for each item of stock. Due to the detailed recording of all in and out, management does not need to do a physical stocktaking/count. The stock level can be ascertained at any moment of time. To ensure that the stock level is accurate, physical stocktaking needs to be conducted.

3.5.2 Physical stocktaking

Basically, there are two types of physical stocktaking:

Continous Stocktaking: The word continuous means the continual physical count of the quantity of the stock. This is done few times a year. The physical quantities counted are then compared to the stock recorded under the perpetual inventory system. Stock discrepancies between physically counted and recorded might be due to:

- Pilferage and falsification of documents;
- Natural wastage like evaporation or breaking in bulk;
- Warehouse's errors both physical and clerical;
- Clerical errors in the books recorded under the perpetual inventory system

Periodic Stocktaking: Unlike continuous stocktaking, the stocks are physically counted only at the end of the accounting year or period.

3.5.3 Advantages of Continous Physical Stocktaking Compared to Periodic Stocktaking

Though the greatest disadvantage is the time and manpower factor as it involves more frequent stocktaking, there are many advantages of continuous over periodic stocktaking:

- It improves the quality of the physical stocktaking as there are more frequent physical counting;
- It allows stock discrepancies to be more fully investigated;
- Maintain a higher work standards as the warehouse personnel know that they need to count the stock more frequently;
- Unauthorized changes in procedures are detected and;
- Production hold-ups, a common issue in periodic stocktaking are eliminated.

4.0 CONCLUSION

We have been able to discuss the management of materials in this unit. Materials could also be referred to as stocks which are an important aspect of production. Care and caution should be taken when they are valued and during the stocktaking process

5.0 SUMMARY

In this unit we have examined the basic classification of materials, functions and activities of the stores, factors that facilitate effective material cost control, valuation of stock and materials management.

6.0 TUTOR-MARKED ASSIGNMENT

1. Mention the basic classification of stocks
2. Explain the basic functions and activities of stores
3. List the factors that facilitate effective material cost control
4. State the methods of stock valuation
5. Differentiate between physical stocktaking and periodic stocktaking.

7.0 REFERENCES/FURTHER READINGS

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UNIT 2: STOCK/INVENTORY CONTROL

CONTENTS

1.0 Introduction

2.0 Objectives

3.0 Main content

- 3.1 Stock control system
  - 3.1.1 Minimum stock level
  - 3.1.2 Maximum stock level
  - 3.1.3 Reorder stock level
  - 3.1.4 Economic order quantity
  - 3.1.5 Average cost level
  - 3.1.6 Safety stock or Buffer stock
  - 3.1.7 Lead time

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 References/Further reading

1.0 INTRODUCTION

In the last unit we considered materials management and we looked at the various methods of taking stock. In this unit, we shall be considering the technique of controlling stock/inventory. Inventory control is one of the challenges of management. This is because they have to ascertain the level of stock to maintain in other to avoid stock-out or overstocking. Management must make decisions on the levels of stock that will minimize cost and maximize the efficient use of available materials.

2.0 OBJECTIVES

At the end of this unit, you should be able to calculate the following stock levels

a. Minimum stock
b. Maximum stock
c. Re-order stock

d. Re-order stock quantity or Economic Order Quantity, and

e. Average stock

3.0 MAIN CONTENT

If stocks are too high, there would be excess capital tied up unproductively; high cost of storage; risk of deterioration; risk of changes in demand or technology will leave surplus stocks unusable. But then, if stocks are too low, there would be risk of interruption to production; high cost of frequent re-ordering and loss in economies resulting from bulk purchase. A proper system of control and recording of stocks must be instituted to prevent stocks lying around in heaps thereby making it impossible to know the level of stock and control them. Also, if there is no control, cost of production will not be known and this will mean that information required for other financial management decision will be incomplete.

3.1 Stock Control System

A proper system of stock control will have the following elements: physical security of stock in a lockable section controlled by a responsible storekeeper; diversified control of stock ordering and usage by works personnel, issue and receipt by stores personnel, buying by the buying office, and payment by the accounting department; careful documentation of all stock movements and stock levels. In this unit we shall be considering the technique of ascertaining different stock levels.

3.1.1 Minimum Stock Level:

This is the lowest level of the stock that is established by management. It is arrived at after considering the lead-time and the demand for the materials.

3.1.2 Maximum Stock Level:

This is the stock level that should not be exceeded without the permission of top management.

3.1.3 Re-order Stock Level:

The re-order stock level is the level of inventory at which it becomes necessary to place order for new supply. Management must be watchful in other to know the quantity of stock to order and the timing of the supply.

3.1.4 Economic Order Quantity

Economic order quantity is the quantity of materials an organization will purchase at a time to enjoy economy of scale i.e. transport cost, bulk discount, ordering cost, holding cost, etc.

3.1.5 Average Cost Level

This is the midway between the minimum stock level and the maximum stock level.

3.1.6 Safety Stock or Buffer Stock

This is an additional stock held by an organization over and above the minimum stock. The provision is made against some errors in the demand estimate for the stock or abnormal delays in the lead time.

3.1.7 Lead time

This is the amount of time it takes for the material to be delivered from the supplier after an order has been placed.

SELF ASSESSMENT EXERCISE

Briefly explain the following terms:

a) Minimum stock level
b) Maximum stock level
c) Reorder stock level
d) Economic Order Quantity
e) Average Cost level

Illustration 3-1

The following data relates to Better Life Manufacturing Company Ltd with respect to material AZ7.

1. 24,000 units of the material will be used every day for a 260 days year
2. It will cost N100,000 to place each order
3. The cost of one unit of AZ7 is N24,000 and it will cost 10% of this amount to hold each unit of AZ7 in store.
4. Daily usage of material AZ7 will not exceed 25, 000 units and will not be less than 23, 000 units.
5. The most reliable supplier takes a maximum period of 4 days to deliver. But the shortest period could be 2 days.

Using the above data, calculate the following:

a. Re-order level of stock

b. Minimum stock level

c. Reorder quantity/Economic Order Quantity

d. Maximum stock level

e. Average cost level

SUGGESTED SOLUTION 3-1

a. Re-Order Level Of Stock

Re-order stock level = Maximum usage X maximum delivery period

Maximum usage = 25, 000 units

Maximum Delivery Period= 4 days

Re-order level = 25, 000 x 4 days = 100, 000 units

b. Minimum Stock Level

Minimum stock level = Re-order level – (Average usage X Average delivery period)

Re-order level = 100, 000 units

Average usage = 24, 000 units i.e (23,000 + 25,000/2)

Average lead time = 3 days

∴ Minimum Stock level = 100, 000 unit – (24, 000 units x 3 days)

" = 100, 00 units – 72, 000 units

" = 28, 000 units

c. Reorder Quantity / Economic Order Quantity

Economic Order Quantity [EOQ] = $\sqrt{\frac{2DCo}{Cc}}$

Where: D = Annual demand

Co = Cost of order

Cc = Carrying cost per unit

Annual Demand = 24, 000 units x 360 = 8,640, 000

Co = Cost of order = 100, 000

Cc = Carrying cost per unit = 2400

EOQ = $\sqrt{\frac{2(8,640,00)(100,000)}{2400}}$

EOQ = $\sqrt{720,000,000}$

EOQ = 26, 832. 815 units

d. Maximum Stock Level

Maximum stock level is Re-order Level + Re-order Quantity - (Minimum usage X Minimum Delivery Period)

Reorder level = 100, 000 units

Reorder quantity = 26, 833

Minimum usage = 23, 000 units

Min. delivery period = 2

MSL = 100,000 + 26, 833 – 23, 00 x 2

MSL = 126, 833 – 46, 000

MSL = 80, 833 units

e. Average Stock Level

$$\text{Average stock level} = \frac{\text{Max.Stock LEvel+Minimum Stock Level}}{2}$$

$$= \frac{\text{80,833 units+28,000 units}}{2}$$

$$\frac{\text{108,833 units}}{2} = \text{54,417 units}$$

4.0 CONCLUSION

The control of inventory in an organization cannot be overemphasized because organizations cannot afford to experience stock shortage or to be overstocked. Any of these situations could lead to direct or indirect losses.

5.0 SUMMARY

In this unit we have been able to discuss stock control system in relation to minimum stock level, maximum stock level, reorder stock level and economic order quantity.

6.0 TUTOR MARKED ASSIGNMENT

Oriental Hotels uses 10,000 cartons of red wine per annum. The carrying cost per unit of the cartons is N2.00 per carton and cost of order is N5, 000.00 per order. Determine the Economic Order Quantity.

7.0 REFERENCES/FURTHER READING

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UNIT 3: ACCOUNTING FOR LABOUR

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2.0 Objectives

3.0 Main content

- 3.1 Labour as a factor of production
- 3.2 Division of Labour and Productivity
- 3.3 Labour recruitment cost
- 3.4 Selection process
- 3.5 Labour Timing and Assessment
- 3.6 Work Study
- 3.7 Labour cost computation
- 3.8 Direct and Indirect cost of Labour

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 References/Further Reading

1.0 INTRODUCTION

Labour cost is present in all organizations. It is an unavoidable cost. Labour is the second element of cost, and one of the most important. It is believed that labour controls other elements of cost like materials and expenses. It is generally accepted that the success or failure of production of goods and services largely depends on the labour. Therefore, labour is a germane element in the production process.

2.0 OBJECTIVES

After studying this chapter, you should be able to:

- define labour cost
- explain labour as a factor of production
- explain division of labour and productivity
- explain what constitutes recruitment cost
- explain the methods of labour timing and assessment
- explain work study

- compute labour cost using the various methods of remuneration
- distinguish between direct labour cost and indirect labour cost
- explain group incentive scheme.

3.0 MAIN CONTENT

3.1 Labour as a factor of Production

Labour cost is the human contribution to production process and it requires regular evaluation, control and analysis. For an effective and efficient evaluation, control and analysis of labour, there is the need for an organization to develop a good organization chart. Factors of production are resources or inputs that are used to facilitate the production of goods and service in an organization. Labour which is the human contribution to the production process is required to transform raw material into finished goods and services. Labour takes the form of employee knowledge, expertise and experience. With these skills, production cannot take place.

3.2 Division of Labour and Productivity

It is generally believed that when labour is allocated amongst specialized units, it would lead to cost minimization and that large scale production is more beneficial than small scale production as a result of economies of scale and possibility of specialization.

3.2.1 Advantages of Division of Labour

- Specialization leads to automation and computerization of the production process which results in high productivity.
- Time is saved because the worker does not switch from one operation to another.
- Training time is reduced since a worker needs to know only his specific function.
- The workers, employer and the whole organization would benefit from specialization, when each person can specialize in a particular skill.

3.2.2 Disadvantage of Division of Labour

- Fatigue is likely to set in.
- The more specialized a worker is, the more the chances of becoming unemployed, if the demand for the particular type of skill diminishes.
- There is the danger of the part of some jobs being concentrated on particular individuals.

3.3 Labour Recruitment Cost

Recruitment is the process of identifying and attracting a pool of candidates, from which some will later be selected to receive employment offers. It is also referred to as a set of activities an organization uses to attract job candidates who have the abilities and attitude needed to help the organization achieve its objectives.

3.3.1 Types of Recruitment

Decisions made during the recruitment process, can go a long way to affect the productivity and efficiency of the organization. An organization can choose from the centralized or decentralized form of organization.

3.3.1.1 Centralized Recruitment

The recruitment practices of an organization are centralized when the human resource (HR) department of the Head office performs all the functions of recruitment.

3.3.1.2 Decentralized Recruitment

This form of recruitment practice is commonly seen in the case of conglomerates operating in different and diverse business areas. With diverse and geographically spread business areas and office, it becomes important to understand the needs of each unit and arrange the recruitment policies and procedures accordingly. Each business unit carries out its own recruitment.

The following steps are usually taken:

- A job analysis is done to determine the role, responsibilities, and person specification required.
- Internally, an advert is placed on company notice board and a search conducted.
- Externally, consideration is given to various search options like labour office, newspapers, outsourcing, job fairs, executive searches and so on.
- Applicants respond to companies' invitation and the company proceeds to shortlist potential applicants.

SELF ASSESSMENT EXERCISE

1. What are the advantages and disadvantages of division of labour?
2. Explain the different types of recruitment

3.4 Selection Process

- Interviews are conducted – whether structured or unstructured. A structured interview should have an agreed format with questions to evaluate applicants.
- The right candidate is selected using per-determined criteria.

3.5 Labour Timing and Assessment

After employees have been engaged and they begin to work, there is the need to time them as they work so as to assess their performance and also to make it possible to assign monetary value to the work that they do. Various organizations use different methods to time their employees. Examples of methods used included the following:

- The use of attendance register
- The use of click cards
- The use of attendance board
- The use of Job sheets and Job books etc

The above records will then be used as evidence of: the number of hours worked by employees; the time spent by each employee on any job; the number of hours during which each employee was idle etc. These will then form the basis for computing the wages of employees.

3.6 Work Study

This is the system of increasing or maximizing the productivity of an operating unit by organizing the work of that unit. Work study is sub-divided into two major methods namely;

- Method study and
- Work measurement.

3.6.1 Method Study

This is the recording and critical examination of existing methods of doing work and comparing same with proposed methods with a view of coming up with easier methods which would be more effective and cheaper on the long run.

3.6.2 Work Measurement

This seeks to measure the time required for a qualified worker to complete a specific assignment at a specified level of performance.

3.7 Labour Cost Computation

Labor cost can be computed using the following methods:

i. Time based remuneration

ii. Output based remuneration

3.7.1 Time based method of remuneration

The amount earned by the employee is based on the number of hours spent at his place of work and not on the quantity of work produced. The gross wage is calculated as (Hours worked X Rate per Hour). However, when overtime is worked, the payment to the employee will also include premium on the overtime hours.

ILLUSTRATION 3-1

Assume the following scenario

Number of hours worked = 150 hours

Rate per hour = N3500

Gross wage will be (number of hours worked X rate per hour)

(150 X N3500) = N525, 000

3.7.1.1 Advantages of Time Based Method of Remuneration

- It is simple to operate and easy to understand.
- The quality of work produced tends to be higher since the worker is not in a rush to complete a job in order to minimize his earnings.

3.7.1.2 Disadvantages of Time Based Method of Remuneration

- There is no financial incentive to produce more than a minimum amount.
- supervision cost will be incurred to monitor and check idleness of the employer.
- The method is often unfair because lazy workers and hard workers are paid the same rates.

3.7.2 Output Based Methods of Remuneration

3.7.2.1 Piece Rate Methods of Remuneration

The amount earned by the employee is based on the number of units produced. Piece rates can be examined under three headings, namely;

- Straight Piece Rate
- Differential Piece Rate
- Piece Rate with guaranteed time rate

a. Straight Piece Rate: Under straight piece rates, the payment to the employee is computed thus:

No. of units produced X Rate per unit

The worker receives a fixed rate for each unit produced which does not depend on the time taken to produce it. Earnings therefore depend on the volume of the worker's output.

ILLUSTRATION 3-2

Assume that:

Number of units of Ankara shoes produced in Butterfly concept is 2,000 units,

rate per unit is N50,000. What is the gross wages to be paid based on straight piece rate remuneration.

SUGGESTED SOLUTION 3-2

Gross wage = 2,000 units X N50,000

= N100,000.00

3.7.2.2 Differential Piece Rate

ILLUSTRATION 3-3

Normal rate per hour paid to a staff of Butterfly concept is N2,000 and the standard time allowed is 20 units per hour. Assuming Biodun completes 80 units and Shina 50 units in 7 hours. Calculate the earnings of each employee.

	Biodun	Shina
	80	50
Rate per hour is N2,000		
Units per hour is	20 units	
Rate per unit - $\frac{N2,000}{20}$	100	100
Gross Wage	N8,000 (N100 X 80)	N5,000 (N100 X 50)

The remuneration is in direct proportion to the units produced by each employee. If time rates were used, both employees would receive (7 hours x N2000) = N14, 000

Advantages of the Piece Rate

- Effort is rewarded and in consequence, the employee is given the incentive to produce more.
- Because employees are self-motivated, less supervision is required.
- The employees benefits from a reduction in the overhead cost per unit of production.

Disadvantages of the Piece Rate

- There is a danger that quality will be sacrificed and in such a situation the employer would spend more on inspection and quality control.
- Piece workers, after earning certain remuneration during the week, might be satisfied and reduce their pace, arrive late or absent themselves.
- A considerable degree of time is involved in setting standard times and as these are subject to the agreement of trade union representation, further time is often spent in detail negotiation before piece rates are established.
- If an error is made and piece rates are set too high, it is difficult subsequently to reduce them. This could prove to be extremely costly.

3.7.2.3 Piece rate with Guaranteed Day Rate

It is a system adopted to compensate employees on account of low production, leading to earnings under piece rate being below the normal day rate remuneration. If an employee's earnings according to the piece work are less than the normal day rate, he is paid the day rate instead of the piece rate.

ILLUSTRATION 3-4

Assume the rate per hour is N15,000 and the cost per unit is N16,000 while the units produced is 8,000 units. Calculate the piece rate with guaranteed day rate of remuneration assuming that 8,800 hours were used to produce the entire unit.

Piece Rate Earnings = Units produced x Rate per unit

= 8,000 units x N15,000

=N120,000,000

Since the guarantee hourly rate (8,800 hours X N15,000 = N132,000,000) is higher than the piece rate, the employee is paid the hourly wage of N132,000,000.

3.7.3 Differential Piece Rate

Under this scheme, the piece work rate changes at different levels of efficiency or production.

ILLUSTRATION 3-5

N10,000 is paid per unit when production is below 7 units per hours. N15,000 is paid per unit, when it is 7-10 units per hour. N20,000 is paid per unit when production is above 10 units per hour, etc

The objective of this is to provide a strong incentive to reach the maximum rate of production.

3.7.4 Premium Bonus Schemes

Bonus schemes are intended to reward employee for their efficiency in saving cost for the organization through the saving of time. These are therefore schemes for sharing extra profit with employees.

Types Of Premium Bonus Schemes

1. Halsey Bonus Scheme
2. Halsey Weir Bonus Scheme
3. Rowan Bonus Scheme

Halsey Scheme

According to this scheme, the time saved should be apportioned equally between the employee and employer.

Bonus = ½ x Time saved x Day Rate

Note: Time allowed – Time Taken = Time Saved.

Halsey Weir Scheme

Under this scheme, the proportion is 2:1 in favour of the employer. Thus the employee gets only a third of time saved at the rate per hour.

Bonus = $\frac{1}{3}$ x Time Saved x Day rate

Rowan Scheme

Under this system, the bonus award to the employee is the proportion between time taken and time allowed of the time saved.

Bonus = $\frac{\text{Time taken}}{\text{Time allowed}}$ x Time saved x Day rate

It therefore follows that if the employee saves more time, he gets a greater bonus.

ILLUSTRATION 3-6

Time allowed = 12hrs

Day rate = N18,000

Time taken by A = 6hrs

Time taken by B = 9 hrs

Required: calculate the bonus to be rewarded to both employees using the Rowan Bonus Scheme.

Solution

Rowan Bonus Scheme:

Employee A:

Time allowed = 12hrs

Time taken = 6hrs

Time saved = 6hrs

$$\text{Bonus} = \frac{\text{Time taken}}{\text{Time allowed}} \times \text{Time saved} \times \text{Day rate}$$

$$= \frac{6hrs}{12hrs} \times 6 \times N18{,}000$$

$$= N54{,}000$$

Employee B

Time allowed = 12hrs

Time taken = 9hrs

Time saved = 3hrs

$$\text{Bonus} = \frac{\text{Time taken}}{\text{Time allowed}} \times \text{Time saved} \times \text{Day rate}$$

$$= \frac{9hrs}{12hrs} \times 3 \times 18{,}000$$

$$= N40{,}500$$

3.7.5 Over Time Remuneration Schemes

Over time is the time spent beyond the normal working hours or days. Over time wage rates are expressed as time plus a fraction or multiples of time e.g.

i. Time and one half
ii. Time and one third
iii. Double time and
iv. Time and one fifth and so on.

3.8 Direct and Indirect cost of Labour

The direct labour cost is the labour cost incurred on employees who are engaged in directly transforming the raw materials into finished goods. It must be noted that it is only the basic wages paid to direct workers that constitute direct labour cost. Policy related cost incurred on direct workers is not direct labour but rather indirect. Example of these policies related costs includes:

- Workmen compensation premium paid to insurance companies
- Employer's social security fund contribution
- Bonuses paid to employees
- Overtime premium paid to employees where the overtime is worked regularly as company policy etc.

Wages incurred on indirect workers is indirect wages.

ILLUSTRATION 3-7

ABC Farms employs on her farm 120 workers as direct labour and 15 workers as indirect labour, the farm remunerates its labour as follows:

a. Direct labour is paid regularly on the basis of units of output at the rate of N12,250 per unit;
b. Indirect labour is paid regularly on the basis of hours worked at the rate of N14,000 per hour;
c. Overtime premium is paid to all factory workers on the hours worked at the following rates;
    i. N26,000 per hour for direct labour
    ii. N28,000 per hour for indirect labour
d. The employer and employee contribute 10% and 5% respectively of gross pay to the pension fund.
e. Each worker contributes dues to the local workers union at the following rates:
    i. N50,000 per direct labour per month
    ii. N80,000 per indirect labour per month

    The union dues are deducted at source
f. The farm in addition operates a workmen's compensation insurance scheme with for all factory workers – The monthly premium is N7,500,000.00 approximately divisible between direct and indirect labour in the ratio of 4:1.
g. PAYE Tax is approximately 8% of monthly gross income.

During this month of June 2012, the farm produced 30,000 units of products during regular working time of 8 hours a day for 22 days a month. The farm worked overtime of 6 hours a day for 4 day during the month and produced 3,200 more units of products.

You are required to determine:

i. the cost to ABC Farms of factory labour for the month of June 2012 distinguishing between direct and indirect labour cost.

ii. the total net wages paid to the workers for June 2012

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Solution

WORKINGS	Direct workers	Indirect workers
No. of units produced in normal time	30,000 unit	-
Overtime production	3,200 units	-
Total units produced	33,200 units	-
Hours worked regular time	120 x 176 hrs	15 x 17 hrs
	= 21,120 hrs	= 2,640 hrs
Overtime hours	24 hrs x 120 = 2,880 hrs	24 hrs x 15 = 360 hrs
	N12, 250 / unit	N14,000 / hrs
Overtime rate	N26,000/hr	N28, 000/hr
Overtime pay	2880 hrs @ N26,000	360 hrs @ N2800
	=N 74,889,000	= N10, 880,000
Overtime piece rate	$\frac{74,880,000}{3200}$	
	= N23, 400	
Overtime premium	11, 150	N14, 000

i) Direct and Indirect Cost

	Direct wages	Indirect wages	Total basis
Wages	₦'000	₦'000	₦'000
Direct worker 3320 units @ 12250	40,670	-	40,670
Indirect worker 3000hrs	-	42,000	42,000
Basic wages	406,700	42,000	448,700
Overtime premium:			
Direct workers (3200 x 11,150)	35,680	-	35,680
Indirect workers (360hrs x 14,000)	5,040	-	5,040
Premium for workman compensation	7,500	-	7,500
Employer pension scheme 10% of basic wages			
Direct worker	40,670	-	40,670
Indirect workers	-	4,200	4,200
Total labour cost	**406,700**	**235,090**	**541,790**

Payroll	**Direct** ₦	**Indirect** ₦
Basic wages	406,700	42,000
Pension scheme 5%	(20,335)	(2,700)
	386,365	39,900
Other allowances:		

Overtimes premium	45,680	5,040
	422, 045	44, 940
Taxable Pay	(33,763.6)	(3,595.2)
Local union	(6000)	(1200)
	382,281.4	40,144.8
Net wage per employee	382,281.4 / 120 = 3185.68	40,144.8 / 15 = 2676.32

4.0 CONCLUSION

Labour cost cannot be excluding when calculating the total cost incurred in production. It is an important element in production cost

5.0 SUMMARY

This chapter explained the definition of labour cost, explained labour as a factor of production and further examined division of labour and productivity, its advantages and disadvantages. It also focused on recruitment and the various forms of recruitments. And these forms are centralized and decentralized recruitments. Other areas also covered are: what constitutes recruitment cost; the methods of labour timing and assessment; work study; computation of labour cost using the various methods of remuneration; distinguish between direct labour cost and indirect labour cost and group incentive scheme.

6.0 TUTOR-MARKED ASSIGNMENT

Explain in details Time based and output based forms of remuneration

7.0 REFERENCES/FURTHER READING

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UNIT 4: ACCOUNTING FOR OVERHEADS

CONTENTS

1.0 Introduction

2.0 Objectives

3.0 Main content

- 3.1 Types and classification of overheads
- 3.2 Overhead allocation and apportionment methods
- 3.3 The concept of overhead absorption

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 References/Further Reading

0.0 INTRODUCTION

Expenses/overheads constitute the third element of cost after materials and labour. It is the aggregate of indirect materials, indirect labour and indirect expenses.

Examples includes cost of cleaning materials, cost of stationary, cost of consumable materials, superman cost, bonus payable to employees, salaries of indirect workers and so on.

2.0 OBJECTIVES

After studying this chapter, you should be able to

- Distinguish between direct and indirect expenses
- Explain overhead cost analysis
- Explain the treatment of under and over absorption of overhead
- Classify overhead
- Calculate overheads absorption rates using six methods
- Make accounting entries with respect to overhead.

3.0 MAIN CONTENT

3.1 Types and classification of overheads

1. Production overheads
2. Administrative overheads
3. Marketing, selling and distribution overheads
4. Research and development overheads

3.1.1 Production Overheads

These are the indirect cost of manufacturing a cost unit e.g. materials consumed in the factory. Indirect factory wages and other indirect expenses incurred in connection with production.

3.1.2 Administrative Overhead

These are cost of formulating policy, directing and controlling operations not related directly to production, selling, distribution or research and development.

3.1.3 Marketing Overhead (Selling and Distribution)

Salaries and commission of salesman, advertising, rent and insurance of warehouses, bad debt collection charges, cash discounts allowed etc.

3.1.4 Research and Development Overheads

These are costs of seeking new ideas, materials, methods of production and improved products and the development and design of such ideas so that they can be applied to formal production.

3.2 Overhead allocation and apportionment methods

3.2.1 Overhead Allocation

This is the assignment of overheads to cost centres directly without sharing. Overhead cost that is specifically incurred in respect of a particular cost centre is wholly assigned to that cost centre, This is referred to as overheads allocation.

3.2.2 Overhead Apportionment

This is the sharing of overhead cost incurred in respect of a number of cost centres to the centres involved using a fair and equitable basis of apportionment. There are some overheads costs that are incurred for a number of cost centres and at times even for the whole organization e.g. of bases of apportionment commonly used are; space occupied by cost centre; number of employees; values of plant; number of materials requisitioned; kilowatt of energy used, etc.

ILLUSTRATION 3-1

Adam Ltd makes wooden crates which are sold to brewers and soft drinks bottling companies. The production work involves three production departments, Saving, Assembly and Finishing. There are two service departments, Maintenance and Materials handling.

During the year 31st December 2013, 40,000 crates were made;

	Saving	Assembly	Finishing
Cost incurred			

Materials used	800,000	600,000	100,000
Direct wages	300,000	750,000	250,000
Overheads	120,000	80,000	30,000

Materials handling wages	N21,000
Maintenance wages totaled	N45,000
Consumable stores totaled	N15,000 (Maintenance)

The departments benefits from the service departments are as follows;

	Saving %	**Assembly %**	**Finishing %**	**Material handling %**
Maintenance	30	40	20	10
Material handling	50	20	30	

Required:

a. Prepare a statement showing the overheads allotted to each production department
b. Calculate the unit cost of a wooden crate.

OVERHEAD ANALYSIS SHEET

	Saving	Assembly	Finishing	Maintenance	Materials handling
Overhead	120,000	80,000	30,000	45,000	21,000
Consumables				15, 00	
	120,000	80,000	30,000	60,000	21,000

Maintenance	18,000	24,000	12,000	(60,000)	6,000
Material handling	13,500	5,400	8,100	-	(27,000)
	151,500	**109,400**	**50,100**	**Nil**	**Nil**

	Saving	Assembly	Finishing	Total	Cost per unit
Material cost	800,000	600,000	100,000	1,500,000	37.5
Direct wages	300,000	150,000	250,000	700,000	17,5
Overhead	151,500	109,400	50,100	311,000	7,78
	1,251,500	**859,400**	**400,100**	**2,511,000**	**62.78**

Unit cost per crate = **N62.78**

3.3 The Concept Of Overhead Absorption

This is the process of assigning overhead costs to products or services produced. Overheads are absorbed into products by first calculating the overhead absorption rate and then apply the calculated overhead absorption rate to determine the overhead absorbed by each cost unit.

To determine the overhead cost per unit of any product or service therefore, the following process is followed:

1. The organization is divided into a production cost centre or a service cost centres.
2. Allocate the cost to the various cost centres.
3. Those overhead costs that are incurred for more than one cost centre, should be apportioned among the beneficiary cost centres.
4. Re-apportion the overhead cost of the service costs centres to the production cost centres.

Where the service cost centres provide reciprocal services, it means one service cost centre serves another and receives serviced from that other.

ILLUSTRATION 3-2

In such a situation, the following methods are used for re-apportionment

a. Elimination method
b. Continuous method

c. Simultaneous equation method

Brown manufacturing company has four production departments and three service departments. Indirect labour and other indirect costs for a typical month have been allocated as shown:

Brown Manufacturing Company

	Production Department				Service Department		
	Grinding	**Blending**	**Firing**	**Polishing**	**Personnel**	**Admin.**	**Maintenance**
	₦'000	**₦'000**	**₦'000**	**₦'000**	**₦'000**	**₦'000**	**₦'000**
Indirect labour	4600	3300	5400	2900	700	1800	800
Other indirect cost	1,400	1200	2800	1600	500	300	1200

The service department's cost are allocated as follows:

	Grinding	Blending	Firing	Polishing	Admin.	Maintenance
Personnel (%)	15	25	30	20	5	5
Administration (%)	10	30	40	15	-	5
Maintenance (%)	15	30	40	5	10	-

In the grinding and firing departments, an overhead rate per machine hour was used, where as in the blending and polishing department, an overhead rate per direct labour hour is used.

Machine hours are budgeted as 620 in the grinding department and 520 in the firing department. Direct labour hours are budgeted as 1,050 in the blending department and 450 in the polishing department.

Required

a. Determine the total overheads for each of the production cost centres

b. Calculate the overhead recovery rates for each of the production department.

Suggested Solution

Elimination Method – **In this method, once a service cost centre's overheads have been re-apportioned, that service cost centre is eliminated from further apportionments.**

		Production cost centres				Service cost centres		
Overheads	**Basis**	**Grinding**	**Blending**	**Firing**	**Polishing**	**Personnel**	**Administration**	**Maintenance**
		₦'000	**₦'000**	**₦'000**	**₦'000**	**₦'000**	**₦'000**	**₦'000**
Indirect labour	Allocate	46,000	33,000	54,000	2,900	700	1,800	800
Other indirect cost	Allocate	1,400	1,200	2,800	1,600	500	300	1,200
Total		**6,000**	**4,5000**	**8,200**	**4,500**	**1,200**	**2,100**	**2,000**
Re-apportionment								
Service cost								
Personnel	15:25:30	180	300	360	240	(1200)	60	60
Maintenance	15:30:40	309	618	824	103	-	206	(2060)
Administration	10:30:40:15:5	249	747	996	374	-	(2366)	-
Overheads								
Production cost		**6738**	**6165**	**10380**	**5217**	**Nil**	**Nil**	**Nil**

centres									

Overhead analysis sheet (elimination method).

Continuous method

Each of the service cost centre overheads will be continuously re-allocated until the amount to be re-apportioned becomes insignificant, the re-appointment is ignored.

Again, using the above example.

Overheads	Basis	Grinding	Blending	Firing	Polishing	Personnel	Administration	Maintenance
	₦000	₦000	₦000	₦000	₦000	₦000	₦000	₦000
Indirect labour	Allocation	4,600	3,300	5,400	2,900	700	1,800	800
Other indirect cost	Cost allocation	1,400	1,200	2,800	1,600	500	300	1,200
Total		6,000	4,500	8,200	4,500	1,200	2,100	2,000
Re-apportionment of service cost								
Personnel	15:25:30:20:5:5	180	300	360	240	(1,200)	60	60
Administration	15:30:40:5:10	309	618	324	103	-	206	(2,060)
Maintenance	10:30:40:15:5	237	710	947	354	-	(2,366)	118
Administration	15:30:40:5:10	18	35	47	6	-	12	-
Maintenance	10:30:40:15:5	1	4	5	2	-	(12)	-
Production cost centre		6,754	6,167	10,383	5,205	Nil	Nil	Nil

Overhead analysis sheet using continuous allotment method

Simultaneous Equation

Here, the total allotment of overheads to a particular service cost centre is the overheads allocated directly to that cost centre plus the amount of overhead allotted to it from other service cost centres.

The method uses equation. The amount to be charged to each service cost centre is considered an unknown variable and worked for using the concept of simultaneous equations.

Using the above example.

P = Total personnel department overheads

A = Total administrative departments overhead

M = Total maintenance department overheads

Now, P = 1,200

A = 2,100 + 0.05p + 0.10m

But we know P to be 1,200

Thus, A = 2,100 + 0.05 (1,200) + 0.10m

A = 2,160 + 0.10m ---------- (1)

M = 2,000 + 0.05p + 0.05A

= 2,000 + 0.05 (1,200) + 0.05 (A)

M = 2,060 + 0.05 A ---------- (2)

Be re-arrangement, equation (2) will be;

M – 0.05A = 2,060

- 0.05 A = 2,060 – M

$$A = \frac{2,060}{0.05} - \frac{M}{0.05}$$

A = - 41,200 + 20M ---------- (3)

Deduct equation (1) from (3)

A = - 41,200 + 20M

A = 2,160 + 0.10 M

0 = - 43,360 + 19.90M

- 19.90(M) = - 43,360

$$M = \frac{-43,360}{-19.90} = 2,179$$

Substitute M = 2,179 into ---------- (1)

A = 2,160 + 0.10 (2,179) = 2,378

Therefore;

P = 1,200

M = 2,179

A = 2,378

The overhead analysis sheet will then look as follows:

Overhead analysis sheet

Overheads	Basis	Grinding	Blending	Firing	Polishing	Personnel	Administration	Maintenance
	₦000	₦000	₦000	₦000	₦000	₦000	₦000	₦ 000
Indirect labour	Allocation	4,600	3,300	5,400	2,900	700	1,800	800
Other indirect	Cost allocatio	1,400	1,200	2,800	1,600	500	300	1,200

cost	n							
Total		6,000	4,500	8,200	4,500	1,200	2,100	2,000
Overhead Re-apportionment								
Personnel	15:25:30:20:5:5	180	300	360	240	(1,200)	60	60
Administration	15:30:40:5:10	238	713	951	357	-	(2,378)	119
Maintenance	10:30:40:15:5	327	654	872	108	-	218	(2,179)
Production cost centre overheads		6,754	6,167	9,523	5,205	Nil	Nil	Nil

At the end of all these stages, the total overheads cost for each production cost centre would have been determined. The next stage then is to absorb the overheads to cost units using any of the methods of overheads absorption.

3.3.1 Overhead Absorption Methods

The charging of the apportioned cost centre overhead to cost units is referred to as overhead absorption. There are many methods or bases of charging overhead costs to cost units. Some of them are: Total output, Direct material cost, Direct labour hours, and Direct machine hours.

Formulae

$$\text{Overhead Absorption Rate} = \frac{\text{Total Cost Centre Overhead}}{\text{Total Units of base used}}$$

3.3.1.1 Total output Base

$$\text{Overhead per Unit} = \frac{\text{Total Cost Centre Overhead}}{\text{Total Units of Produced}}$$

If the apportioned overhead to cost centre P2Y was ₦50,000 and the total output for the period was 10,000 units. Calculate the overhead cost per unit for the cost centre.

$$\text{Overhead per Unit} = \frac{₦\ 50{,}000}{10{,}000\ \text{Units}} = ₦5 \text{ per unit}$$

3.3.1.2 Direct Material Cost Base

This method is used where there is a correlation between overhead costs and quantity of direct materials used.

$$\text{Overhead per Direct material cost} = \frac{\text{Total Overhead Cost}}{\text{Total Direct Material cost Used}}$$

If the apportioned overhead cost was ₦50,000 and the total direct material cost used was ₦ 100,000, the overhead per direct material cost can be expressed as percentage.

$$\text{Overhead per Direct material cost} = \frac{₦\ 50{,}000}{₦100{,}000} \times \frac{100}{1} = 50\% \text{ or } ₦\ 0.5$$

3.3.1.3 Direct Labour Hour base

The overhead rate per direct labour is calculated as:

$$\text{Overhead rate per Direct labour hour} = \frac{\text{Total Overhead Cost}}{\text{Total hours engaged}}$$

Illustration

If the total overhead cost for the period was ₦ 50,000 and the total direct hours engaged was 25,000 hours calculate the overhead rate per labour hour engaged.

$$\text{Overhead rate per Direct labour hour} = \frac{50{,}000}{25{,}000} = ₦\ 2$$

It follows from the calculation that if a job or product required 4000 direct labour hours, it will be charged.

4,000 X ₦2 = ₦ 8,000

3.3.1.4 Machine Hour Base

Here, the factory overhead is absorbed by dividing the total factory by the total machine time.

Illustration

If the total factory overhead for the period was ₦50,000 and the total machine hours used was 40,000 hours, calculate the overhead rate per machine hour.

$$\text{Overhead rate per machine hour} = \frac{₦50,000}{40,000\text{Hrs}} = ₦1.25$$

If therefore a particular job or product required 8,000 machine hours to complete, the overhead absorption for the product or job will be 8,000 hours X ₦1.25 = ₦10,000

Other methods are: Time basis, Blanket rate, predetermined rate etc.

ILLUSTRATION 3-4

XYZ Manufacturing Company absorbed overhead by means of direct labour. The company annual budget for production overhead is shown below:

Production overhead ₦450,000

Direct labour hours 900,000 hours

During the year, the actual production overhead and direct labour hours are:

Quarter	Production Overhead Incurred	Direct Labour Hours Worked
1	150,000	300,000
2	180,000	240,000
3	150,000	210,000
4	120,000	300,000

You are required to calculate using predetermined direct labour hourly rate the under or over absorbed expenses.

Suggested solution

Predetermined direct labour hourly rate = $\frac{\text{Budgeted Overhead}}{\text{Budgeted direct labour hours}} = \frac{₦450,000}{900,000 \text{ hours}}$

= 50 kobo per labour hour

Actual overhead expenses and direct labour hours worked

Quarters	Production Overhead	Direct Labour Hours
1	150,000	300,000
2	180,000	240,000
3	150,000	210,000
4	120,000	300,000
Total	600,000	1,050,000 hours

Pre-determined overhead = 1,050,000 X 50 kobo = ₦525,000

Less: Actual overhead = ₦600,000

Under absorbed overhead ₦ 75,000

4.0 CONCLUSION

Overhead costs are all manufacturing costs that are related to the cost object but cannot be traced to that cost object in an economically feasible way. Overhead cost can also be referred to as indirect costs.

5.0 SUMMARY

This chapter focused on the distinction between direct and indirect expenses, it also explained overhead cost analysis and the treatment of under and over absorption of overhead.

6.0 TUTOR MARKED ASSIGNMENT

1. Explain the four classification of overhead.
2. Describe overhead allocation and apportionment.
3. If the total factory overhead of COSCHARIS MOTORS for the period 2012-2013 was ₦5,000,000 and the total machine hours used was 40,000 hours, calculate the overhead rate per machine hour.

Reference

Okoye, A.E. (2011): Cost Accountancy: Management Operational Applications. Mindex Publishing Co. Ltd. Benin.

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UNIT 5: JOB AND PROCESS COSTING

CONTENT

1.0 Introduction

2.0 Objectives

3.0 Main content

3.1 Job Costing

3.1.1 Components of Job costing

3.1.2 Factory Job costing

3.2 Process Costing

1.0 INTRODUCTION

Management accountants use two basic types of costing systems to assign costs to products or services and they include job and process costing. These two types of costing systems are best considered as opposite ends of a continuum; in between, one type of system can blur into the other to some degree. In this unit we shall be considering the job and process costing in details.

2.0 OBJECTIVES

After studying this chapter, you should be able to:

- Explain the meaning of job costing.
- List and explain the components of job costing
- Know the meaning of process costing

3.0 MAIN CONTENT

3.1 Job Costing

Job costing is the process of tracking the expenses incurred on a job against the revenue produced by that job. For example, building contractors, subcontractors, architects and consultants often use job costing, whereas a hardware store or convenience store would not use job costing.

Job costing using accounting software enables you to track a number of factors and analyze the results to aid decision making. A Job costing report helps you ensure that all costs involved in a job have been properly invoiced to the customer. An estimates vs. actual report compares quoted costs to actual costs, and quoted revenues to actual revenues so that you can analyze any

variances between your quote and the actual result. You can then use the results of your analysis to create more accurate quotes when you bid on future jobs.

Using job costing will allow you to identify the most and least profitable areas of your business, so that you can focus on the profitable elements, and try to make the less profitable aspects of your business more efficient. It will help you to quote new jobs more accurately, and assist you in managing jobs in progress.

3.1.1 Components of Job costing

There are numerous aspects to job costing, and you may use many, some or none of them. If you want to use job costing, you need to: track the costs involved in the job; make sure all of the costs are invoiced to the customer; produce reports showing details of costs and revenues by job.

The fundamental components of job costing are:

- Quotes – also known as estimates, bids, or proposals
- Fixed fee jobs
- Time and materials jobs
- Revenues
- Items
- Direct costs
- Standard costs

3.1.2 Factory Job costing

Factory Job Costing is a type of job costing used when an order is small, and the completion of such order does not extend beyond one financial year. In most cases, the job is carried out within the factory e.g providing electricity supply, plumbing work, building maintenance, equipment installation etc. The procedure for costing a factory job is to open a job card for the job and give the job a code number. All the direct cost elements are charged to the job to get the job production cost. Other administrative, selling and distribution overheads, are then added to arrive at the total cost. From the quotation price (selling price) deduct the total cost to arrive at profit on the job or loss made on the job.

3.2 Process costing

This is defined as a method for determining the total unit cost of the output of a continuous production run (such as in food processing, petroleum, and textile industries) in which a product passes through several processes (or cost centers). It involves the following steps:

- the 'total cost per process' is computed by estimating the number of products passing through each process in a given period;

- the 'unit cost per process' is computed by dividing the 'total cost per process' by the number of units passing through the process in the given period;
- the 'unit cost per process' is charged to each unit as it passes through each process so that, at the end of the production cycle, each product will have received an appropriate charge for each process through which it has passed.

SELF ASSESSMENT EXERCISE

Differentiate between Job Costing and Process Costing

ILLUSTRATION 3-I

Adebisi & Co. Ltd is an Engineering Company. The organization has three main functional sections namely: Machining, Rolling and Assembling. The overhead costs over the years were apportioned by means of blanket rate at ₦0.5 per direct labour hour of the three main functional departments. However, the overhead costs for the selling and distribution costs were calculated as 15% of the production costs. The company has just employed a new Executive Director who has introduced a new policy on overhead absorption starting from the second quarter of the year which commences on 1st April 2011. The new policy on overhead is as follows:

Production overhead:

Matching – 10% of Direct Material Cost

Rolling – ₦ 0.50 per machine hour

Assembly – ₦0.60 per direct labour hour

Selling and distribution overhead – 20% of production cost

The company has just secured a contract Job PCM119 and the following estimates have been made:

	₦	₦
Direct materials		
Mat. PZ9 600 units at ₦ 6 per unit	3,600	
Mat. PM6 Units at ₦ 10 per unit	8,000	
Mat. PL8 900 units at ₦ 8 per unit	7,200	18,800
Direct Labour wages:		

Machining: 370 hours at ₦8 per hour		2,960	
Rolling: 500 hours at ₦ 8 per hour	4,000		
Assembly: 480 hours at ₦12 per hour		5,760	12,720

The contract price quoted for the job was ₦40,000 and the job took 1,000 machine hours to complete.

You are required to prepare a job cost sheet for the job PCM119

(a) If it was started and completed in the first quarter of the year and

(b) If it was started and completed in the second quarter of the year after the new overhead policy has been introduced.

Suggested solution

Job Cost Sheet		Job. No. PCM 119
Name of client		
Address		
	Date of completion:	March
Date of commencement: January		
Direct Material cost:		
Mat. PZ9 600 units X ₦ 6	3,600	
Mat. PM6 800 units x ₦ 10	8,00	
Mat. PL8 900 units x ₦8	7,200	18,800
Direct Labour Wages:		
Machining 370 hours at ₦ 8 per hour	2,960	
Rolling 500 hours at ₦ 8 per hour	4,000	
Assembly 480 hours at ₦12 per hour	5,760	12,720
		31,520
Add: Production Overhead:		
0.50k per direct labour hour (1350 hrs x 0.50k)		675
Product cost		32,195
Add: Selling and Distribution; Overhead at 15% of production cost (₦ 32,195 x 15%)		4,829.25
Total cost		37,024.25
Quotation price		40,000.00
Profit		2,975.75

(b)

JOB COST SHEET		**Job. No. PCM 119**
Name of client		
Address		
	Date of completion:	March
Date of commencement: January		
Direct Material cost:		
Mat. PZ9 600 units X ₦ 6	3,600	
Mat. PM6 800 units x ₦ 10	8,00	
Mat. PL8 900 units x ₦8	7,200	18,800
Direct Labour Wages:		
Machining 370 hours at ₦ 8 per hour	2,960	
Rolling 500 hours at ₦ 8 per hour	4,000	
Assembly 480 hours at ₦12 per hour	5,760	12,720
		31,520
Add: Production Overhead:		
Machining: 10% of ₦18,800	1,880	
Rolling: 1,000 hours X ₦0.5	500	
Assembling: 1350 hrs X ₦0.6	810	
		3,190
Product cost:		34,710
Add: Selling and Distribution; Overhead at 15% of production cost (₦34,710 x 20%)		6,942
Total cost		41,652
Quotation price		40,000
Profit		1,652

ILLUSTRATION 3-II

ABC uses job-order costing. It applies overhead cost to jobs on the basis of direct Labor hours. For the current year the company estimates that it will work 20,000 direct labor hours and will incur =N=650,000 of manufacturing overhead. The following transactions took place during the year:

a) =N=300,000 of raw materials were purchased on account

b) Raw materials were issued into production =N=90,000 direct materials and =N=40,000 indirect materials

c) Labor costs incurred: =N=40,000 direct, =N=130,000 indirect, sales commissions =N=50,000, administrative salaries =N=100,000

d) Utility costs for the factory were =N=60,000

e) Depreciation recorded was =N=300,000 (70% related to factory; 30% related to administrative offices)

f) Manufacturing overhead was applied to production. Actual direct labor hours

incurred were 22,000.
g) Units costing =N=300,000 were completed and transferred into the finished goods inventory.
h) Goods with a cost of =N=150,000 were sold on account for =N=200,000.
Required: Calculate the under/over applied overhead for the year.

Suggested Solution	₦	₦
a) Raw materials	300,000	
Accounts payable		300,000
b) Work in process	90,000	
Manufacturing overhead	40,000	
Raw materials		130,000
c) Work in process	40,000	
Manufacturing overhead	130,000	
Sales commission expense	50,000	
Administrative salaries expense	100,000	
Salaries and wage payable		320,000
d) Manufacturing overhead	60,000	
Accounts payable		60,000
e) Manufacturing overhead	210,000	
Depreciation expense	90,000	
Accumulated depreciation		300,000
f) Work in process	715,000	
Manufacturing overhead (1)		715,000
g) Finished goods	300,000	
Work in process		300,000
h) Accounts receivable	200,000	
Sales		200,000
Cost of goods sold	150,000	
Finished goods		150,000
i) Manufacturing overhead	275,000	
Cost of goods sold		275,000

(1)
Predetermined overhead rate = $\frac{\text{=N=650,000}}{\text{20,000 DLH}}$ = =N=32.50 per DLH

Overhead applied = =N=32.50 X 22,000 DLH = =N=715,000

Manufacturing Overhead	
Actual	Applied
40,000	
130,000	715,000
60,000	
210,000	
	275,000 over applied

4.0 CONCLUSION

Assignment of cost to a product is a highly technical process that should be carried out with care and caution. The Job and process costing methods serve as very good way of assigning cost.

5.0 SUMMARY

This unit explained the meaning of Job costing and listed the components of Job costing. It also covered the fundamental components of Job costing and the meaning of Process costing.

6.0 TUTOR MARKED ASSIGNMENT

Explain in details Job and Process costing giving relevant examples.

7.0 REFERENCES/FURTHER READING

Okoye, A.E. (2011). Cost Accountancy: Management operational application: Mindex Publishing Co. Ltd, Benin City.

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MODULE 4 COSTING, BUDGETARY CONTROL AND BREAK-EVEN ANALYSIS

Unit 1 Elements of Marginal Costing, Standard Costing and Budgetary Control

Unit 2 Control and Cost reduction

Unit 3 Nature and Uses of Accounting Ratios

Unit 4 Elements of Break-Even Analysis

UNIT 1: THE ELEMENTS OF MARGINAL COSTING, STANDARD COSTING AND BUDGETARY CONTROL

CONTENTS

1.0 Introduction

2.0 Objectives

3.0 Main Content

- 3.1 Advantages of Marginal costing
- 3.2 Standard costing and Budgetary control
- 3.3 Variance analysis
- 3.4 Standard costing and Budgetary control
- 3.5 Differences between Standard costing and Budgetary control

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 References/Further Reading

1.0 INTRODUCTION

The Chartered Institute of Management Accountants (**CIMA)** defines marginal cost as "the variable cost of one unit of a product or service" and marginal costing as a "principle whereby marginal cost units are ascertained".

Marginal costing is one of the costing techniques management relies upon when considering costs for the purpose of ascertaining profit figures. It is necessary to mention here that the concept of marginal costing is a bit controversial.

Marginal costing from the economist point of view represents the amount by which aggregate cost is changed if the volume of output is increased or decreased by one unit. Accountants on the other hand, view marginal costing as a measure of the variable cost attributable to a cost unit on the grounds that within a normal range of output volumes variable cost will change with volume.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- define marginal costing;
- explain the meaning and objective of standard costing;
- describe the uses of standard costing;
- identify the limitations of standard costing;
- explain the types of standard costing;
- define variance analysis

3.0 MAIN CONTENT

3.1 Advantages of Marginal Costing

• Easy for non-accountants to understand and can be used with standard costing systems.

• Can be used in break-even analysis.

• Fixed costs are incurred over a period of time. Such costs are not therefore directly related to production and hence are not included in the valuation of stock.

• Profits calculations are more realistic because they are related to the time period during which they arise. Fixed costs are not carried forward from one accounting period to the next. Assists when choices have to be made between alternatives, and contribution (selling price – variable costs) is a critical consideration.

• Pricing policy can be related to variable costs as fixed costs are deducted from total contribution. This can assist when making decisions regarding special orders.

• The unit cost is pre-determined. Problems arising from a variable fixed cost per unit are eliminated.

• Apportionment of overhead is required. Overhead apportionment is frequently calculated on a subjective basis of the relationship between fixed costs and departmental activity.

• Under or over-absorption of overhead is avoided. The procedures to deal with under or over-absorption of overheads take place when the level of activity differs from the pre-planned level.

• Useful when a costing is required for a specific decision that management is considering.

ILLUSTRATION 3-1

From the following data relating to three firms, prepare a statement to show how profit is calculated using Marginal costing.

	Firm A	Firm B	Firm C
Selling price per unit	₦25	₦10	₦12
Variable cost per unit	₦15	₦4	₦8
Annual fixed cost	₦60,000	₦20,000	₦ 120,000
Normal production level (units)	20,000	5,000	60,000
Actual production level (units)	20,000	5,000	60,000
Sales (units)	18,500	4,200	57,500

Exercise 1 – Solution

Firm A	**N**	**N**
Sales		462,500
Less cost of sales:		
Variable costs	300,000	
Closing stock (Note)	(22,500)	(277,500)
Contribution		185,000
Fixed costs		(60,000)
Profit		125,000

Note

• Closing stock (units) × Variable Cost per unit = 1,500 × ₦15 = ₦22,500

Firm B	**N**	**N**	**N**
Sales			42,000
Less cost of sales:			
Variable costs	20,000		
Closing stock	(3,200)	(16,800)	
Contribution			25,200
Fixed costs			(20,000)
Profit			5,200

Note

Closing stock (units) × Variable cost per unit = 800 × ₦4 = ₦3,200

Firm C	**N**	**N**	**N**
Sales			690,000
Less cost of sales:			
Variable costs	480,000		
Closing stock (Note)	(20,000)	(460,000)	
Contribution			230,000
Fixed costs			(120,000)
Profit			110,000

Note

Closing stock (units) × Variable cost per unit = 2,500 × ₦8 = ₦20,000.

SELF ASSESSMENT EXERCISE

Explain in detail the concept of marginal costing.

3.2 Standard Costing and Budgetary Control

Planning and Control are few of the functions of top management. Planning involves determination of objectives of a business and it also refers to the manner in which these objectives are to be achieved. Thus, it refers to both problems solving (identification of alternatives) and decision-making (selection from alternatives). Plans can be of value only if they are achieved. The control function comes into play to measure the extent to which the plans are achieved so that in case the actual results do not fully conform to the plans, efforts can be made to correct adverse tendencies. Control implies a system which provides for the establishment of a plan, operation of the plan, automatic feedback from the system and automatic regulatory action so that any deviation is corrected. Standard costing can be of immense use to the management in achieving the two aforesaid important spheres of functions. In the planning stage, standard costing can assist the managers with much of the necessary data. At the control stage, it can be used to find the extent and place where such inefficiencies exists, and also to suggest ways for combating them by bringing them to the attention of those who have authority to control them.

3.2.1 Definition of Standard Costing:

Standard costing is a technique of costing consisting of rules & procedure to ascertain the standard cost of products or services which are compared with the actual results to check the variations either for the purpose of a control measure or to revise it.

Standard costing is defined by the ICWA, London "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."

The Institute of Chartered Accountants of Nigeria (ICAN) defines Standard costing as a useful control technique based on the feedback control concept which ensures the determination of standard costs of products or services and compares them with the actual results and costs with the difference being referred to as a variance. This difference can be further explained by a process called variance analysis.

Standard cost is defined as a pre-determined cost which is calculated from management's standards of efficient operation and the relevant necessary expenditure. It may be used as a basis for price fixing and for cost control through variance analysis. According to CIMA, it can also be defined as the planned unit cost of the products, components or services produced in a period. The main uses of standard costs are in performance measurement, control, stock valuation and in the establishment of selling prices.

3.2.2 Objectives of standard costing

Some of the objectives of adopting standard costing are;

- To encourage management and employees, since it ensures that they have to plan ahead;
- To provide a guidance on possible ways for assessing performance and efficiency;
- To control costs by establishing standards and analyzing variance;
- The standard costs facilitate stock and work in progress valuation, profit planning and decision making.

3.2.3 Uses of standard costs:

- Standard costs is an effective way for planning and controlling costs;
- pricing decisions and decisions involving submission of quotations; answering tenders etc., are also facilitated by the use of standard costs;
- identification and measurement of variances from standards has been made possible with the use of standard cost, with a view to improve performance or to correct loose standards, if any;
- facilitates management by exception.

3.2.4 Limitations of standard costing

- Establishment of unattainable standards.
- **The problem of identifying the specific need on consumers**
- Persistent rise in general price level
- Problem associated with the accurate estimation of normal loss in the course of production

- Frequent changes in the level of technology
- Negative attitude of operating manager towards the established standards.
- The technique may be very expensive to operate especially where technicalities are involved and set up time is elongated.

3.2.5 Types of standard

Performance standards setting are a function of four basic standards:

a) **Ideal standard:** these represents the level of performance attainable when prices for material and labour are most favorable, when the highest output is achieved with the best equipment and layout and when the maximum efficiency in utilization of resources results in maximum output with minimum cost. These are based on perfect operating conditions whereby there are no wastages, inefficiencies, idle time, breakdown of machines, etc. Staff may be of the opinion that the standards are difficult to achieve and may therefore put less efforts in achieving them. So, ideal standards are not necessarily encouraging.

b) **Attainable/Expected standard:** also referred to as practical standard, represents an established standard specifically premised on what is considered practicable within the organization. This is a function of normal operating circumstances, ensuring that some allowances are available for losses, wastages, inadequacies, etc. This standard makes for a challenging situation for employees in as much as psychological awareness is created.

c) **Current standard:** This standard reflects the management's anticipation of what actual costs will be for the current period. These are the cost which the business will incur if the anticipated prices are paid for the goods and services and the usage corresponds to that believed to be necessary to produce the planned output**.** But this standard does not seem to bring about a higher current level of performance.

d) **Basic standard:** this will represent an old established standard designed principally to satisfy a given objective. Basic standards are not subject to frequent alteration, therefore outdated in nature as a result of changes in technology, laws, norms etc. They can only be used to express changes in the level of efficiency or performance over a period of time as well as the trend of prices from period to period.

SELF ASSESSMENT EXERCISE

1. What is Standard costing
2. Explain the different types of standards.

3.3 Variance Analysis

The major application of standard costing is for controls, through variance analysis and reporting. A variance is simply the difference between planned or budgeted costs and actual costs and similarly in respect of revenues, while variance analysis is the analysis of variances in a standard costing system in constituent parts. It is the analysis and comparison of the factors

which have caused the difference between pre-determined standards and actual results with a view to eliminating inefficiencies.

3.3.1 Types of variances

The basic variances can be categorized under four major headings

a) Sales volume variance

b) Sales price variance

c) Variable cost variances which is direct material, direct labour and variable overheads (which can also be sub-divided into spending and efficiency variances).

d) Fixed overhead cost variances, that is, expenditure and volume variances (which can be further categorized into efficiency and capacity variances which can also be sub-divided into capacity usage and fixed overhead idle-time variance).

3.3.2 Possible causes of variance

The following are the more common factors attributed to variances in manufacturing concerns.

(a) Material Price - Buying materials at a price different from the specified buying price; inefficiency of the purchasing department in seeking the most advantageous sources of supply; changes in market condition causing general price increase; purchase of inferior (or superior) quality materials.

(b) Material Usage - Using more or less quantities of material than those specified to achieve the actual production; careless handling of materials by the production workers; purchase of inferior quality materials.

(c) Labour Rate - Paying labour at a rate different from the agreed rate; assignment of work to higher grade labour; negotiated increase in wage rates not reflected in the standard wage rate.

(d) Labour Efficiency - The work force spending more or less time than allowed for the actual production; waste of time due to use of inferior quality materials; use of different grades of labour from that specified.

(e) Overhead - Since the Recovery Rates are always based on budgeted figures, any deviation from budget will give rise to a variance.

Therefore, overhead variance will be caused by the following factors: actual expenditure being different from the budgeted expenditure; actual production being different from the budgeted production.

ILLUSTRATION

DD Project produces and sells Vuvi drinks for children. The standard direct cost per crate is as follows:

Materials

100 litres concentrated juice at N2 per litre

200 litres of carbonated water at N2.50 per litre

10 labour hours at N9.00 per hour.

The budgeted monthly production and sales is 500 crates and the selling price is N1,000 per crate.

The following details relate to October 2003, when 510 crates of Vuvi drinks were produced and sold:

		N
Sales		506,500
Materials used:		
Concentrated coconut juice-51,600 litres	102,500	
Carbonated water-101,500	258,800	
Labour:		
5,000 hours cost		45,750

Required:

a) Compute the price and usage variance for each material
b) Calculate the wage rate and efficiency variances
c) Comment briefly upon the information revealed by each of the variances you have computed.

SOLUTION

a) (i) Material price variance

(Std price-Actual price) x Actual qty	Concentrated Coconut Juice N	Carbonated Water N
Actual Qty x Standard Price(51,600 x 2)	103,200	
253,750(101,500x2.50)		
Actual qty x Actual price	102,500	258,800
VARIANCE	700F	5,050A

TOTAL MATERIAL PRICE VARIANCE	4,350A	
ii) Material Usage variance		
(Standard qty – Actual qty) x Std price		
Containers (510 x 100 x 2)	102,000	
255,000(510x200x2.50)		
Actual Qty x Std price (51,600x2)	103,200	
253,750(101,500x2.50)		
VARIANCE	1,200A	1,250F
TOTAL MATERIAL USAGE VARIANCE	50F	

b) (i) Wage rate variance
(Std Rate – Actual Rate) x Actual hours

Std Rate x Actual hours (N9 x 5000)	45,000
Actual rate x Actual hours	45,750
VARIANCE	750

(ii) Efficiency variance
(Std hours – Actual hours) x Std rate

Std rate x Std Hours for 510 containers	45,900
(N9 x 5100)	45,000
Std rate x Actual hours N9 x 5000	900F

c) Comments
Material Price Variance
Concentrated coconut juice gave a favourable variance while carbonated water gave adverse
It could be due to any of the following

i. Unexpected change in the price of the materials
ii. Faulty determination of standard price.

Material Usage Variance
Concentrated coconut juice gave an adverse variance while carbonated water gave an almost compensating figure of favourable variance. Considered in total, the net effect could be misleading, but considered separately, we may be able to discover the following:

i. The use of employees with varying levels of experience in production leading to either minimum or excess wastages.
ii. The use of either better or inferior quality material.

iii. The condition of the machinery used in production would have an effect on materials consumption and waste generation.

Wage Rate Variance

The adverse variance recorded here may be due to paying higher rates than anticipated, or the use of skilled labour where unskilled labour was earlier planned for.

Labour Efficiency Variance

This gave a favourable variance. If skilled labour was used instead of unskilled, the favourable efficiency variance could be the result.

3.4 Standard Costing and Budgetary Control

Budgets are financial and/or quantitative statements, prepared and approved prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective. They include estimates of income, costs and employment of capital. Out of these, only budgeted costs are strictly comparable to standard costs. Both budgeted and standard costs are setup to exercise costs control and to judge performance by setting up targets. Both of them provide bench-marks against which the actual performance and costs are compared, variances are calculated and the reasons for the variances ascertained.

3.5 Differences between Standard costing and Budgetary control.

- Budgets are almost always stated in financial terms while standards need not be monetary. Example of nonfinancial standards, include material usage standards, standard hours etc.
- Budgets are usually focused on cost centers, that is, they aggregate the costs of cost centers while standards are usually set for the various activities.
- A budgetary control system can operate without standard costs. The two systems are not interdependent, i.e., they can exist independently.

4.0 CONCLUSION

Standard costing involves comparing actual costs with predetermined costs. It is similar to budgets because they both provide bench-marks to measure performance. But budgets are usually financial in nature while standards may not necessarily be financial.

5.0 SUMMARY

In this chapter, we discussed the concept of marginal costing and standard costing. It also focused on the objectives, uses, limitations and types of standard costing. It concluded by differentiating between standard costing and budgetary control.

6.0 TUTOR MARKED ASSIGNMENT

i. Mention the limitations of standard costing

ii. List the types of standard costing

iii. What are the possible causes of variance in costing

7.0 REFERENCES /FURTHER READING

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UNIT 2: COST CONTROL AND COST REDUCTION

CONTENT

1.0 Introduction

2.0 Objectives

3.0 Main content

- 3.1 Tools for cost control
- 3.2 Cost reduction
  - 3.2.1 Scope of cost reduction
  - 3.2.2 Tools for cost reduction
- 3.3 Similarities and Differences Between Cost control and cost reduction

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 References/Further reading.

1.0 INTRODUCTION

Cost control is the regulation of cost of operating a business and is concerned with keeping costs within acceptable limits. This limit will either be specified as a standard cost, target cost limit, or in the form of an operational plan or budget. When actual costs differ from planned costs by an excessive amount, cost control measures become necessary. Cost control is a good way to exercise good bookkeeping and also avoid wasteful use of an organization's valuable scarce resources.

2.0 OBJECTIVES

After studying this unit, you should be able to:

- explain the meaning of cost control
- identify the tools for cost control
- explain the term "cost reduction"
- explain the tools for cost reduction

- define variance analysis and state the objectives of variance analysis

3.0 MAIN CONTENT

3.1 Tools For Cost Control

Cost control involves instilling measures that continually monitor costs and indicate needs for control action for effective management of resources. The process of cost control usually follows this sequence:

(a) setting the acceptable or expected level of cost for various activities;

(b) measuring actual cost of activities as they unfold;

(c) comparing actual costs with those pre-determined; and

(d) taking corrective action where necessary.

The setting of pre-determined level of costs to be compared with actual cost gives room for two basic tools to be employed in cost control:

- Standard costing
- Budgetary control.

These two perform complementary rather that conflicting functions, thus they are usually combined and used in organisations as effective cost control measures. Cost control ought to lead to excessive reduction in cost accumulation and spending

3.2 Cost Reduction

This is a planned positive action aimed at reducing costs of products or services without adversely affecting their quality or usability. While cost control is about keeping actual costs within acceptable limits, cost reduction maintains that even those pre-determined amount might be too high. Cost reduction is usually focused on the expected costs with a view to reducing the eventual cost of operations.

Cost reduction begins with the assumption that current cost levels or planned cost levels are too high, even though cost control might be good.The major difficulties with cost reduction: resistance by employees to pressure to reduce costs usually because it has not been properly understood by them; application might be limited to a small area of the business only to discover that it reappears as an extra cost to another cost centre; cost reduction campaigns are often introduced as a rushed, desparate measure instead of a carefully organized well thought out exercise.

3.2.1 The scope of cost reduction

The scope of cost reduction embraces activities of the entire company, from production to marketing and at all levels within the organization from the operative to top levels.

Costs reduction efforts may include the following:

a) Material costs which may include quantity discounts or cash discounts for early payment to suppliers negotiated at favourable discount rates; inventory control policy improvement; value analysis; reduction in material wastage.

b) Labour costs which includes replacing labour intensive jobs with automated machines related jobs; having a production efficiency rewarding plan with the employees.

c) Finance costs: where bank overdraft expenses may be better reduced by effective cash monitoring efforts.

d) Rationalization measures: as a company expands in activities, there maybe duplication of efforts in the different facets of its operations. However, this duplication can be removed by ensuring that resources are concentrated in the firm and this is referred to rationalization efforts, which is aimed at cost reduction that brings about efficiency at the workplace.

SELF ASSESSMENT EXERCISE

State the scope of cost reduction

3.2.2 Tools for Cost Reduction

a) Value Analysis

This is a systematic interdisciplinary examination of the factors affecting the cost of a product or service, with the aim of devising a means of achieving the desired purpose most economically, at the required standard of quality and reliability.

Objectives of value analysis

- Cost elimination or cost prevention.
- Cost reduction
- Improving product quality and so selling greater quantities at the same price as before
- Improving product quality, and so being able to increase sales price

Features of value analysis

- It encourages innovation and a more radical outlook for ways of reducing costs.
- It recognizes the various types of value which a product or service provides, analyses this value, and then seeks for ways of improving or maintaining aspects of this value but at a lower cost.

Aspects of value analysis

- Cost value: The objective of the exercise is to reduce costs. This affects all aspects of cost from production to distribution
- Exchange value: this is the market value of a product or service
- Usage value: This refers to the function and performance of the product, that is, what purpose was it meant to serve
- Esteem value: this refers to the prestige the customer attaches to the product.

Other tools for cost reduction include Total Quality Management, Just-In-Time processes and Work study.

b) **Total Quality Management (TQM)**: This is a term used to describe a management philosophy based on the continuous improvement of quality. It is an idea focused on the reduction or eventual elimination of the cost of re-working.

c) **Just-In-Time (JIT) Processes:** Its aim is to reduce inventory levels and its attendant costs. JIT requires that products or materials are not acquired in anticipation of sales or use. Rather the materials and products are acquired only when needed.

d) **Target Costing:** Target Costing is actually working backwards to find out the target cost, which a firm would be able to achieve. In this technique, the first stage is to determine the target price, which the product will fetch in the market. In the second stage, target profit margin is determined and in the third and final stage the target profit margin is deducted from the target-selling price to arrive at the target cost.

e) **Work Study**: Work study may be viewed as a cost reduction technique. This is a critical analysis of the method of work carried out by examining the various stages of a production line with the aim of finding the most efficient means of production and ensuring that only that means is employed during production. Work study seeks out efficient operations which will ultimately reduce cost of operations.

3.3 SIMILARITIES AND DIFFERENCES BETWEEN COST CONTROL AND COST REDUCTION

Cost control and cost reduction are similar as they both:

I. Ensure the efficient utilization of resources

II. Involve the pre-setting of a target after an initial cost analysis

The differences include the following;

I. Cost control is static with the basic objectives of containing cost within pre-set target while cost reduction aims to reduce costs from some pre-determined target without reducing the benefits derived from the product made or services rendered

II. Cost control is an ongoing process while cost reduction is on ad-hoc basis

III. They both have quite distinct objectives and different techniques are used to achieve their goals.

4.0 CONCLUSION

Costing is an important activity in an organization. Techniques such as cost control and cost reduction can therefore not be overemphasized. This is because one of the major objectives of an organization is cost minimization.

5.0 SUMMARY

This chapter focused on cost control and the various tools that can be utilized for cost control. It further explained the meaning of cost reduction and the tools for cost reduction.

6.0 TUTOR MARKED ASSIGNMENT

a) The process of regulating costs of operation of a business and keeping the expenditure within acceptable limits is _____.

b) A planned positive approach to reducing expenditure because of its excessiveness is _____

c) State three main objectives of method study

7.0 REFERENCES/FURTHER READING

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UNIT 3: NATURE AND USES OF ACCOUNTING RATIOS

CONTENT

1.0 Introduction

2.0 Objectives

3.0 Main Content

- 3.1 Uses of Accounting Ratios
- 3.2 Classification/Types of ratios
  - 3.2.1 Solvency ratio
  - 3.2.2 Profitability ratio
  - 3.2.3 Activity ratio
  - 3.2.4 Investment ratio

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 References/Further reading

1.0 INTRODUCTION

A financial statement is an official document of the firm, which explores the entire financial information of the firm. The main aim of the financial statement is to provide information and understanding of the financial performance and position of a firm so as to ensure that users of financial statements make informed decisions. Hence, preparation of the financial statement is as important as the financial decisions. Financial statements prepared by companies are meant to provide its users with reliable information about the company's performance and financial position. Due to the fact that financial statements provide information that is not specific (that is financial statement are prepared for all classes of users) it is important that such statement be subjected to further analysis.

Ratio analysis is a useful tool for financial statement analysis. Ratio is one number expressed in terms of another number to show the relationship between them. Ratio is used as an index for evaluating the financial performance of the business concern. Adams (2013) stated that what happened in the past should be a guide to the future, previous year's published statements are analysed and evaluated in order to form an opinion on the trend. It was further explained that to interpret means to put the meaning of a statement into simple terms for the benefit of users.

2.0 OBJECTIVES

After studying this unit, you should be able to:

- define ratio analysis
- explain the uses of ratios
- identify the limitations of accounting ratios
- explain the classification and types of ratios
- compute the various ratios

3.0 Main Content

3.1 Uses of accounting ratios

Accounting ratio serves as a means of summarizing financial information. Accounting ratio is simply one figure divided by another. Therefore, there is almost an infinite range of ratios that can be calculated. The calculation of ratios simplifies the comparison of different company's statement because certain variables, such as size are compensated for. Therefore, it can be possible to compare the profitability of two competing companies if the profit figures were expressed as a percentage of capital employed or divided by total fixed assets.

3.2 Classification/Types of ratios

Ratio analysis focuses on different issues as they relate to the measurement of a company's performance which include: the financial results of the company as they have to do with the generation of revenue; the company's ability to meet up with her obligations in both the long and short run; the evaluation of the company's results relative to the benefits to be derived by the owners of the business (existing or potential).

In computing ratio analysis, one has to know the appropriate ratio to be employed in a given situation. When this has being determined, calculating the specific ratio rests more on knowing the formula.

Financial or Accounting ratios can be classified into;

- Solvency ratios
- Profiatibilty ratios
- Activity ratios
- Investment Ratios

3.2.1 Solvency Ratio

These ratios can be categorized into two: Short term solvency or Liquidity ratio and Long-term solvency or Leverage ratio

a) Liquidity or short-term solvency ratios are used to determine the ability of the company to meet its current obligations or liabilities. Illiquidity will result to loss of goodwill, poor credit ratings and undue legal tussles which may eventually lead to the winding up of a company. Excess liquidity could also lead to under utilization of assets. The liquid ratio can be classified as:

- Current ratio
- Quick or acid test ratio
- Cash ratio
- Interval measure
- Net working capital ratio

The Current ratio is a measure of the relationship between the current assets and current liabilities. A ratio greater than one shows that the company has more of current assets than current liabilities. The ratio ideally is expected to be 2:1

Crrent ratio = Current assets/Current Liabilities.

The Quick or acid test ratio shows the relationship between liquid assets and current liabilities. The stock and prepayment items are not always included in the current assets because stock items are not usually the same in different companies while prepayments may not be easily recoverable.

The Quick ratio is calculated as $\frac{\text{Current Asset-Stock-Prepayments}}{\text{Current Liabilities}}$

A general quick ratio of 1:1 is considered reasonable for financial purposes.

Cash Ratio is used to determine the degree of responsiveness of cash and cash equivalent to take care of current liabilities and ascertain the ability of the company to hold enough cash and cash equivalents per time. It can be expressed as

$$\frac{\text{Cash+marketable securities/Trade investment}}{\text{Current Liabilities}}$$

The Interval measure ratio is that which is used to evaluate the company's ability to take care of its constant cash expenditures, that is, it is used to measure the relationship of liquid assets to average daily operating cash overflows. It is also used to determine the number of days that will be sufficient for liquid asset to finance operation without having any cash intake.

Interval measure = $\frac{\text{Current Asset – Inventory/Stocks}}{\text{Average daily operating expenditures}}$

Net Working Capital ratio is that which measures the difference between the current assets and current liabilities which is an expression of the company's potential funds reserved. It can therefore be measured as the relationship with net assets

Net Working Capital = $\frac{\text{Net Current Assets}}{\text{Net Assets (Capital Employed)}}$

b) Leverage or Long term solvency ratios are used to ascertain the long-term financial performance of a company, hence, the usage of the terms financial leverage or capital structure. This ratio measure the company's competence to engage debts to the shareholders' benefits.
The ratios that can be computed under leverage ratio include

Gearing Ratio.
This ratio measures the extent to which fixed interest liabilities relate to the equity. A company may be lowly geared when the ratio is less than 50% or highly geared when it is higher than 50%. The more highly geared a firm is, the greater the risk and the little earnings that would be available for distribution.

$$\frac{\text{Long term debt}}{\text{Debt + Equity}}$$

Dividend cover

This indicates the number of times fixed dividend is covered by profit.

$$\frac{\text{Net profit after tax}}{\text{Dividend}}$$

Debt Equity Ratio

This ratio indicates the financial plan of the entity and shows if the entity is financed more by debt or by equity.

$$\frac{\text{Debt capital}}{\text{Equity}}$$

Proprietary Ratio

This ratio indicates the extent or degree to which unsecured credit are protected against losses in the event of liquidation.

$$\frac{\text{Shareholder's fund}}{\text{Tangible assets}}$$

Interest Cover

This ratio indicates how many times operating profit will be able to cover interest paid.

$$\frac{\text{Operating profit}}{\text{Fixed interest}}$$

SELF ASSESSMENT EXERCISE

Explain in details Solvency ratio

3.2.2 Profitability Ratios

Profitability ratio helps to measure the profitability position of the business concern. It show the return that the company earn on its investment. Some of the major profitability ratios are given below.

Net profit magin.

This indicates the net margin due to the business after deducting expenses from revenue. The higher the percentage, the more efficient the entity will deemed to be controlling its revenue expenses.

$$\frac{\text{Net profit before tax}}{\text{sales}} \times 100$$

Gross profit margin

This ratio indicates the gross margin achieved by the enterprise on its sales of goods. In a nut shell, it is the percentage of sales earned as operating profit.

$$\frac{\text{Gross profit}}{\text{Sales}} \times 100$$

Operating profit margin

This ratio indicates what percentage of sales is generated as operating profit. It measures the relative efficiency of the entity in managing operational expenses before interest charges.

$$\frac{\text{Operating profit before interest and tax}}{\text{Sales}} \times 100$$

Assets turnover

This measures the efficiency of the firm in utilization of capital employed to generate income.

$$\frac{\text{Sales}}{\text{Capital employed}} \times 100$$

Return on capital Employed. (ROCE)

This ratio indicates the percentage return generated by total funds employed to finance the operations of a company during an accounting year. The higher the percentage, the more profitable the enterprise will be deemed to be. In interpreting ROCE, the investors minimum expected rate of return on similar investment should be taken into consideration.

$$\frac{\text{Operating profit}}{\text{Capital employed}} \times 100$$

Capital employed can be defined as:

- Share capital only
- Share capital + Reserve
- Equity only
- Share capital + reserve + long term liabilities.
-

3.2.3 Activity Ratios

It is also called turnover ratio. It is used by companies to assess the degree of effectiveness achieved with the utilization of their assets. They also show the rate at which assets are turned over into sales. They are therefore used to measure the relationship between sales and assets. The ratios include

Stock Turnover Ratio

$$\frac{\text{Cost of Sales}}{\text{Average Inventory}}$$

Debtors Turnover Ratio

$$\frac{\text{Credit Sales}}{\text{Average Debtors}}$$

Creditors Turnover Ratio

$$\frac{\text{Credit Purchase}}{\text{Average Credit}}$$

Working Capital Turnover Ratio

$$\frac{\text{Sales}}{\text{Net Working Capital}}$$

3.2.4 Investment Ratios

These ratios assess the return attributable to each share. It is an off-shoot of the profitability ratio and it is used to determine the ability of the company as it relates to the consistency in sustaining investment potentials and stability. They include:

Earnings per share

It indicates the amount of the net profit after tax attributable to each ordinary share issued and ranking for dividend during the period.

$$\frac{\text{Profit after tax}}{\text{No of ordinary share in issue}}$$

Dividend per share

It indicates the dividend and retention policy of the company when used in conjunction with earnings per share.

$$\frac{\text{Total dividend}}{\text{No of ordinary share in issue}}$$

Earnings yield

This indicates potential return on investment by shareholders (owners).

$$\frac{\text{Earnings per share} \times 100}{\text{Market value per ordinary share}}$$

Dividend yield

Indicates actual return on investment

$$\frac{\text{Dividend per share} \times 100}{\text{Market price per share}}$$

Price earnings ratio

This ratio indicates how many times earnings must be generated to cover the amount invested on a share.

$$\frac{\text{Market price per share}}{\text{Earnings per share}}$$

4.0 CONCLUSION

Ratio analysis uses financial reports and data and explains key relationships (for example, gross profit to sales) in order to assess financial performance. Its importance becomes greatly enhanced when trends are determined, comparative ratios are available and inter-related ratios are made available.

5.0 SUMMARY

This unit discussed ratio analysis with regards to solvency ratio, profitability ratio, activity ratio and investment ratio.

6.0 TUTOR MARKED ASSIGNMENT

I. Define the term ratio analysis

II. State two long term solvency ratio

III. Expain in details Investment ratio

7.0 REFERENCES

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UNIT 4: ELEMENTS OF BREAK-EVEN ANALYSIS

CONTENT

1.0 Introduction

2.0 Objectives

3.0 Main content

- 3.1 Break-even point formular
- 3.2 The Break-even chart
  - 3.2.1 Fixed cost
  - 3.2.2 Variable cost
  - 3.2.3 Semi-variable cost
- 3.3 Ways to lower Break-even point
- 3.4 Advantages of break-even analysis
- 3.5 Disadvantages of break-even analysis

1.0 Introduction

One of the most common tools used in evaluating the economic feasibility of a new enterprise or product is the break-even analysis. The break-even point is the point at which revenue is exactly equal to costs. At this point, no profit is made and no losses are incurred. The break-even point can be expressed in terms of unit sales or naira sales. That is, the break-even units indicate the level of sales that are required to cover costs. Sales above that number result in profit and sales below that number result in a loss. The break-even sales indicate the gross sales required to break-even. It is important to realize that a company will not necessarily produce a product just because it is expected to break- even. Many times, a certain level of profitability or return on investment is desired. If this objective cannot be reached, which may mean selling a substantial number of units above break-even, the product may not be produced. However, the break-even is an excellent tool to help quantify the level of production needed for a new business or a new product.

2.0 Objectives

After studying this unit, you should be able to:

- define Break-even analysis
- interpret the Break-even chart
- explain the advantages and disadvantages of Break-even analysis
- compute the Break-even point

3.0 Main Content

3.1 Break-even Point Formula: To determine the units required to break-even:

Units required to Break-Even =

$$\frac{\text{Fixed Cost}}{\text{Units Selling Price} - \text{Variable Cost per Unit}}$$

Or

$$\frac{\text{Fixed Cost}}{\text{Contribution per Unit}}$$

Revenue required to Break-even-Even:

$$= \frac{\text{Fixed Cost}}{\text{Contribution Margin Ratio}}$$

or

$$= \frac{\text{Fixed Costs x Sale price/unit}}{\text{Contribution per unit}}$$

Contribution to sales ratio

$$= \frac{\text{Contribution/unit}}{\text{Sale Price per unit}} \times \frac{100}{1}$$

Units required to reach target Profit after Tax

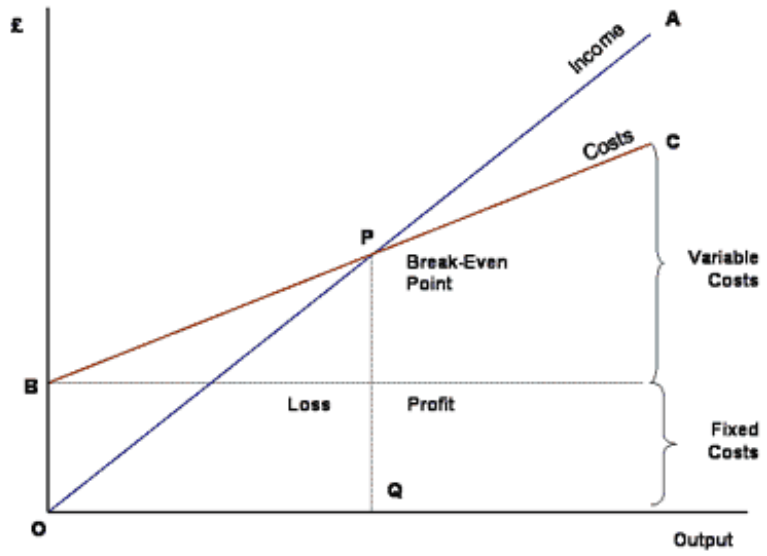
$$= \frac{\text{FC} + \frac{\text{(Target profit)}}{\text{1- Tax Rate}}}{\text{Contribution per unit}}$$

Sales revenue required to reach target point

$$= \frac{\text{FC x (Target Profit x Selling price/unit)}}{\text{Contribution per unit}}$$

3.2 The Break-Even Chart

In its simplest form, the break-even chart is a graphical representation of costs at various levels of activity shown on the same chart as the variation of income (or sales, revenue) with the same variation in activity. The point at which neither profit nor loss is made is known as the "break-even point" and is represented on the chart below by the intersection of the two lines:



3.2.1 Fixed Costs

Fixed costs are those business costs that are not directly related to the level of production or output. In other words, even if the business has a zero output or high output, the level of fixed costs will remain broadly the same. In the long term fixed costs can alter - perhaps as a result of investment in production capacity (e.g. adding a new factory unit) or through the growth in overheads required to support a larger, more complex business. Examples of fixed costs include: rent and rates, depreciation, research and development, marketing costs (non- revenue related), administration costs, etc.

3.2.2 Variable Costs

Variable costs are those costs which vary directly with the level of output. Examples include raw materials, direct labour, fuel and other revenue-related costs such as commission.

3.2.3 Semi-Variable Costs

Whilst the distinction between fixed and variable costs is a convenient way of categorising business costs, in reality there are some costs which are fixed in nature but which increase when output reaches certain levels. These costs are referred to as Semi-variable costs.

3.3 Ways to lower break-even point

There are three ways to lower your break-even volume, only two of them involve cost controls (which should always be the goal of an entity on an on-going basis).

1. Lower direct costs, which will raise the gross margin. Be more diligent about purchasing material, controlling inventory, or increasing the productivity of your labour by more cost effective scheduling or adding more efficient technology.
2. Exercise cost controls on your fixed expense, and lower the necessary total expenses. Be careful when cutting expenses that you do so with an overall plan in mind. You can cut too deeply as well as too little and cause distress among workers, or you may pull back marketing efforts at the wrong time, which will give out the wrong signal.
3. Raise prices of goods and services. Most entrepreneurs are reluctant to raise prices because they think that overall business will fall off. More often than not that doesn't happen unless you are in a very price-sensitive market, and if you are, you really have already become volume driven.

3.4 Advantages of Break-even analysis

The following are some of the advantages of break-even analysis:

- It is simple to conduct and understand.
- It shows profit and loss at different levels of output.
- It can cope with changing circumstances. E.g. the following changes in the business environment can be shown in a break even chart.
- It measures profit and loss at different levels of production and sales.
- It can predict the effect of changes in price of sales.
- It can be used to analyse the relationship between fixed cost and variable cost.
- It is useful in predicting the effect of profitability of changes in cost and efficiency.

3.5 Disadvantages of break-even analysis

Below are some of the major disadvantages of break-even analysis:

- It assumes that all output is sold at the given price (this may well be untrue).
- Although it can cope with changes in circumstances, these factors change regularly reducing its usefulness as a forecasting tool.
- The model assumes that costs increase constantly and do not benefit from economies of scale. If the firm obtains purchasing economies of scale then its total cost line will no longer be straight.
- Break-even analysis is only as good as the data upon which it is based. Poor quality data will lead to inaccurate conclusions being drawn.
- It assumes that selling prices are constant at all levels of output.
- It assumes production and sales are the same.
- Break even charts may be time consuming to prepare.
- It can only apply to a single product or single mix of products.

But, despite these difficulties, break-even analysis is universally applicable. Attempts to apply it will bring out deficiencies in accounting and cost-tracking practices and will indirectly improve the management of the business.

Illustration 3-1

ABC Manufacturing company produces exercise books for primary schools and the data for the production is given below;

Variable cost = ₦15 per unit

Fixed cost = ₦100,000

Selling price = ₦25

You are required to calculate:

(a) Number of units of the exercise book that will be produced in order to Break-even
(b) Sales revenue to be attained to break-even
(c) Contribution to sales ratio
(d) Number of units to be sold to make a profit of ₦50,000
(e) Sales revenue required to make profit of ₦ 50,000

Suggested solution

(a) Units required to break-even $= \frac{FC}{SPU - VCU}$

OR

$= \frac{FC}{Contribution\ per\ unit}$

$= \frac{₦100,000}{₦25 - ₦15}$

= 10,000 units

(b) Sales revenue required to Break-Even

$$\frac{FC\ X\ Total\ Sales}{Total\ Sales - Total\ Variable\ Cost}$$

$$= \frac{FC\ X\ Total\ Sales}{Total\ Sales - Total\ Variable\ Cost}$$

$$= \frac{100{,}000\ X\ (10{,}000\ x\ ₦25)}{(10{,}000\ x\ ₦25) - (10{,}000\ x\ ₦15)}$$

$$= \frac{100{,}000\ X\ 250{,}000}{₦250{,}000 - ₦150{,}000}$$

$$= ₦250{,}000$$

(C) Contribution to sales ratio

$$\frac{Contribution/Unit}{Selling\ Price/Unit}\ X\ 100$$

$$= \frac{₦25 - ₦15}{₦15}\ X\ 100$$

= 40%

(d) Units required to reach Target profit

$$= \frac{FC + Target\ profit}{Contribtuion/\ Unit}$$

$$= \frac{N100{,}000 + N50{,}000}{N25 \quad N15}$$

= 15,000 units

(e) Sales revenue required to reach Target Profit

$$= 15{,}000\ units\ x\ N25$$

$$= N375{,}000$$

4.0 CONCLUSION

Break-even analysis determines both the minimum amount of sales required to avoid a loss or to "break-even" at the end of the fiscal year and permits you to adjust sales estimates accordingly. Break-even analysis can be very helpful in the evaluation of a new venture. In most instances, success takes time. Many new enterprises and products actually operate at a loss (at a point below break-even) in the early stages of development. Knowing the price or volume necessary to break-even is critical to evaluating the time-frame in which losses are permissible. The break-even is also an excellent benchmark by which a company's short-term goals can be measured/tracked. Break-even analysis mandates that costs be analyzed. It also keeps a focus on the connection between production and marketing.

5.0 SUMMARY

In this unit we discussed the concept of break-even analysis by considering the break-even point formula and the break-even chart. We also considered the ways to lower the break-even point.

6.0 TUTOR MARKED ASSIGNMENT

Explain the break-even point in details by making reference to fixed cost, variable cost and semi-variable cost.

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