MBA 805: MANAGEMENT AND ACCOUNTING

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Table of Contents

UNIT 1: INTRODUCTION TO MANAGEMENT ACCOUNTING

Table of Content

1.0 Introduction

This is the first unit of this course Management Accounting, **and it will cover a period of** one hour We shall be taking a look at the introduction to management accounting which will cover the definition of management accounting as an information system, information **needs of management,** qualities of information required by managers and the differences between management accounting and financial accounting.

2.0 Objectives

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

- Identify accounting as an information system
- Define the concept management accounting
- Identifying the informational needs of managers
- Identify the qualities of information required by managers
- Differentiate between management accounting and financial accounting.

3.1 Accounting as an information system

The accounting system is the major information system in any organisation. The information provided by accounting is for three major purposes namely

- Internal reporting to enable managers plan and control their routine operations
  Internal reporting to managers for use in making non-routine decisions and formulating major plans and policies
- External reporting to shareholders, government, creditors and other interested parties

Students Assessment Exercise

(a) What is the major information system in an organisation?
(b) List two purposes for which accounting information is provided for

Solution

- (a) Accounting System
  - . For internal reporting to enable managers to plan and control their routine operations
  - For internal reporting to managers for use in making non-routine decisions and formulating major plans and policies

32 Definition of Management Accounting

Management accounting is "the application of professional knowledge and skill in the preparation and presentation of accounting information in such a way as to assist management in the formulation of policies and in planning and controlling of the operations of the undertaking' (Chartered Institute of Management Accounting CIMA)

Students Assessment Exercise

What is the essence of providing management accounting information?

Solution

The essence is for the application of professional knowledge and skill in the preparation and presentation of accounting information in such a way as to assist management in the formulation of policies and in planning and controlling of the operations of an organisation.

3.3 **Types of information needed by managers**

- Information that would enable the manger to judge whether he is doing well or not
- Information, which would enable the manager to know the problem areas to look into.
- Information, which would enable the manager to choose the best among several alternatives.

Students Assessment Exercise

List three areas for which managers need information

Solution

- To judge whether he is doing well or not.
- To locate problem areas to look into
- To choose the best course of action among several alternatives

34 Qualities of information provided by Management Accounting report

- Factual —An ideal management accounting report must be capable of being independently proved by the users i.e. must contain both quantitative and qualitative data.
- Degree of details —A good management accounting report must be conclusive in presentation i.e. it must be adequate for the purpose of taking a particular decision.
- Cost Benefit Analysis — The cost of generating the management accounting report must not be higher than the benefits to be derived from the report.
- Timeliness — for management accounting reports to be considered a relevant in a particular situation, it must be presented on time i.e. prior to the decision. A stale information will not serve the appropriate objective of the organisation
- Method of presentation — An ideal management accounting report must highlight the key aspect of the report in such a way that it will be assessable to the users. This may be done through appropriate headings or paragraph method.
- Ambiguity —An ideal management accounting report must not include words that are capable of different interpretations and meanings because of its implications to the user i.e. technical jargons should be avoided.
- Volume of content — A good management accounting report must be explicit yet not

Students Assessment Exercise

You are required to list the qualities that a good management accounting report must possess.

Solution

- Factual — it must be capable ofbeing independently proved by users i.e. should contain both quantitative and qualitative data.
- Degree of details — it must contain enough information and be conclusive in nature for the purpose of taking a particular decision.
- Cost benefit analysis — the cost of generating the report must not be higher than the benefit to be derived from the report.
- Timeliness —for a report to be considered relevant in a particular situation, it must be presented on time.
- Method ofpresentation— The report must highlight the key aspect ofthe report using appropriate
  headings or paragraph method in such a way that it will be assessable to the users.
- Ambiguity —An ideal report must avoid the use of ambiguous words or technical jargons.
- Volume of content — A good report must be self explanatory and yet not voluminous.

3.5 Differences between management accounting and financial accounting

3.5.1 Users:- Management is the main user ofmanagement accounting report. The users of financial accounting reports include insiders and outsiders. These various users can be categorized broadly as follows:

- Equity — investor group
- Loan — creditor group
- Employee group
- Business contact group
- Research/analysts group government group
- Government Group
- Public group.

3.5.2 <u>Rules and regulations</u> —Financial accounting reports are influenced by the following

- Accounting conventions *e.g.* prudence, going concern, matching, accrual conventions etc.
- Professional pronouncements e.g. statements of standard accounting practice (SSAP), Internal accounting standards (IAS), financial Accounting standards (FAS) etc.
- Statutory pronouncements from The Corporate Affairs Commission (CAC) Companies and Allied Matters Act (CAMA); Banking and Other Financial Institutional Act (BOFIA), Productivity, Prices and Income Board (PPD3) etc.

All these factors do significantly affect the preparation of tnanagement accounting reports.

3.5.3 <u>Degree of details</u> — Financial accounting reports relate most of the time to the whole organisation whereas management accounting reports predominantly relate to the specific sections ofoperation ofthe organisation, and therefore much more detailed than would

3.5.5 Time focus r financial accounting reports are historical in nature while management accounting reports are predominantly futuristic and predictive in nature.

3.5.6 Use of estimates and approximations - in view of the fact that financial accounting reports are historical and the periodicity ofthe reports is static, the use of estimates and approximations are reduced to the barest minimum. However, due to the emphasis of management accounting reports on the future, which are unknown, estimates and approximations are extensively made use of

3.5.7 Objectives - The main reason for keeping financial records is to comply with legal requirements and for the purpose of accountability or stewardship. On the other hand, management accounts are kept for planning and controls purposes.

Students Assessment Exercise

Itemise the points of distinctions between management accounting and financial accounting.

Solution

- Usas ofinformation
- Rules and regulations
- •Degree of details
- Period ofpreparing reports
- Tune focus
- Use of estimates and approximates
- Objectives.

4.0 Conclusion

Management accounting has been demonstrated to be an indispensable tool to the management of an organisation in achieving its planning, controlling and decision making functions.

5.0 Summary

In this unit, attempts have been made to identify accounting as part ofthe information system in organizations, and to define the concept ofmanagement accounting. Also, we attempted to identify the informational needs ofmanagers, to identify the qualities of such information and to differentiate between management accounting and financial accounting.

6.0 References and other further readings

- Asaolu, T **0. &** Naccar, M. L. (1997). Essentials of Management Accounting. Cedar Publishers. Nigeria.
- Drury C. (2000) Management and Cost accounting. Thomson Learning, Berkshire House, London.
- ICAN Distance Learning Pack Management Accounting by. G I. Johnson 2001.

7.0 Thor marked assignment

1. Define management accounting
2. Enumerate the qualities of a good management accounting reports.

You are to note that whenever you are requested to give a definition, you should endeavour as much as possible to give the official definition given by the Chattered Institute of Management Accounting.

UNIT 2: INTRODUCTION TO MANAGEMENT ACCOUNTING (CONTINUE))

Table of Content

1.0 Introduction

This is the second unit ofthis course Managanent Accounting, and it will cover a period of one hour. This unit is a continuation to unit one — introduction to management accotmting. We shall be loolding at the manageraent process, planning, decisiongnaking, control and the role of 'wassail= accountant in the management process.

2.0 Objectives

Attie aid ofthis unit, you should be able to

- **Idea* the management process man organisation**
- **Understand decision making process ma business Organisation**
- **Identifythe roles oftnanagment accountant in the management process.**
- **Identify types ofplanning in an organisation**

3.1 The Management Process .

The management process may be subdivided into three components

- **Planning-strategic planning, tactical planning and operational planning**
- **Decision-making**
- • **Control**

3.1.1 Planning— **This is the process of setting objectives for the future and the means of attaining them. I want you to imagine that you have a plan of** earning **a degree. Of course, there are many means of earning a degree, one of which is through distance learning. Your objective here is to earn a degree, and the means of attaining tha is through the distance learning *on. The means of attaining corporate plans are called the corporate strategy Planning is divided into three phases namely:**

3.1.1.1 Strategic Planning:

Examples of strategic plans include:

- Entering into a new market
- Introduction of new product lines
- Acquisition of another company or a merger
- Entering the export market.

You would realize that these examples are long-term developmental planifor the organization, which can be likened to your plan of earning a degree. The plan cannot be achieved immediately, benefits to be derived from the actualization ofthese plans are more enduring and therefore they require strategic planning or planning for the distant future.

3.1.1.2 Tactical planning:

This is concerned with medium term plans such as:

- Whether to make or buy
- . Whether or not to drop a product line
- Whether to buy or lease an equipment
- Whether to sell at present state or process further a by-product.

Can you think of a medium tam plan to your desire to earn a degree? Something like planning for your industrial attachment during the course ofyour study would be more like it.

3.1.1.3 Operational Planning:

This is concerned with short-term plans such as

- Choosing credit customers
- Deciding on daily delivery routes

Think out the plans that would be operational to the attainment ofyoUr educational ambition. Mode of receiving lectures would be more like it.

3.1.2 Decision making

Decision-making involves choositig from among alternative courses of action 7, the best which seems to be the most effective and the most efficient. What are the alternative courses of action to your decision to earn a degree — make a fist of these. Do you think you have chosen the best among these alternatives? Whatever option you have chosen is a decision and you should be ready for the consequences of your decisions.

3.1.1.1 The Characteristics of decision making are:

- Decision making deals with the future
- Decision making situation arises only when there are alternatives to be chosen from
- Each decision covers a time period. The time period may be called short range, Wit is less than a year, medium range, Wit is between 23 years and long range ifthe duration extends beyond three years.

3.1.1.2 Phases of decision making:

- Statement of objectives
- Determination of objectives
- Evaluation ofalternatives
- Selection ofthe best alternatives
- Implementation

The above are also phases of planning.
Develop phases to your decision to earn a degree. Can your selected decision be implemented?

3.1.2 Control:

This is the comparison of actual results achieved with plans, and the extent and reasons for deviations from the plans

Do you control your plans? How?

3.2 The role of the management accountant in the management process.

The management accountant is concerned with the collection organisation and presentation of information required for management processes.

3.2.1 The interrelationship between management activities and management accounting is shown below:

Managerial activity	Accounting activity
* Planning for the future	, - Preparation ofbudgets - Setting up of standards
* Decision making	- Providing data on alternatives - Advising on consequences of possible actions
* Control	- Comparing actual results with standards and budget - Interpretation and identification of problem areas.

Do you collect, organize and present your information in a manner that would assist you to take the right decision? If you do, list the activities you perform for your company as a managerin terms of planning, decision-making and control.

4.0 Conclusion

Management process has been demonstrated to include planning, decision- making, and controlling, all of which are very important managerial activities in an organisation. Decision making in an organisation has been demonstrated to be a pivotal factor in the achievement of corporate goal achievement. Also, the important role that management accountants play in the management process was equally discussed.

5.0 Summary

In this unit, attempts have been made to identify management process in an organization to explain the role of decision-making process in business organizations, to identify the roles of management accountants in the management process, and to identify the types of planning in an organization.

6.0 References and other further readings

- Asaolu, T.O. Nassar, ML. (1997) Essentials of Management Accounting. Cedar Publishers
- Nigeria.
- Drury C. (2000) Management and Cost accounting. Thomson Learning, Be?kshire House,

7.0 Tutor marked assignment and marking scheme

Q1: Enumerate the characteristics of decision-making

Q2: State the phases of decision-making

Q3: With respect to management accounting, state the accounting activities in an Organization

Marking scheme:

Mark obtainable	20
QI: Any two points @ 2 marks	4
Q2= All five steps @ 2 marks	10
Q3 = Any six points @ I mark	6
	20

UNIT 3: INTRODUCTION TO MANAGEMENT ACCOUNTING(CONT/NUED)

Table of Content

1.0 Introduction

This is the 3rd unit oftlis course, Management Accounting. It will cover a period ofone hour This unit is a continuation to unit —2- introduction to management accounting. We shall be looking at the definition of information, categories of information, sources of information to management, information processing systems and the role of computer in the information system.

2.0 Objectives

At the end ofthis unit, you should be able to:

- Define information
- Categorize information
- Identify the sources of information to management
- Identify decision support systems
- Identify information processing systems
- Identify the role of computer in the information system

3.1 Definition of Information

Information is the generic term that includes all the facts, figures, ideas, observations, impressions, experience, insights and relationships that enhance our understanding of a decision-making situation.

From your quest to earn a degree from the distance-learning program, what are the information that you would seek? List them and appraise how each ofthem would enhance the attainment ofyour objective.

3.2 Categories of Information

Basically, there are two broad categories of information:

- Quantitative Information— These are information that can be measured in quantitative terms such as time, units, cost data, sales revenue, labour hours etc.
- Qualitative Information — These are those intangible factors, which do not lend themselves to numeric expressions such as human factors, managerial insight, socio-political repercussions, and -changes in attitude.

Can you imagine a factory environment where a decision is to be taken on whether to buy a certain component named "XIn for N400 per unit from a supplier or to continue to manufacture the same component "XI" internally at a marginal cost of production ofN500 per unit. Well, on the surface, the reasonable option would appear to be that ofbuying 'XY' from the supplier and thus saving N100 per unit purchased. However, the consequence of this decision would be the retrenchment ofcertain categories of workers and its attendant labour unrest. Identify quantitative and qualitative information from the above two paragraphs.

1

3.3 The Role of Information in an Organization:

The role of information is to predict fixture circumstances. The more accurate the prediction, the lesser the degree of risk. However, not all information is useful for decision- making. In order to be useful, information should be timely and relevant. Information can be relevant Wits availability or non-availability can influence the choice ofan alternative. Historical information are not relevant to decision making. Relevant information are futuristic, since decision making is concerned with the fixture.

Management accounting is mainly concerned with qualitative information, is just as important, and on some occasions, may even be more important. Whenever possible, qualitative factors should also be presented as part of the information system.

Students Assessment Exercise

Discuss the role of information in an organisation.

3.4 Sources of Information to Management

The sources of information to management might be from within the organisation (in which case it is known as feedback) or it might be environmental information. Feedback represents a part of the control cycle whereby actual iesults ofoperations are measured, compared against planned results so that any corrective action can be determined, and reported to management.

Environmental information originates from outside the business and tends to be used more extensively by senior management.

Students Assessment Exercise

List extensively the internal and external sources of information about the distance learning education system.

3.5 Decision Support System

A decision support system is a system which operates so as to provide help i.e. support in making decisions. Any management information system could be described as a decision support system in that it provides information for managers in an organised and understandable way to enable them to make a more timely decision.

Within a management information system, decision support sub-systems can be identified. For example, routine management reports might be provided regularly to indicate what control decisions are necessary. Decision models may also be developed to facilitate management decisions. For example, budget planning decisions might be aided by a linear programming model or cost-volume-profit model, and stock ordering decisions by an economic order quantity (EDO) model.

The more developed and sophisticated decision support systans become, the better the quality of management decisions is likely to be, because better and more relevant information on which to base decisions should be available.

Students Assessment Exercise

(a) Define a decision support system

(b) As a manager, identify two decision support sub-systems in your work place.

3.6 Information Processing systems

Information may be wholly processed by human beings or by machines Human information processing is the processing of information by human beings as distinct from automated processing by machines. In a small business, the entire information ofbusiness systems may exist without the aid ofbusiness machines or computers. It might consist ofcopying, totalling, summarizing sorting classifying and other similar operations.

In what type ofbusiness organisation **are you working** and how is the business information processed?

3.7 The Role of Computer in the Information System

An effective information system must be devised first, before it is computerized. The use of the computer does not in itself guarantee a more efficient management inforination system because garbage in would produce garbage out (G I. G O.).

The success of a management information system depends primarily not on the relative efficiency with which information is processed, but on whether the system provides the information needed by decision makers.

40 Conclusion

The importance &information to managers in taking decisions has been emphasized. A decision is as good as the quality outs decision support system. Also, the important role played by computer in information processing was also discussed.

5.0 Summary

In this unit, attempts have been made to define information, to categorize information, to identify the role of information in management, to identify the importance ofdecision support systems, to identify information-processing systems, and to discuss the role of computers in the information system.

60 References **and other further readings:**

- Asaolu, T.O. Nassar, M.L. (1997) Essentials of Management Accounting Cedar Publishers Nigeria.
- Drury C. (2000) Management and Cost accounting. Thomson Learning, Berkshire House, London.

7.0 Tutor marked assignment and marking scheme

(a) Define information

(b) Big. Sam Nig. Ltd. is a merchandising company, buying and selling product "AB" The management of the company has just decided to be manufacturing product 'AB' in-house by its self.

You are required to state tree qualitative factors to be considered in taking the decision.

Marking Scheme

Mark obtainable		20
(a)	Any eight factor @ 1 mark	8
(b)	Any three points @ 4 marks	12
		20

UNIT 4: DETERMINATION OF COST BEHAVIOUR

Table of Content

1.0 Introduction

This is unit 4 of this course, Management Accounting, and it covers a period of one hour. During the course of this lecture, we shall look at the determination of cost behaviour which will cover definition of cost, concept of cost behaviour level of activity reasons for studying cost behaviour, concept ofrelevant range, basic principle of cost behaviour and the types of cost behaviour.

2.0 Objectives

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

- Define cost
- Describe the concept of cost behaviour
- Identify the reasons for studying cost behaviour
- Describe the concept of relevant range
- Identify the types of cost behaviour and describe a level of activity

3.1 Definition of Cost

The scope of the term 'cost' is extremely broad and general. It is, therefore, not easy to define or explain this term without leaving any doubt concerning its meaning. Cost accountants, Economists and others develop this concept of cost according to their needs. This concept should therefore be studied in relation to its purpose and use. Some of the definitions of cost are given hereunder:

- "A cost is the value of economic resources used as a result of producing a product or service" (WM. Harper)
- Cost is "the amount of expenditure (actual or notional) incurred on or attributable to a given thing" (ICMA)
- cost is "an exchange price, a foregoing, a sacrifice made to secure benefit" (A tentative set of Broad Accounting Principles for Business Enterprises)

Students Assessment Exercise

Attempt your own definition of cost, and give an instance wheriit can be so used.

3.2 Concept of Cost Behaviour

Cost behaviour is the study ofthe ways in which cost react or do not react to chimges in the level ofactivity ofan organisation. Knowledge of cost behaviour is the basis ofall cost-volume-profit (C. V.P) analyses. When we know the behaviour of costs, then financial planning is made simpler.

Students Assessment Exercise

Identify some activities in your work place and state the reaction of cost to slight changes in the level of operation of this activity e.g. rent ... cost item, number of patients treated... activity If the number of patients treated fluctuates in a period, would the rent paid on the patients' ward fluctuate accordingly?

3.3 Level of activity

The level of activity is the amount ofwork done or the number of events that has Occurred. The type ofactivity which influences cost varies according to the nature ofwork done in the organisation or department, and the nature of the items of cost whose behaviour is being analysed depending on the circumstance, the level of activity may refer to the volume of production in a period, the number of items sold, the value of items sold, the number ofinvoicts issued, the number ofinvoices received, the number &units of electricity consumed, etc.

Students Assessment Exercise

Identify what should be the level of activity in the following:
Barbers shop
Restaurant
Mechanic workshop
Lawyers Office
Airline ticketing office
Secondary school
Hospital
Railway station
Petrol station

34 Reasons for studying cost behaviour

There are three principal reasons for studying how costs respond to changes in the level of activities:

- For the prediction of cost to facilitate budgetary and corporate planning
- For performance evaluation when a system of flexible budgetary control is in operation
- For the estimation of costs for various decision making processes e.g. pricing decisions, make or buy decision, optimal product mix, shut-down decisions etc.

Students Assessment Exercise

Can you identify other reasons why cost behaviour should be studied?

3.5 Concept of Relevant Range:

This is the range in which all assumptions about the level of activities and cost will remain valid. Within this range, most items of cost will settle into a basic pattern or behaviour and cost can be classified into either fixed or variable cost.

Students Assessment Exercise

Have you ever heard of installed capacity before this time? Ifyou have, then think about a car that has the capacity to carry just five persons or a machine that can work continuously for just twelve hours., if you want the car to carry more than five persons, then you have to procure another car to extend your relevant range, or if you want the machine to work continuously for twenty-four hours, you may have to procure the second machine because that machine has just twelve hours as its Stalled capacity.

3.6 Basic Principles of Cost Behaviour

The basic principle of cost behaviour is that, as the level of activity rises, costs will usually rise. It will cost more to produce 2,000 units of an output than it will cost to produce 1,000 units of the same product.

This principle is common sense. I agree with you. The problem for the accountant, however, is to determine for each item of cost, as the level of activity increases:

- The ways in which the costs behave to changes in activity level; (i.e. are costs
- Fixed, varied, stepped or mixed
- By how much (i.e. what is the amount of fixed cost per period and what is the variable cost per unit of activity?)

For the purpose ofthis course, the level of activity for measuring cost will generally be taken to be the volume of production.

Students Assessment Exercise

State the accountants' interest in the study of the principle of cost behaviour.

3.7 Types of Cost **Behaviour:** [4]

3.7.1 Fixed Costs:

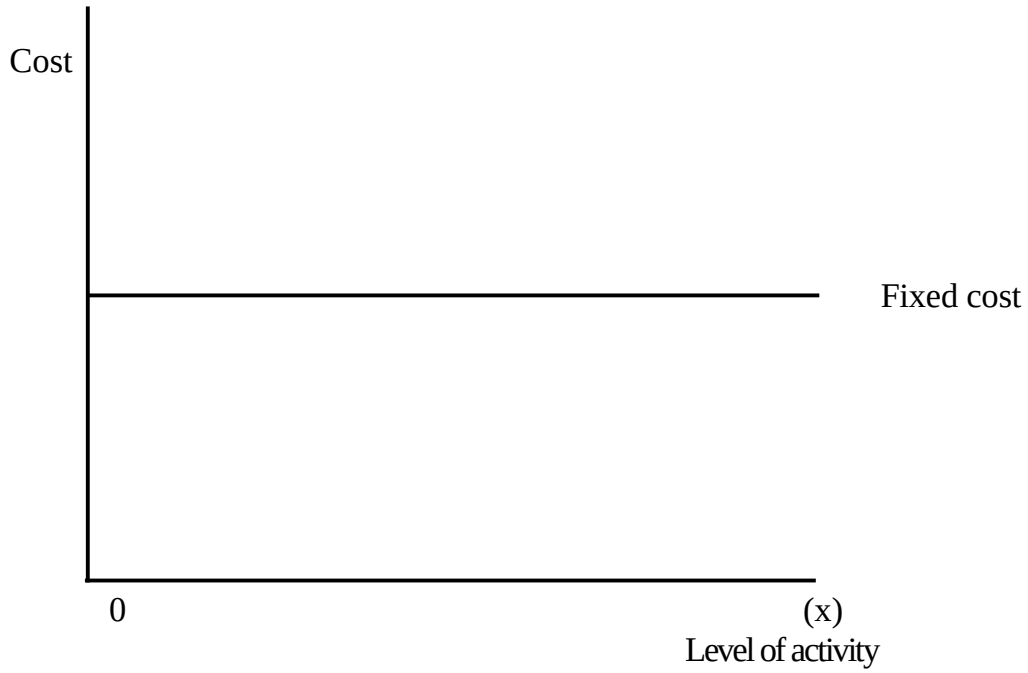
Fixed costs are those costs, which do nofvary with output or production level. They accrue with the passage of time hence they are time or period cost. They remain constant in amount for a given short term period and within relevant range of output. Fixed costs are costs of holding assets

- and other factors of production in readiness for production.

A company when defining fixed cost should take the following factors into consideration:

- Controllability —All fixed costs are controllable in the long run. Some fixed costs are subject to management control in the short-run. Numerous fixed costs are determined annually by discretional management policies.
- Relevant range —Fixed cost must be related to a range of activity. Afixed cost would only remain constant only when level of operation is within relevant range.
- Period cost —Because they accrue with the passage of time, the amount of the fixed costs must be related at specified period of time. Fixed costs should be related to a financial year and expressed as a constant amount per month.
- Fixed in total but variable per units —A fixed cost is constant in total amount per period, but variable in terms of unit cost.

A sketch graph of a fixed cost would look like:



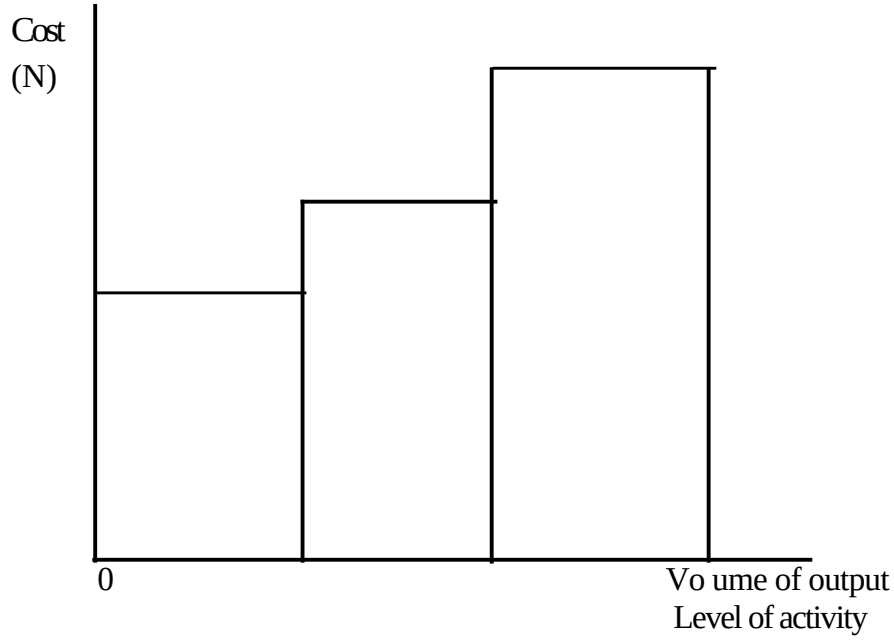
Examples of fixed costs are:

- The salary per month of a supervisor
- The rent of a single factory building per month or per annum

3.7.2 Step Cost

This is a variant of the fixed cost. Many items of cost are fixed in nature but within certain levels of activity i.e. a relevant range. For example, the annual depreciation cost of a machine may be fixed if production remains below 1,000 units for machine that has a maximum capacity of 1,000 units, but if production is to exceed 1,000 unit, even by 1 unit, then a second machine would be required, and the annual depreciation cost on two machines would go up in a stepped manner.

A sketch graph of a step cost would look like:



Other examples of step cost area:

- Rent — where accommodation requirements increase, as output levels get higher.
- Basic wages — basic pay of employees is nowadays usually fixed, but as output rises, more employees are required.

3.7.3 **Variable** Costs

A variable cost is one, which tends to vary viiith the volume of output. The variable cost per unit is the same amount for each unit produced, which means that the amount of resources used and the price of these resources are constant for each additional unit produced. The total cost of a variable cost item would be shown graphically as follows:

3.7.4 Total Cost

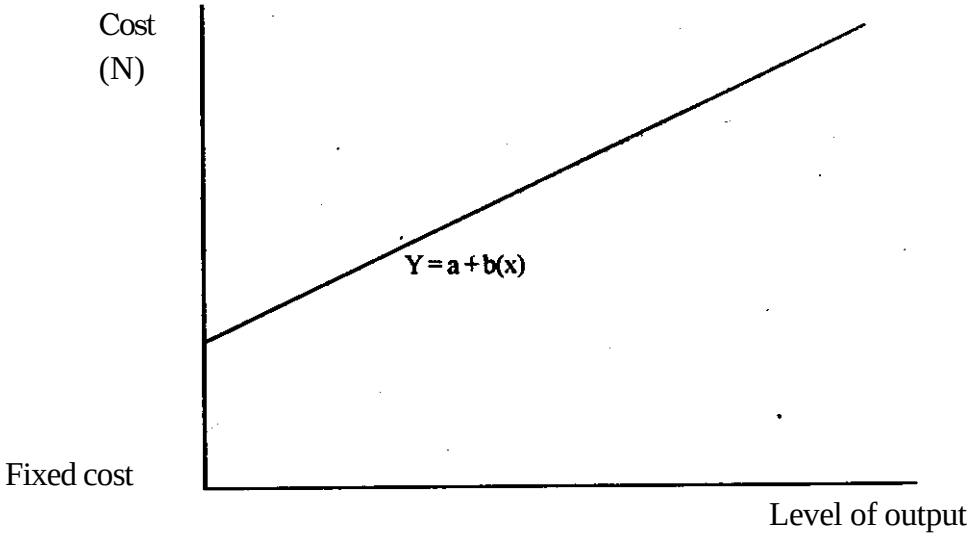
This is the totality of costs: i.e. the addition oftotal variable cost plus total fixed cost, and its function is given as:

$$a+b(x)$$

Where,

y .= total cost
a = fixed cost
variable cost per unit
= activity level

It is shown graphically as:



3.7.5 Mixed Costs

Also referred to as semi-variable or semi-fixed cost. They are cost items which are partly fixed and partly variable i.e. costs which contain a standing basic charge plus a variable charge per unit of consumption e.g. telephone bills, electricity bill, etc.

Students Assessment Exercise

Identify and sketch the graph of any other cost behaviours?

4.0 Conclusion

Cost behaviour has been demonstrated to be a veritable tool in understanding the effect of cost in response to changes in the volume of activity and to understanding the resulting impact of cost on profitability.

5.0 Summary

In this unit attempts have been made to define cost, to describe the concept of cost behaviour, to identify the reasons for studying cost behaviour, to describe the concept of relevant range, to describe a level of activity and to identify the types of cost behaviour

6.0 References and other further readings:

- Arora, MN. (1997) A textbook of cost accountancy — VIKAS Publishing House India.
- Asaolu, T.O. & Nassar M.L. (1997) Essentials of Management Accounting CEDAR Publishers Nigeria.
- ICAN Distance Learning Pack Management Accounting ed. F.L. Johnson 2001

7.0 'Pular Marked Assignment and Marking Scheme

Explain the term cost behaviour and state the factors that would influence the behaviour of costs in response to changes in an organization's level of activity.

Marking Scheme

Mark obtainable	20
Definition ofcost behaviour	8
Any six factors @ 2 marks	12
	20

UNIT 5: COST ESTIMATION TECHNIQUES

Table of Content

1.0 Introduction

This is unit 5 ofthis course, Management Accounting, and it will cover a period of one hour. We shall be taking a look at the need for cost estimation and the various methods of cost estimation

2.0 Objectives

At the end ofthis unit, you should be able to:

- Establish the need for cost estimation
- Describe the various cost estimation techniques.

3.1 Need for Cost Estimation

You would recall from unit 4 of the course that we said there exists a mixed cost or semi-variable cost or semi-fixed cost. These are said to be costs which are partly fixed and partly variable i.e. a cost which is a composite of a standing basic charge plus a variable change per unit of consumption. If all costs are to be classified as either a fixed cost or a variable cost, then a mixed cost has to be so separated into its variable and fixed costs components.

Imagine the telephone bill received from NITEL Even in situations where the telephone is still out of service, you still receive a bill for the month. You would wonder where the charges came from. Well, it is the standing charge for having a line, which would carry a fixed charge. And in addition to this, you pay a constant variable charge per usage. The two changes would have been added together and sent to you as a bulk, which you may have to separate for planning purposes and budgeting.

3.2 Cost Estimation Techniques

3.2.1 Scatter graph method

Under this method, the coordinates ofthe cost and the associated level of activity in respect of historical records for a defined period of time are plotted on a graph. Aline of best fit is then drawn usually across the coordinates crossing the cost axis. This technique fits a tredd line to a series of historical data points and then projects the line into the figure for medium to long-term forecasts. Developing a linear trend line by a precise statistical method would require the use of the least square Method. This method results in a straight line that minimizes the sum ofthe squares of the vertical differences from the line ofbest ;fit.

A least square line is described in terms of its y-intercept (i.e. the height at which it intercepts - the y-axis); and its slope (i.e. the steepiness or angle of the line).

If the y-intercept and its slope can be computed, then the line can be expressed with the following equation.

$y = a + b(x)$

where:

y = computed value of the variable to be predicated (This is referred to as the dependent variable)

a =y — axis intercept

= slope of the regression line or the rate of change in y .i.e ity

dx

values of a and b for nay regression line can be determined. The slope b is determined by:

$$\frac{\text{Awy} — \text{ncy}}{\text{fix}' — \text{nx}^2}$$

where:

slope ofthe regression line

A = summation sign

values ofthe independent variable

- values ofthe dependent variable

the average of the values ofthe x's

- the average of the values of the y's

– the number of observations

The y-axis intercept i.e. 'a' is computed as:

a = y — bx

Students Assessment Exercise (Unit 5.11

Year	Units of power generator sold
1992	74
1993	79
1994	80
1995	90
1996	105
1997	142
1998	122

You are required to draw a straight line trend (i.e. a line of best fit) to fit these data and foreoast the 1999 demand.

Solution:

Let the periods be represented by simpler numbers i e

1992 by 1
1993 by 2
1994 by 3
1995 by 4
1996 by 5
1997 by 6
1998 by 7

Year	X (Time Period)	Y (unit demanded)	X'	Xy
1992	**1**	**74**	**1**	**74**
1993	**2**	**79**	**4**	**158**
1994	**3**	**80**	**9**	**240**
1995	4	90	16	360
1996	5	**105**	**25**	**525**
1997	**6**	**142**	**36**	**852**
1998	**7**	**122**	**49**	**854**
	fix = 28	**Ay = 692**	**áx^2= 140**	**itxy = 3,063**

$$\frac{28}{7} = 4$$

$$ay = 692 = 98.86$$
$$7$$

Since $b = \frac{5xy - rocy}{Ax^2 - nx^2}$

$$b = \frac{3063 - (7)(4)(98.86}{140 - 7(4^2)}$$

$$b = \frac{295}{28}$$

b= 10.54

and, a = y — bx

a= 98.86— 10.54(4)

a= 56.70

The least square trend equation is given *as*:

$y = a + b(x)$

y = 56.70 + 10.54(8)

Please note that x here is period 8 i.e. 1999

y= 141.02

y= 141 generators

See graph 3.2.1

3.2.2 The High and Low Method

Under this method, a previous data relating to a defined period of time is extracted from the historical records and in particular, two previous data corresponding to the highest level of activity during the same period and the lowest level of activity during the same period, together with their associated corresponding costs form the basis for the derivation of the cost function. The differences between the total cost ofthe high output and the total cost ofthe low output will be the variable cost ofthe different output levels.

Students Assessment Exercise Unit _5-2

The costs ofoperating the maintioance department ofAB.C. Manufacturing Nigeria Limited for the last fonr months have been given **a§** follows:

Month	Total cost N	Production volume (Standard hours)
1	111,000	7,000
2	115,000	8,000
3	113,000	7,700
4	97,000	6,000

You are required to compute total cost for month five (5) when output is expected to be 7,500 standard hours.

Solution

Steps (a) Identify the highest activity and its corresponding total cost.

(b) Identify the lowest activity and its corresponding total cost

(c) Determine the difference in activities and the total costs

(d) The change in total cost due to the corresponding change in activities would be the variable cost per standard hour

(e) Make necessary substitutions in either the high or low volume cost.

	Standard Hours	Total Cost
Ffigh output	8,000	115,000
Low output	6,000	97,000
	2,000	18,000

Variable cost per standard hour is

18.000
2000 = N9 per standard hour

Substituting in either the high or low volume cost:

	High N		Low N
Total cost	115,000		97,000
Variable cost (800 x 9)	72.000	(6,000 x 9)	4.000
Fixed cost	43,000		43,000

The estimated cost of 7,500 standard hours of output would be:

Fixed cost	43,000
Total variable cost (7,500 x N9)	67,500
Total cost	110,500

4.0 Conclusion

Cost estimation technique has been demonstrated to be a useful tool to management in separating mixed cost into its variable cost and fixed cost demands which is very helpful for profits planning and budgets and budgetary control.

5.0 Summary

In this unit, attempts have been made to establish the need for cost estimation and to describe some of the various cost estimation techniques.

6.0 References and other further readings •

- Asaolu, TO. Nassar, M.L. (1997) Essentials of Management Accounting Cedar Publishers Nigeria.
- Drury C. (2000) Management and Cost accounting. Thomson Learning, Berkshire House, London.
- ICAN Distance Learning Pack Management Accounting ed. E.I. Johnson 2001.

7.0 Tutor marked assignment and marking scheme Unit 5.3

I J K Nigeria Limited has computed its total factor overhead cost at the high and low levels

	Level ofActivity	
	Low	Hit
Direct labour hours	50,000	75,000
Total factory overhead costs	142,000	176,250

Assume that the factory overhead costs above consist of indirect materials, rent and maintenance expenses. The company has analyzed these costs at the 50,000 direct labour hours of activity, and has determined that at that level, these costs exist in the following proportions:

Indirect materials (variable)	50,000
Rent (fixed)	60,000
Maintenance (semi-variable)	32.000
	142.000

For planning purposes, the company wants to break the maintenance cost down into its variable and fixed elements.

You are required to determine:

(a) How much of the N176, 250 factory overhead costs at the high level of activity above consists of maintenance cost

(b) The cost formula for maintenance by means of the high-low method of cost analysis.

Discussion, solution and marking scheme

- The analysis of co st given in the body of cost is for the low level of activity at 50,000 hours.
- Indirect materials is said to be a variable cost and records N50, 000. This means that it should be possible to establish the variable cost per hour, and this would be N50, 000 =N1 per hour.

- Rent is fixed at the low level at N60, 000. Since rent is a fixed cost, it is expected that it would remain constant even at a higher level of activity
- The total cost recorded at the high level is N176, 250. Out of this, N75, 000 is accounted for by indirect materials, which in variable N60, 000 is accounted for by rent which is fixed, therefore, the balance ofN41, 250 will be for maintenance.
- Maintenance cost at the high level of operation (75,000 hours) is N41, 250 and at the low level of operation (5,000 hours) is N32, 000. Maintenance cost is said to be a semi-variable cost, • therefore, we can adopt the high low method to separate it into its variable cost and fixed cost element and proceed to state the cost formula for maintenance.

UNIT 6: COST ESTIMATION TECHNIQUES

Table of Content

1.0 Introduction

This is unit 6 of this course, Management Accounting, and it will cover a period of one hour. We shall continue our discussion on cost estimation techniques under which we shall be looking at the statistical approach and the accounts analysis method.

2.0 Objective

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

- Describe and apply the statistical approach
- Describe and apply the accounts analysis method.

3.1 Statistical Approach:

Statistical methods may be used to remove the subjective element of the scatter graph method. Regression analysis is used to determine the equation of the line (i.e. cost function) that best fits the data. The "goodness of fit" of such an equation can be tested by an examination ofthe correlation coefficients.

3.1.1 Normal Equations:

The objective of simple regression is to determine an equation ofthe form Y = a + which gives the bestexplanation ofthe relationship of the observed data. This is accomplished by the use oftwo equations usually called the normal equations. They are stated as:

$Ay = na + b(x)$

$ixy = a(Ax) + b(Ax)^2$

where. '

= the number of the pairs of observation

Ax = the sum of the observations of the independent variable (e.g. x = level ofoutput)

Ay = the sum of the observations of the dependent variable (e.g. y = total costs)

Ax^2 = the sum of the squares of the x observations

fixy = the sum of the product of each pair of observation,

3.2.1 Coefficient of Correlation

Once the cost function has been determined, the next step should be to determine how well the estimated relationship explains the variation in the observations. This can be done by •

calculating the coefficient of correlation. The coefficient of correlation (r) measures the extent to which the output variable explains the changes in total costs, and may be measured by the following formula:

$$r = \frac{\text{Etaxy)—(âxJRay)}}{\text{O[n(ax}^2\text{)-(a4}^2\text{1 [n(fiy}^2\text{)-(iy)}^2\text{]}}$$

When the co-efficient of correlation is raised to power two i.e. (r^2), it is referred to as the coefficient of determination. It indicates the percentage of the variation in the total costs that is explained by the estimated cost function. Its value will always be between 0 and 1.

(b) So,

$$r = \frac{6(68.900)— 580(70.2)}{6[6(57,400)4\ 580)1\ [6(829.84)-(702)^2]}$$

$$= 0.955$$

The indicated 95.5% of the variation in total costs for the six months period is explained by changes in the volume of output produced. The remainder is explained by random variation and the effect of other variables.

Student Assessment Exercise Unit 6-1

XYZ Nigeria Ltd. has total costs and output for the first six months of the year as follows:

	Output (Unit)	Total cost N
January	80	102
February	90	109
March	100	121
April	80	108
May	120	137
June	110	125

You are required to:

(a) Estimate both fixed cost and variable cost elements from the above data

(b) Determine and interpret the significance of the coefficient of determination (r^2)

Solution: Unit 6-1

Output Total

(a)

Output (x)	Total cost (y)	x^2	'CY	y^2
80	102	6,400	8,160	10,404
90	109	8,100	9,810	11,881
100	121	10,000	12,100	14,641
120	137	14,400	16,440	18,769
110	125	12,100	13,750	15.625
Ax = 580	Ay = 702	ix' = 57,400	Axy = 68,900	ay' = 82,984

Number of observations (n) = 6

These values can be substituted into the following normal equation:

Ay = na + b(Ax)

Axy = a(Ax) + b(ax)²

792 (6)a b(580)

68,900 = 580a + b(57,400)

i.e. 702 = 6a + 580b• ..... (Erin. 1)

68,900 = 580a + 57,400b (Eqn 2)

Multiply through eqn 1 by 290 and eqn 2 by 3:

Hence;

203.580 = 1,740a + 168,200b (Eqn 3)

206,700 = 1,740a + 172,200b ..... (Eqn 4)

Deduct eqn 3 from eqn 4:

206,700 = **1740a + 172,200b**

203.580 = 1740a + -168200b

3120 = 4000b

Divide both sides of the equation by 4000

3.120 4000b

4000 4000

;. b = .78

Substitute the value of b into equation 1 thus:

702 = 6a + 580b .....(Eqn 1)

702 = 6a + 580 (0.78)

02 = **60 + 452.4**

Collect like terms:

6a= 702 L 452.4

6a= 249.6

Divide both sides of the equation by 6

6a = 249.6

6 6

a = 41.60

Therefore, the estimated cost function is:

.41 60 0.78(x)

3.2 Account Analysis Method:

Under this method, the cost function is **arrived at through a rough investigation ofall sources of information that makeup the total cost incurred in a defined period oftime. Depending upon the nature of cost incurred as documented on the source documents and using a subjective judgement** of the accountant, each of the costs **that make up the total** cost is **categorized as either fixed** or variable

The meth' cid is also referred to as the Account Classification because it **requires an examination of accounting records. The accounting records for some recent period are selected and an officer who is likely to be the accountant classifies each cost item according to his subjective view of its • behaviour. For instance, cost of materials will be treated as a variable cost whereas administrative overheads will** be treated as a fixed cost.

Some difficulties arise with semi-variable costs e.g. electricity. Such costs are mixed costs which comprise both the variable and fixed element. An estimate must be made ofthe fixed element of these costs on the basis of the evidence available.

This method is fast and also inexpensive and easily revised but it has serious limitations such as:

- It relies heavily on the initial decisions to classify cost category as fixed or variable,
- The treatment of mixed costs is often arbitrary, and
- It is sensitive to apportionment ofindirect costs which are fixed for the enterprise as a whole but variable for the departments

Students Assessment Exercise Unit 6.2

During the June, 2002, Management meeting ofAJ1FOWOBAJE Manufacturing Nigeria Ltd.; the production manager criticized the inaccuracies in the accountant's cost statement which have repeatedly shown wide variances between actual and forecast.

The table below shows actual cost incurred and output data for the first half of 2001. Output for July 2001 is expected to be 130,000 units while the factory will close down for the

Month	Jan	Feb	Mar	Apr	May	June
Output ('000 units)	80	90	100	80	120	110
Costs:						
Materials	1,950	2,350	2,670	2,030	3,080	2,680
Direct labour	2,910	3,010	3,540	3,320	4,500	3,990
Supervising labour	280	290	280	290	310	300
Factory rent & rates	700	700	700	700	700	700
Fuel & Power	920	1,010	1,180	910	1,230	1,140
Office expenses	610	620	690	630	690	670
Maintenance	220	230	220	240	280	260
Depreciation	1,100	1,100	1,100	1,100	1,200	1,200
Vfiscellaneous	1,590	1,590	1,720	1,580	1,710	1,560
	10,200	10,900	12,100	10,800	13700	12500

You are required to use he account analysis method to estimate the July production cost.

Solution Unit 6-2

AJIFOWOBAJE MANUFCTURING MG LTD

Production Cost Statement for June 2001

August National Census:

	Total costN	Fixed costN	Variable costN
Materials	2,680	-	2,680
Direct labour	3,990	-	3,990
Supervising labour	300	300	-
Factory rent & rates	700	700	-
Fuel & Power	1,140	-	1,140
Office expenses	670	670	-
Maintenance	260	-	260
Depreciation	1,200	1,200	-
Miscellaneous	1,560	1,560	-
	12,500	4,430	8,070

Note that the classification of cost as either fixed or variable is arbitrary depending on your judgement.

Variable con per unit:

$$= \frac{N8.070}{110} = N73.36$$

Therefore, total cost function ('000) becomes = N4,430 +N73.36(x) .

4.0 Conclusion

Cost estimation technique has been demonstrated to be a useful tool to **management in** separating mixed cost into its variable cost and fixed cost elements which is very useful **for proRt planning** and budget and budgetary control.

5.0 Summary

In this unit, attempts have been made **to establish the need for cost estimation and describe** some of the various cost estimation techniques **their advantages and limitation.**

6.0 References and other further readings

- Asaolu, T.O. Nasser, ML. (1997) Essentials **ofManagementAccoiniting Cedar Publishers Nigeria.**
- Drury C. (2000)Management and Cost accounting. Thomson **Leaning, BalmlikeHouse, London.**
- **ICAN Distance Learning Pack Management Accounting ed. El. Johnson 2001.**

7.0 Tutor marked assignment and marking scheme Unit 6.3

The following information is made availableto you:

M.Wia	OutputUnit	Total Cost N
Jan	80	10,200
Feb	90	10,900
Mar	. 1.00	12,100
Apr	80	10,800
May	120	13,700
June	110	12,500

You are required to use the:

(a) Ifigh low method, and

(b) Simple regression analysis; to analyze the cost and estinate the July propduction cost **If expected production for the same month** is 130:

UNIT 7: BREAK - EVEN ANALYSIS

Table of Content

1.0 Introduction

This is Unit 7 of this course Management Accounting, and it will cover a period of one hour. We shall be taking a look at break — even analysis and this will cover:

- Definition of break — even analysis.
- Variable costs and fixed costs.
- Assumptions underlying the break-even analysis.
- Areas of application of the break—even analysis
- Break—even analysis terminology

2.0 Objectives:

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

- Define break—even analysis
- Distinguish a variable cost from a fixed cost
- List the assumptions underlying the break—even analysis
- Describe the areas of application of the break—even analysis
- Define break—even analysis terminologies.

3.1 Definition of break—even analysis.

Break—even analysis is the term given to the study of the interrelationship between cost, volume **and profit at various levels** of activity It is a system of analyzing costs into fixed and variable components to determine the probable profit at any given level of activity. A firm is said to be operating at the break—even point when it has generated enough sales revenue to cover total cost. This is the point of operation at which a firm makes neither a profit nor a loss.

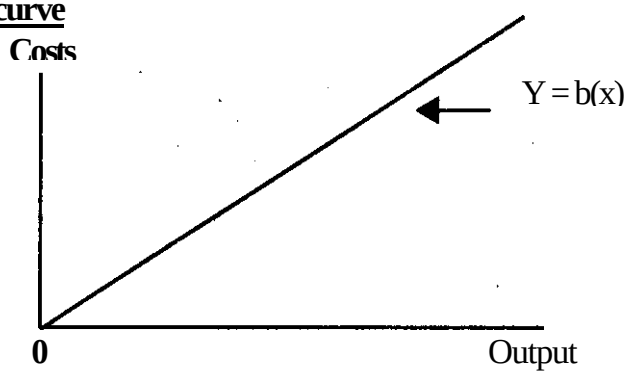
You would recall that before you can start a business, you would have incurred some establishment **costs like rent of shop.** This rent of shop will be fixed irrespective of the fact that you are providing **services or not. If in a particular month, no** services are provided, then your loss for that month would be, the total amount of fixed cost incurred on rent. But as you begin to provide the service and make or generate revenue per unit of service, the loss earlier mentioned would be reducing as you generate **more revenue. It will** get to a point that you would have generated enough sales revenue to cover both **your fixed cost and variable** cost of providing the service. At this point, you would say you have **broken even, only that you are not making a** profit, but at the same time, you are not making a loss, **that is, total revenue has equated total** cost.

3.2 Variable cost and Fixed cost

3.2.1. Variable cost.

You will recall from the study from earlier unit that variable cost **is defined as " a cost, which** tends to change (vary) with the level of activity". Thus, it is a cost, which changes directly with the level of sales, output (quantity) and cost. In break-even analysis, variable cost per unit is assumed to be constant, therefore, the variable cost curve is linear i.e. a straight **line.**

Variable cost curve



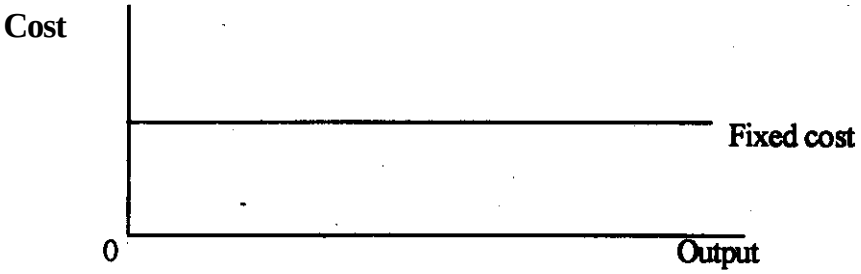
Students Assessment Exercise

Mention the variable costs that are involved in the production of leather shoes.

3.2.2. Fixed cost:

You will also recall from your earlier study that a fixed cost is defined "as a cost which is incurred for a period, and which, within certain output and turnover (sales) limit, tends to be unaffected by changes in the level of activity. It may also be termed as a period cost. **Examples are rent, rates, insurance and salaries of managers etc. Thus, it is a cost, which is not affected by changes in cost, volume or sales, within certain limit. The fixed cost curve is parallel to the output axis and remains constant throughout the relevant range.**

Fixed cost curve



Students Assessment Exercise

Mention the fixed cost that may be found in the production of leather shoes.

33 Assumptions underlying breakeven analysis

- **Constant variable cost per unit**
- **Constant total fixed cost per period**
- **Constant selling price per unit**
- **Constant stock levels i.e. stock levels do not vary significantly. In other words, production output (units) = Sales level (units)**

- Constant sales mix at all levels of activity where more than one product is included in the analysis.
- A relevant range is determinable
- Divisibility of mixed costs into its fixed and variable elements.
- Technology, production methods and efficiency remain unchanged
- The only factor that affects cost and revenue is volume i.e. output.

Students Assessment Exercise

Recall and list six of the assumptions underlying the principles of breakeven analysis

3.4 Areas of application of break-even analysis:

- For budget planning — it is used to determine the volume of sales required to make profit, a targeted profit level, and to determine the margin of safety.
- For determining product pricing and sales volume decisions
- For determining optimum production and sales mix.
- For determining the effect of capacity utilization on cost.

3.5 Break-even analysis terminologies:

- Break—Even Point- It is a point of activity where total sales or revenue is equal to total cost. Thus, it is the level of activity where neither profit nor loss is made.
- Break—Even Units: This is the Volume of production (quantity) which when sold, would make total cost to equal total sales. In other words, it is the level of units where the firm breaks even.

Students Assessment Exercise

Can you still remember the areas of application of break-even analysis? State any three areas.

4.0 Conclusion

Break-even analysis has been demonstrated to be a useful tool for management in budget planning, for determining product pricing, for determining optimum production and sales mix and for determining the effect of capacity utilization on cost.

5.0 Summary

In this unit, attempts have been made to define break-even analysis, to distinguish a variable cost from a fixed cost, to list the assumptions underlying the application of break-even analysis, to describe the areas of application of break-even analysis and to define break- even terminology.

6.0 References and other further readings

- Asaolu, T.O. & Nassar M.L. (1997)

  Essential of Management
  Accounting Cedar Publishers Nigeria.

  Drury, C (2000) Management and Cost Accounting, Thomsen Learning Berkshire House London

- ICAN Distance Learning Pack Management Accounting ed. E.I. Johnson (2001) '

7.0 **l'utor marked assignment and marking scheme:**

(a) Define the term break-even

(b) Give five assumptions of the break-even analysis

Solution and Marking Scheme

Marks obtainable	20
Definition	5
Any five points @ 3 marks	15
	20

UNIT 8: BREAK—EVEN ANALYSIS (CONTINUED)

Table of Content

1.0 Introduction

This is unit 8 of this course, Management Accounting, and it will continue the discussion on break—even analysis. It will cover a period of one hour. In this unit, we shall discuss: the approaches to break-even analysis.

2.0 Objectives

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

- Describe the equation approach to break-even analysis
- Describe the graphical approach to break-even analysis
- State the limitations of the break-even analysis

3.1 Approaches to break—even analysis:

3.1.1 Equation approach:

The following are the BE formula:

- Break even point (B.E.P) in units:

$$\frac{\text{Fixed cost}}{\text{Contribution per unit}}$$

$$\text{Break even point (REP) in N-value} = \text{fixed cost} \bullet \frac{}{\text{Contribution/sales ratio}}$$

Or

$$\text{Fixed cost} \quad X \quad \frac{1}{\text{Contribution/sales ratio}}$$

Contribution to sales Ratio (c/s ratio)

$$\frac{\text{Contribution}}{\text{Sales (N)}} \times \frac{100}{1}$$

Or

$$\text{Contribution per unit} \times \frac{100}{1}$$

Sales price per unit

Level of sales (units) required to achieve a target profit: $\frac{\text{Fixed cost + Desired profit}}{\text{contribution per unit}}$

Level of sales in (N value) required to achieve a target profit:

$$\frac{\text{Fixed cost + Desired profit}}{\text{Contribution/sales ratio}}$$

Note: (i) Contribution per Unit is unit-selling price less variable cost per unit.
0 Total contribution is total sales less total variable cost

Students Assessment Exercise

XYZ Nigeria Ltd. produces a product called "LIU", The following information relates to the company's product:

Selling price per unit	500
Variable cost per unit	400
Total fixed cost	400,000
Target profit	100,000

You are required to calculate the:

(a) Break—even point in units.
(b) Brealfreven point in (N) value.
(c) Quantity ofgoods to be sold by the company in order to achieve the target profit
(d) 'Value of sales that will achieve the target profit.

Solution

(a) . Break—Even Poine(Units) = $\frac{\text{Fixed cost}}{\text{Contribution per unit}}$

$\frac{\text{N 400.000}}{\text{N100}}$

4000 units

(b) Break—even point (N value) = Fixedcost

C/

- N 400,000

0.2

- N 2,000,000

(c) Number ofunits required to achieve the target profit:

$$= \frac{\text{Fixed cost} + \text{target profit}}{\text{Contribution per unit}}$$

- $\frac{\text{N 400,000} + \text{N 100,000}}{\text{N 100}}$

N 500,000

r_ **5,000 Units**

N 100

(d) Level of sales (N) required to achieve the target profit:

$$= \frac{\text{Fixed cost + target profit}}{\text{Ts ratio}}$$

$$\frac{\text{N 400,000} + \text{N 100,000}}{0.2}$$

$$\frac{\text{N 500,000}}{0.2 .}$$

N 2,500,000

3.1.1.1. Contribution to sales Ratio (Vs Ratio):

This is also called the profit-volume ratio or the contribution percentage. It is the contribution achieved as a percentage of sales ofa product. It measures the amount of contribution that would be achieved on a N sales. It is calculated as follows:

$$\frac{\text{Change in profit}}{\text{Change in sales}} \times 100$$

3.1.1.2. Margin of safety (M.O.S.)

This is the excess ofbudgeted sales over break—even sales. It measures the sensitivity ofa firm to unfavorable responses in operation i.e. the amount by which actual sales may fall short ofthe budgeted level without the firm incurring a loss. It is calculated as

$$\frac{\text{Budgeted Sales — Break-Even Sales}}{\text{Budgeted Sales}} \times 100$$

3.1.1.3. Contribution:

This is the difference between sales and variable cost. It is the effort made in N value towards the recovery of fixed costs and subsequently towards generating profit. Therefore, contribution is equal to fixed cost plus profit i.e. (fixed cost + profit). Contribution per unit is the difference between the selling price per unit and variable cost per unit.

- **Students Assessment Exercise**
- The following information is made available to you

Selling price per unit	1,000
Variable cost per unit	600
Total fixed cost	640,000

You are required to calculate:

(a) Contribution per unit.
(b). Break—even point in units
(c) Break—even point in N value
(d) c/s ratio
(e) The quantity of goods to be sold in order to make aprofit ofN 160,000
(f) The value of sales that will achieve a profit ofN 160,000.
(g) Margin of safety.

SOLUTION:

(a) Contribution/Unit = Selling Price - Variable cost/unit

- N 1,000 N600

- N 640, 000
  N 400

- 1,600 units

(d) Break—Even Point (N) = Fixed cost / CA ratio

- N640,000
  0.40

r N 1,600,000

(d) Vs ratio = $\frac{\text{Contribution per Unit}}{\text{Selling price per Unit}} \times 100$

$\frac{1}{1}$

- $\frac{14400}{N\ 1000} \times 100$

- 40%

(e) Number of units required in order to achieve a target profit.

$$\frac{\text{Fixed cost + Target profit}}{\text{Contribution per unit}}$$

$$\frac{N640,000 + N\ 160.000}{N400}$$

- N 800,000

N 400

2,000 Units

Sales value required to achieve the target profit:

$$\frac{\text{Fixed Cost + Target profit}}{\text{Vs ratio}}$$

$$\frac{N\ 640,000 + N160,000}{0.40} = \frac{14800,000}{0.40} = N\ 2,000,000$$

(g) Margin of Safety = $\frac{\text{Budgeted Sales} - \text{Break Even Sales}}{\text{Budgeted Sales}} \times 100$

- $\frac{2000 - 1600}{2000} \times \frac{100}{1}$

- 400 x 100

2000 1

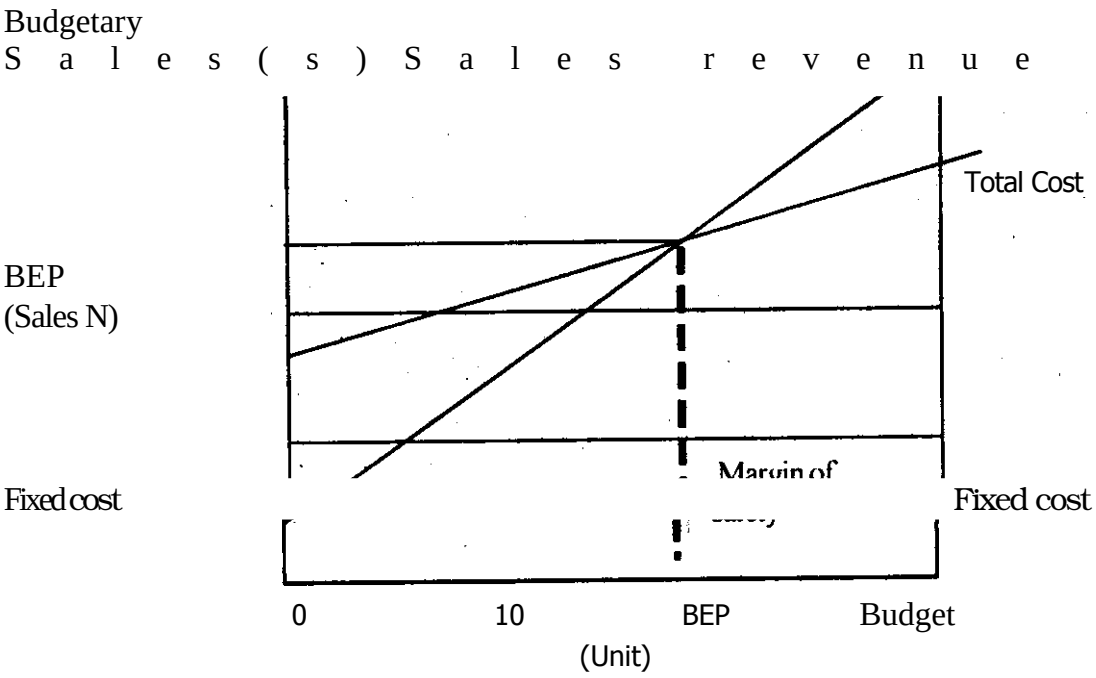
3 1.2 The Graphical Approach-

3 / I The Traditional Break—Even Graph.

Break—even analysis can also be made on the graph known as the traditional break- even graph. Thus, the break-even point in units and value, sales (N) and sales in unit etc., can be ascertained from the graph. The break—even graph can be drawn by considering the following factors:

- Selling price or sales revenue at each level of activity (output)
- Variable cost per unit·
- rota] fixed cost.
- Total cost at each level of activity (output), and
- Various levels of activity (output)

The Traditional Break —Even Chart.



3.12 Advantages of the graphical method.

- It

presents the essential features of break—even analysis as simple as possible .* The presentation is appealing to users who are non—accountants -

It is well suited to the needs of the ever—busy executives, since the situation can be appraised at a glance.

3.2.3 Angle of Incidence:

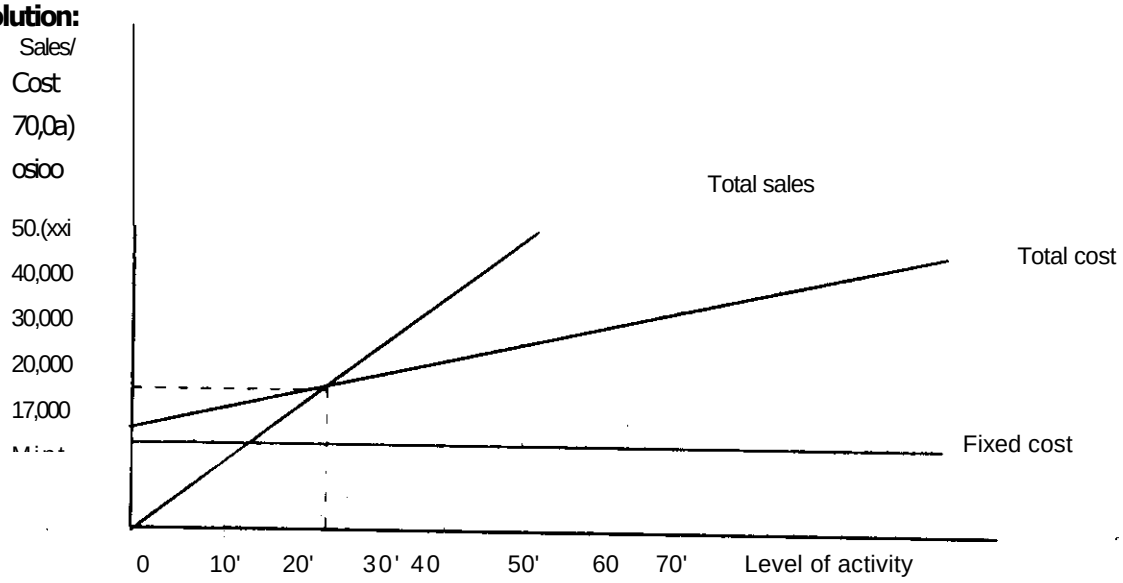
This is' the angle at which the sales line cuts the total cost line on the break—even chart A large angle of incidence indicates high profit rate while a low angle indicates a low profit rate. A firm would be in an extremely favorable position if both the angle of incidence and the margin of safety are large.

Students Assessment Exercise

- From the following data, you are required to construct a break—even chart to ascertain the break—even point and ascertain the break—even units and value:

Sales	N 50,000
Variable cost	N 20,000
Units sold	50 Units
Fixed cost per period	N 10.000

Solution:



From the graph:

BEP (unit) = 175 units

REP Nvalue N 17,000

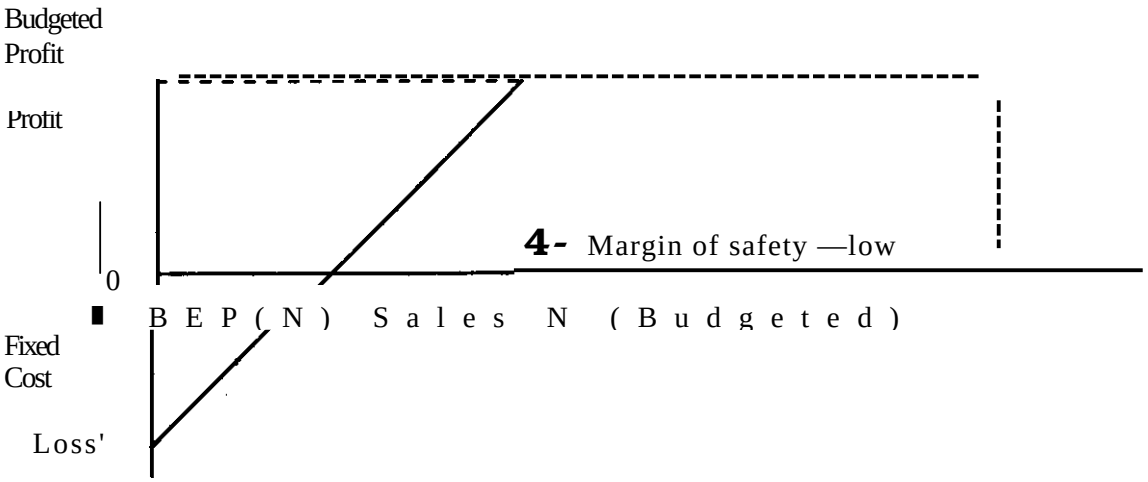
3.3. The Profit Volume Graph:

The profit volume graph is similar to the break—even chart in that it also records the profit or loss **at each level of sales at a** given sales price. It is a straight-line graph, drawn most simply by recording:

- The loss at zero sales, which is the full amount of fiXed cost; and
- I'he profit (or loss) at the budgeted level of sales
- Joining the two points by a straight line

Note: Where this straight line touches the x — axis will indicate the sales value required to break even.

Profit Volume chart



Students Assessment Exercise:

ANYANWU Nigeria Ltd; makes and sells a single product. The variable cost of production is N4 per unit. Fixed costs total N6,000 per period and selling price is N6 per unit. The company budgets to make and sell 3,600 units per annum.

You are required to draw a profit volume graph to show:

(a) Expected amount of sales N
(b) Sales (N) required to break even, and
(c) The margin of safety.

3.4 Limitations of the break—even analysis:

Limitations underlying the application of the break—even analysis depend largely on the restrictions imposed by the assumptions. They include:

- Total costs cannot always be separated into fixed and variable cost components. There are other types of costs, which are possible to be incurred. E.g. semi — variable cost, stepped costs e.t.c.
- Because of quantity discount, selling price per unit cannot remain constant.
- Total fixed costs cannot always remain constant throughout the production period. Outside a relevant range, fixed cost would become stepped cost.
- Most firms are poly — product companies.
- The prices of factors of production would not remain constant
- Productivity per worker would not remain constant because of learning curve factor
- Volume of output is not the only factor that influences costs or sales. Weather, religion, habit, taste, sex are other factors affecting costs or sales.
- We do not operate in a perfect world therefore production units cannot always equal sales units.

Students Assessment Exercise

With the way you are receiving your lectures via satellite and distance communication, do you think it would be reasonable to assume that technological development will remain constant?

4,0 Conclusion

Break—even analysis has been demonstrated to be a useful tool for management in budget planning, for determining product pricing, for determining optimum production and sales mix and for determining the effect of capacity utilization on cost.

5.0 Summary

In this unit, attempts have been made to describe the equation approach to break — even analysis, to describe the graphical approach to break—even analysis and to state the limitations of the break—even analysis.

60 References and other further readings

- Asaolu, T.O.B Nassar, M.L (1997) Essentials of Management Accounting Cedar Publishers, Nigeria
- Drury, C (2000) Management and Cost Accounting Thomson Learning Berkshire House, London.
- Oduro, E (2000) Principles of costing Ter-ror Series, Ghana.

7.0 lbaor-Marked assessment

Bukola manufacturing Mg. Ltd tentative budget for product "BKL" for year 2002 is as follows:

Sales (2,500 unit at N40 per unit)		
1,00,000		
Manufacturing cost ofgoods sold:		
Direct labour	15,000	
Direct materials	14,000	
Variable factory overhead	10,000	
Fixed factoty overhead	5,000	44,000
Gross prat		56,000
Selling expenses:		
Variable	6,000	
Fixed	10,000	31.000
Operating income		25,000

You are required to:

(a) Determine the number of products `BICL' to be sold to break—even.
(b) What would the operating income be, if projected sales, is increased by 30%.

UNIT 9: MARGINAL COSTING TECHNIQUE

Table of Content

1.0 Introduction

This is unit 9 ofthis course Management Accounting and it will cover a period of one **hour. We shall be having a look at marginal costing technique.**

2.0 Objectives:

At the end ofthis unit you should be able to:

- **Define marginal costing**
- **Describe the areas ofapplication ofmarginal costing technique**
- **List the advantages of inarginal costing tedmique**
- **List the disadvantages ofmarginal costing technique**

3.1 Definition of marginal costing:

Marginal costing may be defined as a cost accounting system in which variable costs are charged to cost units (product costs) and the fixed costs of the period are written off in hill against the contribution for the period. It is a suitable technique for decision-making.

3.2 Areas of application of marginal costing techniques

- **It** forms a **basis for providing information to management for planning and decision-making. It is particularly appropriate for short nun decisions like:**

- **Make or buy decision**
- **Optimal products mix in a situation of resource constraints**
- **Acceptance or rejection of special contracts that utilize excess capacity.**
- **Closure ofa department.**
- **It can also be used in the routine cost accounting system for the calculation**
- **of stocks. It is an alternative to absorption costing.**

3.3 Advantages of marginal costing:

– The following are the advantages ofmarginal costing.

- It is simple to operate

- Under or over absorption of overhead is avoided

It is possible to fix selling prices knowing the true cost ofproduction

It provides information that shows goods that should be manufactured and those that should be purchased from outside sources.

Fixed costs are related to time. Examples include salaries, rent and rates etc., and do not relate to productivity. Hence it is logical to write them off in the period in which they are incurred and this is done using marginal costing.

Students Assessment Exercise

List two areas of application of marginal costing technique and describe it's advantages

3.4 Disadvantages of marginal costing

The following are the demerits ofmarginal costing technique:

- It is difficult to understand why selling prices of products should be fixed at a price less than its total cost of production.
- The period costs are ignored and hence two jobs may have the same marginal cost but one may last twice as long as the other. The actual cost of the job that has taken a longer time is therefore higher than that of the other one. This is not disclosed by marginal costing.
- In some industries, the cost per unit of direct labour increases as production level increases.
- As production becomes more intensified on more expensive high — capacity automatic machinery, the weight offixed cost increases and this should be allowed for in price fixing.

Students Assessment Exercise

(a) What is marginal costing?

(b) What benefits would accrue to companies that apply marginal costing to profit planning?

(c) State four ways costing can help in profit planning and decision-making.

Students Assessment Exercise with solution.

Calculate the net profit of Joy Limited from the data given below:

Sales	2,000 units ® N100
Production	3,000 units
Fixed factory overheads	NJ 5,000
Direct materials per unit	N15
Direct Labour per unit	N30
Variable factory overhead per unit	N20
Fixed selling expenses	N20,000
Fixed administrative overhead	N15,000

Solution:

Joy Limited

	N	
Sales (2000 @ N100)		200,000
Less: Marginal cost of sales		
Direct notaial (3000 x N15)	45,000	
. Direct labour (3000 x N15)	45,000	
Variable overheads (3000 x N30)	90,000	
Variable overloads (3000 x N20)	60,000	
	195,000	
Less Closing stocks 1000 x 195,000		
3,00(i		
	65,000	139030
Contribution		70,000
Less: Fixed costs:		
Fixed factory overhead....	15,000	
Fixed selling overhead	20,000	
Fixed Administrative cost	15,000	50,000
Net Profit		20,000

4.0 Conclusion

Marginal costing technique has been demonstrated to be a useful tool to management for planning and decision-making and for calculation of cost and valuation of stock.

5.0 Summary

In this unit, attempts have been made to define marginal costing, to describe the areas of application of marginal costing technique and to discuss costing technique and disadvantages ofmarginal costing technique.

6.0 References and other further readings

* Asaolu T.O. & Nassar, M.L. (1997) Essentials of Management Accounting, Cedar Publisher, Nigeria. Publishers, Nigeria.

Drury, C (2000) Management and Cost Accounting, Thomsen Learning Berkshire House, London.

- Oduro, E (2000) Principles of Costing, Terror series, Ghana.

7.0 Tutor marked assessment and marking scheme:

The data given below relates to Olabisi Nigeria Ltd. for the year ended 31*December 2001.

Fixed factory overhead cost....	N160,000
Production units	1,000 units
Sales: 800 unit at 14500	
Administration cost	1440, 000
Variable selling per unit	MO
Direct labour per unit	N70
Direct material per unit	N50

You are required to determine the net profit using the marginal costing technique

UNIT 10: MARGINAL COSTING TECHNIQUE AND MANAGEMENT DECISION MAKING

Table of content

1.0 ' Introduction

This is unit 10 of this course Management Accounting, and it will cover **a period of one hour. We shall** be discussing marginal costing technique and its application to management decision making under which we shall be looking at the concept of management decision making, stages in decision making, basic assumptions of the marginal costing technique, qualitative and quantitative factors in decision making, relevant cost and historical cost, avoidable cost and opportunity cost..

2.0 Objectives:

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

- Describe the concept of management decision
- Define decision making
- List the stages in decision making
- Describe the basic assumptions of marginal costing technique
- Distinguish between qualitative and quantitative factors in decision making
- Distinguish between relevant cost and historical cost
- Describe avoidable cost
- Describe opportunity cost.

3.1 Concept of management decision

One ofthe basic functions of management is decision making, and decision-making often involves the selection of a course of action from among a set of alternatives. For each problem, there are always at least two alternatives available, of which one of such alternatives is to continue as before or to do nothing. For example, alternatives may be to:

- Continue to perform an operation by hand
- Buy new machines
- Improve the present method of working
- Eliminate the manufacturing operation altogether and get the operation performed from another manufacturer

The most useful contribution of marginal costing is the assistance that it renders to the management in vital decision-making. This is to say that marginal costing is an invaluable aid to management decision making.

3.2 Decision making:

Decision-making is futuristic and involves a choice between alternatives. Many factors both qualitative and quantitative would provide information for many decisions.

Student Assessment Exercise

Think of an activity that would lead to your making a decision and the alternative options available to you.

3.3 Stages in decision making

- Defining the problem
- Identifying various alternatives
- Determining relevant cost and revenue data
- Evaluating the data
- Consider non — cost factors like quality of product, employee morale, etc
- Making a decision

Student Assessment Exercise

Did you follow the stages mentioned in paragraph 3.3 in taking a decision under paragraph 3.2?

3.4 Basic assumption of marginal costing techniques:

Marginal costing is based on the assumptions of cost behaviour:

- P eriod fixed costs which are constant amounts, and no matter what the volume of sales and production is (provided that operation is within a relevant range). It follows that by making and selling one extra unit of a product, total cost will rise only by the variable cost i.e the marginal cost of production for that unit.
- Similarly, total cost will fall by the variable cost per unit for each reduction by one unit in the level of activity.
- The additional profit earned by making and selling one extra unit of output is the extra revenue from sales minus the variable cost ofthe unit.
- As the volume of activity increases, there will be an increase in total profit, which is equal to the total extra revenue minus total extra variable cost. This is the additional total contribution from the extra output and sales.
- Contribution is described as "contribution towards the recovery of fixed period costs and making profit". The total profit in a period is the total revenue minus the total variable costs of goods sold minus the total fixed cost of the period.

Students Assessment Exercise
Define the following:

(a) Marginal cost.
(b) Contribution
(c) Profit

3.5 Qualitative and quantitative factors in decision making:

3.5.1 Qualitative factors: These are those whose measurement in naira value is difficult and in — precise, yet a qualitative factor may easily be given more weight than the cost — savings analysis. For example, a decision to manufacture some products components at a cost below supplier quotation may be rejected because ofthe following:

- A long term dependence on the supplier for other important sub — assemblies
- The quality of the component produced by the supplier vis — a— vis internal production
- Reliability ofthe supplier
- Possibility ofalternative wa)is to which internal facilities could be utilized, ifpurchase is made from outside.
- The dangers associated with the release of the company's trade secrets
- The volume that is required both in the short run and long run may not justify inveitment in internal production.

3.5.2 Quantitative factors: These are those that may easily be reduced to terms of naira and kobo such as projected alternative cost ofmaterials, direct labour and overhead. The accountants, statisticians and mathematicians increasingly try to express as many decision factors as possible in quantitative terms. This approach tends to reduce the number of quantitative factors to be judged.

Student Assessment Exercise:
What arethe qualitative factors to the decision you made in paragraph 3.2

3.6 Relevant cost and historical cost

3.6.1 Relevant costs —these are expected future costs that will differ under different alternatives. The function of decision-making is to select courses of action for the future. So, **a** key question in determining relevant cost is "what difference will be made".

3.6.2 Historical costs — these are past costs i.e. already incurred, and are also referred to as sunk costs and are therefore irrelevant in decision-making.

Students Assessment Exercise:
It has been said, that" marginal costs are used primarily in guiding decisions yet to be made". Explthn the foregoing statement

3.7 Avoidable costs

All costSffiat would be avoided and all revenues, which would be forgone ifthat particular alternative were not adopted, are relevant costs and revenues. It follows teerefore that avoidable costs are "incremental costs" or "additional costs". Any cost which will remain constant in amount whichever alternative is adopted is not relevant and should not be considered at all, and therefore ignored.

Students Assessment Exercise

A machine has a book value ofN50,000 and a scrap value of N5,000.

(a) How much is sunk cost?

(b) How much is relevant cost?

Solution

(a) N50,000

(b) N5,000

38 Opportunity costs

Opportunity cost is always a relevant cost when the problem facing the firm is a problem of choice. Opportunity cost is defined as the "best alternative foregone". This is because the best alternative could have been the next choice if the first choice was not made. The following list would . enable you to identify the opportunity cost in any circumstance:

- It does not involve future cash flows
- It is not in any way based on historical or acquisition cost of the resource
- There is no opportunity cost for something not possessed
- The resource should be limited in supply before it can have an opportunity cost.
- It is the net realizable value of the asset if the asset could be sold.
- It is the rental value of the asset, if the asset could be hired out.
- It is the transfer value of the asset, ifthe asset could be put into alternative use within
- the company.
- Ifthe asset or resource can be sold, rented or put into alternative use, the opportunity cost is the best foregone alternative
- Opportunity costs are imputed cost.

Student Assessment Exercise

The revenue and cost data for two products are given as follows:

		A		B
	N	N	N	N
Sales costs:		40		90
Materials	30		20	
Labour	25		18	
Overhead	17	72	10	48
		68		42.

The company can only choose only one product. If i chooses product A, the relevant cost statement evaluating product/ A should be presented as follows:

Sales		140
Less: relevant costs		
Material	30	
Labour	25	
Overhead	17	
Opportunity cost ofB	42	141
		26

4.0. Conclusion: Marginal costing techniques and how they can be applied to management decision were discussed extensively in this unit.

5.0 Summary

In this unit, attempts have been made to describe the concept of management decision, define decision making to list the stages in decision making, to describe the basic assuniption of marginal costing technique, to distinguish between qualitative and quantitative factors in decision making, to distinguish between relevant cost and historical cost and to describe avoidable cost and opportunity cost.

6.0 **References and other further readings:**

Asaolu,T.O. & Nassar, M.L. (1997) Essentials of Management Accounting Cedar Publishers Nigeria.

* **Duly C. (2000) Management and** Cost Accounting, Thomson Learning Berkshire House, London
- ICAN Distance Learning Pack Management Accounting ed I.E. Johnson (2001)

7.0 Tutor marked assignments

In the application of marginal costing techniques, the following concepts are commonly applied:

(a) Opportunity cost
(b) Sunk cost.

You are required to.

(i) Define these terms precisely
(ii) Suggest for each of them, situations in which the concept might be applied
(iii) Assess briefly the significance of each of the concepts.

	Marks
(i) Definition	6
(ii) Uses	6
(iii) Significance	8

UNIT 11: APPLICATION OF MARGINAL COSTING TECHNIQUE TO MAKE OR BUY DECISIONS.

Table Of Content

1.0 Introduction:

This is unit 11 of this course Management Accounting, and it will cover a period of one hour. We shall be having a look at the application of marginal costing technique to management decision-making.

2.0 Objectives:

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

Apply marginal costing techniques to make or buy decision

3.0 Make or buy decisions:

This type of decision problem occurs when management is contemplating on whether a component part used in the production of a main product should be manufactured internally or purchased from outside suppliers.

The following format should be applied for optimal decision:

		N	
Supplier quotation		xxx	
Less: Incremental outlay:			
Incremental cost....	?WC		
Opportunity cost...	XXX	)cxx	...(b)

Decision criteria:

If (a) is greater than (b), produce the product internally.

If (b) is greater than (a), then buy the product from the outside supplier.

Illustration: 1

A firm is considering whether to manufacture or purchase a particular component k543. This would be in batches of 10,000 units and the buying-in price will be N 6.50 per unit. The marginal cost of manufacturing component k543 is N 4.75 per unit and the component would have to be made on a machine, which is currently working at full capacity. Ifthe component was manufactured, it is estimated that the sales of the finished product "F P97" will be reduced by 1,000 units. Product "F P97" has a marginal cost ofN 60.00 per unit and sells for N 80.00 per unit.

You are required to determine whether or not the firm should manufacture or purchase component "k543".

Solution to illustration 1

Relevant cost of production:	
Marginal cost (10,000 x N 4.75)	47.500
Add. Opportunity cost (1,000 x N 20.00)	20.000
Total relevant cost production	67.000

Supplier quotation (10,000 x N 6.50)... 65,600

Decision: The Company is advised to buythe component from the external supplier and save N 2,500 per batch of 10,000 units.

illustration 2

The Management of Jogs Mg. Ltd., is considering next year's production and purchase budget. One of the components produced by the company which is incorporated into another before been sold has a budgeted manufacturing cost as follows:

Direct material	14.00
Direct labour (4hours @ N3)	12.00
Variable overload (4hours @ N2)	8.00
Fixed overhead (4hours @ N5)	20.00
	54.00

Banlcy Nig. Ltd. *has* offered to supply the above component at a guaranteed price of N50 per unit.

Requirement:

(a). Considering cost criterion only, advise the management of Jogs Mg. Ltd whether the above component should be purchased from Banky Nig. Ltd or not

(b). Explain how your advice will be affected by the situation below:

"As a result of government legislation, ifJogs Nig. Ltd continues to manufacture this component the company will incur additional inspection and testing expenses of1V56,000 per annum which are not included in the above budgeted manufacturing cost"

(c) The Production Director ofJogs Wig. Ltd; recently said "we must continue to manufacture the component as only one year ago, we purchased some special grinding equipment to be used exclusively by this component. The equipment cost N100,000, it cannot be resold, or used elsewhere and if we cease production of this component, we will have to write off the book.value ofN80,000".

You are required to draft a reply to the Production Director position commenting on his assertions.

Make an attempt at this problem before visiting the proffered solution.

Solution Illustration 2

Jogs Nigeria Limited

(a) Marginal cost of production:

Direct materials	14.00
Direct labour	12.00
Variable overhead	8.00
	34.00

Supplier's quoted price N50.00 per unit

Savings from internal production N16.00 per unit
i.e (N54.00 - N34.00)

Decision: Make the component from internal facilities.

(b) 35,000 units should be produced to offset the N56, 000 expense since N16 00 is the saving made on each unit produced i.e. N56000 N 16

(c) RESPONSE TO THE PRODUCTION DIRECTOR'S COMMENT ON SUNK COSTS

(i) Neither the book value nor the cost of the machine is relevant for the purpose of decision-making. As a matter of fact, they are sunk costs.

When making decisions, only the variable costs that make a difference between the alternative courses of action should be recognized.

(iii). All past costs should be completely ignored or else, solutions arrived at will be sub-optimal.

Students Assessment Exercise

Chijuka Nigeria Ltd; makes four components A, B, C, and D for which costs in the forthcoming year are expected to:

	A	B	C	D
Production (units)	2000	4000	8000	6000
Unit marginal cost	N	N	N	N
Dinect materials	8	10	4	8
Direct labour	16	18	8	12
Variable production overhead	4	6	2	4
	28	34	14	24

Total fixed costs per annum, which are incurred as a direct consequence of making:

A	2,000
	10,000
	12,000
	16,000
Other fixed costs	60.000
	100.000

A sub-contractor has offered to supply units of A, B, C, and D for N24, N42, N20, and N28 respectively.
Should Chijuka Nigeria Ltd; make or buy the component?

4.0 Conclusion

Marginal costing technique has been demonstrated as a good tool for management to make a decision on whether to produce a product using internal facilities or buying from an external source.

5.0 Summary

In this unit, attempts have been made to describe how marginal costing technique can be applied to the management decision of making or buying a product.

6.0 References and other further readings.

- Asaolu, T. O. & Nassar, M. L. (1997) Essentials °Management Accounting, Cedar Publishers, Nigeria.
- Drury, C (2000) Management and Cost Accounting Thomsen Learning Berkshire House, London.

7.0 Tutor marked assignment

Meg Nig. Ltd. manufacturers part M-6 for use. Meg's production cycle has the following unit for the production of 27,500 units:

Direct Materials	
	7.50
Direct labour	22.50
Manufacturing Overheads	24.00
	54.00

It has been established that 66 2/3% of the manufacturing overhead costs is fixed.

Diya Nig Ltd. has offered to sell 27,500 units of the part M-6 to Meg Nig Ltd. for N47.50 per unit. If Meg Nig. Ltd. accepts Diya's offer, some of the facilities presently used to manufacture part M-6 could be rented to a third party at an annual rent ofN65, 000. Additionally, N6 per unit of the fixed overhead cost, which applies to part M-6, will be totally eliminated.

(a). The Managing Director has called on you to advise on whether or not they should accept Diya Nig. Ltd's offer.

(b) Mention factors other than relevant costs above, which will influence your decision to *accept* or reject Diya Nig. Ltd's offer.

UNIT 12: APPLICATION OF MARGINALCOSTING TECHNIQUE TO PRODUCT PROFITABILITY DECISIONS.

Table of Contents

1.0 Introduction

This is unit 12 of this course Management Accounting, and it will cover a period ofone hour. We shall continue our discussion on the application of marginal costing technique to management decision-making.

20 Objectives:

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

- Apply marginal costing techniques to product profitability decision

3.0 Product profitability decision

This type of problem arises when management is in a dilemma as to whether a product or a department that is presently making a loss should be discontinued or not. An optimal decision cannot be made on the basis of financial report prepared by the financial report prepared by the financial accountant due to the reason of arbitrariness involved in the allocation apportionment and absorption of fixed overheads.

A marginal costing report has to be prepared to highlight the contribution emanating from the product line or department before an optimal decision can be made.

Decision Rule: ,

- If the product shows a positive contribution towards the recovery of general
  - fixed costs, do not discontinue.
- If the product shows a negative contribution towards the recovery of general
  - fixed costs, drop the product line.
- Consideration must be given to qualitative factors before the final decision can be talcen.

Format:

	N
Total sales	***
Less: variable cost	***
Variable contribution	***
Less: Attributable fixed cost	***
Total contribution	****

Illustration 1:

A company produces three products for which the following statemen has been produced:

	X	Y	Z	Total
	N	N	N	N
Sales	32,000	50,000	45,000	127,000
Less: total cost	36,000	38,000	34,000	108,000
	(4000)	12,000	11,000	19,000

The total costs comprise (2/3) variable cost elements and (1/3) fixed cost elements. The directors considered that as product "X" is showing a loss in its operating result, it should be discontinued.

Requirement

(a) Based on the above data, should product "x" be dropped?

(b) What are the other factors that should be considered?

Solution to illustration 1:

	Total cost N	Variable cost N	Fixed cost N
X	36,000	24,000	12,000
Y	38,0W	25,333	12,667
Z	34,0W	22,667	11333
	108,000	72,003	36,000

	X	Y	Z	Total
	N	N	N	N
Sales	32,000	50,0W	45,000	127,C00
Less: Variable cost	24,000	25,333	23,667	72,0W
	8,0W -	24,667 '	22,333	55,000
Less: fixed cost				36,000
Profit				19,000

Decision: Product 'X' should not be discontinued as it makes a contribution of N 8,000 to the total profit. If product 'X' should be discontinued, the profit level would reduce by the N8,000 which is the contribution made by product 'X'

From the above analysis, it can be seen that product 'X' makes a contribution of N 8,000 to the recovery of fixed costs. If product 'X' is dropped, the position will be like:

Contribution from product 'Y'	24,667
Contribution from product 'Z'	22,333
Total contribution from products "V" and "Z"	47,000
Less: fixed costs	36,000
Profit	11.000

Product 'X' should not be dropped, otherwise, net profit will reduce by N8, 000.

(3) Qualitative factors:

- Possible loss of goodwill if product 'X' is discontinued as a result of the inability to satisfy the contpany's customers.
- Low morale aztiong other workers. The retrenchment to be suffered in the affected departntent will have a negative impact on the other workers in other departments and this may affect their productivity with other product lines.

Illustration 2:

Georgina Company Nigeria Limited is considering the option of discontinuing with Department **'El',** one of the three departments, which it currently maintains. The following information has been gathered for the three departments.

	Department A N	Department B N	Department C N
Sales	MOW	50.003	80.000
Cost of goods sold	(40,000)	(42,000)	(60,000)
Salaries	(8,0(X))	(4400)	(12,00))
Rent	(2.000)	(2.000)	(3.000)
Utilities	(1,000)	(2,700)	(2 000)
	(51,0k)	(53,00))	(77,0(k)
Net income or (loss)	9,0W	(3,100)	3,000

Because department **'13'** is making a loss, management is contemplating scrapping it If department 'B' is eliminated, the space it occupies will be divided equally among Departments A and C. Utilities are allocated on the basis offloor space occupied. 70% ofthe salaries in department 'B' will be eliminated while the other 30% will be split equally between Departments A and C.

You are required to:

(a) Determine whether or not Department 'B' should be eliminated.

(b) State other factors which the management of Georgina Nig Ltd should take into consideration in making the decision as to whether or not Department 'B' should be discontinued.

Solution to illustration 2

Georgina Nig. Ltd.

Operating statement ofDepartment — B

		N
Sales		50,000
Less: Variable cost	42,000	
Salaries (70% X N6,400)	4,480	46,480
Contribution		3,520

Decision: Department `B' should not be dropped because it is sharing a positive contribution of N3,520 towards the recovery of the general fixed overhead costs and profit otherwise, the overall not profit will ball by N3,520.

(b) Qualitative Factors:

- Possible loss of goodwill
- Negative impact on the morale of other workers.

Student Assessment Exercise:

The Management ofAlcwu Electrical Nig. Ltd is reviewing the profitability of the company's **three products and the potential effects of several proposals for varying the product mix. An excerpt from the detailed Profit and Loss Account and other data are as follows:**

	TOTAL N	A N	B	C N
Sales	**817** OM	200 000	360 000	252 000
Cost of good sold	515,480	95,003	141,120	279,360
Gross profit	296,520	105,000	218,880	(27,360)
Operating expenses	155,840	39,800	59,520	56,520
Profit before tax	140,680	65,200	159,360	(83,880)

Units sold	10,000	12,000	18,000
Variable cost per unit of goods sold	N5.00	N6.00	NI3.00
Variable operating expenses per wiit	N2.34	N2.50	N2.00

The following three proposals are being conidered independently:

(a) Discontinuance of product C, this will lead to loss of customers causing a decrease in sales of product B by 500 units

(b) Increasing the sales price of product. An increase of the sales price to N16 will decrease the number of units sold to 15,000

(c) Using the plant in which product C is produced, to produce a new product D. Total variable cost and expenses per unit of product D will be N16.10 and 16,000 units can be sold at N19.00 each. If product D is introduced, product C will be discontinued.

You are required to give your advice on which of the three proposals should be adopted using computation to support your position and assume that the activity of other products remain stable. Make an independent attempt at this question before looking at the proffered solution.

Solution to **the student Assessment Exercise:**
Alcwu Electrical Nigeria Ltd.

	A hi	B NI	C N
Marginal cost per unit.	7.34	8.50	15.03
Selling price per unit	20.00	30.00	14.00
Contribution per unit	12.66	21.50	1.00

ProposalA:	18,000
Savings from the discontinuance of product C (N 1 X 1800)	10.750
Less: Loss of goodwill from product B (N21.50 X 500)	7.250

Proposal B:	18,000
Savings from increasing the old price of product C	15.000
Contribution from new selling price (NI x15,000)	13,000
	•

	N
Proposal C:	
Saving ofN 1. x 18000 from discontinuation	18,000
Contributionfrom product D (N 2190 x 16000)	46.400
	64.400

Decision: Proposal C is recommended because it gives the highest savings and contribution.

4.0 Conclusion

Marginal costing technique has been demonstrated to be a good tool for management to make a decision on whether to drop a product line or a department that is presently making a net loss but generating enough positive contribution towards the recovery of general fixed cost and making profit.

5.0 Stintmasy

In this unit, attempts have been made to describe how marginal costing technique can be

- applied to the management decision making of evaluating product profitability

6.0 References and other further readings:

- Asaolu, T.O. & Nassar, M.L (1997) Essentials of Management Accounting Cedar Publishers.

Drury; C (2000) Management and Cost Accounting, Thomson Learning Berkshire House, London.

7.0 Tutor marked assignment

Moshood Nig. Ltd. manufactures custom—made plastic bowls of three types. It is considering possible amendment to its pricing and production policies. Moshood prepares profit and loss statement by product line. Costs are separated into their fixed and variable elements and a full cost absorption system is used to allocate overheads and indirect cost to product line. The allocations are made consistently from period to period on a variety abases, according to what has been accepted asequitable in the past.

For the quarter to 31g March, 1996, the budgeted figures are as follows (in)·

Total Basis	FRE NN	BRIT N	TURK N
Sales	50,400	88,000	72000
Cost of Sales	(56, 000)	74,000	28.200
Gross profit (Loss)	5,600	14,000	43,800
Operating and distribution costs	11 000	16,880	11900
Net profit/ (Loss)	(16,300)	(2,880)	319C
Unit Basis			
Sellingprirr	14 00	2700	10 00
Dirretive- variable nnstc.			
rag of Sales	11 00	12.00	6.00
Operating and Distribution	2.00	2.4()	2.50
Allocated costs:			
Cost of sales	2.56	6.50	5.75
Operating and Distribution	1.06	1.82	2.46

***Little* variation is expected in the stock of raw materials,** work—in—progress, or finished **good during the quarter.**

You are required to determine the effect on Moshood's financial performance of each in turn of the following five department proposals (i.e. assuming that anything not specified in the particular proposal remains the same):

(i) The product line Fren is discontinued:

The product line Fren is discontinued with a consequential decrease of 400 units in the sales ofproduct line Turk;

(ia The selling price of product line Fren is increased to N16.00 per unit with a consequential decrease of one — sixth in the number of Fren sold.

(iv) **The product line Fren is discontinued and the plant used to make a replacement new product line, Taiw. Expected sales otTaiw would be 3,200 units at a price ofN19.00 per unit. The variable cost of sales would be N12.00 per unit, and the variable operating and distribution cost would be N4.10 per unit. The total overhead and indirect costs previously allocated to product Fren is now allocated to product line Taiw;**

(v) Part of the plant in which the product line Fren is made is adapted to make product line Brit. The output and sales of Brit would be increased to 5,000 units (each sold at a unit price ofN21.00) and the output and sales of Fren reduced to 2,400 units (each sold at a unit price 09417.00)

UNIT 13: BUDGETS AND BUDGETARY CONTROL

Table of content

1.0 Introduction.

This is unit 13 of this course Management Accounting, and it covers a period of one **hour. We shall be taking a look at budgetary control.**

2.0 Objectives

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

- **Describe a budget**
- **Describe budgetary control**
- **State the objectives ofbudgetary control**
- **List the advantages and disadvantages ofbudgetary control system**

3.1 Concept of budget:

You should be familiar with the idea of a plan. Not only in business, but also in private life, people make plans, though there are considerable differences in the way which different people make their plans. Some people do their plans in their heads, others do it on rough papers and yet others formally express their plans in quantitative terms. The process of expressing plans in quantitative terms is referred to as budgeting.

A budget therefore is a plan relating to a period of time, expressed in quantitative terms. It has been defined by CIMA terminologies as "a financial and/or quantitative statement, prepared prior to a defined period of time, ofthe policy to be pursued during that period, for the purpose of attaining a given objective". This budget reveals the following characteristics of a budget:

- **A budget may be expressed in monetary terms and or non — monetary terms like units of products, units oftime, number of employees e.t.c.**
- **A budget is concerned with a definite future period, and is therefore, prepared in advance of the period during which it is to operate.**
- **The purpose ofa budget is to implement the policies formulated by the management for attaining the given objectives.**

Students Assessment Exercise

Assume that your objective is to earn a B. Sc degree in five years time by open and distance learning, develop a plan and a budget of doing this.

3.2 Concept of budgetary control:

Budgetary control is a system of controlling costs, which includei the preparation of budgets. Budgeting is thus only a part of the budgetary control According to CIMA terminologies, budgetary control is "the establishment of budgets relating to the responsibilities of executives of a policy and the continuous comparison of the actual with the budgeted results either to secure by individual action the objective of the policy or to provide a basis for its revision" The following characteristics of budgetary control can be noted

- Establish a budget or target of performance
- Record the actual performance
- Compare the actual performance with that budgeted
- Establish the differences and analyze the reasons for them
- Act immediately, if necessary, for corrective actions to be taken.

The principles involved in budgeting can be likened to those followed by the captain of a ship. Before his voyage, he would have planned his route by taking into consideration such factors as shipping hazards, tides and possible adverse weather forecast During the journey, he will record details of progress and frequently checks actual progress with that planned. Though trying to keep to the plan, he may have to deviate froth the plan if prevailing circumstances require it. **On** the completion ofthe journey, he will compare the conditions he encountered with those he expected. The experience so gained will be used by him to plan similar voyages in the future.

Students Assessment Exercise

Subject your plan in paragraph 3.1 to budgetary control. Are you still convinced that you should go ahead with your desire to earn a B.Sc. degree by open and distance learning or do you feel equipped to face the challenges ahead?

33 Objectives of budgetary control:

The objectives ofbudgetary control are:

- **To plan** - A budget provides a detailed plan of action for a business over a definite period of time. Detailed plan relating to production, sales, raw material requirements, labour needs, advertising and sales promotion performances, research and development activities, capital and additions e.t.c. are drawn up. By planning, many problems are anticipated long before they arrive and solutions can be sought through carefiil study.
- **To coordinate** - Budgeting aids mangers in coordinating their efforts so that objectives of the organization as a whole are hannonized with the objectives of its constituent parts. Effective planning and organization contribute a lot in achieving coordination. For example, coordination requires that purchase managers integrate their plan with production requirements and the production managers use the sales budget to help them anticipate and plan for the manpower and plant facilities required.
- **To communicate** - Abudget is a communication device. The approved budget, showing in detail the plans of the management, will not be carried out unless the

organization understands what the plans are. Copies of the budgets may be distributed to all management staff which will serve to provide not only adequate understanding and knowledge of the programmes and policies but also to give a knowledge about the restrictions to which the organization is expected to adhere. For example, the maximum amounts that can be spent on advertisements, maintenance etc., will be brought to the attention of the executives concerned.

- **To control —** control is the action necessary to ensure that plans and objectives are being achieved Control as applied to budgeting, may be thought of as a systematized effort aimed at keeping management informed of whether predetermined plans are being achieved or not. Control comes through variance analysis and reporting.
- **To motivate —** Individuals in the organization are motivated by careful setting and communication oftargets.

Students Assessment Exercise

A production manager planned to produce 10,000 units of a particular product while the sales manager has capacity to sell just 5,000 units of the same production. What do you think is the missing link here?

3.4 Advantages of budgetary control:

The following are the advantages derived from budgetary control:

- **Planning —** It provides a well-organized plan based on facts. It provides definite objectives with regard to figure operations. At the same time, executive policies for the future are formulated.

- **Control** Tit enables management to control each faction or department in order to attain the best possible result by each department. This is done by continuous comparison of actual against plan indicating where control is needed.

- **Coordination —** It promotes and encourages coordination between departments of a business, for the attainment of the overall good ofthe organization.

- **Cost consciousness —** The existence of budgetary control makes management to become more cost conscious and this can help to eliminate waste **and** inefficiency.

Management by Exception — Management precious time can be saved and attention directed to areas of more pressing and difficult — areas by the exception principle which is the essential feature ofbudgetary control.

- **Responsibility of management**—It enables responsibility of each manager to be clearly established.

- **Measurement of performance —** It provides a means of measuring the performance of individual managers and the various cost centers or departments by comparing targets (budget) against which the performance of managers can be assessed.

- **Communication and motivation —** Preparation of budgets involves communication between top management and lower levels on how to attain the objectives. Reasonable agreement motivates managers to achieve the target set.

- **Prevention of waste-** budgetary control prevents waste of physical resources such as labour, equipment, machinery etc. Duplication of efforts is avoided since the most efficient and effective use of these resources is specified in the budget.

- **Authorization and Delegation -** Approval ofthe master budget explicitly and expressly authorizes the policy represented by the budget, and by accepting their budgets, the responsibility for carrying out the policy can be delegated to individual managers.

Students Assessment Exercise

Discuss the advantages derivable from a budgetary control system.

3.5 Limitations of budgetary control:

Budget is not a cure —all for organization ills. Budgetary control system suffers from certain limitations, and those using the system should be fully aware ofthem. The main limitations are:

- **The budget plan is based on estimates:** Budgets are based on forecasts and forecast estimates cannot be an exact science. Absolute accuracy, therefore, is not possible in forecasting and budgeting. The strength or weakness of the budgetary control system depends to a large extent, on the accuracy with which estimates are made. Thus while, using the system, the fact that budgets are based on estimates must be kept in view.

- **Danger of rigidity:** Abudget programme must be dynamic and continuously deal with the changing business conditions. Budgets will lose much of their usefulness ifthey are not flexible and revised with the changing circumstances.

- **Budgeting is only a tool of management —Budgeting** cannot take the place of management. The budget is a means to an end and not an end in itself Sometimes, it is believed that the introduction of a budget programme is alone sufficient to ensure its success. The execution of a budget will not occur automatically. It is necessary that the entire organization must participate enthusiastically in the programme for the realization ofthe budgetary goals.

- **Expensive technique —** The installation and operation of a budgetary control system is a costly affair as it requires the employment of specialized staff and involves other expenditures so much that small business concerns may find it difficult to adopt it . However, it is essential that the cost of introducing and operating a budgetary control system should not exceed the benefits to be derived from it.

- Budgets are developed round existing organizational structures, which may be inappropriate for current conditions.

- Budgetary control lowers morale and productivity since clear and realistic objectives of desired performance may be difficulty to establish.

Students Assessment Exercise

Discuss the limitations inherent in the installation of a budgetary control system.

4.0 Conclusion

Budgetary control system has been demonstrated as a technique that atsints management to achieve its planning, controlling, coordinating, cotnmunicating and motivating unctions.

5.0 Summary

In this twit, attempts have been made at describing a budget, budgetary control, stating the objectives ofbudgetary control and to list the advantages and disadvantages of a budgetary control system.

6.0 References and other further readings:

* Asaolu, T.O. and Nassar, M.L. (1997) Essentials of Management Accounting, Cedar Publishers, Nigeria.
- Arora, MN. (1995)A text book of Cost Accountancy VDUS Publishing House, India.

7.0 Tutor marked assignment

While a budgetary control system may be desirable for a business, its application may bring some disadvantages to the organization.

Discuss.

Marking Scheme:

Mark obtainable		**20**
(i)	Definition ofbudgetary control	**4**
(n)	Advantages ofbudgetary control (Any four points x 2 marks)	**8**
(I)	Disadvantages ofbudgetary control Any four points x 2 marlcs	8
		20

UNIT 14: BUDGETAND BUDGETARY CONTROL (CONTINUED)

Table of content

1.0 Introduction

This is unit 14 of this course Management Accounting, and it will cover a period of one hour We shall continue our discussion on budgets and budgetary control

2.0 Objectives

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

- Identify the considerations in the installation of a budgetary control system.
- Distinguish between forecasting and budgeting

3.1 Considerations in the installation of a budgetary control system.

3.1.1 Creation of budget centers:

A budget center is **a** section of the organization of an undertaking created for the purpose of budgetary **control.** Budget centers must be clearly defined because a separate budget has to be set for each of such center with the help of the head of department concerned. For example, in the preparation of purchase budget, the purchase manager has to be consulted Similarly while preparing labour cost budgets, the personnel manager will be of great help

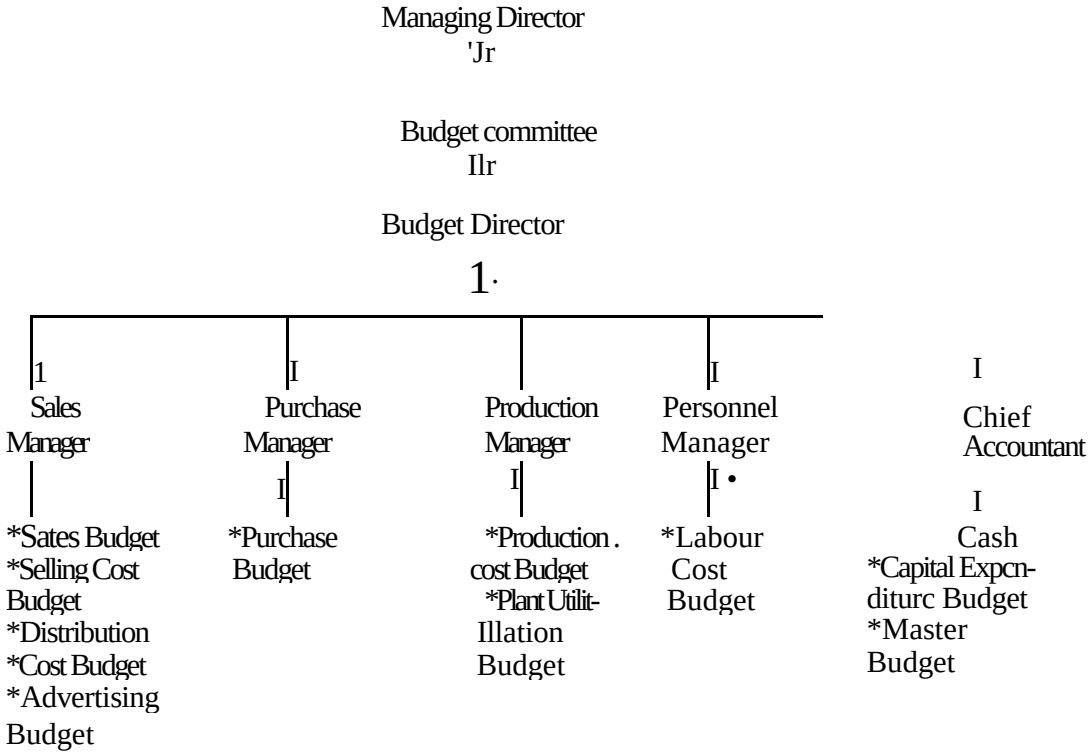
3.1.2 Introduction ofAdequate Accounting Records:

There is a close relationship between budgeting and accounting. For the preparation of budgets, one has to depend heavily on accounting department for reliable historical data, which necessarily forms the basis fOr many estimates. The accounting system should be so designed so as to be able to record and analyze the information required. The budget procedures must also employ the same classification of revenues and expenses as the accounting department. Comparisons cannot **be made if the** classifications do not coincide. A chart of accounts corresponding to the budget **centers should be maintained.**

3.1.3 Preparation of an organization chart:

Proper organization is essential for a successful budget system. An organization chart should be prepared which clearly shows the plan of the organisation. Each member of management should know the exact scope of his responsibility and authority and his relationship to other members For this purpose copies of the organization chart and written supplement should be distributed to all those concerned

ORGANIZATION CHART FOR BUDGETARY CONTROL



The organization chart will depend upon the nature and size of the company

3.1.4 Establishment of Budget Committee:

In large organizations generally, the direction and execution of the budget is delegated to a budget Committee, which reports directly to the top management. The financial controller is usually appointed to serve as the budget director. He would be in charge of preparing the budget manual or instruction, and accumulates the budgeted and actual figures for reporting. Other members of the budget committee usually comprise of various heads of functional departments, like the sales manager, purchase manager, production manager, personnel manager, chief accountant etc Each member would prepare his/her own departmental budget(s), which will then be considered by the committee for coordination.

The main functions of a budget committee are:

- To provide historical data to all departmental heads to help them in estimations
- To issue instructions to departments regarding requirements, dates of submission of estimates etc.
- To define the general policies ofthe management in relation to the budget system.
- To receive budget estimates from various departments for consideration and review
- To discuss difficulties with departmental heads and suggest possible revisions.
- To evaluate and revise the estimates before preparing the final budget
- To make recommendations on budget matters where there is a conflict between departments
- To prepare budget summaries
- To prepare a master budget after functional budgets must have been approved
- To inform departmental head of any revisions made in their budgets by the committee
- To coordinate all budget work
- To analyze variances and recommend corrective action, where necessary.

3.1.5. Preparation of Budget Manual:

A budget manual is defined by C.I.M.A. as "a document which sets out the responsibilities ofthe persons engaged in the routine of and the forms and records required for budgetary control". A budget manual is thus a statement ofbudget policies and lays down the details ofthe organizational set up with duties and responsibilities of executives, including the budget committee and budget director and the procedures and programmes to be followed for developing budgets for various activities.

The contents of a budget manual are summarized as follows:

- Description of the budget system and its objectives
- Procedure and forms to be used in budget preparation
- Responsibilities of operational executives, budget committee and budget director
- Budget calendar, specifying definite dates for the completion of each part ofthe budget and submission ofthe reports
- Method of accounting and accounting codes in use.
- Procedures to be adopted in operating the system
  Following up procedures

3.1.6 Budgeting period:

A budget period is a length of time for which a budget is prepared and operated. Budget periods vary between short term and long tent and no specific period can be down for all budgets. It varies among concerns and industries as a result of several factors.

Abudget is usually prepared for one year, which corresponds to the accounting year. It is then sub-divided into quarters, and in turn, each quarter is broken down into three separate months. When a business experiences seasonal fluctuations, the budget period may be fixed to cover one seasonal cycle. If the seasonal cycle covers (say) two on three years, a long-term budget should be prepared to cover that period. This long period may then be broken down into smaller period by preparing short-term budgets. Budgets for capital expenditures are usually prepared on a long-term basis. For example, in construction companies, which incur very heavy capital expenditures, the need for new crane is possibly forecast five to ten years in advance. Such long-term budgets are supitlemented by short term ones.

3.1.7 Determination of Key Budget Factors:

Key budget factors are also referred to as "limiting factors", "governing factors" or "principal budget factor". The key factor means the factor, which limits the size of output It is defined as 'The factor the extent ofwhose influence must first be assessed in order to ensure that functional budgets are capable of fulfillment". Such a factor is of vital importance and affects all budgetsto a large extent

The key factor serves as the starting point for the preparation of budgets. For instance, when sales potential is limited, sales become the key factor. Therefore, sales budget should be prepared first. Production and other budgets will then follow the sales budget. Thus a key factor determines priorities in functional budgets. Among the various key factors which affect budgeting are the following:

(a) Sales:

- Low market demand
- Shortage of experienced salesmen
- Inadequate advertising due to shortage of funds

(b) Materials:

- Availability ofraw materials
- Restrictions imposed on import licenses, foreign exchange allocation etc.

(c) Labour:

- General man-power shortage
- Shortage of specialized labour in a particular process

(d) Plant:

- Limited plant capacity
- Bottlenecks in certain key process

It is possible that more than one key factor is operating at the same time. Under such conditions, the relative impact of factors is considered in budget preparation. Moreover,

- key factor is not necessarily a permanent factor. The management may be provided with opportunities to overcome the limitation imposed by key factors. For example, plant capacity can be increased by the installation of new and improved plant and machinery, which may be financed by the issue of new shares or by lease agreement.

Student Assessment Exercise

What are the key budget factors in your desire to earn a B.Sc degree by open and distance learning? List them.

3.2 Forecasting and Budget Compared.

It is important to note the distinction between a forecast and a budget.

A forecast is a prediction of what will happen as a result of a given set of circumstances. It is an assessment of probable future events.

A budget, on the other hand, is a planned result that an enterprise aims to attain. It is based on the implications of a forecast. Forecasting thus precedes the preparation ofbudgets. The main distinction between the two is that forecast is concerned with "probable events" whereas budget relates to "planned event".

Student Assessment Exercise

oistinguish between a forecast and a budget.

4.0 Conclusion

The introduction of an accounting system and an organizational chart would assist in achieving the objectives of a budgetary control system

5.0 Summary:

In this unit, attempts have been made to identify the considerations in the installation of a budgetary control system and to distinguish between forecasting and budgeting.

60 References and other further reading

- Asaolu, T.0 & Nassar, M.L. (1997) Essentials of Management Accounting Cedar Publishers, Nigeria.
- Arora, M.N **(1995)A** textbook of Cost Accounting, VIKAS Publishing House India

7.0 Tutor marked assignment and marking scheme:

(a) How does the process of budgetary control operate? Discuss.

UNIT 15: BUDGETS AM) BUDGETARY CONTROL CONTINUED

Table of contents

1.0 Introducdon.

This is unit 15 of the course Management Accounting, and it will cover a period of one hour. We shall continue our discussion of budgets and budgetary control.

2.0 Objectives

At the end of this unit, you should be able to describe the different types of functional budgets

3.1 Functional Budgets

A functional budget is one, which relates to a function of the business e.g. sales, production etc all the functional budgets are summarized into what is known as a "master budget." These functional budgets are therefore subsidiary budgets ofthe master budget.

3.2 Sales Budget

In most companies, the sales budget is not only the most important but the most difficult to prepare. The importance of this budget arises from the fact that if sales figures are incorrect then practically, all other budgets will be affected. The sales budget is a statement ofplanned sales in tams ofquantity and value and analysis byproducts. It forecasts what the company can reasonably expect to sell to its customers during the budget period. The sales budget can be prepared to show sales classified according to products, salesmen, customers, territories, period, etc.

3.3 Production Budget

The production budget is an estimate ofproduction for the budget period. It is first drawn up in quantities of each product and when the remaining budgets have been compiled and cost of production calculated, then the:quantities of production are translated into money terms, and what,

in effect, becomes a production cost budget. The production budget is the initial step in budgeting manufacturing operations. There are at least three principal budgets related to manufacturing in addition to production budget. These are raw materials budget, labour budget and production overhead budget.

Example

The following information has been made available from the records ofPrecision Tools Nig. Ltd for the six month s o f 2000 (and of only the sales of January 2001) in respect of product x:

(i) The units to be sold in different months are:

July 2000	1,100
August 2000	1,100
September 2000	1,700
October 2000	1,900
November 2000	2,500
December 2000	2,300
January 2001	2000

00 There will be no work in progress at the end of any month.

(li) Finished units, which are equal to half the sales of the next month will **be** in stock at the end of every month (including June, 2000)

(iv) Budgeted production and production cost for the year ending 31" December 2000 are as follows:

Production (units)	22,000
Direct materials per unit	N10
Direct wages per unit	N4
Total factory overhead apportioned to production	N88,000

You are required to prepare:

(a) A Production Budget for each of the six months of 2000, and

(b) A Summarized Production Cost Budget for the same period.

Solution:

(a) **Production Budget for six months ending December 2000**

	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Units	Units	Units	Units	Units	Units
Opening stock	*550	550	850	950	1,250	1150
Add Production	1100	1400	1800	2200	2403	2150
Goods Availability for Sale	1650	1950	2650	3150	3650	3300
Less: Closing stock	550	850	950	1250	1150	1000
Sales	1100	1100	1700	1900	2500	2300

*Half ofJuly sales (1100 units) should be the closing stock of June i.e. 550 units. Closing stock of June will automatically be the opening stock of July.

Production Cost Budget for the six months ending December, 2000

Production			11,050 units	
Direct material (N10 x 11,050)			N	110,500
Factory overhead N 88000	x	11050	44,200	44,200
22000		1	198,900	44,200
				198,900

3.4 Raw Material Budget:

The raw material budget shows the estimated quantities of all raw materials and components needed for the output demanded by the production budget. The raw material budget serves the following purposes:

- It assists the purchasing department in planning the purchases
- It helps in the preparation ofpurchase budget
- It provides data for raw material control

It should be noted that raw material badget generally deals with only the direct materials. The indirect materials are generally included in the overhead cost budget

3.5 Purchase Budget:

Careful planning ofpurchases offer one of the most significant areas of cost saving in many concerns. The purchase manager should be assigned the direct responsibility for preparing a detailed plan ofpurchases for the budget period and for submitting ***the*** plan in the form of a purchase budget. These are planned purchases, to be made during the period to meet the needs of the business. It indicates:

- The quantities of each type of raw material and other items to be purchased;
- The timing ofpurchases; and,
- The estimated cost of material purchases.

Example 2

The Sales Manager ofJimmy Nig Ltd. reports that next year he expects to sell 50,000 units of a certain product:

The Production Manager consults the Store Keeper and costs his figures as follows: Two kinds of raw materials A and B are required for manufacturing the product. Each unit of the product requires 2 units ofA and 3 units of B. The estimated opening balances at the commencement of the next year are — finished product — 10,000 units, A— 12,000 units and B — 15,000 units. The desirable closing balances at the end of the next year are — Finished product — 14,000 units, A — 13,000 units and B — 16,000 mats

You are required to draw up a quantitative chart to show the materials purchases budget for the next year.

Solution:

Production Budget	Unit
Opening stock	10,000
Add: Production estimated (to be derived)	54,000
	64,000
Less: Closing stock	14,000
Sales during the year	50,000

Purchases Budget

	Material A	Material B
Dpening Stock	12000	15,000
Add Raw material purchased (To be derived)	109,000	163,000
	121,000	178,000
Less Closing stock	13,000	16000
Consumption during the year		
A54,000 x 2	108,000	
B 54,000x3		162,000

3.6 Labour Budget

The labour budget represents the forecast of labour requirements to meet the demands of the company during the budget period. This budget must be linked with production and production cost budget. The labour budget serves the following purposes:

- To estimate the labour cost of production.
- To determine the direct labour required in terms of labour hours and hence the number and grade of workers required to meet the production requirements.
- To provide data for managerial control of labour cost.
- To provide the personnel department with personnel requirements so that it may plan recruitment activities.

3.7 Production Overhead Budget

The production overhead budget represents the forecast of all the production overheads to be incurred during the budget period. The fact that overheads include many dissimilar types of expenses creates problems in:

(a) The allocation ofproduction overheads to products manufactured, and
(b) Control ofproduction overheads

3.8 Selling and Distribution Cost Budget:

This is concerned with the sales budget and represents the forecast of all costs incurred in selling and distributing the company's products during the budget period. As a general rule, the sales budgets and the selling and distribution cost are prepared simultaneously, since each has an impact on the other.

3.9 Administration Cost Budget

This budget represents forecast of all administration expenses like directors' fees, managing directors' salary, office lighting, cooling and air — condition etc. Most of these expenses are fixed within defined line, and so should not be too difficult to forecast.

),j0 Capital Expenditfire Budget

This budget represents the estimated expenditure on all fixed assets during the budget period. It includes such items as new buildings, machinery, land, and intangible items like patients etc.

3.11 Cash Budget:

The cash budget is one of the most important and one of the last to be prepared. It is a detailed estimate of cash receipts from all sources and cash payments for all purposes and the

resultant cash balances during the budget period. It makes certain that the business has sufficient cash available to meet its needs as when these arise. It is a device for coordinating and controlling the financial side ofthe business to ensure solvency and provide a basis for planning and financial requirement to cover up deficiency in cash. Cash budget thus plays an important role in the financial management of a business undertaking.

The main purposes of cash budget are outlined below:

- It ensures that sufficient cash is available when required
- It indicates cash excesses and shortages. So that action may be taken in time to invest any excess cash or to borrow finds to meet any shortages.
- It establishes a sound basis for credit.
- It shows whether capital expenditure may be financed internally.
- It establishes a sound basis for control of cash position

FORMAT OFA CASH BUDGET

	PERIOD I	**PERIOD** 2	**PERIOD** 3
Opening cash balance b/f	N	N	N
Add: Receipts from debtors Sales of capital items	X X	X X	
Loans received	X	X	X
Proceeds from share issued	X	X	X
Dividend income	X	X	
Total CashAvailable	XX	icc	XX
Less: Payments to creditors	XX		
Cash	XX	XX	**XX**
Wages and salaries	(xx)		
Loans repayments	(xx)	(xx)	(xx)
Dividends	(xx)	(xx)	(xx)
Taxation	(xx)	(n)	04
Any other such disbursement		(xx)	(xxXxx)
Closing cash balance If	X	X	X

4.0 Conclusion.

Budgets and budgetary control have been demonstrated to be good tools in coordinating and controlling the financial and operational activities of a business organisation.

5.0 Summary

In this unit, attempts have been made to describe the different types of functional budgets.

6.0 References and other further references

Asaolu, T.O. and Nassar, M.L. (1997) Essentials of Management Accounting, Cedar Publishers. Nigeria.

Arora, M.N. (1995) A textbook of cost Accountancy VIKAS Publishers, India

7.0 Tutor marked assignment and marking scheme:

The opening cash balance on the 1^{5}` January was expected to be N30,000. The sales budgeted were as follows:

November	80,000
December	90,000
January	75,000
February	75,000
March	80,000

Analysis of records shows that debtors settle according to the following pattern:
60% within the month of sale
25% the month following
15% the month following
Extracts from the purchase budget were as follows:

	N
December	60,000
January	55,000
February	45,000
March	55,000

All purchases are on credit and past experience shows that 90% are settled in the month following purchase and the balance settled the month after.

Wages are N15,000 per month and overheads of N20, 000 per month (including N5, 000 depreciation) are settled monthly.

Taxation ofN8, 000 has to be settled in February and the company will receive settlement of an insurance claim ofN25, 000 in March.

You are required to prepare a cash budget for January, February and March.

UNIT 16: BUDGETARY IMPROVEMENT TECHNIQUES

Table of content

1.0 Introduction

This is unit 16 of this course Management Accounting and it will cover a period ofone hour. In this unit, we shall be discussing the various budgetary improvement **techniques Safe** developed to cover some of the weaknesses of the budgetary system.

2.0 Objective

At the end of this unit, you are expected to be able to describe.

- Flexible budgeting
- Continuous or rolling budgeting
- Zero based budgeting
- Planning programming budgetary system (PPBS)

3.1 Budgetary Improvement Techniques

Some of the weaknesses of the budgetary system can be reduced to the minimum if some improvement techniques are incorporated into the orthodox budgetary system. These techniques include:

3.1.1 Flexible Budgeting:

This recognizes the existence of fixed, variable and semi—variable costs and it is designed to change in relation to the actual level of activity of a period. Fixed budget on the other hand cannot be adjusted to the actual volume of output or level of activity attained in a period, which - would probably be different from the level of activity originally planned.

It should be noted that a fixed budget is essentially useful for planning purposes. A flexible budget on the other hand is a more dynamic tool used for control purposes.

Students Assessment Exercise

Differentiate between a fixed budget and a flexible budget.

Illustration

The budgeted and actual results ofA.B.C. Ltd. for September 2001 were given as follows:

	Budget	Actual	Variance
Sales and production units	1 000		
Sales	N20 000	N14 00	N 5,800(A)
Less: Variable cost.			
Direct material	8000	5,200)	
Direct labour	4000		3 1 2800(F) 0 0
Variable overhead	2000	1 00	SOOT
Contribution	6,000	4400	1600(A)
Less: Fixed cost '	5 000	5 900	A
	1,000	(1,000)	2000(A)

From the above, you are requited to provide a more meaningful analysis for control purposes.

Solution

	Budget	Flexible Budget	Actual	Variance
I n g a n i Sales	20 000	ti(14000	i i i M	
				12
Direct materia	8,000	5,600	5,03	1tgl
Direct labour IMOMMI111.1 Mfi,HIIMIIIIMMINIB	4000	min/In11111n1111111iMI 4 4 0 0 800	3 100	l i n
	6000	4200	4400	I r a A
s Fixed cost	5000	5000	5400	
	1,000	800	1,000	200(A)

3.1.2 Rolling or Continuous Budget:

A rolling budget can be defined as the continuous updating of a short tenn budget by adding say a fluter month or quarter and deducting the earliest month or quarter so that the budget can reflect cunent conditions. Thus, a rolling budget is a device, which attempts to help an organization to overcome the problems resulting from frequent unexpected or unforeseeable activities or future cost.

A rolling budget is therefore an attempt to prepare targets and plans, which are more realistic and certain. By shortening the period between preparing a budget annually, then there would be budgets every 2, 3, or 4 months. Each of these budgets will plan for the next 12 months so that the current budget is extended by an extra period as the current period ends, hence the name continuous or rolling
budget.

Suppose, for example, that a continuous budget is prepared every three months, the first three months will be prepared in great detail and the remaining nine months in lesser detail because of the greater uncertainty about the longer term future.

Illustration

Assuming a three monthly rolling budget:

Quarter 1. Jan. 2000— March 2000 would be prepared in detail
April 2000 — December 2000 would be prepared superficially
Quarter 2. Apri12000 - June 2000 would be prepared in detail
July 2000 — March 2001 would be prepared superficially
Quarter 3. July 2000 — September 2000 would be prepared in detail
October 2000 —June 2001 would be prepared superficially and so on and so forth.

3.1.2.1 Advantages of continuous Budget

At all times, figures for the next twelve months are available and management is made continually to be aware of the budgetary process.

- Whereas as twelve months budget becomes outdated when there is a rapid inflation, a continuous budget system allows for more frequent re — assessment and revisions in the light of inflationary trend.
- Management is able to concentrate on a suitable management time span, which it can visualize and for which it can be fairly held responsible.

3.1.2.2 Disadvantages of Continuous Budget:

- Higher cost and effort required for continuous budgeting
- Each period, the whole procedure of preparing budget has to be undertaken. It would be expected that company objectives and limiting factors will be more critically assessed on an annual basis than when the assessment is required twelve times or four times in a year.
- If the budget is built up from basic standard costs, there may be four changes each year in standard product cost assuming a three monthly rolling budget As a result, valuation of closing stock, pricing of materials issues etc. would become more complex.
- How is the period to be covered decided? Would it be for a quarter or a month? Would the shorter period justify the extra work?

Students Assessment Exercise.

State the advantages and the disadvantages of a continuous budget

3.1.3 Zero Based Budgeting (Z.B.B)

ZBB inifilies that the budget is started from a zero situation and justifies each segment of the budget rather than merely adding to historical budgets or actual budgets.

Conventionally, budgets are only queried when they show increases in expenditures over previous years. In ZBB, there should be a possible attempt to eliminate inefficiency and slack fiom current expenditure.

ZBB was the brainchild of Peter A. Pyhrr. He identified the following structured and systematic approach to budgeting based on ZBB.

- Organizations are divided into small sections known as decision units.
- Each decision unit is clearly defmed.

- For each activity, a decision package is defined for the minimum level of spending and this sets out the cost, the purpose of the activity, possible measures of perfonnance, consequences of not performing the activity, etc.
- Similar decision packages are defined for incremental allocations for alternative methods ofperforming the activities.

Decision packages are specified for alternative methods ofperforming the activities

- The decision packages are ranked
- Resources are allocated and a budget formulated from the priorities that have been identified
- The actual usage of resources and the actual performance of the decision units are monitored as it is with other budgeting systems; deviations from budgets are investigated where significant and appropriate actions taken.

A decision package is really the foundation of the ZBB system, Phy-rr defines it *as* a document that identifies and describes a specific activity in such a manner that management can:

- Evaluate it and rank it against other activities competing for the same or similar limited resources.
- Decide whether to approve it or disapprove it.

3.1.3.1. Advantages of ZBB

- Efficient allocation of scarce resources, and inefficiencies, which are perpetuated by the incremental approach to budgeting are avoided.
- Cost reduction may also be effected.
- Management attention is focused on activities, which warrant action.
- Activities are evaluated and justified.
- Performances of managers can be more effectively monitored
- Management cooperation and involvement is stimulated

3.1.3.2 Disadvantages of ZBB

- Extra paper works are created by the decision packages
- **ZBB** is more applicable to only discretionary cost items. Such as research and development training etc.
- Completely ignoring the present state and the past may induce assumptions impossible to achieve
- Initial cost associated with re—organization and employee education could be prohibitive.
- It encourages the false idea that all decisions have to be made in the budget. Management must be able to meet unforeseen opportunities and threats at all times and must not feel restricted from carrying out new ideas simply because they were 'nit approved by decision package cost/benefits ranking analysis.

Students Assessment Exercise

Describe the systematic approach to budgeting based on ZBB

3.1.4. Planning and Programming Budgeting System (PPBS)

PPBS is constructed on a few basic concepts which need definition before hand. They are:

- Objectives
- Programmes
- Resources
- Effectiveness

3.1.4.1 Objectives

These are the organizations aims or purpose, which collectively define its main reason for existence.

3.1.4.2. Programmes

These are the set of activities undertaken to accomplish the objectives

3.1.4.3. Resources

Resources are the goods and services consumed by programme activities. They may be thought of as equipment, materials and men requited to produce each programmes end — product Programme cost is the monetary value of resources identified with a programme.

3.1.4.4 Effectiveness

Effectiveness is a **measure of the degree** to which **programmes accomplish objectives.**

3.1.5 Features of P.P.B. System

- **The planning phase ofthe PPBS is concerned with idaitifying and defining objectives.**
- **"Programming"then groups the organizations activities into programmes that can be related to each objective. This requires grouping by end — product rather than by administrative or by fiurtion. This grouping then enables us to look at what we want to produce and the resources we require to produce them.**
- **The programme budget presents resources and costs categorized according to the programme or end —product to which they relate. This contrasts with the traditional budget, which assembles** costs **by the type of resource input or by finictions. The advantage ofthis restructuring ofbudget information is that it aids by fly:using attention on competition for resources among programmes and on the effectiveness of resources used within programmes.**
- **PPBS requires a long term planning which covers at least five years and where appropriate should extend to ten, fifteen or more years into the fiaure. This is intended to enable all costs and benefits of programme decisions to be realized within the planning period.**
- **Comparability rather than accuracy** is **the main consideration in the analysis of programme** costs **and benefits. In addition, aggregate and not detailed data should generally be used in** cost and benefit analysis

  Planning, not forecasting, is the purpose of **PPBS. The aim** is to **examine the costs and** benefits for the future, of alternative courses of action.
- Capital and operating cost implications of programmes are looked at together and not separately as in the traditional budget practice.

Students Assessment Exercise

Enumerate the main features of the PPBS.

4.0 Conclusion

In this unit, we have attempted to demonstrate that most of the short comings ofthe traditional budgeting control system can be overcome by the budgetary control improvement techniques.

5.0 Summary

From this unit, you should have been able to describe the features, advantages and disadvantages of the budgetary improvement techniques.

6.0 References and other further readings

Asaolu,T.O. & Nassar,M.L. (1997) Essentials of Management Accounting Cedar Publishers, Nigeria.

I.C.A.N. Distance learning Pack — Management Accounting ed I.E. Johnson (2001)

7.0 Tutor marked assignment

Ashy & Ashy Industries Nig. Ltd manufactures a single product and has produced the following flexed budget for that year:

Level of Activity.	70%	80%	90%
	N	N	N
Direct materials	17,780	20,320	22,860
Direct labour	44,800	51,200	57,600
Production overhead	30,500	32,000	33,500
Administration overhead	17,000	17,000	17,000
	110,090	120,520	130,960

You are required to prepare a flexible budget at the 50% level of activity.

UNIT 17: PERFORMANCE EVALUATION IN A DIVISIONALISED ORGANISATION.

Table of Content

1.0 Introduction .

This is unit 17 ofthis course Management Accounting, and it will cover a period of one hour. In this unit, we shall be looking at performance evaluation in a decentralized organization.

2.0 Objectives:

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

- Describe the different levels ofdecision making
- Define centralization
- Describe the advantages and disadvantages of divisionalization.

3.1 Levels of decision-making

Management at all levels makes decisions. The levels of decision-making in an organization am:

- **Strategic**
- **T a c t i c a l**
- **Operational**

3.1.1. Strategic level

The board ofdirectors will have jurisdiction on decision bothering on the following:

- Diversification of the company's product
- Acquisition of a subsidiary
- Appointment of top executives
- Specified areas of capital expenditure acquisition and disposal.
- Raising of finance and investment of surplus fund
- Determination ofoverall objectives
- Specification of areas of research and development
- Centralized services and activities e.g. legal services and projection ofoverall image via press etc.
- Monitoring of overall objectives
- Product line closure or departmental closure decisions
- Arbitration decisions if transfer pricing between divisions is involved
- Company sourcing decisions: where more than one division use the same raw materials components, part etc. corporate interests may be best served by making this a strategic activity

3.1.2 Tactical Level

Divisional managers, production controllers, sales managers etc. will have jurisdiction of decisions bordering on the following:

- Advertising campaign
- Product selection
- Appointment and dismissal ofjunior and intermediate staff
- Transfer pricing decisions excluding arbitrary transfer method imposed by central management
- Production methods
- Plant replacements and disinvestments — although with some constraints e.g. all such items with a maximum limit of say N100, 000
- Purchasing management
- Short — term operational decisions, such as sub — contracting work, over-time working, productivity standard setting etc.
- Guaranteeing or suspension of credit to customers.

3.1.3. Operational level

Credit supervisors, work foremen etc., will have jurisdiction on decision bordering on the following

Maintenance or suspension of deliveries of bad customers

- Selection of men to deal with a particular job etc.

3.2 Importance of organizational structure in decision-making:

Where there is no organizational structure, there will be no distinction between the different levels ofdecision-making, and all decisions will be made at just one point close to the top management and this is absolute centralization.

On the other hand, where there is a highly structured organization and no decision is taken at the strategic level but the bulk is passed down the ladder, then we talk of absolute decentralization.

3.3 Centrafization

Centralization is the tendency to restrict delegation of decision-making in an organisation, usually by holding it at the top of the organisation structure i.e. at the strategic level.

3.4 Decentralization

Decentralization on the other hand is the tendency to disperse decision-making authority in an organization structure i.e. freedom is granted to subordinate officers to take decision.

Absolute centralization in one person is conceivable but it implies that there are no subordinate managers and therefore no structural organization. Consequently, it can be said that some decentralization characterizes all organizations. On the other hand; there cannot be absolute decentralization, for if managers should delegate **all their authority, then their status** as **managers would cease, their positions would be** eliminated and there would, again be no organizations.

3.5 Divisionalization

A division is an investment center with responsibility for production, purchasing and marketing and whose head is given a degree of discretion as to what product to produce and sell, and at what price, what manufacturing operations to perform, what sales areas to serve, and what research to be undertaken.

Divisionalization involves the delegation of decision making powers to divisional heads and hence the divisions achieving some degree of autonomy.

A divisionalized company therefore, is one whose organisation and operations are segmented into semi — autonomous units, and each with a large degree of responsibility for decision making within its respective unit. -

Student Assessment Exercise

Identify the different bases of cfivisionalization in an organization.

3.5.1. Advantages of Divisionalization

Better decisions

As the business grows in size of activities and personnel, the ability of an organization **to make decisions effectively and quickly is reduced by its chain of command and span of control. But by splitting the organization into smaller and more manageable units, the quality of decision-making and management is improved. Top management work over — load is also reduced so that they can focus their attention on strategic areas.**

Cope better with changes:

When a business operates in a stable'environment, e.g. a stable sales market and:a Stable cost structure, many decisions can be made centrally at the planning stage. Management will normally find it unnecessary to respond speedily to unpredictable problems, whatopaating in a more turbulent environment, e.g. active competition, cost inflation, employee strikes etc.

Decisions cannot be predetermined at the planning stage. Local management, more finning with , the problems (and better access to data) will be able to make correct and responsive decisions than central management.

Training:

Through delegation of authority, subordinate are being groomed and trained for higher-level responsibilities.

Motivation:

By assigning the responsibility of a division performance to, its management, there will be an improverhent in its performance. This accords with the behavioural theory ofHerzberg *in* which responsibility is viewed as a "motivator" The opportunity for freedom from programmed decisions and detailed central control will clearly appeal to managers in large companies.

33,2 Disadvantages of Divisionalization

Increase in cost:

Activities which are common to divisions can be more effectively centralized to save costs through economies ofscale e.g costs &running purchasing departments and billing bulk purchasing savings. Duplication ofactivities is required to effect a divisionalized structure, along with the costs of running a head office activity

Goal Congruence, dysfunctional behaviour and loss of control:

When decisions are made centrally, their consistence with corporate objectives is more easily controlled. Within a divisionalized structure, divisional management is given freedom to decide (both correctly and incorrectly) and hence its decisions may not be congruent with the corporate goals. This is the goal congruence problem. Top management at the center will lose some degree occontrol if autonomy is assigned to divisional management. This is the autonomy and control conflict.

Design of control System:

To report on divisional managements decision-making and performance, an effective method of control will need to operate. Problems of design of divisional profit measure, methods of measuring performance of divisional managers and the cost of operating the system need to be considered.

Students Assessment Exercise:

List the advantages and disadvantages of divisionalization in a divisionahzed organization.

36 Management Accounting Problems of a Divisionalized organisation

Divisionalized organization

Infra — company transactions:

Where one division is concerned with ensuring goods or services from another division, problems will arise in pricing such transactions. The management accountant will be actively concerned in ensuring:

-That the pricing system does not act to the detriment of the company's interest. -That the transfer prices are fair to both parties

-That the negotiation and administration involved in transfer pricing are not disproportionate to the benefit from maintaining autonomous divisions.

Apportionments:

Establishment of separate divisions usually involves apportionment and allocation ofcommon cost and/or assets. The management accountant will aim at making such apportionments as equitable as possible.

Division's result may be materially affected by costs, which are outside the responsibility of the divisional manager Such costs need to be identified for meaningful performance report5. '

-

Designing effective control systems:

There is the problem of communication depending on the degree of decentralization. There is also the problem of determining the form, content and periodicity of preparation of operating and budget statement; ippropriate to the different levels of management There should be general coordination between the units and the implementation of appropriate procedure to ensure as far as possible, uniformity in the classification and application ofcosts. •

Evaluation of results:

There is the problem of the appropriate technique to apply in evaluating the performance of the divisions.

Students Assessment Exercise

What are the management accounting problems of setting up a divisionalized organisation?

4.0 Conclusion

In this unit, we have been able to demonstrate that divisionalization is desirable to a large organization for better planning, control and decision making but that at the same time, the attendant problems associated with divisionalization should be taken into consideration when designing a divisional system.

5.0 Summary

In this unit, we have been able to describe the different levels of decision-making, define centralization, describe divisionalization and the advantages and disadvantages involved in cfivisionalization.

6.0 References and other further reading

- Asaolu, TO. & Nasser M.L. (1997) Essentials ofManagement Accounting cedar Publishers, Nigeria
- IOAN Distance Learning Pack management Accounting Training & Publications Ltd.

74) Tutor marked assignments and marking scheme.

Absolute centralization in one person is conceivable but it implies no subordinate managers and therefore no structural organisation. Discuss

Solution:	Mirk
Definition ofcentralization	5
Definition ofdecentralintion	5
Advantages of centralization	5
'Disadvantages of centralization	5
Total marks obtainable	20

UNIT 18: PERFORMANCE EVALUATION IN A DIVISIONALIZED ORGANISATION (CONTINUED)

Table of content

1.0 Introduction:

This is unit 18 of this course Management Accounting, and it is for duration of one hour. We shall continue our discussion on performance evaluation in a divisionalized organisation.

2.0 Objectives:

At the end ofthis unit, you should be able to:

- Define responsibility accounting
- State the objectives of responsibility accounting
- Describe the features of responsibility accounting
- Describe the types of responsibility centers
- Measure the performance of responsibility centers

3.1 Definition **of Responsibility Accounting** -

Responsibility accounting is a system, which recognizes decision centers in an organisation **and traces costs and revenues to** the individual managers who are primarily responsible far making decisions about these costs and revenues.

3.2 Objectives of Responsibility Accounting:

The objectives of responsibility accounting are two fold:

- To state the overall plan or goal of the organisation in concrete terms and to assign rbsponsibility for attaining the goal and sub — goals.
- To serve as a monitoring device during execution of the plan

3.3 Features of the Responsibility Accounting system.

The areas involved in the application of the principles are:

- The determination of responsibility for each activity carried on in the enterprise and the assigning of each item of income, expense and other expenditures accordingly.
- Definition of the kind and amount of data each manager need and the reflection of these in accounting and statistical classification .
- The use of nnabagement report to convey the data to those who will use and at the time they want it
- Planning and budgeting practices made frilly compatible with the reports.
- The setting up of measures of performance to be incorporated in the reports **and budget.**

- **3.4** **Types**

Three types of responsibility centers can be identified, namely:

3.4.1 Cost center:

This is a department or section or function over which a designated individual has responsibility for expenditure. Cost centers are relatively simple and consist mainly of locations at which costs can be separately identified and collected. They are mostly used for cost control and can consist of a single person or machine. Provided that a cost number or job number is allocated, costs can be assigned thereto and separately recorded. For interdepartmental performance comparison, ti unit of measurement of output is normally required although in its absence, the absoluteiotal cost cah be compared. It is necessary for each cost center to separate those costs that are directly controllable and accountable by the person responsible and those costs, which may be apportioned or allocated to the center e.g. computer costs, canteen expenses etc. Another problem of cost center isthe diffioulty of identifying specific output levels to the cost incurred..

3.4.2 Profit Center

This is a segment ofa business entity by which both revenue and expenditures are controlled and accounted forit thus differs from a cost center in that the revenue also is accumulated and thereby a profit or loss is established within the given segment. The prime need is for there to be an 'ability to segregate a definable amount of sales generated by the particular segment. The person responsible for a profit center should have control over both the sales policy and the production facilities i.e. authority commensurate with responsibility

3.4.2.1 Problems of Establishing a Profit Center: -

Segregation of sales by product lines of customers who take several products, and of identifying individual sales, if all invoicing is done by the national head office.

- **Pricing of inter—departmental transfers when components or products are supplied between profit centers.**

On the cost side, there would be the need to allocate, apportion and absorb corporate advertising, research and developmental expense and general administrative costs.

3.4.3 investment Center:

This is a profit center controlling revenue and costs but which in addition, the profit is related to the assets employed in earning the profit i.e. returns are compared to investment. The prime need is the identification of the assets employed in the particular business segment or product line. Many assets may be in common use by several profit centers for example, factory-building, utilities, transport, materials and tools stores. Investment centers are likely to be larger than profit centers. An investment center may comprise several profit centers having control at a higher stage in the management structure.

3.4.3.1. Difficulties involved in the Establishment of Investment Centers:

- The necessity to allocate all fixed assets in use.
- Difficulty in establishing a base to relate profit for interdepartmental comparison, whether the fixed assets should be stated at cost, at written down value or at replacement value.
- How would joint assets be allocated e.g. boiler plants canteen and sports facilities?
- Would assets include idle plant and incomplete construction?
- In making comparisons, would all segments be expected to make the same return on whatever asset base is chosen?

It is instructive to note that, -while all investment centers are profit centers, not all profit centers are investment centers. Divisions in a divisionalized organization are invariably investment centers.

35 Measures of Divisional Performance:

3.5.1 Absolute Divisional Profit:

This is the profit that arises from divisional operations. The profit achieved would be compared against a budget or target and variances in volume, prices and rate of expenditure would be brought under review. It is likely, since a division is not a completely independent business, that some cost will be charged to the division in respect of goods or services provided by other segments of the enterprise. Some of these would be required by the divisional manager and will be charged at" arms length" prices. Others, however, will be apportionments of costs over which the divisional manager may have no control in the short term. For the purpose of judging the manager personal achievement, a" controllable profit" figure may be used prior to charging these "non — controllable costs".

The main problem in using controllable profit is that it will encourage divisional managers to adopt a short run view ofobjectives, which the group may find inconsistent with the level of investment. Local managers may treat fixed assets as free goods and concentrate on maximizing the short —term return at the expense of the longer term efficiency of the assets. This could have implications for expenditure on repairs and maintenance. The largest technical problem would be the isolation of controllable overloads. Other definitions of profits are:

3.5.1.1. Net Profit:

This is revenue less divisional costs and apportioned head office costs. The divisional , manager is made aware of the fill cost of operating his division.

3.5.1.2 Direct profit.

This is revenue less direct cost of the division. The problem ofapportioning head office costs to the division is avoided. Certain costs which are however directly traceable to the division, may not be controllable at that level e.g. divisional manager's salary.

3.5.13. Controllable Profit.

This is revenue less costs controllable at the divisional level. The measure comprises only costs and revenue for which the divisional manager has primary responsibility It should be noted that fixed costs mien be controllable because they are, by definition, fixed in relation to activity and not in amount e.g. supervisor's salary. If an expenditure on fixed assets is decided on by head office management, depreciation charges on these assets will not be included in arriving at controllable profit.

3.5.1.4 Controllable Residual Profit/Income

•This is revenue less divisional controllable costs and interest imputed on the investment controllable by the divisional manager. Here, the level of investment is assumed to be the responsibility ofthe divisional manager The difference between controllable profit and controllable residual profit is interest, which is imputed at the company's cost of capital on the amount of investment in the division.

151.5 Net Residual Profit/bicome

This is revenue less total divisional costs, including imputed interest on the divisional investment and apportioned head office costs. This measure evaluates the investment in the division rather than the performance of the manager.

33.2 Returns on Capital Employed (ROCE)

ROCE is an all —embracing ratio that relates net income to the level ofinvestments. The ratio is given as:

$$\frac{\text{Net Income}}{\text{Sales}} \times \frac{100}{1}$$

It can be sub — analyzed as:

$$\text{Profit percentage} = \frac{\text{Net income}}{\text{Sales}} \times \frac{100}{1}$$

$$\text{Asset turnover} = \frac{\text{Sales}}{\text{Investmart}}$$

33.2.1 Advantages of ROCE

- The data input is compatible with infomiatiOn contained in conventional financial reports and this facilitates easy interpretation of the ratio by managers
- Because the R.00E ratio can be sub-divided into a series of explanatory ratios, it is a useful analytical device for examining various aipects of performance.
- It gives consideration to capital base ofeach division thereby regarding them as autonomous investment units.

2.2 Disadvantages of ROCE:

- Definitions ofprofit are subject to accounting policies and the consistency in the application ofthe policies. Particular problems will arise in relation to:
- Allocation ofcentral overheads

- Effects of taxation
- Depreciation
- Similar to the problems ofprofit, definitions are those ofdetermining the investment base.

  Various investment bases are

  0 Net book value

  0 Gross book value

  0 Current value
- Maximising return on investment may lead divisional managers to disregard the interest of the organization as a whole and select projects, which will simply increase the divisional ROCE
- Although a single rate of ROCE would normally be calculated on the overall financial results of the business, it is important to recognize that individual projects or business activities may be achieving returns which are significantly different from the average.
- ROCE may not properly reflect the company's goals because it ignores non-monetary objectives namely.
  - The employees growth in managerial skills
  - Social responsibilities of the company

The different divisions engage in different activities and some lines of business generally yield higher returns than others. To this extent, using ROCE may perpetuate some divisions as "leaders" because of the peculiarities of their business, e.g. the rate of return for companies in capital equipment and cOnstruction is lower than that of companies selling to the consumer market.

3.5.3 Residual Income:

Divisional residual income is divisional profit less an imputed charge on the net assets employed by the division. The rate of interest will normally be the required pre — tax rate of return of the enterprise as a whole, so that any residual income will indicate earnings in excess of the normal rate of return.

Using residual profit as a performance measure assumes that the level of divisional investment is a responsibility of divisional management. This should be contrasted with the view taken when. absolute profit is used as a performance measure, that the investment level is a central strategic responsibility. It combines the qualities of born an absolute and a relative measure. A positive residual income demonstrates that the required ROCE has been *exceeded* and measures the excess in absolute income terms. A numerical example will demonstrate the use of residual ineome **as the** performance measure will ensure that goal congruence between the division and the company IS achieved.

StudentsAssessment Exercise:

A division currently has net income ofN200, 000 per annum generated from an investment base ofN1 million. The **company** requires a minimum return on capital employed of 15%. Anew project being considered by the division will entail additional investment ofN100, 000 and will yield annual net income of N1 7, 000.

You are required to evaluate the project using both ROCE and residual income.

Solution

	Existing position	Position on acceptance of project
	N	
Net income	200,000	217,000
Investment	1,000,000	1,100,000
ROCE	20%	19.73%

Decision: Because the ROCE falls, the project will be rejected

(b) RESIDUAL INCOME APPROACH

es income	200,000	217,000
!e4 iinces1	A50,000	165,000
	so,000	52,000

Decision : Because residual income has risen by N2000, the project willbe accepted.

3.5.1.1 Advantages of Residual Income

Residual income represents the total surplus of a division after all costs. Divisional management that maximizes residual income will behave consistently with the wealdtpR;imisiN cotpotate objectives rather than when they maximize Roa. Residual income therefore promotes goal cPngnidleY·

* Resiauai income performance measures are reconcilable to techniques such as net present value (NPV) and internal rate of returns (IRR).

3:5.32 Disadvantages of Residual Income:

Although central trtanagement may hire the idea of inputing a cost to the &titian kir uSe of local assets, they may not faVoutthe assumption on investirient powers contained within the residual income approach. Another disadvantage is that

* The tliaultips of estimatingthe fum'scostofcapital

Students Assessment Exercise

A division has assets ofN2, 000,000 and operating income ofN600,000.

(a) What is the division's ROCE?
(b) If interest is inputted at 14%, what is the residual income?
(d) What effects on management behaviour can be expected if ROCE is used to measure performance?
(e) What effects on management behaviour can be expected if residual income is used to measure performance?

Solution

(a) ROCE = $\frac{\text{Income}}{\text{Investment}} \times \frac{100}{1}$

$\frac{\text{N 600,000}}{\text{N2, 000,000}} \times \frac{100}{1}$

30%

(b) Residual Income — Operating income less interest on capital employed

- N600, 000— (14% of N2,000,000)
- N600, 000 - N 280,000
- N320, 000

(c) If ROCE is used, the management is prone to reject projects that do not earn a return on investment of at least 30%. From the point of view of the organization as a whole, this position may be undesirable because its best investment opportunities may lie in that division at a hurdle rate of, say 20%. If a division is enjoying a high ROCE, it is less likely to expand if it is judged by ROCE than if it is judged by residual income. The reason being that its investment base will be expanding i.e. the denominator to which income is related will be growing while income is expected to be stagnant or just increase marginally at the early stage of the new investment.

(d) If residual income is used, the management is inclined to accept all projects whose expected ROCE exceeds the minimum desired rate.

4.0 Conclusion

We have been able to demonstrate that divisional ization is desirable and that responsibilities must be commensurate with authority and that management of a division should be made accountable for all Costs and revenues in their division.

5.0 Summary

In this unit, we have been able to define responsibility accounting, to state the objectives of responsibility accounting, describe the features of responsibility accounting, describe the type of responsibility accounting and measurement ofresponsibility accounting.

6.0 References and further readings.

Asaolu,T.O. & Nassar M.L. (1997) Essentials of Management Accounting, Cedar Publishers Nigeria.

7.0 Tutor marked assignment and marking scheme:

The Athletic footwear Division has prepared the following budget data:

BATA BULLETIMANUFACTURINGMGLTD

Receivables		100,000
Inventories		200,000
Plant & Equipment (Net)	300,000	
	600,000	
Fixed overhead	N200, 000	
Variable cost per pair	N 10	
Desired rate of return on average available assets	25%	
Selling price per pair	N45	

Required:

(a) How many pairs of shoes must be sold to obtain the desired rate of return on average available assets?

(b) What would be the expected capital turnover?

(c) What would be the operating income percentage ofNaira sales?

(d) If Bata Bullet has 15% cost of capital, what would be the residual income for the Athletic Footwear Division?

UNIT 19: TRANSFER PRICING IN DIVISIONALIZED ORGANIZATIONS

Table of Content

1.0 Introduction

This is unit 19 of this course Management Accounting, and it is for a duration of one hour, we shall be focusing our attention on transfer pricing in divisionalized organizations.

20 Objectives:

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

- Describe the essence of transfer pricing in divisionalized organization
- State the objectives of transfer pricing systems
- Describe the various transfer pricing methods

3.1 Introduction to Transfer Pricing Systems:

In a large decentralized organization where internal transfer of goods and services occur, it would be necessary to attach monetary values to such exchanges and to evaluate the separate performances of the divisions or departments involved.

Transfer pricing is therefore the process of determining, reporting and acting on the imputed values of goods and services exchanged between divisions. It should be realized that a company cannot make a profit by selling to itself, hence these internal sales between divisions are regarded as "transfer" and the prices at which such "transfers" are made are known as "transfer prices"

To avoid transfer-pricing problem of arbitrary pricing between divisions, and for the purpose of optimal decision making by the various divisional management, the central management should properly define a transfer pricing policy to be used on a consistent basis by all the divisions within the decentralized organization.

Students Assessment Exercise:

State the need for a transfer pricing system in a decentralized organization.

3.2 Objectives of Transfer Ericing.Systeniti.... e I *rtst* 1. r.f..t.

3.2.1 Goal Congruence:

A transfer pricing policy shoukl enhance decision made at the divisionalmiumgement level that would not only be beneficialto the division but to the whole cmganisation. The prices should be set in such a way that the divisional management's desire to maximize divisional returns is consistad with the objectives of the company a, a whole. The transfer:prices should discourage sub-optimality indecision-making, Sub-optimalitymearis the subjugation of corporate goals for d i v i s i o n a l g o a l s . h J .

3.2.2 Performance Appraisal

The transfer prices should afkoithecentadmaitagemehttheOppo*niiyttheffekititebt.i determined* contributionof eacholthedivisions toWards etsposatepto&Performance evaluation emphasizes the point that, since profit is used to measure divisional perftumance, the transfer pricing system should be fair to both the buying arid sellingdivielant: The transferpticing system should form part of the management informatiortsystem; whit' thwill accomplialathefollowing:

. .L , Gokleiclocjaionmaking 4t

. .. Realistic asSessment oftheperformanceofeaehdivisionalmanaget

- Evaluate the contribution made by the division to overall comrianyprofits. . ..
  Assess the wortkof adivisionasaneconomic unit.; : L :;

3.2.3 DivisionalAutonomy

The transfer prices should preserve the autonomy of divisions so that the benefits of decentralization (motivation, training ground febbighettaspottaibilityzl*tat ficaisienntaking, *fat.* t. tesPOillunctlocalproblorns,initiotiveete).avemaintained:x. 4.:ii· .4 *#11;, ; i,12·....·0 :3r;..t a: t,jJi'*

Students Assessment Exercise: Discuss the objectives of transfer pricing system.

i.S. Fit

is that, it iiiray aimculifor any Ofthe transierpripingnietlioda to simultancpusly satisfy the criteria ofperformance evaluation, goal congruence and diyisiancllpt000MY..... c - . . (-1 e

3.3.1. Cost Baled Transfer Pricing

Tinder this method, the selling divissiu Sells to me buying ,aivion at ei ii -gt`the cost it has incSed er it ilia cosinlitsareal:k1L-Up. Cost couldbe an/ Of tWelotlrowu tuithe

- Full cost: The selling division recovers all the production COSI
  including fixed **Wtanded**
- Vilighjecoitt:"fillitianstehirice‘`.0isfiis6'amt atiailte 4Vari4e or marginal-coks are redOVered, Mute fik- OverheadS tete'' let pi ,Mc' f This thod iS.especially vroyriate whenever the it &desk ca/:Thli e ' inte4lling division. **4S.ta**
  on re e muned ami

3.3.1.1 Advantages of Cost Based Transfer Pricing method:

- It is very useful for optimal decision-making purposes especially the variable cost variant whenever there is an excess capacity in the selling division.
- The computation of closing stock value is not problematic whenever group accounts are being prepared as there wouldn't be any unrealized profit on stock
- A transfer price could be fixed and agreed in advance without being subject to external fluctuation especially when the standard cost variant is used.
- It offers the only available option when there is no market
- Prices can easily be obtained from the costing system.

3.3.1.2 Disadvantages of Cost Based Transfer Pricing Method:

- It may lead to an unpredictable monthly fluctuation unless the standard cost variant is used.
- Cost of the selling division may be rejected on the ground that it is inefficient especially when the fill cost variant is used
- When transfer is made at cost plus mark—up, the selling division is guaranteed a certain percentage ofprofit and this may encourage inefficiency to be perpetrated for a long time.
- It treats the divisions as cost centers rather than profit or investment centers. Therefore, measures such as ROCE and residual income cannot be used for evaluation purposes.

3.3.2 Market Based Transfer Pricing Method:

This is the transfer price at which an outside competitor would be prepared to supply the **same** product In other words, both the buying and selling divisions would be operating at arms length i.e. as if they are not members of the same group.

3.3.2.1 Advantages of Market Rued Transfer Pricing method:

- There is goal congruence as any decision taken by divisional management using market based transfer pricing method would not only be in the interest of the division but also that ofthe whole organization as well.
- Divisional autonomy is maintained
- It is most adequate for measuring performance and motivating managers
- Market prices are objective and verifiable
- There would be no controversy as to the efficiency or inefficiency of the selling division.

3.3.2.2 Disadvantages of Market Based Transfer Pricing Method.

- **The** element ofinters—group profit could complicate stock valuation when group accounts are being prepared.
- Accurate information about the market price may not be readily available.
- The *use* ofmarket price may act as a disincentive especially in the selling division whenever there are excess capacities even though the variable cost variant could have been desirable for use in that situation.

3.3.3 Negotiated Transfer Pricing Method

Under this method, the selling and the buying divisions agree to use a mutually acceptable Price.

3.3.3.1 Advantages of Negotiated Pricing method:

- The motivation impact is always stronger because it gives managers a high degree of control and involvement when prices are set.
- There would be fewer disputes on transfer prices because many factors would have been considered, such as the full and variable production cost, market prices etc.

3.3.3.2 Disadvantages of Negotiated Transfer pricing method:

- Negotiation process may be time consuming
- The negotiated price may be influenced by the negotiating abilities, personality and fluency of the managers.
- The group interest may be subordinated to individual interest.

3.3A. Arbitrary Transfer Pricing method:

Under this method, transfer prices are determined centrally based on what top management believes is most beneficial to the whole group. Individual division may have some contribution but no control over prices actually set.

3.3.4.1 Advantages of Arbitrary Transfer Pricing method:

- Time consuming negotiations are saved
- Uniformity and stability tend to prevail.

3.3.4.2 Disadvantages of Arbitrary Transfer Pricing Method:

- Profit and cost consciousness may suffer where arbitrarily fixed price is not considered realistic.
- It crodes part of the independence normally desirable for autonomous divisions.

Students Assessment Exercise:

Discuss the best transfer pricing policy for divisionalized organization

4.0 Conclusion

We have been able to bring out the fact that any transfer pricing method must be able to satisfy the criteria of goal congruence, autonomy of divisions and performance measure for it to be totally acceptable to divisional managements.

5.0 Summary

In this unit, you should by now be able to describe the essence of transfer pricing in divisionalized organizations, state the objectives oftransfer pricing systems, and describe the various transfer pricing methods.

6.0 References and other further readings:

Asaolu, to. & Nassar, Mr (1997) Essentials of Management Accounting Cedar Publishers Nigeria.

7.0 Tutor marked assignment and marking scheme.

GDB Nig. PLC; an aluminum manufacturing company, has three autonomous divisions, X, Y, and Z. Division X is responsible formanufacturing aluminum flat sheets which become the raw materials for Division Y. from the flat sheets, Division Y makes aluminum windows and doors. Division Z is responsible for marketing the entire company's final products.

The company's management finds that the divisions should be evaluated as separated profit center and should be credited with an equitable share of contributions. The company's transfer pricing policy stipulates that proportionate efforts are to be measured by the ratio of the division's variable cost to the total variable cost of the centers.

A budgeted sale for 1996 is N25m with total variable cost of N15m for the centers. The details of the variable end fixed costs by the divisions are given as
frollows:

	X	Y	
	N	N	N
Variable cost	4,500.000	3,000,000	7,500,000
Fixed costs	2,500,000	1,500,000	2,000,000
	7,000,000	4,5130,000	9,500,000

You are required to detennine budgeted transfer values using the agreed pricing method:

UNIT 20: STANDARD COSTING TECHNIQUE AND VARIANCEANALYSIS

Table of content

1.0 - Introduction

This is.unit,20 oldierause ManagementAccouting, and it is for durationefonehohr. In, thisunit, we shall be looking at standard costing technique.

2.0 Objectives

Atthe end of this unit you should be able to:

* Define standard costing and variance analysis
* Describe tvpes of
* State tbe advanta,gesand disadvantagesof standardtostitig
* Describe cost control by means of
* State the possible causes of variances
* Gain background knowledge ofthe material and labour variances

3.1 Definition of standard costing

The technique known as standard costing consists ofpratenniued estimate of coitsanit the comparison of this with actual cost as they are incuned. The difference between the actual cost and standard cost is termed variance. Variance analysis is used to attribute Variances to the Various causes. The Chartered Institute ofManagement Accountants in its official terminologies define stafidatt1 cost as [4] a predetennined cost of how much costs should be under specified wodc and condlitions"

VarianceAnalysitc,

A variancd according td our discussions is the difference between standard 'cost and 'actual' cost. Varimice analysis therefore is the process whereby the difference between standard cost and actual cost is sub-analyzed into their constituent parts.

3.3 Types of standard:

3.3.1 Basic Standards:

This is defined by the CINIA as a standard established for use over a long period from which a current standard can be developed. They are established for use unaltered over the years.

3.3.2. Ideal Standards:

This is a standard which can be attained under the most favourable conditions i.e. a perfect world with a perfect efficiency

EXAMPLE OF A STANDARD COST CARD

STANDARD COST CARD

PRODUCT: x

DATE OF STANDARD:

	Code	Quantity	Standard price Der unit	Departments 1	2	3 4	5		Totals
M			N	N	N	N			N
a									
t	2-769	3	3.00			9.00			9.00
e	2-461	6	5.00		30.00				30.00
r	3-590	36	50	18.00					18.00
i	6-178	12	2.50	30.00					30.00
a	Total material cost			48.00	30.00	9.00			87.00

1 L	Job No	Standard hours	Standard rate per hour					
a								
b								
o	2-1768	4	4.00	16.00				16.00
11	7-SA1S	15	4 SO	67 VI				67 SA
r	3-1245	10	5.00	50.00				5000
	_ 3-1600	5	4.60		23.00			23.00
	Total labour costs		11750	16.00	23.00			15650

0									
V	Standard hours	Standard rate per labour hour							
e c									
r 0	4		N2.00	8.00				8.00	
h s	25		3.00	75.00					75.00
e t	5		2.50		12.50			12.50	
a S									
d	Total manufacturing overheads			75.00	8.00	12.50			95.50
	TOTAL STANDARD COSTS								399.00

3.4.1 Factors in the determination of standards.

It is essential that all factors be considered in the determination of standards e.g. quantities, prices, rates, quality and grades. To be effective for analysis and control purposes, standards are only fixed for a certain period e.g. six months or a year. When changes in economic conditions occur, it is necessary to revise the standards e.g. wage increases material price increases.

3.4.2 **Cost control by means of standards:**

In a manufacturing concern, the following steps should be taken when a standard cost system is aPPlied-

- Detennine standards for each cost element (material, labour and manufacturing ovaheads)
- Obtain actual results
- Compare actual and standard cost to determine variances
- State favourable and unfavourable variances on a variance report, and deal with them immediately
- Pinpoint responsibility for variances and obtain explanations
- Take corrective actions

35 Advantages of standard costing:

- Standard costing serves as a criterion against which actual costs can be measured
- Analysis of variances necessitates regular control ofthe entire production process
- Use of standard costing reduces clerical work
- Interpretation ofreports by management is simplified and requires less time
- Standard costing provides better control over costs. The objective is always to imptDve work performance and material consumption.
- In order to establish standards, an extensive study of all facets of the organisation is
  - required.

  Production and price policy can be formulated before starting operations
- When standards have been established, they can serve as a basis for further planning, which may lead to greater efficiency.
- It is useful in motivating employees and achieving labour efficiency.
- It is useful in setting prices in advance, mostly in making tender.

3.6 -Disadvantages of standard costing.

It may be expensive ancl rime consuming to install and maintain the system.
hi an inflationary period or improving technological environment, standards quickly become obsolete and consequently lose their control and motivational effects.

Students Assessment Exercise

(a) Define the term "standard costing"
(b) State the-factors that are taken into account in the determination of standards
(c) What steps are taken to control costs by means of standard.
(d) Lit five advantages and two disadvantages of standard.

37 Material variances

- 3.7.1 Elements

The total cost ofmaterial consumed in orpurchases for manufacturing process are determined by two basic elements.

- The unit price paid for the material and
- The quantity of material consumed or applied.

The total variance between the standard and the actual material cost can be broken down into these two elements Where more than one type of material is used, a third variance is possible namely the variance between the standard rnix and the actual mix.

3.7.2 Material price variance:

Thepurchasesdepartroent isconeemedwiththe determination ofstandatd prices: **it1** forecasting average prices, due consideration must be given to large-scale purchases, market conditions, diseoutts and storage casts. •The standard price is used as a norm. If the actual price exceeds the standard price, the variance is unfavourable. If the actual price is less than thestandard price, the variance is favourable

3.7.3 Causes of material price variance:

- Favourable or unfavourable tenns of purchase cartracts
- Unforeseen changes in market prices
- Higher or lower delivery cost&
- Erroneous calculation of expected discounts
- Pooptiming **ofpurchases.**

3.7.4 Material quantity variance

The standard typeand quantity ofmaterial necessary to be converted into a finished product must be &tented. Provisions must be made for unavoidable waste, spillage or usages during the production process. The design departure* in claw cooperation with the factory staff must determine the 9,51ndapi Material cp.uunity specifications, which *serve* as the basis for determining the standard quantity in manufacturing a completed unit.

The standard quantity is used as the nom If the actual quantity is more than thestandard quantity, the variance is unfavourable, and vice -- versa.

17.5 Causes of material quantity variances.

- **l'he** *use* Of a different grade or substitute material
- Improper or pact Control over spillage and wastage ofmaterial
- Efficient or inefficient performance due to supervision, type of equipment, ability of workers etc.

Students Assessment Exercise:

(a) Name two material variances.

Briefly explain who would be responsible for these variances

(c) ciWNP.s.tancycS cupid,cause a favourable material quantity variance?

(e) What does "total material variances imply?

(f) How is a standard quantity determined?

34/ LAINUr variance$:

3.8.1 Elements:

As in the case of materials, labour costs are made up of two basic elements:

- The rate paid for the labour

Thertirwitgedc41O,PaanufaquE9 the goods i

TIN MS MgtiatweiWw.genthq Standard and the actual direct labout coatis therthrokensloyminkk thelie two elements.

3.8.2 Labour rate variance: •

The personnp,Idepartmentdetenninus !atunclardlabuunates. These rates are-Alm:40J ited wage scales for specific grades of labour.

The standard rate is taken as thp noon,. Ikthe,acnihrate.mumexIsElbe, $44)1144100, the

4nctifice7Yetr4i

3.8.3 Causes of labour rate variances: •

- Unforeseen changes in minimum wage rates
- Poor scheduling ofproduction resulting in overtime (at uhisheirate)ollin
- Use of personnel on higher/lower wagesrades10:perforin-certaitt.a4ions infthe manufacturing prortss
- Incorrect calculation of standard

Effiffiffeff4cYcYaFiance;

The work-study department, by means oftime and motion studies, determines the inanufactsinEi tispupcgrired toy cachijahsuuligude,, cach cost centet.When standardtfineura standardtour is calculated, provision must be made for unavoidable idle time. The stands:dope thendutennined it A based on the most efficient method according to which job to be performed.

The standard time is used as a norm for determining the labouitifiltithicydriftelf Stilt I hours exceed standard hours, the variance is tinfavourabk and vicie—vetstil '

3.8.5 Causes of labour efficiency variances

- Working conditions
- Redesign ofproducts
- Efficient work planning
- Good or poor planning
- Good or poor supervision
- Well — trained or poorly trained workers
- Good or poor quality ofmaterials resulting in more or less time spent in the processing thereof
- Problems.with tools or machinery.

Students Assessment Exercise:

(a) Name two labour variances
(b) Under what circumstances would an unfavourable labour efficiency variance arise?
(c) What does total labour cost variance imply?

4.0 Conclusion:

We have been able to demonstrate that cost can be controlled by means of standards and to gain background knowledge to the workings of material and labour variances.

5.0 Summary:

By now, you should be able to define standard costing, describe types of standard, state the advantages and disadvantages of standard costing, describe cost control by means of standards and gain background knowledge on the workings of material and labour variances.

6.0 References and other further readings.

University of South Africa (1983) Accounting study guide 3 forACT 100-F

7.0 Tutor marked assignment and marking scheme:

(a) A product (A) has a standard direct material cost as follows: 5 kilograms of material Mat N2 = N10 per unit ofA. During April 2001, 100 units of the product are manufactured, using 520 kilograms of material M, which cost N1, 025

You are required to calculate:

(h) Total direct material cost variance
(i) Direct material price variance
(j) Direct material usage variance

(b) The standard direct labour cost of product B is 4 hours of grade S labour at N3 per hour =N12 per unit

During May 1995, 200 units of product B were made and the direct labour cost of grade S was N2, 440 for 785 hours **of work.**

You are required to calculate:

(i) Total direct labour cost variance
(h) Direct labour rate variance
(iii) Direct labour efficiency variance.

NATIONAL OPEN UNIVERSITY OF NIGERIA

Form QST1 Questionnaire

Dear Student,

While studying the units of this course, you may have found certain portions of the text difficult to comprehend. We wish to know your difficulties and suggestions, in order to improve the course. Therefore, we request you to fill out and send us the following questionnaire, which pertains to this course. If you find the space provided insufficient, kindly use additional sheet.

Course Code: _____ **Course Title.** _____

1 How many hours did you need for studying each of these units?

Unit	1	2	3	4	5	6	7	8		91	11	12	13	14	15
No. of hours															
Unit	16	17	18	1	20	21	22	23	24	25	26	27	28	29	30
No. Of hours															

2. Which of these units do you find most difficult to understand?

3. Please give specific problem you **find** difficult with the unit.

_____

_____

_____

_____

How would you like the unit improved

_____

_____

_____

Please Mail to
The Course Coordinator.....THROUGH the Study Centre Manager
National Open University of Nigeria
Victoria bland,
Lagos.

NATIONAL OPEN UNIVERSITY OF NIGERIA

Form QST2
Questionnaire

In the questions below, we ask you to reflect on your experience of the course as a hole.

.	**Cotwee Code and Title** .....
2	**Mother tongue** .....
3	**I am registered for a** ..... **Degree/Programme**
4	**Why did! choose to take this course?** .....
5	**Which study unit did I enjoy the most and why?**
6	**\Whichstudy unit did I enjoy the least and why?** .....
7	**Was the course material easy to unclerstandor difficult?** .....
8	**Which particular topic do! understand better than before and how?** .....
9	**•Does the course have any practical applications in the real world, e.g. for the work I currently do?...YES/NO? EXPLAIN** .....
10	**What aspects would I like to know more about or study further?** .....
11	**How could the coursebe improved?** .....
12	**Other comments about the course** ***(Please lick)*** .....

Items	Excellent	Very Good	Good	Poor	Give specific examples, if poor
Presentation Quality					
Language and Style					
Illustrations Used (diagrams, tables, etc.)					
Conceptual Clarity					
Self Assessment Questions					
Facilitators response to TMA Questions					