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**Chalimbana University**

**Integrity. Service. Excellence**

**DIRECTORATE OF DISTANCE EDUCATION**

***BCM 2101: COST AND MANAGEMENT ACCOUNTING***

**First Edition 2018**

Chalimbana University

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The Directorate of Distance Education wishes to thank Mr. Sikalumbi A. Dewin and

Mr. Sinkala Peter for writing the Cost and Management Accounting Module.

**MODULE OVERVIEW**

**Pre-requisite: BMT1100 Business Mathematics and Statistics**

**Introduction**

Welcome to Cost and Management Accounting module. Cost and Management accounting is a combined volume of cost accounting and management accounting. Cost accounting focuses on cost analysis of production cost, material cost, labour cost, and overhead cost while management accounting focuses on managerial decision making based on quantitative information obtained from cost data. This module aims at equipping you with knowledge and skills in cost and management accounting techniques for planning, performance evaluation, cost control and decision-making. The knowledge acquired from this module can be used in given organisation.

**Aim**

The aim of this course is to equip the learners with knowledge and skills in techniques used in cost and management accounting.

Outcomes

**Learning Outcomes**

At the end of this course, students should be able to;

* demonstrate an understanding of the importance of accurate costing and different costing techniques
* apply different costing techniques in the day to day running of the business.
* evaluate management accounting information used in making decisions.
* discuss the types of budgets available and their implications when running the business.
* discuss the various performance measurement systems and their cost implications.
* Undertake cost evaluation and recommend cost approaches

**Rationale**

Understanding the environment within which the business has to operate is very important for running a business unit successfully at any place. Environmental factors influence almost every aspect of business, be it its nature, location, the prices of products, the distribution system, or personnel policies. This course will therefore, enable learners to be aware of the various components of the business environment, which consists of the economic aspect, the socio-cultural aspects, the political framework, the legal aspects and the technological aspects etc.

**Aim**

The aim of this course is to equip learners with the necessary knowledge about various factors that influence business operations.

Outcomes

**Learning Outcomes**

At the end of this course, students should be able to:

* describe the key features characterizing a business environment.
* analyse the major external and internal forces that affect business.
* describe the PESTLE factors and relate them to business performance.
* analyse factors in globalization of business and international business operation.

summary**Summary**

The module looks at the micro and macro environments and how each affect the business. Further, global and international factors are discussed including the organisations that are formed for economic development.

**Recommended Rreadings**

Campbell-Hunt, C., Elkin, G., Geare, A. J., Greatbanks, R. (2009). Management, Organisations, and the Business Environment: A New Zealand Focus, Australia: McGraw-Hill.

[Andrew A. Beveridge](https://www.google.co.uk/search?tbo=p&tbm=bks&q=inauthor:%22Andrew+A.+Beveridge%22), [Anthony R. Oberschall](https://www.google.co.uk/search?tbo=p&tbm=bks&q=inauthor:%22Anthony+R.+Oberschall%22). (2015) African Businessmen and Development in Zambia. Princeton University Press, New Jersey

Recommended Reading

Schwindt, R. (1995) International Business II: Comparative Management, Regional Studies (Japan, Russia, Eastern Europe, the Pacific Basin), International Business Law, Volume 8, Eno River Press, North Carolina

Hill C, W, L (2010) International business, Mcgraw-Hill,

Study skills

**STUDY SKILLS**

As an adult l-earner, your approach to learning will be different to that of your school days: you will choose when you want to study, you will have professional and/or personal motivation for doing so and you will most likely be fitting your study activities around other professional or domestic responsibilities.

Essentially you will be taking control of your learning environment. As a consequence, you will need to consider performance issues related to time management, goal setting, stress management, etc. Perhaps you will also need to acquaint yourself with areas such as essay planning, searching for information, writing, coping with examinations and using the internet as a learning resource.

Your most significant considerations will be *time* and *space* i.e. the time you dedicate to your learning and the environment in which you engage in that learning.

It is recommended that you take time now —before starting your self-study— to familiarise yourself with these issues. There are a number of excellent resources on the web. A few suggested links are:

<http://www.how-to-study.com/>

The “How to study” website is dedicated to study skills resources. You will find links to study preparation (a list of nine essentials for a good study place), taking notes, strategies for reading text books, using reference sources, test anxiety.

<http://www.ucc.vt.edu/stdysk/stdyhlp.html>

This is the website of the Virginia Tech, Division of Student Affairs. You will find links to time scheduling (including a “where does time go?” link), a study skill checklist, basic concentration techniques, control of the study environment, note taking, how to read essays for analysis, memory skills (“remembering”).

Time**TIMEFRAME**

You are expected to spend at least 18 hours of study time on this module. In addition, there shall be arranged contact sessions with lecturers from the University during residential possibly in April, August and December. You are requested to spend your time judiciously so that you reap maximum benefit from the course.

Help**NEED HELP?**

In case you have difficulties during the duration of the course, please get in touch with your lecturer for routine enquiries during working days **(Monday-Friday)** from 08:00 to 17:00 hours on Cell: +260963804004**; E-mail:** [**adsikalumbi@gmail.com**](mailto:adsikalumbi@gmail.com)**; website:** [**www.chau.ac.zm**](http://www.chau.ac.zm)**.**You can also see your lecturer at the office during working hours as stated above.

You are free to utilise the services of the University Library which opens from 07:00 hours to 20:00 hours every working day.

It will be important for you to carry your student identity card for you to access the library and let alone borrow books.

**LIST OF EQUIPMENT**

In this module you will need the following tools;

a scientific calculator.

**ASSESSMENT**

In this course you will be assessed on the basis of your performance as follows:

**Continuous Assessment 50%**

Assignment 10%

Project 15%

2 Tests of equal weight 25%

**Final Examination 50%**

**Total 100%**

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# UNIT: 1

# INTRODUCTION TO COST AND MANAGEMENT ACCOUNTING

## INTRODUCTION

Managers need detailed information about the working of the business to enable them plan, control and make decisions. The cost and management accounting system provide financial information regarding the financial aspects of business performance needed by management. This unit introduces you to cost and management accounting. The difference between cost accounting and managerial accounting are clearly explained. We hope you will enjoy the unit.

Outcomes

## LEARNING OUTCOMES

At the end of the unit, you expected to;

* Differentiate Cost accounting from managerial accounting.
* Describe the various types of costs involved in the day to day operation of the business.

## MANAGEMENT ACCOUNTING

How would you define management accounting? Fine, management accounting is defined as the application of the principles of accounting and financial management to create, protect, preserve and increase value so as to deliver that value to the stakeholders of profit and not for profit enterprises both public and private.

## COST ACCOUNTING

Cost accounting is the establishment of budgets, standard costs and actual costs of operations, processes, activities or products and the analysis of variances profitability or social use of funds.

Cost accounting and management accounting are terms which are used interchangeably. However, this is not entirely right. Cost accounting is part of management accounting. Cost accounting provides a bank of data for the management accountant to use. As you may know, cost accounting aims at establishing the following:

1. the cost of goods produced or services provided;
2. the cost of a department or work section;
3. what revenues have been;
4. the profitability of a product, service or department or the organization in total;
5. selling prices;
6. the value of stocks of goods;
7. future costs of goods and services; and
8. comparison of actual and budgeted costs

## COST ACCOUNTING SYSTEM

A cost accounting system is a system used by an organization to gather, store and analyse data about costs. The purpose of a cost accounting system is to provide management information about costs and profits.

A cost accounting system is often the basis for a management accounting system. The term cost accounting and management accounting are often used to mean the same thing, although strictly there are differences.

## FINANCIAL ACCOUNTING AND COST AND MANAGEMENT ACCOUNTING

Financial accounting is the classification and recording of the monetary transaction of an entity in accordance with established concepts, principles, accounting standards and legal requirements and their presentation by means of profit and loss accounts, balance sheet and cash flow statements, during and at the end of an accounting period. Many businesses have a financial accounting system with a nominal ledger, sales ledger and purchases ledger and books of prime entry for recording transaction that have occurred during a given period.

**Comparison of financial accounting and management accounting**

|  |  |
| --- | --- |
| **Financial accounts** | **Management accounts** |
| * Limited companies are required by law to prepare financial accounts. | * There is no legal requirement to prepare management accounts. |
| * The law and financial reporting standards prescribe formats of published financial statements. | * Management accounting formats are entirely at the discretion of management. |
| * Most financial accounting information is of a monetary nature. | * Management accounts incorporate both monetary and non-monetary measures. |
| * Financial accounts present an essentially historic picture of past operations. | * Management accounts are both historical record and future planning tool. |

## INTERNAL REPORTING STRUCTURES

When costs are recorded, analysed and reported, it is important they are reported to the managers or departments responsible for the spending. In other words, the reporting of cost information should ideally be based on a system of responsibility accounting and responsibility centres.

## Responsibility accounting

A system of providing financial information to management where the structure of the reporting system is based on identifying individual parts of a business which are a responsibility of a single manager.

## Responsibility centres

A responsibility centre is an individual part of a business whose manager has personal responsibility for its performance.

Many businesses are structured into a hierarchy of responsibility centres. These might be cost centres, revenue centres, profit centres and investment centres. At the lowest level of the hierarchy is the cost centre and at the highest is the investment centre.

## Cost centre

A cost centre can be defined as production or service location, function, activity or item of equipment whose costs may be accumulated and attributed to cost units.

**Revenue centre**

A revenue centre is part of the organization that earns sales revenue. its manager is responsible for the revenue earned but not for the cost of the operation.

## Profit centre

A profit centre is a part of the business for which both the costs and revenues earned are identified. The manager is responsible for both costs and revenues.

**Investment centre**

An investment centre is a profit centre with additional responsibilities for capital employed and possibly investment decisions. Managers of investment centres are responsible not just for decisions affecting costs and revenues but also investment decisions.

## ALLOCATION OF COSTS

Costs are incurred in business on the following:

* Direct materials.
* Direct labour.
* Direct expenses.
* Production overheads.
* Administrative overheads.
* General overheads.

When costs are incurred, they are generally allocated to costs centres. Cost centres are simply collection points for costs for further analysis.

## Cost units

Once costs have been traced to cost centres, they can further be analysed in order to establish cost per unit.A cost unit is a unit of production or unity of activity in relation to which cost is measured. The cost unit is a basic control unit for costing purposes.

## Cost units are measured for several reasons:

* To establish how much it has cost to produce an item or perform an activity.
* To measure profit or loss on an item.
* To value closing stocks.
* To compare costs with budgeted costs.

Examples of unit costs;

* Student in a college
* Barrel in the brewing industry
* Room in a hotel

## Cost object

A cost object is any activity for which a separate measurement of costs is desired.

If the users of management accounting want to know the cost of something this something is known as cost object. Examples of cost object include:

* The cost of a product
* The cost of a service
* The cost of operating a department

## THE ROLE OF ACCOUNTING TECHNICIAN

As part of the cost accounting team, the accounting technician is likely to be included in gathering and processing data to measure the costs of an organisation’s activities, products and services.

For example, in a manufacturing business, the accounting technician could be involved in measuring and analysing:

* The cost of raw materials used in manufacturing
* The value of stocks of unused raw materials
* The cost of labour used in production
* The costs of other expenses incurred in production
* Overhead costs for each product
* Total cost for each product made by the business
* The profitability of each product.

Measuring costs and revenues is an important step in providing management with information to assist them with planning, control and decision making.

summary

## UNIT SUMMARY

* Cost centres are collection pools for costs before they are further analysed into cost unit.
* A cost unit is a unit of product or service to which costs can be related.
* A cost object is any activity for which a separate measure of cost is desired.
* A responsibility centre is a department or organisational function whose performance is the direct responsibility of a specific manager.
* Profit centres are responsibility centres that are responsible for both costs and revenues.
* Revenue centres are responsibility centres responsible for only revenue generation.
* An investment centre is profit centre that is also responsible for capital investment and possibly financing.

# UNIT 2

# COST CLASSIFICATION

## Introduction

This Unit explains that costs can be classified in different ways according tothe purpose for which

the cost information is required. Various methods ofclassifying costs will now be described for you.

Outcomes

## Learning Objectives

After studying this Unit, you should be able to:

* Outline reasons for cost classification
* Describe different methods of classifying costs

## Classification of Costs

As the term suggests, Cost classification is the analysis of costs into logical groups so that they may be summarised into meaningful information for management. Management in organisations requires information concerning a variety of issues which require different types of cost summaries. Costs are thus classified in different ways according to the purpose for which they are to be used.

The main classifications include:

* Cost by element
* Direct and indirect costs
* Functional costs
* Fixed and variable costs
* Other categories

The above classifications are discussed for you below.

**2.3.1 Classification by Element**

The initial cost classification basis is according to the elements on which expenditure is incurred. And these could be

* Materials
* Labour
* Expenses

Within cost elements, costs can be further classified according to the nature of expenditure. Take for example material costs; these may be further classified according to whether they are raw materials, components, cleaning materials, maintenance materials and so on.

* + 1. **Direct and Indirect Costs**

Each cost element namely materials, labour and expenses can be classified as either a direct cost or indirect cost. Can describe them. Well, see your description agrees with the following.

A direct cost is a cost that can be traced in full to the product, service or department that is being costed.

An indirect cost or overhead is a cost that is incurred in the course of making a product, providing a service or running a department, but which cannot be traced directly and in full to the product or service or department.

Total expenditure may, therefore, be analysed as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Materials | = | Direct Materials | + | Indirect Materials |
| + |  | + |  | + |
| Labour | = | Direct Labour | + | Indirect Labour |
| + |  | + |  | + |
| Expenses | = | Direct Expenses | + | Indirect Expenses |
|  |  |  |  |  |
| **Total cost** | **=** | **Direct cost** | **+** | **Indirect Costs** |

1. **Direct Material**

Direct material is all material that becomes part of the product (unless used in negligible amounts and/or having negligible costs).

Examples of direct materials are:

* raw materials used in a product e.g. flour used in baking a loaf of bread;
* bought in parts and assemblies e.g. tyres in car manufacturing;
* primary packing materials e.g. a cooking oil container.

1. **Direct Wages**

Direct wages are all wages paid for labour (either as basic hours or overtime) expended on work or the product itself e.g. salary paid to an audit clerk in a firm of accountants.

1. **Direct Expenses**

Direct expenses are expenses which are incurred on a specific product other than direct material costs and direct wages. Examples would include a particular job or batch.

1. **Indirect Costs**

All material, labour and expense costs which cannot be identified as direct costs are termed indirect costs. The three elements of indirect costs; indirect materials, indirect labour and indirect expenses are collectively known as **overheads.**

* + 1. **Functional Analysis of Costs**

In financial accounting, costs or expenses are commonly classified as cost of sales, administrative expenses or sales and distribution costs. This is a method of analysing costs by function or according to the type of activity for which the costs were incurred.

In cost accounting costs are often analysed by function and categories of functional analysis commonly used are:

* Production costs
* Administration costs
* Selling costs
* Distribution costs
* Research and development costs
* Financing costs
  + 1. **Fixed and Variable Costs**

A different way of analysing and classifying costs is into fixed and variable costs.

A fixed cost is a cost which is incurred for a particular period of time and which within certain activity levels is unaffected by changes in the levels of activity e.g. rent paid by a business.

A variable cost is a cost which tends to vary with the level of activity, for example, materials used in manufacturing.

* + 1. **Other Cost Classifications**

These could be:

1. **Avoidable Costs**

Avoidable costs are specific costs of an activity or business which would be avoided if the activity or business did not exist.

1. **Unavoidable Costs**

Unavoidable costs are costs which would be incurred whether or not an activity or sector existed.

1. **Controllable Cost**

A controllable cost is a cost which can be influenced by management decisions and actions.

1. **Uncontrollable Costs**

An uncontrollable cost is any cost which cannot be affected by management within a given time span.

1. **Discretionary Costs**

Discretionary costs are costs incurred at the discretion of a manager and examples of discretionary costs include advertising, research and development and training.

summary

## Unit Summary

Having read this unit, the main points that you should understand are as follows:

* Cost classification is the analysis of costs into logical groups so that they may be summarised into meaningful information for management.
* The main classifications include:
  + cost by element
  + direct and indirect costs
  + functional costs
  + fixed and variable costs
  + other categories such as; controllable/uncontrollable and avoidable/unavoidable

## Review Questions

Let us see if you can answer the following questions before proceeding to

Unit 3.

**1. Direct or Indirect Cost**

Classify the following expenses of a manufacturing company as to

whether they are either direct or indirect:

1. Factory rental
2. Insurance of machinery used for one product only
3. Warehouse rental
4. Insurance of office buildings
5. Costs of canteen for employees
6. Petrol for delivery vehicles

**2. Cost Classification**

Distinguish between and provide information to illustrate:

1. Avoidable and unavoidable costs
2. Cost centres and cost units

## Answers to Review Questions

**1.**

1. Factory Rental – **Indirect**
2. Insurance of machinery used for one product only - **Direct**
3. Warehouse rental - **Indirect**
4. Insurance of office buildings - **Indirect**
5. Costs of canteen for employees – **Indirect**
6. Petrol for delivery vehicles –**Indirect**

**2.**

(a)

**Avoidable costs**

Avoidable costs are specific costs of an activity or business which would be avoided if the activity or business did not exist.

**Unavoidable costs**

Unavoidable costs are costs which would be incurred whether or not an activity or sector existed.

(b)

A cost centre is an area of a business (a department, location, or item of equipment) in relation to which costs may be ascertained for cost control and product costing. Separate production and service departments in a factory may each be a cost centre as an example. Alternatively, a department may consist of more than one cost centre where costs may be separately ascertained for each cost centre and an individual held responsible for the costs in each case.

A cost unit is a quantitative unit of a product or service in relation to which costs are ascertained. In manufacturing, cost units will be units of output produced within production cost centres. If the manufacturing unit is on a job order basis, the cost unit will be the individual jobs for the customers. If the manufacturing unit is a continuous process with output of homogeneous product, the cost unit will be a standardised quantity of output expressed in terms of units, weight or volume. Similarly in a service operation costs may be related to either individual jobs or per unit of service such as cost per hour of service.

# UNIT 3

# COST BEHAVIOUR

## Introduction

In Unit 2, you looked at various ways of classifying costs. In particular, we covered the classification of costs into those that vary directly with changes in activity levels (variable costs) and those that do not change (fixed costs). This Unit examines further this two-way split of cost behaviour and explains methods of splitting semi-variable costs into fixed and variable components. This information is important for management, who will use it in setting budgets, carrying out variance analysis and decision making.

Outcomes

## Learning Objectives

After studying this Unit, you should be able to:

* Explain the importance of cost behaviour in relation to decision-making
* Explain the nature of fixed, variable and semi-variable costs
* Describe other cost behaviour patterns for individual items of cost
* Identify, describe and illustrate graphically different types of cost behaviour
* Provide examples of semi-variable costs
* Analyse semi-variable costs into their fixed and variable cost elements using the high-low method

## Definition and Application of Cost Behaviour Concept

Cost behaviour is the way in which costs are affected by the changes in the volume of output. Management decisions are often based on how costs and revenues vary at different activity levels.

**3.3.1 Cost Behaviour and Levels of Activity**

Although there are many factors which may influence costs, the major influence is the volume of output or the level of activity. The term level of activity may refer to one of the following:

* number of units produced
* value of items sold
* number of items sold
* number of invoices issued
* number of units of electricity consumed

**3.3.2 Application of Cost Behaviour Information**

Management may use knowledge of cost behaviour pattern in the following management tasks:

* Controlling costs;
* Preparing budgets or forecasts;
* Deciding on output levels;
* Adjusting selling prices;
* Deciding whether to accept or reject a contract;
* Making decision to Subcontract.

**3.3.3 Cost Behaviour Principles**

The basic principle of cost behaviour is that as the level of activity rises, costs will usually rise. Logically you will agree that it will cost more to produce 2000 units of output than it will cost to produce 1000 units.

However, not all items of cost will incur higher costs as the output level rises. This creates a problem for the management accountants who have to ascertain how each item of the cost varies with increases or indeed decrease in activity levels.

## Cost Behaviour Patterns

Cost behaviour analysis is concerned with how costs change with the level of activity and by how much. Individual items of cost can be classified according to their cost behaviour. There are many cost behaviour patterns but many costs can be classified according to behaviour as:

* Fixed costs
* Variable costs
* Semi-variable costs
* Step costs

**3.4.1 Fixed Costs**

A fixed cost is a cost which tends to be unaffected in total by increases or decreases in the volume of output.

An example of fixed cost is the rent of a factory which is a constant amount each period regardless of how much or how little is manufactured inside it. The factory rent will be 10 million whether you produce 2 units or 100 units of a product.

In reality, there must be a level of activity at which more than one factory would be required for production. At that point, rent is no longer a fixed cost. Therefore, fixed costs are constant within a **reasonable range of activity.**

Below is a sketch of how a fixed cost will typically look like.

A sketch of a fixed cost:

|  |  |
| --- | --- |
|  | **Graph of Fixed cost** |
| **Cost – K** |  |
|  | **Fixed cost** |
|  |  |
|  | **Volume of output (level of activity)** |

Can you think of some examples of fixed costs? Below are three examples:

* The salary of a managing director per year
* The rent of a single factory building per year or month
* Straight-line depreciation of a single machine

**3.4.2 Step Costs**

A step cost is a cost that is fixed in nature but only within certain levels of activity. Consider the rent of a building whose maximum capacity is 1000 units. Such a cost would be fixed if production remains below 1000 units per month. If production exceeds 1000 units, a second factory would be required and the rental costs would obviously go up.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Graph of step cost** |  |  |  |  |
|  |  |  |  |  |  |
| **Cost K** |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  | **Volume of output** |  |  |  |  |

**3.4.3 Variable Costs**

A variable cost is a cost which tends to vary directly with the volume of output. The variable cost per unit is the same amount for each unit produced.

A constant variable cost per unit implies that the price per unit of say, material purchased is constant and that the rate of material usage is also constant.

**Below are some examples of Variable Costs**

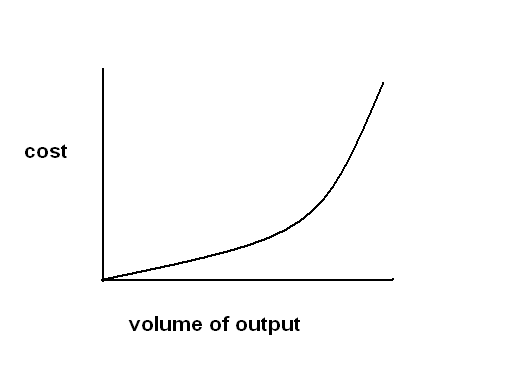
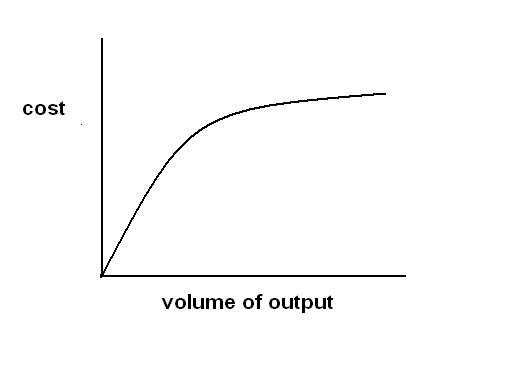
* Cost of raw materials
* Direct labour costs
* Sales commission
* Bonus payment

|  |  |
| --- | --- |
| **Cost**  **K** | **Total Variable Cost Graph** |
|  | **Volume of output** |

**Non-Linear or Curvilinear Costs**

If the relationship between total variable costs and volume of output can be shown as a curved line on a graph, the relationship is said to be curvilinear.

Two typical relationships are as follows:



**3.4.4 Semi-Variable Costs**

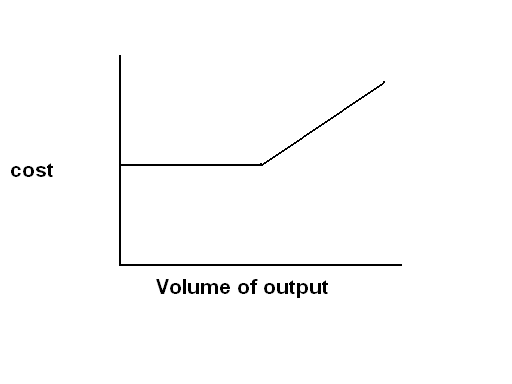
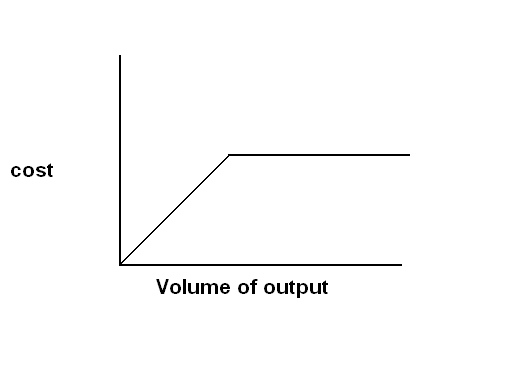
A semi-variable cost is a cost which contains both fixed and variable components and so is partly affected by changes in the level of activity.

Examples of semi-variable costs include:

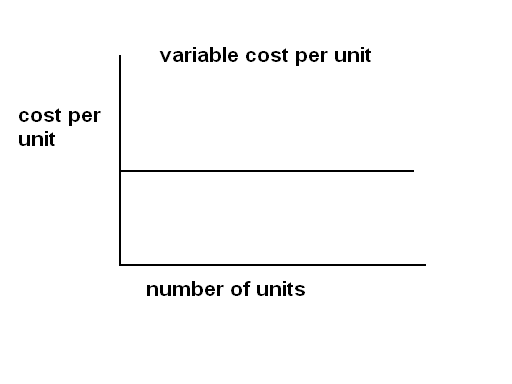
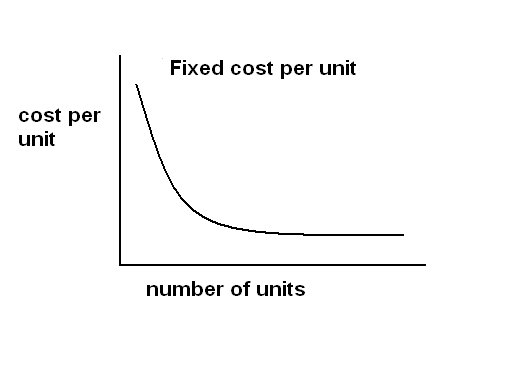
* Electricity bills
* Salesman’s salary
* Costs of running a car

**Other Cost Behaviour Patterns**

*This graph illustrates an item of cost which is variable with output up to a certain level and then becomes constant thereafter.*



*This graph illustrates an item of cost which is variable with output subject to a minimum****.***



*Fixed cost per unit decreases with Variable cost per unit remains constant*

*the increase in activity at all levels of activity*

## Determining the Fixed and Variable Elements of Semi–Variable Costs

It is generally assumed that costs are one of the following:

* Variable
* Fixed
* Semi-variable

Semi-variable costs are often separated into fixed and variable components. One of the methods used to split the cost is the high-low method which works as follows:

*Step 1* Review records the costs in the past periods

1. Select the period with the highest activity level
2. Select the period with the lowest activity level

*Step 2* **Determine** the following:

1. Total cost at high level of activity
2. Total cost at low level of activity
3. Total units at high level of activity
4. Total units at low level of activity

*Step 3* **Calculate** the variable cost per unit by dividing the difference between the total cost at the lowest activity and total cost at high activity by the difference between the highest and lowest activity.

*Step 4* Calculate the fixed cost by subtracting variable costs from the total cost at either the lowest or highest activity.

**Example**

Makonge Ltd has recorded the following total costs during the last five years:

|  |  |  |
| --- | --- | --- |
| Year | Output (000) | Total cost (K’000) |
| 2000 | 65,000 | 145,000 |
| 2001 | 80,000 | 162,000 |
| 2002 | 90,000 | 170,000 |
| 2003 | 60,000 | 140,000 |
| 2004 | 75,000 | 160,000 |

**Required**

Calculate the total costs that should be expected in 2005 if output is 95,000 units.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Solution** | |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| *Step 1* | Period with the highest activity | 2002 |  |  |  |  |  |
|  | Period with the lowest activity | 2003 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| *Step 2* | Total cost at high activity | 170,000 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | Total cost at low activity | 140,000 |  |  |  |  |  |
|  | Total units at high activity | 90,000 |  |  |  |  |  |
|  | Total units at low activity | 60,000 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| *Step 3* | Variable cost per unit |  |  |  |  |  |  |
|  | Total cost at high activity - total cost at low activity | | |  |  |  |  |
|  | Total units at high activity - total units at low activity | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | K170,000 - K140,000 | K30,000 |  |  |  |  |  |
|  | 90,000 - 60,000 | 30,000units |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| *Step 4* | Fixed cost = Total cost @ high activity - total units @ high activity x variable cost per unit | | | | | | |
|  |  |  |  |  |  |  |  |
|  | K170,000 - K (90,000 x 1) = | **K 80,000** |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | ***Therefore, total costs at 95,000 units are as follows:*** | | |  |  |  |  |
|  |  | K |  |  |  |  |  |
|  | Variable cost = 95,000 x 1 | 95,000 |  |  |  |  |  |
|  | Fixed costs | 80,000 |  |  |  |  |  |
|  | Total costs | **175,000** |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

summary

## Unit Summary

In this Unit, the points you have covered include the following:

* Costs which are not affected by the level of activity are fixed costs or period costs.
* Step fixed costs are fixed with a certain range of activity.
* Variable costs increase or decrease with the level of activity and they are assumed to be constant per unit.
* Semi-variable costs are costs that are partly fixed and partly variable.
* The fixed and variable elements of semi-variable costs can be determined by the high-low method.

## Review Question

Shelela Limited recorded the following costs for the past six months

|  |  |  |
| --- | --- | --- |
| Month | Activity level  Units (000) | Total cost  K’000 |
| 1 | 40 | 6,586 |
| 2 | 30 | 5,826 |
| 3 | 36 | 6,282 |
| 4 | 38 | 6,396 |
| 5 | 42 | 6,700 |
| 6 | 33 | 6,052 |

**Required**

Estimate the fixed cost per month.**(4 marks)**

Estimate the total costs for the following activity levels in a month.

* 1. 75 units
  2. 90 units

**(6 marks)**

## Answer to Review Question

Shelela Limited

|  |  |  |
| --- | --- | --- |
|  | Activity | Cost(K’000) |
| High activity | 42 | 6,700 |
| Low activity | 33 | 6,052 |
| Change | 9 | 648 |
|  |  |  |
| Variable cost per unit | 648 | = 72 |
|  | 9 |  |
|  |  |  |
|  |  |  |
| Fixed costs = Total cost - variable cost | | |
|  | K’000 |  |
| = 6700 - (72 x 42) = | **3,676** |  |
|  |  |  |
| Total cost at 75 units |  |  |
| = 3676 + (72 x 75) = | **9,076** |  |
|  |  |  |
|  |  |  |
| Total cost at 90 units |  |  |
| = 3676 + (72 x 75) = | **10,156** |  |

# UNIT 4

# COSTING OF MATERIALS

## Introduction

This is the first of several Units that deals with the accounting and costing of the elements of costs namely; materials, labour and expenses. These could either be direct or indirect costs.

Outcomes

## Learning Objectives

After studying this Unit you should be able to:

1. Explain the distinction between direct and indirect material costs
2. Describe the documentation used for recording of materials
3. Calculate the costs of materials used in production and the values of closing stocks using the First-In-First-Out (FIFO), Last-In-First-Out (LIFO) and Weighted Average (AVCO) Cost methods of stock valuation
4. Account for material costs in the ledger account

## Direct and Indirect Materials

In cost and management accounting, materials are commonly classified as either direct or indirect. Direct materials as you may know by now, are the materials that can be directly attributed to a unit of production, or specific job or service provided directly to a customer.

In a manufacturing business direct material include:

1. Raw materials
2. Components

Indirect materials are other materials that cannot be directly attributed to a unit of production. With that description in mind, can you think of an example of indirect materials? Well these might be the oil used for the lubrication of production machinery or other consumable such as cleaning materials.

## Stock Control

As the cost of purchasing stock is usually one of the largest costs faced by a business it is important that an effective stock control system is established within an organisation.

Stock control for a business should cover the following functions:

1. The ordering of stock
2. The purchase of stock
3. The receipt of the ordered items
4. Storage of stock items
5. The issue of stock items
6. The maintenance of sufficient stocks

## Procedure and Documentation for Materials

**Purchase Procedure**

As bought in, materials and services normally represent a large proportion of a firm’s cost, it is essential that the materials purchased are most suitable from the utility and cost basis.

**Purchase Requisition**

Any request for material purchase should be made on a purchase requisition. The purchasing manager will verify that requisitions are authorised in accordance with established policy before placing orders. An example of a purchase requisition is shown below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Purchase Requisition Req. No: …….**  Department/Job no :  Suggested supplier : Date requested :  Requested by :  Latest date required : | | | | |
| Quantity | Code number | Description | Estimated Costs |  |
|  |  |  | Unit | K |
| Authorised signature : | | | | |

**Ordering**

The purchase order is the basis for a legal contract between the firm and the supplier. The issue of a purchase order must be closely controlled and signing restricted to a few senior people.

Upon receipt of a duly authorised purchase requisition, the purchasing department will place a purchase order with one of the selected suppliers. Copies of the order are sent to the accounts, goods reception and progress chasers.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Purchase Order/ Confirmation**  Please deliver to the above address  *Ordered by…………….*  *Passed and checked by………….*  *Total order value K…………….*  Purchase order ref:  To  Address of supplier | | | | |
|  |  |  |  |  |
|  |  | Subtotal  Vat @17.5%  Total |  |  |
|  |  |
|  |  |
|  |  |

**Reception and Inspection Procedure**

When materials are received from suppliers, they are normally delivered to the Stores Department. The stores personnel must check that the goods delivered are the ones that have been ordered, in the correct quantity, of the correct quality and in good condition.

The Stores Department raises a Goods Received Note (GRN) from the delivery note details. The GRN is used to update the Stores record with the quantities of goods received.

**Purchase Invoices**

A copy of the GRN will be sent to the purchasing department attached to the copy purchase order. When the supplier’s invoice is received, the three documents will be passed to the appropriate individual to approve payment of the invoice.

|  |  |  |
| --- | --- | --- |
| **GOODS RECEIVED NOTE**  Date : Time:  *WAREHOUSE COPY*  Our Order No……………………..  Supplier and Suppliers Advice Note No……………………. | | |
| QUANTITY | CAT NO | DESCRIPTION |
|  |  |  |
| **RECEIVED IN GOOD CONDITION**  **Name……………………………….*.***  **Signature……………………………** | | |

**Storage**

In any stock control system, there should be a continual record of the current quantities of each of the stock item held in store. Receipt into store and issues from store must be recorded, so that the current balance in stock can be kept up-to-date.

Storekeeping involves storing materials to achieve the following:

1. Speedy issue and receipt of materials;
2. Full identification of materials at all time;
3. Correct location of all materials at all times;
4. Protection of materials from damage and deterioration;
5. Provision of secure stores to avoid pilferage, theft and fire;
6. Efficient usage of storage space;
7. Maintenance of correct stock levels;
8. Keeping correct and up-to-date details of receipts, issues and stock levels.

When the stores control system is a paper-based system, there could be two separate stock records:

1. Bin card system
2. Stock ledger system

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Bin card** | | | | | | |
| Part Code No………………………… Location………………………………..  Bin Number…………………… Stores Ledger No…………… | | | | | | |
| Receipts | | | Issues | | | Stock Balance |
| Date | Quantity | GRN | Date | Quantity | Req No. |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Stores Ledger Card** | | | | | | | | | | | |
| Materials……………………………. Maximum Quantity  Code ………………………………… Minimum Quantity | | | | | | | | | | | |
| Date | Receipts | | | | Issues | | | | Stock | | |
| GRN No | Quantity | Unit Price | Amount | Stores Req No. | Quantity | Unit Price | Amount | Quantity | Unit Price | Amount |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |

## Material Issues and Pricing

**Material Issues**

The issue of materials must be appropriately authorised and amount issued recorded so that the appropriate charge can be made to production or to the receiving cost centre. The usual way this is done is by a material requisition. This document performs two functions; itauthorises the stock- keeper to release the goods and acts as a posting medium to the stores ledger and bin cards.

|  |  |  |  |
| --- | --- | --- | --- |
| **Materials Requisition Note** | | | |
| Date Required………………………. Cost Centre No/ Job No………………… | | | |
| Quantity | Item Code | Description | K |
|  |  |  |  |
| Signature of requisitioning  Manager/foreman………………………………………. Date…………………….. | | | |

**Pricing Issues**

When materials are purchased, they are valued based on the price charged by the supplier plus any carriage inward costs. The cost should be net of any trade discount given.

When materials are issued from stores, a cost or price has to be attached to them. When a quantity of materials is purchased in its entirety for a specific job, the purchase cost can be charged directly to the job.

A business might use any of several valuation methods for pricing stores issued such as:

1. First in First Out (FIFO)
2. Last In First Out (LIFO)
3. Weighted Average Cost (AVCO)

**Example**

The following data will be used to illustrate the three common methods of stock valuation namely:

1. First in First Out (FIFO)
2. Last In First Out (LIFO)
3. Weighted Average Cost (AVCO)

**4.6.1 First- In- First- Out (FIFO)**

Using this method, material issues are priced at the unit price of the oldest batch in stock until all the units of the batch have been exhausted after which the price of the next oldest batch is used.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Stores Ledger Card** | | | | | | | | | | |
| Date | Details |  | Receipts |  |  | Issues |  |  | Balance |  |
|  |  | Units | Price | Values | Units | Price | Values | Units | Price | Values |
|  |  |  | K'000 | K'000 |  | K'000 | K'000 |  | K'000 | K'000 |
| 1-Jan | Balance Bf |  |  |  |  |  |  | 100 | 50 | 5,000 |
| 9-Jan | Issues |  |  |  | 40 | 50 | 2,000 | 60 | 50 | 3,000 |
| 15-Jan | Receipts | 50 | 55 | 2,750 |  |  |  | 60 | 50 | 3,000 |
|  |  |  |  |  |  |  |  | 50 | 55 | 2,750 |
| 20-Jan | Receipts | 50 | 60 | 3,000 |  |  |  | 60 | 50 | 3,000 |
|  |  |  |  |  |  |  |  | 50 | 55 | 2,750 |
|  |  |  |  |  |  |  |  | 50 | 60 | 3,000 |
| 29-Jan | Issues |  |  |  | 60 | 50 | 3,000 |  |  |  |
|  | Issues |  |  |  | 10 | 55 | 550 | 40 | 55 | 2,200 |
|  |  |  |  |  |  |  |  | 50 | 60 | 3,000 |

* + 1. **Last –In- First-Out (LIFO)**

Using this method, issues are charged out at a price of the most recent batch received and continue to be charged thus until a new batch is received.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Date | Details |  | Receipts |  |  | Issues |  |  | Balance |  |
|  |  | Units | Price | Values | Units | Price | Values | Units | Price | Values |
|  |  |  | K'000 | K'000 |  | K'000 | K'000 |  | K'000 | K'000 |
| 1-Jan | Balance Bf |  |  |  |  |  |  | 100 | 50 | 5,000 |
| 9-Jan | Issues |  |  |  | 40 | 50 | 2,000 | 60 | 50 | 3,000 |
| 15-Jan | Receipts | 50 | 55 | 2,750 |  |  |  | 60 | 50 | 3,000 |
|  |  |  |  |  |  |  |  | 50 | 55 | 2,750 |
| 20-Jan | Receipts | 50 | 60 | 3,000 |  |  |  | 60 | 50 | 3,000 |
|  |  |  |  |  |  |  |  | 50 | 55 | 2,750 |
|  |  |  |  |  |  |  |  | 50 | 60 | 3,000 |
| 29-Jan | Issues |  |  |  | 50 | 60 | 3,000 |  |  |  |
|  | Issues |  |  |  | 20 | 55 | 1,100 | 30 | 55 | 1,650 |
|  |  |  |  |  |  |  |  | 60 | 50 | 3,000 |

**4.6.3 Weighted Average Cost (AVCO)**

With this method, all quantities of stock are valued at Weighted Average Cost.

A new Weighted Average Cost is calculated each time there is a new delivery into stock.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Stores Ledger Card** | | | | | | | | | | |
| Date | Details |  | Receipts |  |  | Issues |  |  | Balance |  |
|  |  | units | Price | Values | units | Price | Values | units | Price | Values |
|  |  |  | K'000 | K'000 |  | K'000 | K'000 |  | K'000 | K'000 |
| 1-Jan | Balance Bf |  |  |  |  |  |  | 100 | 50 | 5,000 |
| 9-Jan | Issues |  |  |  | 40 | 50 | 2,000 | 60 | 50 | 3,000 |
| 15-Jan | Receipts | 50 | 55 | 2,750 |  |  |  | 110 | 52 | 5,750 |
| 20-Jan | Receipts | 50 | 60 | 3,000 |  |  |  | 160 | 55 | 8,750 |
| 29-Jan |  |  |  |  | 70 | 55 | 3,828 | 90 | 55 | 4,922 |

## Comparison of Issue Methods

Provided that the system is used consistently and suits operating conditions of the firm, any of the systems could be used. While FIFO and Weighted Average Cost are acceptable for financial reporting purposes, LIFO is not. However, in cost accounting, the rules of financial reporting do not apply, and businesses can use LIFO if they wish. Differences between valuation methods are only significant in the times of inflation. The relative advantages and disadvantages of FIFO, LIFO and AVCO are, therefore, discussed below in relation to inflationary situations.

|  |  |  |
| --- | --- | --- |
| **METHODS** | **ADVANTAGES** | **DISADVANTAGES** |
| **FIFO** | * Produces current values for closing stock | * Produces out-of-date production costs and therefore, potentially overstates profit * Complicates stock records as stock must be analysed by delivery |
| **LIFO** | * Produce realistic production costs and, therefore, more realistic/prudent profit figures | * Produces unrealistically low closing stock values. * Complicates stock records as stock must be analysed by delivery |
| **AVCO** | * Simple to operate-calculations within stock records are minimised | * Produces both stock values and production costs which are likely to differ from current values |

## Accounting for Material Costs

In cost accounting, we are concerned not only with the cost of individual items of stock, but with the total costs of all raw material stocks used and the total costs of all finished goods sold during the year. These total costs, which are the sum of all the costs on individual stores ledger records, are recorded as follows:

1. In raw materials stores account for raw material stocks.
2. In work in progress all materials under production.
3. In finished good stocks account for finished goods.

**Example**

At 1 January 2015, the total value of items held in stock was K50 million. During the month the following transactions occurred.

|  |  |
| --- | --- |
| Detail | K’ Million |
| Materials purchase from suppliers on credit | 60 |
| Materials returned to suppliers | 3 |
| Materials purchased for cash | 8 |
| Direct materials issued to production | 55 |
| Materials issued to the maintenance services department | 20 |
| Direct materials returned to stores from production | 4 |

**Required**

Enter the above transaction in a stores ledger account, balancing off the account.

**Solution**

|  |  |  |  |
| --- | --- | --- | --- |
| **Stores Account** | | | |
|  | K'000 |  | K'000 |
| Balance b/f | 50,000 | Work In Progress | 55,000 |
| Creditors | 60,000 | Production Overhead | 20,000 |
| Cash | 8,000 | Returns to suppliers | 3,000 |
| Returns from WIP | 4,000 |  |  |
|  |  | Balance c/f | 44,000 |
|  | 122,000 |  | 122,000 |
| Balance b/f | 44,000 |  |  |

summary

## Unit Summary

Now that you have read Unit 4 you should understand that:

1. Direct materials are materials that can be directly attributed to a unit of production or a specific job or service provided directly to a customer.
2. Indirect material are materials that cannot be directly attributed to a unit of production.
3. FIFO is a method of stock pricing and operates on a First in First out basis.
4. LIFO is a methods of stock pricing and operates on a Last in First out basis.
5. AVCO is the weighted average method of stock pricing.
6. The total cost of all raw materials stocks used during the accounting period is recorded in the raw materials stock account.

(vii) The total cost of stocks manufactured in the production department

is recorded in the work in progress.

(viii) The total cost of finished goods sold in an accounting period are

recorded in the finished goods account.

## Review Questions

**The following information relates to questions 1, 2 and 3.**

The stock record for component Fean Express for the month of January showed:

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Receipts  Units | Value  K ‘000 | Issues  Units |
| Opening stock | 500 | 1,250 |  |
| 5 January | 1,000 | 2,750 |  |
| 12 January | 1,600 | 4,480 |  |
| 18 January | 1,200 | 3,480 |  |
| 19 January |  |  | 2,100 |
| 25 January | 1,500 | 4,350 |  |
| 31 January |  |  | 1,800 |

1.Using the FIFO method of pricing issues, the cost of issues (in K’000) during the month was**:**

1. K11,250
2. K10,800
3. K10,855
4. K11,300

2. Using the LIFO method of pricing issues, the value of stock at 31st January issues (in K’000) is:

1. K4,100
2. K3,720
3. K5,120
4. K3,950

3. Using the AVCO method of pricing issues, at what price would the issues on 31st January be made (calculate to two decimal places).

1. K3.00
2. K2.95
3. K2.90
4. K2.83

## Answers to Review Questions

**Fean Express**

**QUESTION 1: B QUESTION 2: C**

|  |  |  |
| --- | --- | --- |
| **Cost of issues under the FIFO method** | | |
|  |  |  |
| Issue |  | Value |
| 500 |  | 1,250 |
| 1,000 |  | 2,750 |
| 1,600 |  | 4,480 |
| 800 | =800/1200 x 3480 | 2,320 |
| 3,900 |  | 10,800 |

|  |  |  |
| --- | --- | --- |
| **Cost of issues under the LIFO method** | | |
|  |  | K'000 |
| Total Receipts | | 16,310 |
|  |  |  |
| Less Issues | |  |
|  |  |  |
| 1,200 |  | 3,480 |
| 900 | =900/1600 x 4480 | 2,520 |
| 2,100 |  |  |
|  |  |  |
| 1,500 |  | 4,350 |
| 300 | =300/1600 x 4480 | 840 |
|  |  | 11,190 |
|  |  |  |
| **Closing Stock** | | **5,120** |
|  |  |  |

**QUESTION 3: D**

|  |  |  |  |
| --- | --- | --- | --- |
| **Cost of issues under the AVCO method** | | | |
|  | Units | Average price | Value |
|  |  |  | K'000 |
| Receipts | 500 | 2.50 | 1,250 |
| Receipts | 1,000 | 2.75 | 2,750 |
| Receipts | 1,600 | 2.80 | 4,480 |
| Receipts | 1,200 | 2.90 | 3,480 |
| **Total** | **4,300** | **2.78** | **11,960** |
| Issue | (2,100) | 2.78 | (5,841) |
| Balance | 2,200 | 2.78 | 6,119 |
| Receipts | 1,500 | 2.90 | 4,350 |
| **Total** | **3,700** | **2.83** | **10,469** |

# UNIT 5

# MATERIALS STOCK CONTROL

## Introduction

In the previous Unit, you looked at how transactions involving materials are recorded and valued. This Unit looks at the monitoring of stock levels as a means of controlling the stock costs.

Outcomes

## Learning Objectives

After studying this unit you should be able to:

1. Describe the procedures required to monitor stock and minimise stock discrepancies and losses;
2. Explain the costs of stockholding and stock-outs;
3. Explain and illustrate minimum stock levels, maximum stock levels and stock reorder levels;
4. Calculate and interpret optimal order quantities.

## Why Stock Control?

The costs of purchasing stock are usually one of the largest costs faced by an organisation and once obtained, stock has to be carefully controlled and checked.

**The Benefits of Stock Holding**

The main reasons for holding stock can be summarised as follows:

1. To take care of possible future shortages;
2. To ensure sufficient goods are available to meet expected demand;
3. To absorb seasonal fluctuation and any variations in usage and demand;
4. To allow production processes to flow smoothly and efficiently;
5. As a deliberate investment policy, especially in times of inflation.

**Holding Costs**

Though beneficial, holding stocks can be an expensive business. The objective of a stock policy should be to minimise the total annual costs associated with stock holding. Such costs include:

1. Storage costs
2. Interest costs
3. Insurance costs
4. Risk of obsolescence
5. Deterioration

**Order Costs**

These are costs that are incurred every time stock is purchased from a supplier and they are high when stocks are ordered in smaller quantities but more frequently. Such costs include:

1. Clerical and administrative
2. Transport costs
3. Production runs costs

**Stock Out Costs**

An additional type of cost which may arise if stocks are kept too low is the type associated with running out of stock. These include:

1. Lost contribution from lost sales
2. Loss of future sales due to disgruntled customers
3. Loss of customer goodwill
4. Cost of production stoppages
5. Labour frustrations over stoppages
6. Extra costs of urgent orders

## Monitoring Stocks and Stock Losses

Stocks can be monitored using stocktaking.

Stocktaking involves counting the physical stock on hand at a certain date and then checking this against the balance shown on the stock records.

There are two methods of carrying out this process. These are periodic stock taking and continuous stock taking.

**Periodic Stocktaking**

‘A process whereby all stock items are physically counted and valued at a set point in time, usually at the end of an accounting period.’

***CIMA Official Terminology***

**Continuous Stocktaking**

‘The process of counting and valuing selected items at different times on a rotating basis’

***CIMA Official Terminology***

This involves a specialist team counting and checking a number of stock items each day so that each item is checked at least once a year. Valuable items or items with a high turnover could be checked more frequently.

The advantages of continuous stocktaking compared to periodic stock taking are as follows:

There will be occasions when stock checks disclose discrepancies between the physical amount of an item in stock and the amount shown in the stock records. When this occurs, the cause of the discrepancy should be investigated and appropriate action taken.

**Objective of Stock Control**

The overall objective of stock control is to ensure that the total of the following costs is minimised:

1. Holding costs
2. Ordering costs
3. Stockout costs

## Re-order Level System

This is a more sophisticated version of the two-bin system, which involves the setting of three control levels based on an analysis of past stock usage and delivery times. These levels are:

1. Re-order level
2. Minimum stock level
3. Maximum stock level

**5.5.1 Re-order Level**

The re-order level is the level of stock at which a replenishment order should be placed.

Re-order Level = Maximum Usage x Maximum Lead time

**5.5.2 Minimum Stock Level**

The minimum stock level for an item of stock is a warning level at which management should check to ensure that a new delivery of the item will be received from the supplier before stockout occurs. This may call for emergency action to replenish stocks.

**Minimum stock level = Re-order level – (average usage x average lead time)**

**5.5.3 Maximum Stock**

This is the maximum amount of stock that should ever be held in stock. This also acts as a warning level to signal management that stocks are reaching a potentially wasteful level.

**Maximum stock = reorder level + reorder quantity – (minimum usage x minimum lead time)**

**5.5.4 Average Stock Level**

Although average stock is not a control level itself, you may need it to calculate estimated stock holding costs.

If we assume that a replenishment order arrives at the point at which stock reaches the buffer or safety stock level, and then, thereafter, stock is used evenly until it reaches reorder level and an order is placed, the average stock level can be calculated as

**Average stock = safety stock + ½ reorder quantity**

If we assume that no safety stock is held, so that a delivery is received just as stock falls to zero, then the formula for calculating the average stock is:

**Average stock = ½ of reorder quantity**

**Example**

Zam Tyre Ltd deals in Good year tyres for which the following information is available:

Average usage 140 tyres per day

Minimum usage 90 tyres per day

Maximum usage 175 tyres per day

Lead time 10 – 16 days

Reorder Quantity 3,000 tyres

**Required**

Based on this information calculate

* 1. Reorder level
  2. Minimum stock level
  3. Maximum stock level

**Solution**

Reorder level = Maximum Usage x Maximum Lead Time

**175 x 16 = 2,800**

**Minimum stock level = Reorder level – (average usage x average lead time)**

**2,800 – (140 x 13) = 980**

**Maximum stock = reorder level + reorder quantity – (minimum usage x minimum lead time)**

**2,800 + 3,000 – (90 x 10) = 4,900**

## Economic Order Quantity (EOQ)

Ordering in large quantities reduces the annual costs of ordering. On the other hand, large orders increase storage requirements which increase stock holding costs. The economic order quantity minimises the combined costs of stock ordering and stock holding.

**Definition**

Economic Order Quantity (EOQ) is the order quantity for a stock item that will minimise the combined costs of stock ordering plus stock holding over a given period, say a year.

EOQ is based on the following assumptions:

(i) There should be no stockout of the item;

(ii) There is no buffer stock;

(iii) A new delivery of the stock item is received from the supplier at the

exact time that existing stocks run out;

(iv) The stock item is used up at an even rate and predictable rate over

time;

(v) The delivery lead-time from the supplier is predictable and reliable.

|  |
| --- |
| **2CoD** |
| **Ch** |

Formula

**√**

## Other Systems of Stock Control

**5.7.1 Two-Bin System**

This is a system whereby each stores item is kept in two storage bins, say A and B. When bin A is emptied, an order must be placed for re-supply; bin B will contain sufficient stocks to last until the fresh delivery is received.

**5.7.2 Periodic Review System**

Under this system, the stock levels are reviewed at fixed intervals e.g. every four weeks.

**5.7.3 ABC Inventory Analysis**

This is a selective approach to stock control whereby materials are classified under A, B and C according to their expense group, A being the most expensive, group B the medium cost and group C the inexpensive material. High valued items are more carefully monitored compared to less valued ones.

**5.7.4 JIT Systems**

Some manufacturing companies have sought to reduce their inventories of raw materials and components by using the Just-In-Time philosophy. This is a system where raw materials are bought for production and not for stocking. Components are also made when there is readily available customer demand.

JIT philosophy is only possible when suppliers can be relied upon to deliver fresh supplies of an item at the required time and to the required quality standard. Such a system can be successfully adopted where the following features are present:

1. Stable high volume of stock consumption;
2. Coordination of the daily production programmes of the suppliers and the consumer;
3. Co-operation of suppliers;
4. A convenient reliable transport system, or the supplier being in close proximity to the consumer.

The relative costs and benefits of JIT are as follows:

1. Warehousing costs are almost eliminated;
2. The quality control function has been made the responsibility of the supplier;
3. Problems of obsolescence, deterioration, theft, cost tied up and all other costs associated with holding stock have been avoided.

However, it should be noted that the JIT systems expose a business to huge costs such as unfulfilled customer orders when there is a breakdown in the supply chain network.

summary

## Unit Summary

Having read Unit 5, the main points to remember are:

1. Perpetual inventory refers to stock recording system whereby the records.

(bin card and stores ledger card) are updated for each receipt and issue of

stock as it occurs.

1. Stocktaking - counting and recording physical quantities of stock
2. Lead time - the time between when an order is placed and the receipt

of stock.

1. Stock control levels can be calculated in order to maintain stocks at the

optimum level. The three critical levels are reorder level, minimum level

and maximum level.

1. Stock costs include purchase costs, holding costs, ordering costs and stock out costs.
2. Economic order quantity - the order quantity that minimises ordering and holding costs and can be computed using a table, a graph or formula.

## Review Questions

A large retailer with multiple outlets maintains a central warehouse from which the outlets are supplied. The following information is available for part number PART255

|  |  |
| --- | --- |
| Average usage | 350 per day |
| Minimum usage | 180 per day |
| Maximum usage | 420 per day |
| Lead time for replenishment | 11 – 15 days |
| Reorder quantity | 7000 units |
| Reorder level | 6500 units |

1. Based on the data above what is the maximum level of stock?

1. 5,250
2. 6,500
3. 11,320
4. 12,800
5. What is the minimum stock level?
6. 200
7. 1750
8. 2450
9. 4520

3. Invesim Limited uses the economic order quantity formula (EOQ) to establish its optimal reorder quantity for its single raw material. The following data relates to the stock costs

|  |  |
| --- | --- |
| Purchase price | K15,000 per unit |
| Carriage costs | K50,000 per order |
| Ordering costs | K5,000 per order |
| Storage costs | 10 % of purchase price plus K200 per unit per annum |
| Annual demand | 4000 units |
|  |  |

What is the EOQ to the nearest whole unit?

1. 4690 units
2. 1414 units
3. 426 units
4. 509 units

## Answers to Review Questions

**Question: 1 C**

**Reorder level = maximum Usage x maximum lead time**

**420 x 15 = 6,300**

1. **Maximum stock = reorder level + reorder quantity – (minimum usage x minimum lead time)**

**6,300 + 7,000 – (180 x 11) = 11,320**

**Question: 2 B**

**Minimum stock level = Reorder level – (average usage x average lead time)**

**6,300 – (350 x 13) = 1,750**

**Question: 3 B**

|  |  |
| --- | --- |
| √ | **2 x 55,000x 4000** |
| **200 + 10% x 200** |
|  |  |
| √ | 440000000 |
| 220 |
|  |  |

# 

# UNIT 6

# LABOUR COSTING

## Introduction

In this Unit, we will look at labour costs. We begin by looking at a number of remuneration methods and will consider the various types of incentive schemes that exist. We will also examine the procedures and documents required for the accurate recording of labour. The procedure for accounting for labour costs will then be described and finally, certain aspects of labour cost control will be explained such as monitoring labour turnover and productivity.

## Learning Objectives

After studying this unit you should be able to:

1. Describe and illustrate different remuneration methods.
2. Explain how labour time might be recorded and traced to individual products, jobs or activities.
3. Distinguish between direct and indirect labour costs.
4. Explain the cause and costs of labour turnover and calculate turnover.
5. Describe and illustrate measures of labour efficiency and utilisation

## Remuneration Methods

There are three basic groups of remuneration method:

1. Time related
2. Output related
3. Bonus/incentive schemes

**6.3.1 Time Based Systems**

**Basic System**

At the simplest level, workers would be paid for the number of hours worked at a basic rate per hour up to say 40 hours per week using the following formula.

**Formula**

Wages = Hours worked x Rate of pay per hour

**Example**

An employee is paid K5, 500 per hour and is expected to work at least a 48-hour week. What would he be paid for a standard 48-hour week?

**Solution**

48 hours x K5,500 = K264,000

**Overtime**

If an employee works more than the number of hours set by an organization as daily or weekly requirements, the additional hours worked are known as overtime. In many organisations employees who work overtime are paid an additional amount per hour for those extra hours that they work.

When the rate per hour for overtime is higher than the basic rate of pay in normal working hours, the additional pay per hour is known as overtime premium. For example, if the day rate is K30,000 and overtime is paid at time and half, eight hours of overtime would be paid

K

Basic pay (8 x K30,000) 240,000

Overtime premium (8 x K15,000) 120,000

**360,000**

The overtime premium is the extra rate per hour which is paid and not the whole of the payment for the overtime hours.

**High Day Rate Systems**

This is a time-based system which is designed to provide a strong incentive by paying rates well above normal basic rates in exchange for above average output and performance. For its successful application, it is necessary to ensure that the output levels are the result of detailed work studies and that there is an agreement from the labour force and the unions involved on the required production level.

**6.3.2 Piecework**

Piecework is also known as payment by results or output related pay. It is an alternative to time-related pay.

Piece work is where a fixed amount is paid per unit of output achieved irrespective of the time spent.

**Example**

If an amount paid to an employee is K3,000 per unit produced and that an employee produces 80 units in a week, how much should be paid in wages?

**Solution**

80 units x K3, 000 = K240,000

**Variations of piecework**

**Piece Rate with Guaranteed Minimum**

Piece rate with guaranteed minimum operates to give the employees some security where they may suffer loss of earnings when production is low through no fault of their own.

The way the system works is that if an employee’s earnings for the number of units produced in the period are lower than guaranteed amount, then the guaranteed amount is paid instead.

**Example**

Romeo is paid K3,000 for every unit that he produces but he has a guaranteed minimum wage of K28,000 per eight-hour day. In a particular week, he produces the following number of units:

|  |  |
| --- | --- |
| Day | Units |
| Monday | 12 |
| Tuesday | 14 |
| Wednesday | 9 |
| Thursday  Friday | 14  8 |

**Required**

Calculate Romeo’s wage for this week.

**Solution**

|  |  |
| --- | --- |
| Day | K’000 |
| Monday (2 x K3000) | 36 |
| Tuesday (14 x K3000) | 42 |
| Wednesday (guarantee) | 28 |
| Thursday (14 x K3000)  Friday (guarantee)  **Total** | 42  28  **176** |

**A Differential Piecework System**

One objection to straight piecework system is that because a flat rate per unit is paid, the incentive effect at higher production levels declines. Differential piecework seeks to overcome this by increasing the rate progressively at various production levels e.g.

**Example**

Payment by results rates for an organisation are as follows:

|  |  |
| --- | --- |
| Output per week | Rate per unit  K’000 |
| 1 – 100  101- 123 | 15  17 |
| Above 123 | 20 |

**Required**

If an employee produces 135 units in a week, how much will he be paid?

**Solution**

|  |  |  |
| --- | --- | --- |
| Units | Rate  K'000 | Total  K'000 |
| 100 | 15 | 1500 |
| 23 | 17 | 391 |
| 12 | 20 | 240 |
| **135** |  | **2131** |

**6.3.3 Bonus and Incentive Schemes**

Bonuses are payments to employees on top of their basic pay and any overtime payments. They may be paid to employees for a variety of reasons. An individual employee, a department, a division or indeed the entire organisation may have performed particularly well and it is felt by management that a bonus is due to some or all of the employees.

The features of any bonus or incentive scheme are as follows:

1. Employees are paid more for their efficiency;
2. Additional profits are shared between employer and employee;
3. The extra pay motivates employees.

## Labour Turnover

Labour turnover is a measure of the number of employees leaving/being recruited in a period of time expressed as a percentage of the total labour force.

|  |  |
| --- | --- |
| **Average number of leavers who are replaced** | **X 100** |
| **Average number of employees** |

**LABOUR TURNOVER =**

The reasons for labour turnover include:

1. Illness or accidents;
2. A family moves away from the locality, marriage, pregnancy or difficulties with child care provision;
3. Retirement or death;
4. Paying a lower wage rate;
5. Unsafe working conditions;
6. Lack of opportunity for career development.

**Example**

At the beginning of the year, a company employed 4,600 individuals. During the year, 1,800 individuals were recruited and at the end of the year, the company employed a total of 5,500 individuals.

**Required**

What was the labour turnover during the year, to the nearest 1%?

|  |  |  |
| --- | --- | --- |
| *Employees* |  |  |
|  | No of employees |  |
| At start of year | 4,600 |  |
| Recruited during the year | 1,800 |  |
|  | 6,400 |  |
| At end of year | 5,500 |  |
| Therefore,leavers during the year | 900 |  |
|  |  |  |
| Average number of employees = (4,600 + 5,500)/2 = 5050 | | |
| **Labour turnover = (900/5050) x 100% = 17.8% or 18%** | | |

People leave jobs for a variety of reasons, some of which are avoidable, and it is normal to analyse the reasons for leaving so as to take corrective action where possible. Typical reasons for labour turnover include:

1. Redundancy
2. Dissatisfaction over prospects, pay, hours and other conditions
3. Personal advancement
4. Lack of career structure
5. Lack of training
6. Marriage, pregnancy
7. Discharge
8. Move from locality
9. Changes in domestic circumstances

**6.4.1 Costs of Labour Turnover**

The costs of labour turnover can be large and management should attempt to keep labour turnover as low as possible so as to minimise these costs. The costs arise in the following areas:

1. Leaving costs - interviews, preparation of documentation, disruption of output;
2. Replacement costs - advertising, selection, personnel Human resource department procedure;
3. Training costs - costs of required internal and external courses;
4. Learning costs - slower initial production, high scrap rate, tool breakages, increased accident rate, poor service.

**6.4.2 The Prevention of High Labour Turnover**

The following actions could reduce labour turnover:

1. Paying satisfactory wages;
2. Offering satisfactory hours and conditions of service;
3. Creating good informal relationship between members of staff;
4. Offering good training schemes and a well-understood career or promotional ladder;
5. Improving the content of the job to create job satisfaction;
6. Improving human resource planning to avoid redundancies.

## Accounting for Labour Costs

Accounting for the labour costs involves identifying and dealing with the following:

1. Direct labour costs
2. Indirect labour costs
3. Net pay
4. Deductions

**Journal Entries involved in Accounting for Labour costs**

Accounting for direct labour cost

DR WIP

CR Wages Control account

Accounting for indirect labour cost

DR Production Overhead

CR Wages control

Accounting for Net Pay

DR Wages control

CR Bank account

Accounting for deductions

DR Wages control

CR Deduction control

**Direct and Indirect Costs**

Employees can be classified as either direct labour or indirect labour. Direct labour means employees who are directly involved in producing goods or services for customers.

Indirect employees refer to employees who are not directly involved in this work. Examples of indirect employees in a manufacturing business are:

1. Staff working in administration, selling or distribution;
2. Employees in production support departments such as maintenance and planning.

The aim of cost accounting is to identify direct labour costs and indirect labour costs which are not the same thing as the cost of direct labour and indirect labour employees.

**Identifying Direct and Indirect Labour Costs**

1. All costs of indirect labour employees are indirect labour costs.
2. Not all the costs of direct labour employees are treated as direct. Costs of direct labour employees that are usually treated as indirect costs are:
   * The cost of idle time
   * The cost of overtime premium
   * Costs of labour time not spent in production such as when one is on training, sick or holiday.

**Example:**

The following details are extracted from a monthly payroll for 50 employees at a small-scale farm for the month of June.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Paid to Direct Labour | Paid to Indirect Labour | Total |
|  | K'000 | K'000 |  |
| Ordinary time | 62,965 | 29,750 | 92,715 |
| Overtime |  |  |  |
| Basic Pay | 13,600 | 8,750 | 22,350 |
| Premium | 3,400 | 2,190 | 5,590 |
| Shift Allowance | 6,750 | 3,495 | 10,245 |
| Sick Pay | 3,450 | 650 | 4,100 |
| Total | 90,165 | 44,835 | 135,000 |
|  |  |  |  |
| **Net pay** | **78,340** | **32,660** | **111,000** |

**Required**

1. What are the direct wages for the month?
2. Prepare the wages account for the week.

**Solution**

* 1. K62,965 + 13,600 = K76,565 (K’000)

b)

|  |  |  |  |
| --- | --- | --- | --- |
| **Wages control account** | | | |
|  | K'000 |  | K'000 |
| Bank: net wages paid | 111,000 | Work In Progress | 76,565 |
| Deduction control account | 24,000 | Production Overhead |  |
|  |  | Indirect Labour | 38,500 |
|  |  | Over time premium | 5,590 |
|  |  | Shift allowance | 10,245 |
|  |  | Sick pay | 4,100 |
|  |  |  |  |
|  | 135,000 |  | 135,000 |
|  |  |  |  |

## Documentation of Labour Time

The task of separating the total labour cost into direct and indirect is complicated, because of idle time, overtime premium and other non-productive time. In addition, in order to measure the costs of different products or jobs, it is necessary to establish how much time the employee has spent on each job.

To do this, there has to be a system for recording direct labour times and allocating the time spent on individual products or jobs.

The most common methods of recording how much time has been spent on particular activities, products or jobs are:

1. Time sheets
2. Job sheets
3. Cost cards

**6.6.1 Time Sheets**

A time sheet is a record of how a person’s time at work has been spent.

The total hours that an employee has worked in a day or week are known from the employee’s clock card but a breakdown of how those hours were spent will be shown on the time sheet.

The employee fills out his or her own time sheet daily, weekly or monthly basis depending upon the policies of the organisation.

The employee will enter his name, clock number and department at the top of the time sheet together with details of the work he has been engaged in during the period and the hours spent on that work.

**TIME SHEET**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Timesheet** | | | | | |
| Name: Bernard Phiri | | | | **Clock Number: 825734** | |
| Department: Maintenance | | | | | |
| Week commencing: 28 March 20X6 | | | | | |
| Date | Job | Start | Finish | Hours | Overtime |
|  |  |  |  |  |  |
| 28-Mar | Machine X | 09 30 | 17 30 | 7 |  |
| 29-Mar | Machine Y | 08 30 | 11 30 | 3 | 3 |
| 30-Mar | Sick leave | 09 30 | 17 30 | 7 |  |
| 31-Mar | Machine L | 09 30 | 17 30 | 7 | 2 |
| 1-Apr | Holiday | 09 30 | 17 30 | 7 |  |
|  |  |  |  |  |  |
| Total Hours | | | | 31 | 5 |
| Foreman's signature: | |  | | | |

**6.6.2 Job Sheet**

Job sheets are important for employees who are paid on results basis or time basis. In these situations, the sheet is a record of the products produced and it is also used to calculate the payment due to the employee.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Job sheet** | | | | | |
| Name: Sheba Phiri | | | | **Clock Number: 825734** | |
| Department: Factory | | | | | |
| Week Commencing: 28 March 2016 | | | | | |
| Product | Units | Code | Price | Bonus | Total |
|  |  |  | K'000 | K'000 | K'000 |
| Dresses | 23 | DRE | 3.2 | 10 | 73.6 |
| Trousers | 14 | TRO | 4.1 | 0 | 57.4 |
| Shirts | 21 | SHI | 2.5 | 9 | 52.5 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Gross Wages | | | | 19 | 183.5 |
| Foreman's signature: | |  | | | |

## Measuring Labour Activity

Measures of labour activity include:

1. Efficiency ratio
2. Capacity ratio
3. Production volume ratio

**Efficiency Ratio**

This is a ratio that compares the standard hours of work produced with actual hours worked.

**Capacity Ratio**

A capacity is used to measure the utilisation of labour. Labour utilisation refers to how much labour time is used, compared to how much available time was expected. The capacity ratio is expressed as a percentage and compares the actual number of hours actively worked with the budgeted labour hours for the period.

**Production Volume Ratio**

The production/volume ratio assesses how the overall production level compares to planned levels and is the product of the efficiency ratio and the capacity ratio.

**Example**

The following information relates to a small production unit during a period.

|  |  |
| --- | --- |
| Budgeted hours | 9,500 |
| Actual hours worked | 9,200 |
| Standard hours of work produced | 9,300 |

**Required**

Calculate the following ratios

1. Efficiency ratio
2. Capacity ratio
3. Volume ratio

**Solution**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| A | Efficiency ratio | = | Standard Hours | = | 9300 | 101% |
|  |  |  | Actual Hours |  | 9200 |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| B | Capacity | = | Actual Hours | = | 9200 | 97% |
|  |  |  | Budgeted Hours |  | 9500 |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| C | Volume | = | Standard Hours | = | 9300 | 98% |
|  |  |  | Budgeted Hours |  | 9500 |  |
|  |  |  |  |  |  |  |

summary

## Unit Summary

Now that you have studied Unit 6, it must be clear to you that:

1. There are three basic groups of remuneration methods time based,

piece work and bonus/incentive schemes.

1. Labour attendance time is recorded on, for example, an attendance record or clock card. Job time may be recorded on time sheets or job sheets.
2. Overtime is time that is paid for usually at a premium, over and above the basic hours for the period.
3. Labour turnover is the rate at which employees leave a company and this rate must be kept as low as possible. The cost of labour turnover can be divided into preventative and replacement costs.
4. Direct labour cost is the cost of labour that is directly attributable to a cost unit. It consists of the cost of direct labour spent actively working on production, but usually excludes any overtime premium payments.
5. Indirect labour cost or labour overheads consist of the labour cost of indirect workers plus indirect labour costs of direct workers.
6. The wages control account acts as a collecting place for wages

before they are analysed to work in progress and production

overhead control account.

1. Efficiency ratio compares the expected time for producing output compared with the actual time expressed as a percentage.
2. Capacity ratio compares the actual time worked with budgeted time for the period expressed as a percentage.

## Review Questions

**Shoes Limited**

Shoes Limited a manufacturer of industrial safety shoes operates a labour bonus payment system in its factory with bonus being paid at 75% of the base for all standard hours saved.

The following is a summary of the labour information for month 6 for three employees:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Ndanji | Zewe | Niza |
| Work issued and completed (Pairs) | 72 | 188 | 432 |
| Standard time allowed - mins/ pair | 40 | 15 | 7 |
| Basic Hourly rate (Kwacha) | 920 | 960 | 940 |
| Total hours worked | 45 | 46 | 44 |
| Hours worked on indirect work | 5 |  | 2 |

The basic working week is 40 hours; the first three hours overtime is paid at time plus one-third and the remainder at time plus one-half.

**Required**

1. Compute the individual employee’s gross wages payable.
2. Compute the net wages payable for each of the three employees.
3. Prepare journal entries for the above data taking into account the following additional factors:
   1. Taxation is at the rate of 30% of gross pay;
   2. Each employee pays K3000 as NAPSA;
   3. Each employee is a member of Mukuba Pension Scheme to which they contribute K2,500 monthly.

## Answers to Review Questions

**Shoes Limited**

**Question 1a**

|  |  |  |
| --- | --- | --- |
| Ndanji | | |
| Basic | (45 x 920) | 41,400 |
| Over time Premium - first 3 Hrs | (3 x 1/3 x 920) | 920 |
| Over time Premium - next 2 Hrs | (2 x 1/2 x 920) | 920 |
|  |  |  |
| **Total** |  | 43,240 |
|  |  |  |
| Bonus |  |  |
| Standard Time allowed (40 min x 72) | 48 |  |
| Actual Time | 45 |  |
| Saving | 3 |  |
| Bonus Pay | (3 x 920 x 75%) | 2,070 |
|  |  |  |
| **Total Pay** |  | **45,310** |

|  |  |  |  |
| --- | --- | --- | --- |
| Zewe | | | |
| Basic | (46 x 960) | 44,160 | |
| Over time Premium - first 3 Hrs | (3 x 1/3 x 960) | 960 | |
| Over time Premium - next 3 Hrs | (3 x 1/2 x 960) | 960 | |
|  |  |  | |
| **Total** |  | 46,080 | |
|  |  |  | |
| Bonus |  |  | |
| Standard Time allowed (40 min x 188) | 47 |  | |
| Actual Time | 46 |  | |
| Saving | 1 |  | |
| Bonus Pay | (1 x 960 x 75%) | 2,160 | |
|  |  |  | |
| **Total Pay** |  | **48,240** | |
|  |  |  | |
| Niza | | | | |
| Basic | (44 x 940) | | 41,360 | |
| Over time Premium - first 3 Hrs | (3 x 1/3 x 940) | | 940 | |
| Over time Premium - first 2 Hrs | (2 x 1/2 x 940) | | 940 | |
|  |  | |  | |
| Total |  | | 43,240 | |
|  |  | |  | |
| Bonus |  | |  | |
| standard Time allowed (40 min x 432) | 50.4 | |  | |
| Actual Time | 44 | |  | |
| Saving | 6.4 | |  | |
| Bonus Pay | (6.4 x 960 x 75%) | | 4,512 | |
|  |  | |  | |
| Total Pay |  | | **47,752** | |
|  |  | |  | |

**Question 1b**

|  |  |  |  |
| --- | --- | --- | --- |
| Net pay computation | Ndanji | Zewe | Niza |
| Gross Pay | 45,310 | 48,240 | 47,752 |
| PAYE | (13,593) | (14,472) | (14,326) |
| NAPSA | (3,000) | (3,000) | (3,000) |
| Mukuba Pension | (2,500) | (2,500) | (2,500) |
|  |  |  |  |
| **Net Pay** | **26,217** | **28,268** | **27,926** |

**Question 1c**

|  |  |  |
| --- | --- | --- |
| Journal Entry |  |  |
|  | DR | CR |
| Wages Account | 141,302 |  |
|  |  |  |
| PAYE |  | 42,391 |
| NAPSA |  | 9,000 |
| Mukuba Pension |  | 7,500 |
| Salaries Control |  | 82,411 |
|  |  |  |
| **Total** | **141,302** | **141,302** |
|  |  |  |
| Being wages cost for the month | | |

# UNIT 7

# COSTING FOR OVERHEADS AND ABSORPTION COSTING

## Introduction

In the previous two Units, we have demonstrated how to attribute material and labour costs to units of production or services provided by an organisation. This Unit proceeds to explain the process involved in attributing indirect costs to products and services using a system known as absorption costing.

Outcomes

## Learning Objectives

After studying this Unit, you should be able to:

1. Explain the reason for using absorption costing
2. Describe the process of allocation, apportionment, reapportionment and absorption to establish product cost in absorption costing
3. Calculate overhead absorption rates
4. Calculate costs using the absorption costing method
5. Explain why predetermined overheads absorption rates are used
6. Calculate the under/over absorption costs
7. Describe and apply methods of charging administration overheads and sales and distribution overheads to cost unit.

## Product and Service Costs

Commercial organisations either sell products or provide services and they should know how much it costs them to provide these services and products in order to do the following:

1. Carry out product profitability analysis
2. Price products and services
3. Value stocks

Costs incurred in business can be recorded as:

1. Direct materials
2. Direct labour
3. Direct expenses
4. Overheads

## Overheads

An overhead is the cost incurred in the making of a product, providing a service or running a department, but which cannot be traced directly and in full to the product, service or department.

An overhead is actually the total of the following:

1. Indirect material
2. Indirect labour
3. Indirect expenses

Indirect costs are usually classified by function as shown below:

1. Production overhead
2. Administration overheads
3. Selling and distribution overheads

**7.4.1 Production Overheads**

Production overheads represent indirect materials, indirect wages and indirect expenses attributable to production and also the service activities associated with production.

Indirect production costs are incurred in three main ways:

|  |  |
| --- | --- |
| **Activity** | **Overheads** |
| Production | e.g. Fuel, protective clothing depreciation supervision. |
| Service | The costs of operating non-production departments within the factory such as materials handling, production control and canteen. |
| Establishment | General overheads such as factory rent/rates, heating and lighting and production management salaries. |

**7.4.2 Overhead Costing Procedures**

To attribute production overheads to cost units, a sequence of procedures is undertaken:

1. Establishing cost centres
2. Collecting overheads by item
3. Allocation of overheads
4. Apportionment of overheads
5. Reapportionment of service centre costs
6. Computation of overhead absorption rates
7. Absorbing of production overheads into cost units
8. Computation of over/under absorption

**Overhead Allocation**

Allocation is the process by which whole cost items are charged directly to a cost unit or cost centre.

**Overhead Apportionment**

This is a stage which follows overhead allocation. It is a process of sharing out general overhead costs to beneficiary cost centres on fair basis such as these shown below:

|  |  |
| --- | --- |
| **Example of overhead** | **Basis of apportionment** |
| * Rent, rates, heating and lighting and depreciation of buildings | * Floor area occupied by each cost centre |
| * Depreciation, insurance of equipment | * Cost or book value of equipment |
| * Personnel office, canteen, welfare, wages and cost offices, first aid | * Number of employees or labour hours worked in each cost centre |
| * Heating, lighting | * Volume of space occupied by each cost centre |

**Example: Overhead Apportionment**

Trentyre Ltd has the following budget for overhead costs:

|  |  |
| --- | --- |
|  | K'000 |
| Depreciation of factory | 1,000 |
| Factory repairs and maintenance | 600 |
| Factory office costs | 1,500 |
| Depreciation of equipment | 800 |
| Insurance of equipment | 200 |
| Heating | 390 |
| Lighting | 100 |
| Canteen | 900 |
|  | 5,490 |

Information relating to the production and service centres in the factory is as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Production centres | | Service centres | |
|  | Dept A | Dept B | Dept X | Dept Y |
|  |  |  |  |  |
| Floor space (square metres) | 1,200 | 1,600 | 800 | 400 |
| Volume (cubic metres) | 3,000 | 6,000 | 2,400 | 1,600 |
| Number of employees (head count) | 30 | 30 | 15 | 15 |
| Book value of equipment (K'000) | 30 | 20 | 10 | 20 |

**Required**

Determine how the overhead costs should be apportioned between the four departments.

**Solution**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Total Cost | Production Centres | | Production Centres | |
| Item of Cost | Basis of apportionment | K'000 | Dept A | Dept B | Dept X | Dept Y |
|  |  |  |  |  |  |  |
| Depreciation of factory | Floor area | 1,000 | 300 | 400 | 200 | 100 |
| Factory repairs and maintenance | Floor area | 600 | 180 | 240 | 120 | 60 |
| Factory office costs | Number of employees | 1,500 | 500 | 500 | 250 | 250 |
| Depreciation of equipment | Book value | 800 | 300 | 200 | 100 | 200 |
| Insurance of payment | Book value | 200 | 75 | 50 | 25 | 50 |
| Heating | Volume | 390 | 90 | 180 | 72 | 48 |
| Lighting | Floor area | 100 | 30 | 40 | 20 | 10 |
| Canteen | Number of employees | 900 | 300 | 300 | 150 | 150 |
|  |  | **5,490** | **1,775** | **1,910** | **937** | **868** |

**Re-apportionment of Service Centre Costs**

A factory is divided into several production cost centres and also many service cost centres such as stores maintenance and canteen. The third stage in overhead costing concerns the treatment of overheads in service centres.

Because no production cost units pass through the service cost centres, it is necessary to apportion the service department costs to the production cost centres so that all production costs (including those of the service departments) are accounted for.

Typical bases for re-apportionments are shown below.

|  |  |
| --- | --- |
| **Service Department** | **Basis of apportionment** |
| * Stores | * Number of requisitions * Value of materials issued |
| * Maintenance | * Maintenance hours |
| * Personnel office | * Number of employees |
| * Production planning | * Direct labour hours per each department |

There are three ways of reapportionment of service centre costs:

1. Continuous allotment
2. Direct method
3. Elimination method

Each of these methods will be demonstrated using the information given below for an organisation with two production centres and two service centres:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  | Production centres | | Service centres | |  |
|  | Dept A | Dept B | Dept X | Dept Y | Total |
|  | K'000 | K'000 | K'000 | K'000 | K'000 |
| Overhead costs | 10,030 | 8,970 | 10,000 | 8,000 | 37,000 |
|  |  |  |  |  |  |
| The service departments are expected to spend their time as follows: | | | | | |
|  |  |  |  |  |  |
|  | Dept A | Dept B | Dept X | Dept Y |  |
| Department X | 30% | 50% | - | 20% |  |
| Department Y | 80% | 10% | 10% | - |  |
|  |  |  |  |  |  |

**a) Ignoring Reciprocal Services**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Production centres | | | Service centres | |  |
|  | Basis | Dept A |  | Dept B | Dept X | Dept Y | Total |
|  |  | K'000 |  | K'000 | K'000 | K'000 |  |
| Overhead costs |  | 10,030 |  | 8,970 | 10,000 | 8,000 | 37,000 |
|  |  |  |  |  |  |  |  |
| Dept X | 30: 50 | 3,750 |  | 6,250 | (10,000) |  | - |
| Dept Y | 80: 10 | 7,111 |  | 889 |  | (8,000) | - |
|  |  |  |  |  |  |  |  |
| **Total** |  | **20,891** |  | **16,109** | **-** | **-** | **37,000** |

**b) Elimination Method**

The method works by first apportioning one of the service cost centres to all other centres which make use of its services. When the remaining service centre costs are reapportioned, the work done for other service cost centres is ignored.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Basis | Production centres | | | Service centres | | |  |
|  |  | Dept A |  | Dept B | Dept X |  | Dept Y | Total |
|  |  | K'000 |  | K'000 | K'000 |  | K'000 | K'000 |
| Overhead costs |  | 10,030 |  | 8,970 | 10,000 |  | 8,000 | 37,000 |
|  |  |  |  |  |  |  |  |  |
| Dept X | 3 : 5: 2 | 3,000 |  | 5,000 | **(10,000)** |  | 2,000 |  |
| Dept Y | 8: 1 | 8,889 |  | 1,111 |  |  | **(10,000)** |  |
|  |  |  |  |  |  |  |  |  |
| **Total** |  | **21,919** |  | **15,081** | **-** |  | **-** | **37,000** |

**c) Reciprocal (Repeated Distribution) Method of Apportionment**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Production centres | | |  | Service centres | | |  |
|  | Basis | Dept A |  | Dept B |  | Dept X |  | Dept Y | Total |
|  |  | K'000 |  | K'000 |  | K'000 |  | K'000 | K’000 |
| Overhead costs |  | 10,030 |  | 8,970 |  | 10,000 |  | 8,000 | 37,000 |
|  |  |  |  |  |  |  |  |  |  |
| Dept X | 3 : 5 : 2 | 3,000 |  | 5,000 |  | **(10,000)** |  | 2,000 |  |
| Dept Y | 8 : 1 :1 | 8,000 |  | 1,000 |  | 1,000 |  | **(10,000)** |  |
| Dept X | 3 : 5 : 2 | 300 |  | 500 |  | **(1,000)** |  | 200 |  |
| Dept Y | 8 : 1 :1 | 160 |  | 20 |  | 20 |  | **( 200)** |  |
| Dept X | 3 : 5 : 2 | 6 |  | 10 |  | **( 20)** |  | 4 |  |
| Dept Y |  | 4 |  |  |  |  |  | **( 4)** |  |
|  |  |  |  |  |  |  |  |  |  |
| **Total** |  | **21,500** |  | **15,500** |  | **0** |  | **0** | **37,000** |

## Overhead Absorption

The final stage in the process of overhead is to reflect the cost of overheads in individual cost units. This is known as overhead absorption. To determine the overhead to be absorbed by a cost unit, it is necessary to establish an overhead absorption rate which is calculated as:

|  |  |
| --- | --- |
| Overhead Absorption Rate = | Total Budgeted Overhead |
| Total Budgeted Level of Activity |

**Absorption Bases**

Overheads can be absorbed into cost units by means of:

1. Units produced
2. Total prime cost
3. Total material cost
4. Total direct wages
5. Direct labour hours
6. Machine hours

**Example**

The budgeted production overhead and other budget data for Kwacha Industries Limited are as follows:

|  |  |
| --- | --- |
| Budget | Cost |
| Overhead Cost (K'000) | 72,000 |
| Direct Materials (K'000) | 64,000 |
| Direct Labour Cost K'000) | 80,000 |
| Machine Hours | 10,000 |
| Direct Labour Hours | 18,000 |
| Units of Production | 12,000 |

**Required**

Calculate the absorption rates using various bases.

**Solution**

|  |  |  |
| --- | --- | --- |
| Percentage of direct material cost | 72,000,000 | X 100 = 112.5% |
|  | 64,000,000 |  |
|  |  |  |
| Percentage of direct labour cost | 72,000,000 | X 100 = 90% |
|  | 80,000,000 |  |
|  |  |  |
| Percentage of prime cost | 72,000,000 | X 100 = 50% |
|  | 144000000 |  |
|  |  |  |
| Rate per machine hour | 72,000,000 | = K7, 200 per hour |
|  | 10,000 |  |
|  |  |  |
| Rate per labour hour | 72,000,000 | = K 4,000 per hour |
|  | 18,000 |  |
|  |  |  |
| Rate per unit | 72,000,000 | = K60,000 per hour |
|  | 1200 |  |
|  |  |  |

**Illustration: Absorption**

Using each of the overhead absorption rates calculated above, estimate production overheads that would be absorbed in Product XYZ which has the following details:

|  |  |
| --- | --- |
| Direct Material cost | K80,000 |
| Direct Labour cost | K85,000 |
| Prime cost | K165,000 |
| Machine Hours | 15 |
| Labour Hours | 25 |

**Solution**

|  |  |  |  |
| --- | --- | --- | --- |
| Absorption base | Overhead Absorption rate | Actual activity | Absorbed |
| Percentage of direct material cost | 112.5% | K80,000 | K90,000 |
| Percentage of direct labour cost | 90% | K85,000 | K76,500 |
| Percentage of prime cost | 50% | K1650,00 | K82,500 |
| Rate per machine hour | 7,200 | 15 | K108,000 |
| Rate per Labour hour | 4,000 | 25 | K100,000 |
| Rate per unit | 60,000 | 1 | K60,000 |

Though in theory any basis of absorption can be used, a company should choose a basis for its costs which seems to be fairest.

**Pre-determined Absorption Rate**

The overhead absorption rates used for absorption are calculated prior to the accounting period using budgeted overheads and budgeted activity.

The main reason for this is that the actual overhead and actual activity are not known until the end of the period and the actual overhead absorption rate would not be calculated until then. This would mean that product cost cannot be calculated until the end of the period and this would create unacceptable delays for such activities as invoicing and cost estimation.

The only solution is to use predetermined rates.

**Under or Over Absorption**

Overhead absorption rates are based on budgeted overhead costs and the budgeted volume or activity. In practice, we should expect that:

1. Actual overhead expenditure will differ from budgeted overhead expenditure; and
2. The actual volume activity will differ from the budgeted volume of activity.

As a consequence, the amount of overheads charged to product costs will differ from the actual overhead expenditure.

We might charge more overhead costs to production than the amount of overheads expenditure actually incurred. If so, there is over absorption or over recovery of overheads.

Alternatively, we might charge less overhead costs to production than the amount of overheads expenditure actually incurred. If so, there is under absorption or under recovery of overheads.

**Example**

Q- Point Limited has budgeted production overheads of K50 million and a budgeted activity of 10,000 machine hours. The overhead absorption rate is thus K5,000 per hour.

**Required**

Calculate the under/over absorbed overhead under each of the following circumstances:

|  |  |  |
| --- | --- | --- |
| Outcome | Actual Overhead Cost K’000 | Actual Machine Hours |
|  | 47,000 | 10,000 |
|  | 50,000 | 8,500 |
|  | 47,000 | 8,500 |
|  |  |  |

**Solution**

|  |  |  |
| --- | --- | --- |
| a) |  |  |
|  |  | K'000 |
| Actual Overheads |  | 47,000 |
| Absorbed Overheads | (10,000 X K5) | 50,000 |
| **Over absorption** |  | **3,000** |
|  |  |  |
| b) |  |  |
| Actual Overheads |  | 50,000 |
| Absorbed Overheads | (8,500 X K5) | 42,500 |
| **Under absorption** |  | **(7,500)** |
| c) |  |  |
| Actual Overheads |  | 47,000 |
| Absorbed Overheads | (8,500 X K5) | 42,500 |
| **Under absorption** |  | **(4,500)** |
|  |  |  |
|  |  |  |

## Treatment of Non –Manufacturing Overheads

For financial reporting purposes, it is not necessary to allocate non-manufacturing overheads to products. This is because many of the overheads are non-manufacturing and are regarded as period costs and are written off as a charge to the profit and loss account.

For internal reporting purpose and for a number of industries which base the selling price of their product on an estimate of total cost or even actual cost, a total cost per unit output may be required.

For product pricing purposes and for internal management reports it may, therefore, be appropriate to allocate non-manufacturing overheads to units of output.

**Bases for Absorbing Non-Manufacturing Costs**

Administration overheads might be absorbed into unit costs as a percentage of full product costs.

Sales and distribution overheads might be absorbed into unit costs as a percentage of full production cost.

**Example**

Ngwala Limited has budgeted the following sales and costs for next year:

|  |  |
| --- | --- |
|  | K |
| Full Production Costs | 240,000 |
| Administration overheads | 60,000 |
| Sales and distribution overheads | 80,000 |
| Sales revenue | 450,000 |

Production overheads will be absorbed at a rate of K400 per direct labour hour. Administration overheads will be absorbed as a percentage of full production cost. Sales and distribution overheads will be absorbed as a percentage of full production cost.

**Required**

Calculate the fully absorbed cost of sales for a product that has a direct material cost of K24,000 and a direct labour cost of K16,000 with labour paid at K800 per hour.

**Solution**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Administration overhead  absorption rate | = | Administration overhead | X | 100 |  |
|  |  | Full production overhead |  |  |  |
|  |  |  |  |  |  |
|  |  | 60,000 | X | 100 = | 25% |
|  |  | 240,000 |  |  |  |
|  |  |  |  |  |  |
| Sales and distribution overheads  absorption rate | = | Sales & Dist overheads | X | 100 |  |
|  |  | Full production overhead |  |  |  |
|  |  |  |  |  |  |
|  |  | 80,000 | X | 100 = | 33.33% |
|  |  | 240,000 |  |  |  |

|  |  |
| --- | --- |
|  | K'000 |
| Direct Materials | 24 |
| Direct Labour | 16 |
| Production overheads (20\*\* hours X K400) | 8 |
| Full production cost | 48 |
| Administration overheads (25% X K48) | 12 |
| Sales and distribution overheads (33.33% X K48) | 16 |
| **Full cost of sale** | **76** |

***\*\* hours per unit = labour cost per unit/ labour rate per hour***

summary

**7.7 Unit Summary**

After studying Unit 7, you should remember the following main points:

1. Overhead is the cost incurred in the course of making a product, providing a service or running a department, which cannot be traced directly and in full to the product, service or department.
2. The main reasons for absorbing overheads into products are for stock valuations, pricing decisions and product profitability analysis.
3. The three main stages in absorption costing are:
   1. Allocation
   2. Apportionment
   3. Re-apportionment
   4. Absorption
4. Apportionment is the process by which whole cost items are charged directly to a cost unit or cost centre.
5. Apportionment is a procedure whereby indirect costs are spread fairly between costs centres.
6. Re-apportionment is a procedure where service centre costs are spread fairly to production centres using one of the following methods:
   1. Direct method
   2. Reciprocal method
   3. Step method
7. Overhead absorption is the process whereby costs of production cost centres are added to a unit, job or batch costs. Overhead absorption is called overhead recovery.
8. Under absorption occurs when the overheads absorbed into the product is less than overheads incurred. It is charged as an expense in the profit and loss account.
9. Overhead absorption occurs when the overheads absorbed in the product is greater than overheads incurred. This amount is credited to the profit and loss account.

## Review Questions

**Question One**

1.1 The process of cost apportionment is carried out so that:

1. Cost may be controlled
2. Cost units gather overheads as they pass through cost centres
3. Whole cost items of cost can be charged to cost centres
4. Common costs are shared among costs centres

1.2 An overhead absorption rate is used to:

1. Share out common costs over benefiting cost centres
2. Find the total overheads for a cost centre
3. Charge overheads to products
4. Control overheads

1.3 A company absorbs overheads on machine hours which were budgeted at 11,250 with overheads of K258,750,000. Actual results were 10,980 hours with overheads of K254,692,000. Overheads were:

1. Under absorbed by K2,152,000.
2. Over-absorbed by K4,058,000.
3. Under absorbed by K4,058,000.
4. Over-absorbed by K2,152,000.

1.4 A firm absorbs overheads on labour hours. In one period, 11,500 hours were worked, actual overheads were K138 million and there were K23 million over absorption. The overhead absorption rate per hour was:

1. K10,000
2. K14,000
3. K12,500
4. K17,000

**Question Two**

Wise Bond Marketing Limited is a manufacturing company and has the following budgeted overhead costs for two production departments (Machining and Assembly departments) and two service departments (Stores and Maintenance) for the next financial year.

|  |  |  |
| --- | --- | --- |
| **Indirect Materials** |  |  |
| Machinery department | 100,000 |  |
| Assembly department | 80,000 |  |
| Stores department | 50,000 |  |
| Maintenance department | 15,000 |  |
|  |  | **245,000** |
| **Indirect wages** |  |  |
| Machinery department | 90,000 |  |
| Assembly department | 60,000 |  |
| Stores department | 70,000 |  |
| Maintenance department | 55,000 |  |
|  |  | **275,000** |
|  |  |  |
| **Managers Salaries** |  | 70,000 |
| Depreciation of machinery |  | 150,000 |
| Heating and Lighting |  | 50,000 |
| Building insurance |  | 25,000 |
| Insurance of Machinery |  | 100,000 |
| Rent and rates |  | 75,000 |
|  |  |  |
| **Total** |  | **990,000** |

The following additional information is provided:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Details | Production Departments | | Service Departments | |
| Machining | Assembly | Stores | Maintenance |
| Area occupied (M2) | 500 | 7,500 | 7,000 | 5,000 |
| Number of employees | 15 | 20 | 8 | 7 |
| Value of machines (Kwacha) | 2,000,000 | 500,000 |  |  |
| Materials issued from stores (Kwacha) | 50,000 | 20,000 |  |  |
| Machine hours | 45,000 | 30,000 |  |  |
| Direct labour hours | 100,000 | 80,000 |  |  |
| Maintenance hours | 4,500 | 4,300 | 1,200 |  |

**Required**

1. Prepare an overhead analysis sheet showing clearly the basis of apportionment used for each item of expense.
2. Calculate appropriate overhead absorption rates for the two production departments to two decimal places.
3. Job X passes through two production departments and uses the following hours:

|  |  |  |
| --- | --- | --- |
|  | **Machining** | **Assembly** |
|  |  |  |
| Labour hours | 1000 | 800 |
| Machine hours | 400 | 500 |
|  |  |  |
| Direct material cost | K200,000 |  |
| Labour rate per hour | K5,000 |  |

Calculate the total cost for job X.

**------------------------------------------------------------------------------------------------------------**

## Answers to Review Questions

**Solution 1.1**

Answer is C

**Solution 1.2**

Answer is C

**Solution 1.3**

Answer is A

**Solution 1.4**

Answer is B

**SOLUTION TWO**

**a)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Overhead Analysis Sheet | | | | | | |
| Overhead | Basis of apportionment | Total overhead | Production departments | | Service departments | |
|  |  |  | Machining | Assembly | Stores | Maintenance |
| Indirect Material | Direct | 245,000 | 100,000 | 80,000 | 50,000 | 15,000 |
| Indirect Wages | Direct | 275,000 | 90,000 | 60,000 | 70,000 | 55,000 |
| Managers Salaries | No of employees | 70,000 | 21,000 | 28,000 | 11,200 | 9,800 |
| Depreciation of machinery | Value of Machinery | 150,000 | 120,000 | 30,000 | - | - |
| Heating and Lighting | Area | 50,000 | 1,250 | 18,750 | 17,500 | 12,500 |
| Building insurance | Area | 25,000 | 625 | 9,375 | 8,750 | 6,250 |
| Insurance of Machinery | Value of Machinery | 100,000 | 80,000 | 20,000 | - | - |
| Rent and rates | Area | 75,000 | 1,875 | 28,125 | 26,250 | 18,750 |
|  |  |  |  |  |  |  |
| **Total** |  | **990,000** | **414,750** | **274,250** | **183,700** | 117,300 |
|  |  |  |  |  |  |  |

**b)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Overhead Analysis Sheet** | | | | | | |
| Overhead | Basis of apportionment | Total overhead | Production departments | | Service departments | |
|  |  |  | Machining | Assembly | Stores | Maintenance |
|  |  | K'000 | K'000 | K'000 | K'000 | K'000 |
| Totals |  | 990,000 | 414,750 | 274,250 | 183,700 | 117,300 |
| Maintenance |  | - | 52,785 | 50,439 | 14,076 | (117,300) |
| Stores |  | - | 141,269 | 56,507 | (197,776) | - |
|  |  |  |  |  |  |  |
| **Total** |  | **990,000** | **608,804** | **381,196** | - | - |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Machining |  |  | Assembly |  |
|  | K'000 |  |  | K'000 |
| Overheads | 608,804 |  | Over heads | 381,196 |
| Machine hours | 100,000 |  | Machine hours | 80,000 |
|  |  |  |  |  |
|  |  |  |  |  |
| OHAR | K 6.09 per hour |  | OHAR | K4.76 per hour |

**c)**

|  |  |  |
| --- | --- | --- |
| **Total costs for Job X** | | |
|  |  | K'000 |
| Direct Materials |  | 2,000 |
| **Direct Labour** |  |  |
| Machining | (K5,000 x 1000 hrs) | 5,000 |
| Assembly | (K5,000 x 800 hrs) | 4,000 |
| **Overheads** |  |  |
| Machining | (400hrs x K 6.09) | 2,436 |
| Assembly | (800hrs x K 4.76) | 3,808 |
|  |  |  |
| **Total** |  | **17,244** |

# UNIT 8

# ABSORPTION AND MARGINAL COSTING

## Introduction

This unit defines marginal costing and absorption costing system. As you will learn, absorption costing recognizes fixed costs as part of a product cost, whereas in marginal costing fixed costs are treated as period cost. We shall be looking at the arguments in favour of and against each method. As each method produces a different profit figure, we shall demonstrate how to reconcile the profit figures.

CONTENTS

1. Full cost and marginal costing.
2. Contribution concept.
3. Profit statements under absorption and marginal costing.
4. Advantages and disadvantages of marginal costing.
5. Advantages and disadvantages of absorption costing.

Outcomes

## LEARNING OUTCOMES

After studying this unit you should be able to:

* Define marginal costing.
* Explain the concept of contribution.
* Prepare profit statements using absorption and marginal costing principles.
* Reconcile the profits reported by absorption and marginal costing.
* Discuss advantages and disadvantages of absorption and marginal costing systems.

## MARGINAL COST AND MARGINAL COSTING

Marginal cost is the part of the cost of one unit of product or service which would be avoided if the units were not produced, or which would increase if one extra unit were produced.

The marginal production cost per unit of an item usually consists of the following:

* Direct materials.
* Direct labour.
* Variable production overheads.

### Marginal costing

Marginal costing is the accounting system in which variable costs are charged to cost units and fixed costs of the period is written off in full against the total contribution.

# Marginal cost of sales

Marginal cost of sales usually include marginal cost of production adjusted for stock movement plus variable selling costs, which would include items such as sales commission and possibly some variable distribution costs.

**Principles of marginal costing**

The principles of marginal costing are that:

* Fixed costs are the same for any volume of activity.
* By producing and selling an extra unit or service only the variable cost increases.
* By producing and selling the additional unit, the total profit increase by the amount of contribution from that unit.

Based on the above points marginal costing argues that:

* The valuation of stock should be at variable production costs (direct materials, direct labour and direct expenses).
* Profit measurement should be based on contribution analysis

### Absorption costing

Under absorption costing both variable and fixed costs are absorbed into cost units. The fundamental difference between marginal and absorption costing is one of timing. In marginal costing fixed costs are written off in the period incurred. In absorption costing fixed production costs are absorbed into units and written off in the period in which they are sold.

|  |  |
| --- | --- |
| **Marginal costing** | **Absorption costing** |
| * Closing stocks are valued at marginal production cost | * Closing stocks are valued at full production cost |
| * Fixed costs are treated as period costs are written off in full to the profit and loss account | * Fixed costs are treated as part of product costs |
| * Cost of sales does not include a share of fixed overheads | * Cost of sales does not include a share of fixed overheads |

# Product cost under marginal and absorption costing

**Example**:

A company produces a single product and has the following budget

K

Selling 10,000

Direct materials 3,000

Direct wages 2,000

Variable overheads 1,000

Fixed production overhead is K10 million per month; production volume is 5,000 units per month.

**Required**

Calculate the cost per unit to be used for stock valuation under:

1. Absorption costing
2. Marginal costing

# SOLUTION

# Full absorption cost per unit

K

Direct materials 3,000

Direct wages 2,000

Variable overheads 1,000

Absorbed fixed overhead K10M/5000 2,000

**Full cost 8,000**

# Marginal cost per unit

K

Direct materials 3,000

Direct wages 2,000

Variable overheads 1,000

**Marginal cost per unit 6,000**

## Contribution Concept

Contribution is the difference between sales value and the marginal cost of sales. The term contribution is really short for contribution towards covering fixed overheads and making a profit.

**WHY IS CONTRIBUTION SIGNIFICANT**

Contribution is an important concept in marginal costing. Changes in the volume of sales, or in sales price, or in variable costs will all affect profit by altering the total contribution. Marginal costing techniques can be used to help management to assess the likely effect on profits of higher or lower sales volume, or the likely consequences of reducing the sales price of a product in order to increase demand and so on. The approach to any such analysis should be to calculate the effect on total contribution.

|  |  |  |
| --- | --- | --- |
| **Format for Marginal cost statement** | |  |
|  |  | K |
| A | Sales | XXX |
|  |  |  |
|  | Opening Stock @ variable cost | XX |
|  | Variable production cost | XX |
|  | Closing stock@ variable costs | XX |
|  | Variable production cost of sales | XX |
|  | Variable selling expenses | XX |
| B | Total variable costs | XX |
|  |  |  |
| A - B | Contribution | **XX** |
|  |  |  |
|  | Fixed costs | X |
|  | Production | X |
|  | Selling and administration | X |
|  | **Profit / (Loss)** | **XX** |
|  |  |  |
| **Format for Absorption cost statement** | |  |
|  |  | K |
| A | Sales | XXX |
|  |  |  |
|  | Opening Stock@ full cost | XX |
|  | Production cost | XX |
|  | Closing stock @full cost | (XX) |
| B | Cost of Sales | XX |
|  |  |  |
| A - B | Gross Profit | XX |
|  |  |  |
|  | Under/ (over) absorption | (X) |
|  | Variable selling expenses | (X) |
|  | Fixed selling and Admin costs | (X) |
|  |  |  |
|  | **Profit / (Loss)** | **XX** |

# EXPLANATION OF THE DIFFERENCE IN PROFIT

The difference in profits reported under the two costing systems is due to the different stock valuation methods used.

If stock levels increase between the beginning and end of a period, absorption costing will report the higher profit. This is because some of the fixed production overhead incurred during the period will be carried forward in closing stock (which reduces cost of sales) to be set against sales revenue in the following period instead of being written off in full against profit in the period concerned. On the hand marginal costing will report a lower profit if the stock increase.

If stock levels decrease, absorption costing will report the lower profit because as well as the fixed overhead incurred, fixed production overhead which had been carried forward in opening stock is released and is also included in cost of sales. In this case, marginal costing will report higher profit.

**EXAMPLE: COMPREHENSIVE ILLUSTRATIVE QUESTION ON MARGINAL AND ABSORPTION COSTING**

X Limited commenced business on 1st January making one product only, with the following costs:

|  |  |
| --- | --- |
|  | K'000 |
| Direct Labour | 5 |
| Direct Material | 8 |
| Variable production overhead | 2 |
| Fixed production overhead | 5 |
| **Total cost** | **20** |

The fixed production overheads figure has been calculated on the basis of a budgeted normal output of 36,000 units per annum.

You are to assume that there is no expenditure or efficiency variance and that all budgeted expenditure is incurred evenly over the year.

Selling, distribution and administration expenses are:

|  |  |
| --- | --- |
| Fixed | K120 million |
| Variable | 15% of the sales value |

The selling price per unit is K35,000 and the number of units produced and sold were:

|  |  |  |
| --- | --- | --- |
|  | March | April |
|  | Units | Units |
| Production | 2,000 | 3,200 |
| Sales | 1,500 | 3,000 |

# Required

Prepare profit statement for each of the months of March and April using:

1. Marginal costing; and
2. Absorption costing principles

# SOLUTION

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **W1** | | **Production Overhead** | |  |
|  | |  | Per year | Per month |
|  | | 36,000 X 5 = | 180,000 | 15,000 |
|  | |  |  |  |
|  | |  |  |  |
| **W2** | | **Selling and admin overhead (K’000)** | | |
|  | |  | Per year | Per month |
|  | |  | 120,000 | 10,000 |
| **Marginal cost statement** | |  | | March |  | April |
|  | | **Workings** | | K'000 | **Workings** | K'000 |
| Sales | | K35 X 1,500 | | 52,500 | K35 X 3,000 | 105,000 |
|  | |  | |  |  |  |
| Opening Stock | |  | | - |  | 7,500 |
| Variable production cost | | K15 X 2,000 | | 30,000 | K15 X 3,200 | 48,000 |
| Closing stock | | K15 X 500 | | (7,500) | K15 X 700 | (10,500) |
| Variable production cost of sales | |  | | 22,500 |  | 45,000 |
| Variable selling expenses | | 15% X 52,500 | | 7,875 | 15% X 105,000 | 15,750 |
| Total variable costs | |  | | 30,375 |  | 60,750 |
|  | |  | |  |  |  |
| Contribution | |  | | 22,125 |  | 44,250 |
|  | |  | |  |  |  |
| Fixed costs | |  | |  |  |  |
| Production (W1) | |  | | (15,000) |  | (15,000) |
| Selling and admin (W2) | |  | | (10,000) |  | (10,000) |
| Profit / (Loss) | |  | | (2,875) |  | 19,250 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Absorption cost statement** |  | March |  | April |
|  | **Workings** | K'000 | **Workings** | K'000 |
| Sales | K35 X 1,500 | 52,500 | K35 X 3,000 | 105,000 |
|  |  |  |  |  |
| Opening Stock |  | - |  | 10,000 |
| Production cost | K20 X 2,000 | 40,000 | K20 X 3,200 | 64,000 |
| Closing stock | K20 X 500 | (10,000) | K20 X 700 | (14,000) |
| Cost of Sales |  | 30,000 |  | 60,000 |
|  |  |  |  |  |
| Gross Profit |  | 22,500 |  | 45,000 |
| Under/ (over) absorption |  | (5,000) |  | 1,000 |
| Variable selling expenses |  | (7,875) |  | (15,750) |
| Fixed selling and Admin costs |  | (10,000) |  | (10,000) |
|  |  |  |  |  |
| **Profit / (Loss)** |  | **(375)** |  | **20,250** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **W3** | **Under/ over absorption** | March | | April | |
|  | Actual | K180,000/12 | 15,000 | K180,000/12 | 15,000 |
|  | Absorbed | 2000 X 5 | 10,000 | 3200 X 5 | 16,000 |
|  | **(Under)/Over** |  | **(5,000)** |  | **1,000** |

## RECONCILITION OF THE DIFFERENCE BETWEEN MARGINAL AND ABSORPTION COST PROFITS.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | March |  | April |
| Profit as per Absorption costing Profit |  | (375) |  | 20,250 |
|  |  |  |  |  |
| Less: Fixed costs in the closing stocks | 500 X 5 | (2,500) | 700 X 5 | (3,500) |
| Add: Fixed costs in the opening stock |  | - | 500 X 5 | 2,500 |
|  |  |  |  |  |
| Profit as per Marginal costing Profit |  | (2,875) |  | 19,250 |

# ARGUMENTS IN FAVOUR OF MARGINAL COSTING AND ABSORPTION COSTING

|  |  |
| --- | --- |
| **ABSORPTION** | **MARGINAL COSTING** |
| * It is fair to share fixed production costs to units of production as such costs are incurred in production * Closing stocks are valued in accordance with SSAP 9 | * Absorption costing encourages management to produce goods in order to absorb allocated overheads instead of meeting market demands |
| * It is easier to determine product profitability where a company produces more than one product | * No apportionment of fixed assets |
| * Where stock building is necessary, fixed costs should be included as product costs to avoid fluctuation in reported results | * Fixed costs are period costs that do not change with output. |
|  | * Marginal costing is useful in decision making * Under/over absorption of overheads is avoided. * Simple to operate. |

summary

## Unit summary

* Marginal cost is the variable cost of one unit of product or service.
* Contribution is an important measure in marginal costing, and it is calculated as the difference between sales value and marginal or variable costs.
* In marginal costing, fixed production costs are treated as period costs and are written off as they are incurred.
* In absorption costing, fixed production costs are absorbed into cost units and are carried forward in stock to be charged against sales for the next period. Stock values using absorption costing are therefore greater than those calculated using marginal costing.
* SSAP 9 recommends the use of absorption costing for the valuation of stocks in financial accounts

STUDENT-SELF TESTING

## SELF REVIEW QUESTIONS

1. Define marginal costing. (1.0)
2. State principles of marginal costing (2.0)
3. What are the differences between marginal and absorption costing? (3.0)
4. What is contribution? (3.3)
5. State the arguments in favour of marginal and absorption costing (4.0)

## EXAMINATION TYPE QUESTIONS

**Information relates for the question that follows below:**

Munyaule develops musical CDs for which the budgeted profit per unit is as follows:

|  |  |
| --- | --- |
|  | K |
| Materials | 2,000 |
| Labour | 3,000 |
| Variable Production overhead | 3,000 |
| Fixed Production overhead | 4,000 |
| Variable selling cost | 1,000 |
| Fixed Selling expenses | 2,000 |
| Profit | 5,000 |
| **Sales Price** | **20,000** |

Both types of fixed overheads were based on a budget of 10,000 CDs a year. In the first year of production, the only difference from the budget was that Munyaule produced 11,000 musical CDs and sold 9,000.

**Required**

Prepare:

1. Profit statement made under absorption costing?
2. Profit statement made under Marginal costing?
3. A statement reconciling the profit figures in (a) and (b)

# UNIT 9

# ACTIVITY BASED COSTING

## Introduction

We have so far seen how to incorporate indirect costs into cost objects using the traditional approach referred to as absorption costing. This unit will introduce you to an alternative approach to dealing with overheads known as Activity Based Costing (ABC). ABC was developed in the 1970s and 1980s as alternative to absorption costing. Absorption costing was found to be limited in the modern manufacturing environment where indirect costs were becoming a significant proportion of the product cost. This unit will give a full background to the development of ABC and will demonstrate the application of the concept.

Contents

1. Background to ABC.
2. Identification of activities.
3. Identification of cost drivers.
4. Accounting for overheads using ABC.
5. Contrasting ABC and the traditional approach.
6. Other uses of ABC.

Outcomes

## Learning outcomes

After studying this unit you should be able to:

* Explain the limitation of the traditional approach to costing.
* Understand the concept of activities and cost drivers.
* Contrast the ABC approach and the traditional approach.
* Explain other uses of ABC.

## BACKGROUND TO ABC

ABC was developed in the 1970s and 1980s as an alternative to absorption costing. Since the time when absorption costing was initially developed (at the time of the Industrial Revolution), many aspects of manufacturing have changed and it was felt that absorption cost was not providing information of sufficient quality and accuracy. Some of these changes observed by the advocates of ABC are:

# Product range

The traditional cost accumulation systems of absorption costing were developed at a time when most organisations produced only a narrow range of products, so that products under went similar operations and consumed similar proportions of overheads.

# Level of indirect costs

The traditional cost accumulation systems of absorption costing were developed at a time when overheads were only a very small fraction of total costs, direct labour and direct material costs accounted for the largest proportion of the cost. As such the benefit of more accurate systems of overhead allocation would probably have been relatively small.

# Information processing costs

The traditional costing systems were developed at a time when information processing costs were so high that on a cost benefit analysis basis, the introduction of ABC would not be approved in most organisations.

**Labour costs.**

Traditional costing mainly allocated costs on the basis of labour component in a cost object. With the advent of Advanced Manufacturing Technology, labour has drastically declined (to as low as 5% of a product cost in some cases) and cannot be justified as a correct absorption base.

## DEFINITION OF ABC

Activity Based Costing is an approach to costing and monitoring of activities which involves tracing resource consumption and costing final output. Resources are assigned to activities and activities to cost objects based on consumption estimates. The later utilizes cost drivers to attach activity costs to outputs

***(CIMA Official Terminology)***

The major ideas behind ABC are as follows:

* Activities cause costs
* Producing products creates demand for the activities
* Costs are assigned to a product on the basis of the products consumption of the activities

## Designing an ABC system

Four steps involved in the design of ABC are to:

* Identify major activities that take place within an organisation.
* Assign costs to cost pools/cost centres for each activity.
* Determine the cost driver for each major activity.
* Assign costs to products according to products demand for activities.

# IDENTIFICATION OF MAJOR ACTIVITIES

Activities are composed of the aggregation of units of work or tasks and are described by verbs associated with tasks. For example, activities in a stores department include such tasks as:

* Receiving a purchase request.
* Identifying suppliers.
* Preparing purchase orders.
* Mailing purchase orders.
* Performing follow-ups.

The number of activities to include in the system is a matter of judgment by management.

# ASSIGNING COSTS TO EACH ACTIVITY

After the activities have been identified the cost of resources consumed over a specified period must be assigned to each activity. The aim is to determine how much the organisation is spending on each of its activities. Costs shared by several activities have to be apportioned on some fair bases.

# IDENTIFICATION OF COST DRIVERS

In order to assign costs attached to each activity to products, a cost driver must be selected for each activity.

***Definition of cost driver***

A cost driver is any factor that causes a change in the cost of an activity.

***(CIMA Official Terminology)***

# EXAMPLES OF COST DRIVERS

|  |  |
| --- | --- |
| **Costs** | **Possible cost drivers** |
| Ordering costs | Number of orders |
| Materials handling | Number of production runs |
| Production scheduling costs | Number of production runs |
| Despatching costs | Number of dispatches |

## ASSIGNING COSTS TO PRODUCTS

Costs are charged to products on the basis of their usage of the activity. A product’s usage of an activity is measured by the number of the activity’s cost driver it generates.

# QUESTION: ABSORPTION COSTING VERSUS ABC

Having attended a ZICA conference on activity Based Costing you decide to experiment by applying the principles of ABC to the four products currently made and sold by your company. Details of the four products and relevant information are given below for one period:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Product | A | B | C | D |
| Output in units | 120 | 100 | 80 | 120 |
| Costs per unit: |  |  |  |  |
| Direct materials | 8,000 | 10,000 | 6,000 | 12,000 |
| Direct Labour | 5,600 | 4,200 | 2,800 | 4,200 |
| Machine hours per unit | 2 | 1.5 | 1 | 1.5 |

The four products are similar and are usually produced in production runs of 20 units and sold in batches of 10 units.

The production overhead is currently absorbed by using a labour hour rate and the total of the production overhead for the period has been analyzed as follows:

|  |  |
| --- | --- |
| Product | **K’000** |
| Assembly department cost (rent, rates depreciation and supervision) | 8 430 |
| Set up costs | 5 250 |
| Stores receiving | 3 600 |
| Inspection/Quality control | 2 100 |
| Material handling and despatch | 4 620 |
| Total | 24 000 |

You have ascertained that the cost drivers to be used are as listed below for the overhead costs shown:

|  |  |
| --- | --- |
| Cost | Cost Driver |
| Set up costs | Number of production runs |
| Stores receiving | Requisition raised |
| Inspection/Quality control | Number of production runs |
| Material handling and despatch | Orders executed |
|  |  |

The number of requisitions raised on the stores was 20 for each product and the number of orders executed was 42, each order being for a batch of 10 of a product.

# Required

Calculate the total costs for each product if overheads using:

1. Traditional costing
2. ABC system.

**SOLUTION**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Traditional Costing** | |  |  |  |  |
|  |  |  |  |  |  |
| Products | A | B | C | D | Total |
|  |  |  |  |  |  |
| Direct Material | 8,000 | 10,000 | 6,000 | 12,000 | 36,000 |
| Direct Labour | 5,600 | 4,200 | 2,800 | 4,200 | 16,800 |
| Prime Cost | 13,600 | 14,200 | 8,800 | 16,200 | 52,800 |
| Overheads | 9,000 | 5,250 | 3,000 | 6,750 | 24,000 |
| Total cost | 22,600 | 19,450 | 11,800 | 22,950 | 76,800 |
| Units | 120 | 100 | 80 | 120 |  |
| Cost per unit | **188.33** | **194.50** | **147.50** | **191.25** |  |

**WORKINGS FOR TRADITIONAL COSTING**

W1

|  |  |  |  |
| --- | --- | --- | --- |
| Overhead Absorption Rate = | Budgeted Overhead | = 24,000,000 | = 3,750 |
|  | Budgeted Activity | 6,400 |  |

W2

|  |  |  |  |
| --- | --- | --- | --- |
| Budgeted Hours | Units | Hours per unit | Total Hours |
| A | 120 | 20 | 2,400 |
| B | 100 | 14 | 1,400 |
| C | 80 | 10 | 800 |
| D | 120 | 15 | 1,800 |
|  |  |  |  |
| **Total** |  |  | **6,400** |

W3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Products | Units | Hours | OHAR | Absorbed OH |
| A | 120 | 20 | 3,750 | 9,000,000 |
| B | 100 | 14 | 3,750 | 5,250,000 |
| C | 80 | 10 | 3,750 | 3,000,000 |
| D | 120 | 15 | 3,750 | 6,750,000 |
|  |  |  |  |  |
| **Total** |  |  |  | **24,000,000** |

**ABC SOLUTION**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ABC statement** |  |  |  |  |
|  |  |  |  |  |
| Products | A | B | C | D |
|  |  |  |  |  |
| Assembly | 3,120 | 1,820 | 1,040 | 2,340 |
| Set up | 1,500 | 1,250 | 1,000 | 1,500 |
| Stores | 900 | 900 | 900 | 900 |
| Inspection | 600 | 500 | 400 | 600 |
| Materials Handling | 1,320 | 1,100 | 880 | 1,320 |
| Total | **7,440** | **5,570** | **4,220** | **6,660** |
| Prime Cost | 13,600 | 14,200 | 8,800 | 16,200 |
| Total Cost | **21,040** | **19,770** | **13,020** | **22,860** |
| Units | 120 | 100 | 80 | 120 |
| Cost per unit | **175.33** | **197.70** | **162.75** | **190.50** |

**WORKINGS**

W1

|  |  |  |  |
| --- | --- | --- | --- |
| ACTIVITY | Overhead cost | Drivers | Cost Per Driver |
| Assembly | 8,430 | 6,500 | 1.30 |
| Set up | 5,250 | 21 | 250 |
| Stores | 3,600 | 80 | 45 |
| Inspection | 2,100 | 21 | 100 |
| Materials Handling | 4,620 | 42 | 110 |

## ADVANTAGES OF ABC

* ABC facilitates a good understanding of what drives overheads and assists companies to remain cost competitive and also help in the accurate assessment of product profitability.
* ABC recognizes the complexity of the modern manufacturing environment by using multiple cost drivers.
* Unlike absorption costing which concentrates on factory overheads, ABC does account for non-factory overheads and this takes management accounting beyond its traditional factory floor boundaries.

## CRITICISMS OF ABC

* Not all arbitrary cost apportionment is eliminated, some of it still remains e.g rent may still have to be apportioned to various activities.
* It is still doubtful whether a single cost driver can explain the cost behaviour of all items within a cost pool.
* ABC is sometimes introduced because it is fashionable, not because it will be used to provide meaningful product costs or extra information.
* The cost of implementing and maintaining an ABC system can exceed the benefits of improved accuracy.

Implementation of ABC can be problematic due to such factors as:

* The incorrect belief that ABC can solve all organisations problems.
* Lack of correct type of data.
* Difficulty in determining appropriate cost drivers.

## OTHER USES OF ABC

Information which is gathered in the process of designing and implementing ABC can be used in the management functions of planning, control and decision making.

# Planning

One of the critical steps in the design of an ABC system is the analysis of the organisation’s activities, cost drivers and the relationship between the activities, products/services and their costs. This type of information would be very relevant for the budgeting exercise.

# Control

ABC clearly identifies what causes costs for an organisation in the service and support departments. This makes it possible to control costs by managing the activities which underlie the support departments.

# Decision making

By providing accurate and reliable cost information ABC information can be used to make the following decisions:

* Pricing
* Promotion or discontinuing products or parts of the business
* Redesigning products and developing new products or new ways to do business.

# summary

## Unit summary

* Activity Based Costing is an alternative costing method to absorption costing.
* ABC was developed to remedy weaknesses inherent in the absorption costing approach such as the reliance on labour for cost allocation and absorption when labour is a declining as a proportion of product cost.
* ABC involves the identification of the factors which cause costs (cost drivers) of an organisation’s major activities and charging support overheads to products on the basis of usage of an activity.
* Steps involved in ABC are:
  + Identification of major activities within an organisation.
  + Assigning overheads to the activities.
  + Identifying cost drivers for each cost pool.
  + Finding cost per driver and assigning the cost to cost objects.
* One of the key advantages of ABC is that it recognizes the complexity of the modern manufacturing environment by using multiple cost drivers
* Information from ABC can be used by management for planning, control and decision-making.

STUDENT-SELF TESTING

**SELF REVIEW QUESTIONS**

1. What developments have led to the introduction of ABC? (1.1-1.4)
2. Define ABC (2.0)
3. Mention four steps involved in the development of ABC? 2.1
4. What is a cost driver (2.4)
5. What are the advantages of ABC? 3.0
6. Mention the major criticisms of ABC (3.1)

EXAMINATION TYPE QUESTIONS

Falcon limited uses a single plant and production process to manufacture its candle and matches for its mainly rural market. An extract of production data for these products for the period ending 31st March 20X5 has been given as follows:

|  |  |  |
| --- | --- | --- |
|  | Matches | Candles |
| Quantities produced (Units) | 5000 | 7000 |
| Direct Labour hours per unit | 1 | 2 |
| Machine hours per unit | 3 | 1 |
| Set-ups in the period | 10 | 40 |
| Orders handled in the period | 15 | 60 |

|  |  |  |
| --- | --- | --- |
| Overhead costs |  | **K'000** |
| Relating to Machine activity |  | 220,000 |
| Relating to production run set ups |  | 20,000 |
| Relating to handling of orders |  | 45,000 |
|  |  | 285,000 |

# Required

Calculate the production overheads to be absorbed by one unit of each of the products using:

1. Traditional costing
2. Activity Based Costing approach

# UNIT 10

# CONTRACT COSTING

## Introduction

We now turn attention to a third specific order costing method called contract costing. Contracts are basically large long-term jobs. Most of the costing principles covered under job costing are also applicable to contract costing. The main difference is the recognition of attributable profit part way through the contract.

## CONTENTS

1. What is contract costing?
2. Features of contracts.
3. Contract account.
4. Profit taking.
5. Accounting entries.

Outcomes

## LEARNING OUTCOMES

After studying this unit, you should be able to:

* Know the characteristics of contract costing.
* Be able to prepare a contract account.
* Calculate profits on completed and incomplete contracts.
* Prepare balance sheets entries relating to long-term contracts.
* Be able to summarise standard accounting requirements regarding profits, losses and contract balances.

## DEFINITION

Contract costing is a form of specific order costing in which costs are attributable to individual contracts.

Contract costing has many similarities to job costing and is usually applied to work which is:

* Undertaken to customer’s special requirements.
* Relatively long duration.
* Site based and sometimes overseas.
* Frequently of a constructional nature.

The main difference between a job and a contract is one of **size** and **time span**. Contract costing is used by firms, which undertake building or other constructional work that takes years or months to complete.

## Characteristics of contract costing

Although details vary, certain characteristics are common to most contracts costing systems:

* Higher proportion of direct costs
* Low indirect costs
* Difficulties of cost control
* Surplus materials

## TREATMENT OF COSTS

Each contract is a separately identifiable cost unit, against which cost are collected and later used in profit computations. The various elements of cost are dealt with as follows.

## Direct materials

Materials charged to a contract include materials specifically purchased for the contract, materials transferred from other contracts and materials issued from the stores. At the end of an accounting period, the contract account should be credited with:

* Unused materials.
* Materials transferred to other projects.
* Materials returned to stores.

## Direct wages

The direct wages include work done by the design and drawing office, work done on the site. All labour employed on the site of the contract is direct. Time sheets may be used to disclose time spent by workers at different sites. All such labour costs are debited to the contract account.

## Direct expenses

Direct contract costs other than materials and labour are often very significant and the two major items falling within this category are plant and subcontracted work. Plant used on a contract could come from the following sources:

* Plant specifically purchased for the project.
* Plant transferred from other contracts.
* Plant hired from outside the company.

The contract account should be debited with the cost of using the plant and this is done as follows:

* For plant hired, the hire charge is the cost of using the asset and is charged to the contract.
* For the assets owned by the company, depreciation represents the cost of using the plant and is therefore charged to the contract.
* Subcontracted work – it is common in contract operation to find that the main contractor hires subcontractors to undertake some of the activities on a contract. The cost of any subcontracted work is a direct expense of a contract and is debited to the contract account.

## TERMINOLOGY RELATING TO THE OPERATION OF A CONTRACT.

For contracts a price is agreed between the company and customer. For large companies where work is spread over a number of months or years, the contractor will receive progress payments. Such interim payments are based on the work done involving certain procedures:

Architects certificates- the architect issues a certificate showing the value of the work completed on the contract. Based on the certificates the contractor issues an invoice to the customer as a demand for progress payment.

Retention monies- this refers to monies which a client withholds from the total invoice amounts as he makes progress payments to the contractor. Retention monies act as motivation for possible future rectification work by the contractor. Such retention monies are therefore paid upon the completion of the contract when any faulty work has been done.

## TAKING PROFITS ON LONG TERM CONTRACTS

* Where a contract extends over a long period, IAS11 allows the contractor to take credit for part of the attributable profit to the contract in each year’s contract.
* This provision avoids inconsistency of having a number of years with no profit from a particular contract and then suddenly making a huge profit in the year when the contract is completed.
* In deciding to what extent profit can be taken on uncompleted contract, the following matters should be considered:
  + The successful outcome of the contract should be certain before any interim profit is taken.
  + Any profits should only be taken in proportion to the work completed to date on the contract.
  + Any anticipated overall loss on the contract should be provided for as soon as it is recognized.

Guidelines on calculating interim profit

Various possibilities exist for estimating the profit on incomplete contracts and several options are shown here below. The overriding principle is that a prudent view must always be taken and the profit taken should reflect the degree of completion.

If the contract is at an early stage (say less than 30% complete) no profit should be taken. Interim profits however calculated, should only be taken when the final contract outcome of the contract can be assessed with reasonable certainty.

Options for estimating interim profits

*Exam focus*

Note that in the exam the approach you should adopt in estimating profit should be based on the requirements of the question and the available information.

## Option 1

When substantial costs have been incurred (say 30% - 80% complete) a formula which has been traditionally used in the construction industry is:

|  |  |
| --- | --- |
| Profit taken = 2/3 or 3/4 of the notional profit X | Cash received from progress payments |
|  | Value of work certified |

Where notional profit = Value of Work Certified – Cost of Work Certified

Option 2

This approach involves the following five steps:

## Step 1

Determine the total sales value of the contract - for fixed price contracts; this is simply the agreed contract price. Call this (a)

## Step 2

Compute the total expected costs to complete the contract which consists of two elements:

* The actual costs incurred to date on the contract, plus
* The estimated future costs necessary to complete the contracts

Call this (b)

## Step 3

The expected overall profit on the contract is given by (a) – (b)

## Step 4

The attributable profit to date on the contract should reflect the amount of work that has been completed so far. It can be calculated as follows:

|  |
| --- |
| Value of work certified to date |
| Total contract price |

Estimated overall profit X

# It is important to realize that the attributable profit calculated in the above formula is the cumulative figure.

## Step 5

The profit to be taken this year is the cumulative attributable profit calculated at step 4 less the profit on the contract recognized in the previous year.

## 

## EXAMPLE: TAKING PROFITS ON INCOMPLETE CONTRACTS

**C**ontract 214 commenced during 2004 and has a fixed contract price of K200million. The cost incurred during the year 2004 for materials, wages and subcontractors’ charges totaled K90 million. Plant costing K20 million was purchased during 2004 specifically for the contract.

At the end of 2004:

The plant was valued at K15 million

Unused materials on the site were valued at K19 million

Value of architects’ certificate issued were K100 million

It is estimated that further costs totaling K74 million would be incurred in order to complete the contract. The figure includes the appropriate cost of plant and subcontractors in the future.

Retention monies representing 20% of the certified value of the work completed has been held back by the client. The balance of the money has been paid. The contractor credits the contract account with the full value of the architects’ certificates as they are received.

## Required

Compute estimated profit for 2004

**SOLUTION**

|  |  |
| --- | --- |
|  |  |
| Actual cost to date | **K'000** |
| Materials, Labour and sub contractors’ costs | 90,000 |
| Less: Materials on site at end of 2004 | (19,000) |
|  | 71,000 |
| Add: Plant depreciation (20,000 - 5,000) | 5,000 |
| **Contract cost to date** | **76,000** |
|  |  |
|  |  |
| Project costs to completion |  |
| Contract cost to end of 2004 | 76,000 |
| Estimated future costs | 74000 |
| **Total estimated contract price** | **150,000** |
|  |  |
|  |  |
| Estimated total contract price | K'000 |
| Contract Price | 200,000 |
| Contract Cost | (150,000) |
| Estimated profit | **50,000** |

|  |
| --- |
| Value of work certified to date |
| Total contract price |

Estimated overall profit X

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| Profit taken in 2004 = | 100,000 | X K 50,000,000 = | K25,000,000 |
|  | 200,000 |  |  |

As this contract commenced in 2004 and, the whole cumulative profit computed is attributable to 2004.

## CONTRACT COST ACCOUNTING ENTRIES

The additional requirement in the contract costing questions is to account for the entries relating to the contracts in the profit and loss account and balance sheet. The following question will be used to show entries in the profit and loss account and the balance sheet.

## Question

At the end of the year, NHA construction has three contracts in progress and their details are as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| Contract | NH 10 | NH 11 | NH 12 |
|  | **K'000** | **K'000** | **K'000** |
| Contract price | 150,000 | 275,000 | 185,000 |
| Cost to date | 35,000 | 144,000 | 154,000 |
| Estimated costs to completion | 88,000 | 96,000 | 7,000 |
| Value of work certified | 40,000 | 165,000 | 172,000 |
| Progress payments received | 34,000 | 140,250 | 146,200 |
| Cost of work certified | 28,000 | 138,000 | 150,000 |

## Required

1. By assessing the degree of completion, decide on which contracts profits should be taken and by how much.
2. Show the profit and loss entries.
3. Show the balance sheet entries.

SOLUTION

a) Projects on which to take profit

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Approximate degree of completion** |  |  |  |  |  |  |
|  |  | NH10 |  | NH11 |  | NH12 |
| Cost to date |  | 35,000 |  | 144,000 |  | 154,000 |
| Total costs |  | 123,000 |  | 240,000 |  | 161,000 |
|  |  |  |  |  |  |  |
| **Percentage completion** |  | **28%** |  | **60%** |  | **96%** |

NH10 - As NH 10 is still in its very early stages, no profit will be taken based on the prudence concept.

NH11- As contract NH11 is 2/3 complete profit will be taken on this contract using the traditional notional profit formula.

NH12- As the contract is almost complete, profit will be taken using the total profit approach.

## b) AMOUNT OF PROFIT

## CONTRACT NH11

|  |  |
| --- | --- |
| Profit taken = 2/3 X Notional profit X | Cash received from progress payments |
|  | Value of work certified |

Where notional profit = Value of Work Certified – Cost of Work Certified

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Profit taken = | 2/3 x (165,000-138,000) x 140,250/165,000 | | | |
|  | **15,300 (K’000)** |  |  |  |

## CONTRACT NH12

|  |
| --- |
| Value of work certified to date |
| Total contract price |

Estimated overall profit X

|  |  |  |  |
| --- | --- | --- | --- |
| Profit taken in 2004 = | 172,000 | X 24,000 | **= 22,314** |
|  | 185,000 |  |  |

## 

## c) PROFIT AND LOSS ACCOUNTING ENTRIES

The amount of turnover and cost of sales to be taken to profit and loss account will be those that will produce the profits computed above.

## Contract NH10

No entries will be made in the profit and loss account as no profit will be computed.

## Contract NH11

Entries made in the P & L for this contract should give a profit of K15,300 (000)as computed above. This is achieved as follows:

|  |  |
| --- | --- |
| Turnover = 2/3 X Value of work certified X | Cash received from progress payments |
|  | Value of work certified |

|  |  |  |
| --- | --- | --- |
| Turnover (K’ 000) = | 2/3 x K165,000 x 140,250/165,000 = | **K93,500** |

|  |  |
| --- | --- |
| Cost of sales = 2/3 X Cost of work certified X | Cash received from progress payments |
|  | Value of work certified |

|  |  |  |
| --- | --- | --- |
| Cost of sales (K’000) = | 2/3 x 138,000 x 140,250/165,000 = | **K78,200** |

Profit and loss extract

|  |  |
| --- | --- |
| Profit and Loss entries | K'000 |
| Turnover | 93,500 |
| Cost of sales | 78,200 |
| **Profit** | **15,300** |

## CONTRACT NH12

|  |
| --- |
| Value of work certified to date |
| Total contract price |

Turnover = Contract price X

|  |  |  |  |
| --- | --- | --- | --- |
| Turnover (‘K000) = | 172,000 | X 185,000 | = 172,000 |
|  | 185,000 |  |  |

|  |
| --- |
| Value of work certified to date |
| Total contract price |

Cost of sales = Total cost X

|  |  |  |  |
| --- | --- | --- | --- |
| Cost of sales (‘K000) = | 172,000 | X 161,000 | = 149,686 |
|  | 185,000 |  |  |

Profit and loss extract

|  |  |
| --- | --- |
| Profit and Loss entries | K'000 |
| Turnover | 172,000 |
| Cost of sales | 149,686 |
| **Profit** | **22,314** |

## Summary of P & L entries for the 3 contracts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Contract | NH10 | NH11 | NH12 | Total |
|  | K'000 | K'000 | K'000 | K'000 |
| Turnover | - | 93,500 | 172,000 | 265,500 |
| Cost of sales | - | (78,200) | (149,686) | (227,886) |
| **Profit** | **-** | **15,300** | **22,314** | **37,614** |

## BALANCE SHEET ENTRIES

Entries in the balance sheet relating to contracts are of two types:

i) Straightforward entries such as:

* Unused materials which is reported as stocks
* Plant on site which is reported under Fixed assets

ii) Complicated entries which are:

* Stocks: Long term-contract balances

Long-term contract balances refer to work which is done but not yet allocated to the profit and loss account.

|  |  |  |
| --- | --- | --- |
| Long term contract balances | | |
| i) | Cost incurred to date | XX |
| ii) | Less costs allocated to cost of sales | (XX) |
| Net difference | | XX |

**Debtors: Amounts recoverable on long-term contracts**

This constitutes amounts taken as turnover in the profit and loss account less progress payments received;

|  |  |  |
| --- | --- | --- |
| Amounts recoverable on long-term contracts | | |
| i) | Amounts taken as turnover | XX |
| ii) | Progress payments received | XX |
| \*\*Net difference | | XX |

*\*\* Should a negative balance arise it is set off against the long- term contract balances.*

## BALANCE SHEET ENTRIES USING THE DATA ABOVE

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Contract | NH10 | NH11 | NH12 | Total |  |
|  |  | K'000 | K'000 | K'000 | K'000 |  |
|  | Amounts taken as turnover | - | 93,500 | 172,000 | 265,500 |  |
|  | Less progress payments | 34,000 | 140,250 | 146,200 | 320,450 |  |
| 1 | Net difference | (34,000) | (46,750) | 25,800 - | (54,950) |  |
|  |  |  |  |  |  |  |
|  | Cost to date | 35,000 | 144,000 | 154,000 | 333,000 |  |
|  | Costs allocated to cost of sales | - | 78,200 | 149,686 | 227,886 |  |
| 2 | Costs not allocated to cost of sales | 35,000 | 65,800 | 4,314 | 105,114 |  |
|  |  |  |  |  |  |  |
|  | Any negative balances under 1 are recovered from 2 and as such there would be no debtors | | | | |  |
| Net of 1&2 | **Balance sheet entries:**  Stocks: Long-term contract balances | 1,000 | 19,050 | 30,114 | 50,164 |  |

summary

## Unit summary

* Contract costing is similar to job costing and is used on relatively large scale, long-term contracts which are frequently site based.
* Because of the separate nature of most site work, more costs can be identified as direct, including many which are normally indirect.
* The cost for use of plant bought for a contract is charged as depreciation. For hired plant the cost charged is the hire fee.
* The contractor is paid interim amounts known as progress payments (less retention monies) based on the surveyors’ certificates.
* Retention monies represent amounts deducted by the customer and are paid after the contract has ended.
* Profit on incomplete contracts should be undertaken using conservative estimates.
* If a loss is expected for the contract as a whole the whole loss is recognized in full in the accounts.
* Accounting entries must be made in the P & L and balance relating to long term contracts.

STUDENT-SELF TESTING

**SELF REVIEW QUESTIONS**

1. Define contract costing (1.0)
2. State some characteristics of contract costing (1.2)
3. How is the cost of using assets charged to contracts (2.3)?
4. What are retention monies in relation to contract costing? (3.0)
5. State the overriding principles in the computation of profit on contracts? (4.0)
6. State one recommended method for computing profit in contract costing? (4.2)

EXAMINATION TYPE QUESTIONS

## 

## CONTRACT COSTING QUESTION

A business has a contract that is due to run from 1st January 20X5 to 30 June 20X6. The information about the contract at 31st December 20X5 is as follows:

|  |  |
| --- | --- |
| Contract Price | K450 million |
| Work certified at 31st December 20X5 | K300 million |
| Cost incurred to 31st December 20X5 | K295 million |
| Further costs expected until end of contract | K70 million |

REQUIRED

The attributable profit for the year ended 31st December 20X5 based upon the proportion of cost incurred to date is K……………..

The attributable profit for the year ended 31st December 20X5 based upon the proportion of the contract price completed is K……………..

# UNIT 12

# PROCESS COSTING

## Introduction

Having looked at job costing and batch costing in the previous unit, we shall proceed to consider a third costing method called process costing. This unit starts by considering the basics of the topic which are preparation of basic process accounts and later moving on to accounting for process losses and finally the valuation of work in progress. The next unit will deal with the accounting for by products and joint products.

# CONTENTS

1. Process costing.
2. Process losses.
3. Scrap value.
4. Abnormal gain.
5. Equivalent units.
6. Closing Work in progress.
7. Opening Work in progress.

Outcomes

## LEARNING OUTCOMES

After reading this unit you should be able to:

* Know the features of process costing and the situation where the use of process costing is appropriate.
* Learn how to prepare a process account.
* Know the treatment of normal losses.
* Know the treatment of abnormal losses and abnormal gains.
* Learn how to account for scrap value of losses.
* Understand the concept of equivalent units for the valuation of work in progress.

## INTRODUCTION TO PROCESS COSTING

Process costing is a costing method used where production follows a series of sequential processes. It is used in a variety of industries including:

* Oil refining
* Food processing
* Paper making
* Brewing
* Chemical and drug manufacture

## FEATURES OF PROCESS COSTING

Process production has the following features which make it different from other types of manufacturing operations:

* Process operations are continuous i.e. they never stop, materials are continually being added to operations and output is continually being produced e.g brewing and paint making.
* Due to the continuous nature of operations, there is normally opening work in progress at the beginning and closing work in progress at the end of the accounting period.
* The output of one process becomes input to the next until the finished product is made in the final process.
* There is often a loss in process due to spoilage, wastage evaporation and so on.
* There could be more than one product produced from a common input. For example, oil refinery may produce petrol, diesel, tar, etc. These products may be joint products or by products.

1.3 The main problems in process costing are:

* Preparation of process account
* Treatment of losses
* Valuation of work in progress
* Costing of joint and by products

## PREPARATION OF PROCESS ACCOUNTS

The following example will be used to illustrate the preparation of a basic process account for a company operating a single process operation.

# Information for the Process

In put to a process is 2000 kg of materials costing K2 million

Labour cost was K1 million

Production overheads are absorbed at 75% of labour cost

The process output of 2000 kg was transferred to the warehouse for sale.

**Required**

Prepare a process account using the above information.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PROCESS 1 ACCOUNT | | | | | |
|  | Units | K’000 |  | Units | K’000 |
| Direct materials | 2,000 | 2 000 | Output to process 2 | 2,000 | 3 750 |
| Direct Labour |  | 1 000 |  |  |  |
| Production overheads |  | 750 |  |  |  |
| **Totals** | **2,000** | **3 750** | **Totals** | **2,000** | **3 750** |

## PROCESS LOSSES

During a production process, a loss may occur due to wastage, spoilage, evaporation and so on. These losses are dealt with as follows:

# Normal loss

Normal loss is the expected amount of loss in a process. It is the level of loss or waste that management would expect to occur under normal operating conditions.

Normal loss is not given a cost. The cost of producing these units is borne by the good units.

# Abnormal loss

Abnormal loss is the amount by which the actual loss exceeds the expected or normal loss in a process. It can also be defined as the amount by which actual production is less than normal production.

Abnormal loss is given a cost like good units.

# Abnormal Gain

Abnormal gain is the amount by which actual output from a process exceeds the expected output. It is the amount by which actual loss is lower than expected loss.

Abnormal gain is given a value. The value of abnormal gain is calculated in the same way we calculate the cost per unit of abnormal loss. It is calculated as the cost of production divided by the expected units of output.

# ILLUSTRATION – NORMAL LOSS

The following example will be used to demonstrate the accounting for normal loss, abnormal loss and abnormal gain.

In put to a process is 2,000 kg of materials costing K2 million

Labour cost was K 1million

Production overheads are absorbed at 75% of labour cost

The process output of 1,800 kg was transferred to process 2

Normal loss is 10% of input

# Required

Show the process account.

|  |  |
| --- | --- |
| Unit cost computation = | Process cost |
| Expected out (taking into account normal loss) |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PROCESS ACCOUNT | | | | | |
|  | Units | K’000 |  | Units | K’000 |
| Direct materials | 2,000 | 2 000 | Output to process 2 | 1,800 | 3 750 |
| Direct Labour |  | 1 000 | Normal loss | 200 | 0 |
| Production overheads |  | 750 |  |  |  |
| **Totals** | **2,000** | **3 750** | **Totals** | **2,000** | **3 750** |

## ACCOUNTING FOR SCRAP

Loss may have a scrap value. The following basic rules are applied in accounting for this value in the process accounts.

(a) Revenue from scrap is treated, not as an addition to sales revenue, but as a reduction in process costs.

(b) The scrap value of normal loss is used to reduce the material costs of the process

as follows

DEBIT Scrap account

CREDIT Process account

with the scrap value of the normal loss.

(c) The scrap value of abnormal loss is used to reduce the cost of abnormal loss as follows

DEBIT Scrap account

CREDIT Abnormal loss account

with the scrap value of abnormal loss, which therefore reduces the write-off of cost to the profit and loss account?

(d) The scrap value of abnormal gain arises because the actual units sold as scrap will be less than the scrap value of normal loss. Because there are fewer units of scrap than expected, there will be less revenue from scrap as a direct consequence of the abnormal gain. The abnormal gain account should therefore be debited with the scrap value.

DEBIT Abnormal gain account

CREDIT Scrap account

with the scrap value of abnormal gain.

(e) The scrap account is completed by recording the actual cash received from the sale of scrap as follows

DEBIT Cash received

CREDIT Scrap account

with the cash received from the sale of the actual scrap.

# ILLUSTRATION – ABNORMAL LOSS

Input to a process is 2,000 kg of materials costing K2 million

Labour cost was K 1million

Production overheads are absorbed at 75% of materials cost

The process output of 1,700 kg was transferred to process 2

Normal loss is 10% of input

# Required

Show the process account.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Unit cost = | Process cost | = | K4,500,000 | = K 2,500 per unit |
|  | Expected output |  | 1800 units |
|  |  |  |  |  |

Valuation statement

|  |  |  |  |
| --- | --- | --- | --- |
|  | |  |  |
|  |  |  |  |
| Element of output | Units | Unit cost | Values |
|  |  | K | K |
| Finished goods | 1,700 | 2,500 | 4,250,000 |
| Abnormal loss | 100 | 2,500 | 250,000 |
| **Total** |  |  | **4,500,000** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PROCESS ACCOUNT | | | | | |
|  | Units | **K’000** |  | Units | **K’000** |
| Direct materials | 2,000 | 2,000 | Output to process 2 | 1,700 | 4,250 |
| Direct Labour |  | 1,000 | Normal loss | 200 | 0 |
| Production overheads |  | 1,500 | Abnormal loss | 100 | 250 |
| **Totals** | **2,000** | **4,500** | **Totals** | **2,000** | **4,500** |

# ILLUSTRATION – ABNORMAL GAIN

Input to a process is 2,000 kg of materials costing K2 million

Labour cost was K 1million

Production overheads are absorbed at 75% of materials cost

The process output of 1,900 kg was transferred to process 2

Normal loss is 10% of input

# Required

Show the process account.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Unit cost = | Process cost | = | K4,500,000 | = K2,500 per unit |
|  | Expected output |  | 1,800 units |
|  |  |  |  |  |

Valuation statement

|  |  |  |  |
| --- | --- | --- | --- |
| Statement of valuation | |  |  |
|  |  |  |  |
| Element of output | Units | Unit cost | Values |
| Finished goods | 1,900 | 2,500 | K4,750,000 |
| Abnormal gain | 100 | 2,500 | K250,000 |
| Total |  |  | K5,000,000 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PROCESS ACCOUNT | | | | | |
|  | Units | K’000 |  | Units | K’000 |
| Direct materials | 2,000 | 2,000 | Output to process 2 | 1,900 | 4,750 |
| Direct Labour |  | 1,000 | Normal loss | 200 | 0 |
| Production overheads |  | 1,500 |  |  |  |
| Abnormal gain | 100 | 250 |  |  |  |
| **Totals** | **2,100** | **4,750** | **Totals** | **2,100** | **4,750** |

## TREATMENT OF SCRAP VALUE

In order to illustrate the treatment of scrap value in process costing, the information in the above two illustrations (see paragraphs 2.6 and 2.7) will be used.

**SCRAP VALUE AND ABNORMAL LOSS**

All information as in paragraph 2.6 except that the loss has scrap value of K900 per unit. All the relevant accounts will appear as shown below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Unit cost = | Process cost less scrap from normal loss | = | K4,500,000 – K180,000 | = K 2,400 per unit |
|  | Expected output |  | 1800 units |
|  |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | |  |  |
|  |  |  |  |
| Element of output | Units | Unit cost | Values |
| Finished goods | 1,700 | K 2,400 | K4,080,000 |
| Abnormal loss | 100 | K 2,400 | K240,000 |
| **Total** |  |  | **K4,320,000** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PROCESS ACCOUNT | | | | | |
|  | Units | **K’000** |  | Units | **K’000** |
| Direct materials | 2,000 | 2,000 | Output to process 2 | 1,700 | 4,080 |
| Direct Labour |  | 1,000 | Normal loss | 200 | 180 |
| Production overheads |  | 1,500 | Abnormal loss | 100 | 240 |
| **Totals** | **2,000** | **4,500** | **Totals** | **2,000** | **4,500** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ABNORMAL LOSS ACCOUNT | | | | | |
|  | Units | **K’000** |  | Units | **K’000** |
| Process account | 100 | 240 | Cash/Bank | 100 | 90 |
|  |  |  | P & L |  | 150 |
|  |  |  |  |  |  |
| **Totals** | **100** | **240** | **Totals** | **100** | **240** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| NORMAL LOSS ACCOUNT | | | | | |
|  | Units | **K’000** |  | Units | **K’000** |
| Process account | 200 | 180 | Cash/Bank | 200 | 180 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| **Totals** | **200** | **180** | **Totals** | **200** | **180** |

**SCRAP VALUE AND ABNORMAL GAIN**

All information as in paragraph 2.7 except that the loss has scrap value of K900 per unit. All the relevant accounts will appear as shown below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Unit cost = | Process cost less scrap from normal loss | = | K4,500,000 – K180,000 | **= K 2,400 per unit** |
|  | Expected output |  | 1800 units |
|  |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **STATEMENT OF VALUATION** | |  |  |
|  |  |  |  |
| Element of output | Units | Unit cost | Values |
|  |  | K | K |
| Finished goods | 1,900 | 2,400 | 4,560,000 |
| Abnormal gain | 100 | 2,400 | 240,000 |
| **Total** |  |  | **4,800,000** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PROCESS ACCOUNT | | | | | |
|  | Units | **K’000** |  | Units | **K’000** |
| Direct materials | 2,000 | 2,000 | Output to process 2 | 1,900 | 4,560 |
| Direct Labour |  | 1,000 | Normal loss | 200 | 180 |
| Production overheads |  | 1,500 |  |  |  |
| Abnormal gain | 100 | 240 |  |  |  |
| **Totals** | **2,100** | **4,740** | **Totals** | **2,100** | **4,740** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ABNORMAL GAIN ACCOUNT | | | | | |
|  | Units | **K’000** |  | Units | **K’000** |
| N/Loss | 100 | 90 | Process account | 100 | 240 |
| P & L |  | 150 |  |  |  |
|  |  |  |  |  |  |
| **Totals** | **100** | **240** | **Totals** | **100** | **240** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| NORMAL LOSS ACCOUNT | | | | | |
|  | Units | **K’000** |  | Units | **K’000** |
| Process | 200 | 180 | Cash/Bank | 100 | 90 |
|  |  |  | Again | 100 | 90 |
|  |  |  |  |  |  |
| **Totals** | **200** | **180** | **Totals** | **200** | **180** |

## COSTING OF WORK IN PROGRESS

At the end of a period there may be some units that have been started but have not been completed. These are called closing work-in-progress. The costing problem to be dealt with is how to attribute costs to such incomplete units. The process account below will help to highlight the problem.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PROCESS ACCOUNT | | | | | |
|  | Units | K’000 |  | Units | K’000 |
| Direct materials | 2,000 | 2,000 | Finished goods | 1,500 | ? |
| Direct Labour |  | 1,000 | Closing WIP | 500 | ? |
| Production overheads |  | 1,500 |  |  |  |
| **Totals** | **2,000** | **4,500** | **Totals** | **2,000** | **4,500** |

As shown above, we have to apportion costs between finished output and the closing work in progress. Apportioning costs in proportion to the number of units of finished output and closing WIP would not be fair because the closing WIP units are still incomplete.

## EQUIVALENT UNITS

To apportion costs fairly, we make use of the concept of equivalent units of production. Equivalent units are notional whole units which represent incomplete work, and which are used to apportion costs between WIP and complete output.

# Example

Assume that in a given period production was 2,000 complete units and 600 partly complete. The partly complete units are deemed to be 75% complete.

Total equivalent production = Completed units + Equivalent units in W-I-P

= 2000 + ¾ x 600 = 2,450

**= 2,450**

**EXAMPLE – CLOSING WORK-IN-PROGRESS**

In a given period, production and cost data were as follows:

*Materials 3,200 units costing K10.23 million*

*Labour costing K7.904 million*

*Overheads costing K 6 million*

Production was 2,800 fully complete units and 400 partly complete units. The degree of completion of the 400 units WIP was as follows:

*Materials 75% complete*

*Labour 60% complete*

*Overheads 50% complete*

# Required

Calculate the total equivalent production, cost per unit and the value of WIP and the finished output.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Cost Element** | Equivalent Units | | | **Total Costs**  **K’000** | Cost Per UnitK’000 |
| Finished Output | Closing WIP | Total |  |  |
| Material | 2,800 | 300 | 3,100 | 10,230 | 3.30 |
| Labour | 2,800 | 240 | 3,040 | 7,904 | 2.60 |
| Overheads | 2,800 | 200 | 3,000 | 6,000 | 2.00 |
|  |  |  |  |  |  |
| **Total** |  |  |  |  | **7.90** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Valuation of Closing Work-In-Progress** | |  |  |
|  |  |  |  |
| **Cost Element** | **Equivalent Units – WIP** | **Cost per unit**  **K’000** | **Value**  **K’000** |
|
| Material | 300 | 3.3 | 990 |
| Labour | 240 | 2.6 | 624 |
| Overheads | 200 | 2.0 | 400 |
|  |  |  |  |
| **Total** |  |  | **2,014** |
|  |  |  |  |
|  |  |  |  |
| **Valuation of Finished Goods** | |  |  |
|  |  |  |  |
| **Cost Element** | **Equivalent Units – WIP** | **Cost per unit**  **K’000** | **Value**  **K’000** |
|
| Material | 2,800 | 3.3 | 9,240 |
| Labour | 2,800 | 2.6 | 7,280 |
| Overheads | 2,800 | 2.0 | 5,600 |
|  |  |  |  |
| **Total** |  |  | **22,120** |
|  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PROCESS ACCOUNT | | | | | |
|  | Units | K’000 |  | Units | K’000 |
| Direct materials | 3,200 | 10,230 | Finished goods | 2,800 | 22,120 |
| Direct Labour |  | 7,904 | Closing WIP | 400 | 2,014 |
| Production overheads |  | 6,000 |  |  |  |
| **Totals** | **3,200** | **24,134** | **Totals** | **3,200** | **24,134** |

## OPENING WORK-IN-PROGRESS

Having dealt with closing WIP, it follows that there will be opening working in progress at the beginning of the subsequent period.

This opening WIP will be partially complete and have a value brought forward from the previous period sometimes broken down into various cost elements namely materials, labour and overheads each having a given level of completion and value.

There are basically two approaches for dealing with situations involving opening WIP which are:

* The weighted average cost method
* FIFO method

## FIFO METHOD VALUATION

This method assumes that units are dealt with on a first-in-first out basis so that the first work to be done in a period is the completion of the opening WIP.

The effect of this is that the closing WIP is valued at current period costs and part of the previous period’s costs brought forward in the opening WIP is attached to the cost of completed units.

## THE WEIGHTED AVERAGE METHOD

Under this method the opening WIP values are added to the current costs to provide an overall average cost per equivalent unit.

The effect of this is that both closing WIP and completed units are valued using the same average cost.

Neither of the valuation methods can be said to be incorrect or correct, they are simply two different cost attribution methods used to value work in progress and completed output.

EXAMPLE

The following information relates to process 2 of a three-stage process for the month of December 20X5. At the beginning of period 2 there was 800 units partly completed which had the following values:

|  |  |  |
| --- | --- | --- |
| Cost Element | Degree of Completion | K'000 |
| Material transfer from Process 1 | 100% | 24,600 |
| Added Materials | 55% | 16,800 |
| Labour | 60% | 9,600 |
| Production Overheads | 45% | 7,200 |
| **Total** |  | **58,200** |

During the period 12 600 units were transferred from process 1 at a value of K139.5 million. The costs for the resources used in the current period were as follows:

|  |  |  |
| --- | --- | --- |
| Material |  | 72,000 |
| Labour |  | 58,500 |
| Overheads |  | 54,600 |
| **Total** |  | **185,100** |

At the end of the period, the closing WIP was 1,800 units which were at the following stages of completion:

|  |  |
| --- | --- |
| Cost Element | Degree of Completion |
| Material transfer from Process 1 | 100% |
| Added Materials | 50% |
| Labour | 45% |
| Production Overheads | 40% |

The balance of 13,500 was transferred to finished goods.

# Required

Calculate the value of units transferred to finished goods and the value of closing WIP and prepare process account using:

1. Average cost method
2. The FIFO method

**AVERAGE COST METHOD**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PROCESS ACCOUNT | | | | | |
|  | Units | **K’000** |  | Units | **K’000** |
| Opening WIP | 2,400 | 58,200 | Finished goods | 13,500 | 350,960 |
| Transfer from P1 | 12,900 | 139,500 |  |  |  |
| Direct materials |  | 72,000 | Closing WIP | 1,800 | 31,840 |
| Direct Labour |  | 58,500 |  |  |  |
| Production overheads |  | 54,600 |  |  |  |
| **Totals** | **15,300** | **382,800** | **Totals** | **15,300** | **382,800** |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Cost Element** | **Equivalent Units** | | | **Total Costs** | | | **Cost**  **Per Unit** |
| Finished  Output | Closing WIP | Total | Current  Period | Opening WIP | **Total**  **Costs** |
| **Transfer from P1** | 13,500 | 1,800 | **15,300** | 139,500 | 24,600 | **164,100** | 10.73 |
| Material | 13,500 | 900 | **14,400** | 72,000 | 16,800 | **88,800** | 6.17 |
| Labour | 13,500 | 810 | **14,310** | 58,500 | 9,600 | **68,100** | 4.76 |
| Overheads | 13,500 | 720 | **14,220** | 54,600 | 7,200 | **61,800** | 4.35 |
|  |  |  |  |  |  |  |  |
| **Total** |  |  |  |  | **58,200** | **382,800** | **15.27** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Valuation of Closing Work-In-Progress** | |  |  |
|  |  |  |  |
| **Cost Element** | **Equivalent Units - WIP** | **Cost per unit** | **Value** |
|
| Transfer from P1 | **1,800** | **10.73** | 19,306 |
| Material | **900** | **6.17** | 5,550 |
| Labour | **810** | **4.76** | 3,855 |
| Overheads | **720** | **4.35** | 3,129 |
|  |  |  |  |
| **Total** |  |  | **31,840** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Valuation of Finished Goods** | |  |  |
|  |  |  |  |
| **Cost Element** | **Equivalent Units - WIP** | **Cost per unit** | **Value** |
|
| Transfer from P1 | **13,500** | **10.73** | 144,794 |
| Material | **13,500** | **6.17** | 83,250 |
| Labour | **13,500** | **4.76** | 64,245 |
| Overheads | **13,500** | **4.35** | 58,671 |
| **Total** |  |  | **350,960** |

# FIFO METHOD

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PROCESS ACCOUNT | | | | | |
|  | Units | **K’000** |  | Units | **K’000** |
| Opening WIP | 2,400 | 58,200 | Finished goods | 13,500 | 351.707 |
| Transfer from P1 | 12,900 | 139,500 |  |  |  |
| Direct materials |  | 72,000 | Closing WIP | 1,800 | 31,093 |
| Direct Labour |  | 58,500 |  |  |  |
| Production overheads |  | 54,600 |  |  |  |
| **Totals** | **15,300** | **382,800** | **Totals** | **15,300** | **382,800** |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cost Element | | **Equivalent Units** | | | | | | |  | **Cost Per Unit**  **K’000** | |
| Finished Output | Closing WIP | | Opening WIP | | **Total**  **Units** | | **Total costs**  **K’000** |
| **Transfer from P1** | | 13,500 | 1,800 | | (2,400) | | **12,900** | | **139,500** | 10.81 | |
| Material | | 13,500 | 900 | | (1,320) | | **13,080** | | **72,000** | 5.50 | |
| Labour | | 13,500 | 810 | | (1,440) | | **12,870** | | **58,500** | 4.55 | |
| Overheads | | 13,500 | 720 | | (1,080) | | **13,140** | | **54,600** | 4.16 | |
|  | |  |  | |  | |  | |  |  | |
| **Total** | |  |  | |  | |  | | **324,600** | **14.21** | |
| **Valuation of Closing Work-In-Progress** | | |  | |  | |  | | |
|  | | |  | |  | |  | | |
| **Cost Element** | | | **Equivalent Units - WIP** | | **Cost per unit**  **K’000** | | **Value**  **K’000** | | |
|
| Transfer from P1 | | | **1,800** | | **10.81** | | 19,465 | | |
| Material | | | **900** | | **5.50** | | 4,954 | | |
| Labour | | | **810** | | **4.55** | | 3,682 | | |
| Overheads | | | **720** | | **4.16** | | 2,992 | | |
|  | | |  | |  | |  | | |
| **Total** | | |  | |  | | **31,093** | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Valuation of Finished Goods** |  |  |  |
|  |  |  |  |
| Cost Element | **Equivalent Units - finished goods** | **Cost per unit**  **K’000** | **Value**  **K’000** |
|
| Transfer from P1 | **11,100** | **10.81** | 120,035 |
| Material | **12,180** | **5.50** | 67,046 |
| Labour | **12,060** | **4.55** | 54,818 |
| Overheads | **12,420** | **4.16** | 51,608 |
| Total |  |  | **293,507** |

STUDENT-SELF TESTING

**SELF REVIEW QUESTIONS**

1. Give examples of industries which use process costing (1.0)
2. What are the key features of process operations (1.2)
3. What is normal loss (2.1)
4. What is abnormal loss (2.2)
5. What is abnormal gain (2.3)
6. How is scrap value treated in process costing (
7. 2.81)?
8. Define equivalent units (3.1)
9. Mention two approaches for dealing with opening WIP (3.3)

EXAMINATION TYPE QUESTIONS

## 

Dude Kings Limited produces a detergent paste by putting it through a single process. You are given the following details for period 2:

Input costs were 50,000 kilos at K496 per kilo

Labour costs for 16,000 hours at K1,100 per hour

Over heads costs were K12,600,000

You are also informed that:

1. Normal loss is 4%
2. Scrap value of normal loss is K400 per kilo
3. Finished output amounted to 30,000 units
4. Closing WIP amounted to 12,000 units and was fully complete for materials, ⅔ complete for labour and ½ complete for overheads.
5. There was no opening WIP

REQUIRED

1. Prepare the process account for period 2 detailing the value of the finished units and the work-in-progress. (10 marks)
2. Prepare an abnormal loss account. **(2 marks)**

# UNIT 12

# SERVICE COSTING

## Introduction

In the previous units we have considered costing methods which are relevant to manufacturing operations. In this unit we turn our attention to service costing, i.e. costing methods which are relevant to service organizations such as hospitals and education establishments. This costing method can also be used to cost output of service departments within an organisation. Service costing is widely used today because more and more entities are operating in the service industry rather than manufacturing.

CONTENTS

1. What is service costing?
2. Service costs and cost units.
3. Service costs analysis in service industry.
4. Service costing for internal services.

Outcomes

## LEARNING OUTCOMES

After studying this unit, you should be able to:

* Describe the circumstances in which service costing should be used.
* Explain the practical problems that can arise with the costing of services.
* Illustrate suitable cost units that can be used in a variety of different service operations.
* Carry out service cost analysis in service industry situations.
* Carry out service cost analysis in internal service situations.

## What is service costing?

Service costing is a costing method concerned with establishing the costs, not of products but of services rendered.

When to use service costing

Service costing is used in the following circumstances:

* A company operating in the service industry will use service costing to cost its output to customers. Examples of service companies are telephone companies, power companies, auditing and management consulting firms.
* A service department such as IT department or repairs and maintenance within an organisation can use service costing methodology to cost the work done for various internal departments.

Service costing compared with product costing

The cost of direct materials will be relatively small compared with the costs of direct labour, direct expenses and overheads

Indirect costs will generally represent a higher proportion of total costs.

## Comparison of a product and service

Specific characteristics of services that distinguish them from products are

intangibility, simultaneity, perishability and heterogeneity.

* Intangibility – a service such as a haircut is intangible.
* Simultaneity – the production and consumption of a service take place at the same time.
* Perishability – a service cannot be stored for future consumption.
* Heterogeneity – service provided cannot be exactly the same every time.

## Service costs and cost units

A major problem in service industries is the selection of a suitable unit for measuring the service. It is not easy to decide what service is actually being provided and what measures of performance are most appropriate to the control of costs. Frequently a composite unit may be deemed more appropriate.

Some of the cost units used in different activities are given below:

|  |  |
| --- | --- |
| **Service** | Cost unit |
| * Hotels | * Occupied bed-night |
| * Education | * Full time student |
| * Hospitals | * Patient days |
| * Passenger transport | * Passenger miles |
| * Accountancy | * Man hour |
|  |  |

A service business may use several different units to measure the various kinds of service provided. For example, a hotel with a restaurant and function rooms might use a different cost unit for each different service as shown below:

|  |  |
| --- | --- |
| SERVICE | **COST UNIT** |
| * Restaurant | * Meals served |
| * Hotel service | * Guest days |
| * Function facilities | * Hours rented |

## COLLECTION, CLASSIFICATION AND ASCERTAINMENT OF COSTS

Once the appropriate cost unit has been identified, the next critical step is to design an information system to collect appropriate statistical data. It is the responsibility of the cost accountant to design and manage the system for recording and analyzing these costs.

In a transport company, this may involve recording kilometers day by day for each vehicle in the fleet. A log sheet is normally used to capture this information. Other relevant information could include fuel usage per vehicle and loads or weight transported.

For each service, broad cost categories should be designed for the purpose of cost analysis. Suitable cost codes would be required to identify the categories.

Example

The costs of a transport undertaking can be classified under the following broad headings:

* Operating and running costs
* Repairs and maintenance
* Annual direct expenses
* Administration

For better cost analysis, there would be a need to have sub-classification of costs. For example, the annual fixed costs could be broken down as follows:

* Road licence
* Motor vehicle insurance
* Depreciation
* Vehicle testing

## COST SHEETS

A cost sheet is a record of costs for each service provided. A typical cost sheet for a service would incorporate the following for the current details:

* Cost information under the appropriate headings
* Cost unit statistics
* Cost per unit
* Analyses based on the actual cost units

**EXAMPLE – A COST SHEET FOR A RESTAURANT**

|  |  |
| --- | --- |
| **Cost Sheet** |  |
| Category | Cost - K |
| Food and Drink | 1,125,000 |
| Labour | 1,125,000 |
| Heating and Lighting | 187,500 |
| Consumables | 112,500 |
| Depreciation | 100,000 |
| Apportioned costs | 750,000 |
| Cleaners | 87,500 |
|  |  |
| **Total** | **3,487,500** |
|  |  |
| Number of meals served | 375 |
| **Cost per meal** | **9,300** |

## SERVICE COST ANALYSIS IN SERVICE INDUSTRIES

**QUESTION**

Dar Farms Ltd operates a fleet of trucks whose standard costs have been established as follows:

|  |  |
| --- | --- |
| **Item of expenditure** | Kwacha |
| Loading cost: |  |
| Labour (casual per hour) | 10,000 |
| Equipment depreciation- per week | 160,000 |
| Supervision - per week | 160,000 |
| Drivers’ wages | 500,000 |
| Petrol per Kilometer | 500 |
| Repairs per Kilometer | 250 |
| Depreciation per week per vehicle | 160,000 |
| Supervision - per week | 600,000 |
| Other general expenses | 1,000,000 |
|  |  |
| Loading time per tonne - hours | 1 |

|  |  |
| --- | --- |
|  |  |

There are ten drivers and ten trucks in the fleet. During a slack week only six journeys were made and the details are as shown below:

|  |  |  |
| --- | --- | --- |
| Journey | Tonnes carried  One way | Distance KM  One way |
| 1 | 5 | 100 |
| 2 | 8 | 20 |
| 3 | 2 | 60 |
| 4 | 4 | 50 |
| 5 | 6 | 200 |
| 6 | 5 | 300 |

Required

Calculate the expected average full cost per tonne/kilometer for the week.

Solution

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Journeys | | | | | |  |
| **Variable costs** | 1 | 2 | 3 | 4 | 5 | 6 | Total costs |
|  | K'000 | K'000 | K'000 | K'000 | K'000 | K'000 | K'000 |
| Loading Labour | 250 | 400 | 100 | 200 | 300 | 250 | 1,500 |
| Petrol (both ways) | 500 | 100 | 300 | 250 | 1,000 | 1,500 | 3,650 |
| Repairs (both ways) | 250 | 50 | 150 | 125 | 500 | 750 | 1,825 |
| **Total variable costs** | 1,000 | 550 | 550 | 575 | 1,800 | 2,500 | 6,975 |
|  |  | | | | | |  |
| **Fixed costs** |  |
| Equipment depreciation- per week | 160 |
| Supervision - per week | 160 |
| Drivers’ wages | 500 |
| Depreciation per week per vehicle | 160 |
| Supervision - per week | 600 |
| Other general expenses | 1,000 |
| **Total costs** |  |  |  |  |  |  | **9,555** |

|  |  |  |  |
| --- | --- | --- | --- |
| Journey | Tonnes carried  One way | One-way distance KM | Tonne / kilometers |
| 1 | 25 | 500 | 12,500 |
| 2 | 40 | 100 | 4,000 |
| 3 | 10 | 300 | 3,000 |
| 4 | 20 | 250 | 5,000 |
| 5 | 30 | 1000 | 30,000 |
| 6 | 25 | 1500 | 37,500 |
| **Total** |  |  | **92,000** |

|  |  |  |  |
| --- | --- | --- | --- |
| A cost per tonne kilometre | K9,555,000 | = | **K103.86** |
|  | 92000 |  |  |

## SERVICE COSTING FOR INTERNAL SERVICES

The service costing techniques and procedures used by service organizations can be used to cost the output of internal service departments.

But the question is why should we want to establish a cost for internal services provided by one department on behalf of another?

Service costing for internal services has two basic purposes:

* To control the costs in the service departments
  + Once cost per unit has been established, it can be compared with the target, budget or previous year’s figures for the purposes of control.
* To control the costs of the user departments in the following ways:
  + The overhead costs of the user department will be established more accurately.
  + The user department is discouraged to make wasteful use of the service departments.
  + The user department may be prompted to obtain a similar service externally.

summary

## UNIT SUMMARY

* Service costing can be used by companies operating in a service industry and by service departments of organizations.
* Characteristics which distinguish a service from a product include:
  + Intangibility
  + Simultaneity
  + Perishability
  + Heterogeneity
* A common problem with service costing is that of identifying a suitable cost unit for costing purposes. As a result, composite cost units are normally used.

|  |
| --- |
| Total costs for the period |
| Number of service units per period |

* Cost per service unit
* Service costing techniques are also used to establish costs for internal services which is a service provided by one department for another.

STUDENT-SELF TESTING

**SELF REVIEW QUESTIONS**

1. What is service costing? (1)
2. How is service costing applied (1.1)?
3. Mention some features of services that distinguish them from products (1.3)
4. Give examples of cost units commonly used in the service industry (1.4)
5. Give reasons for costing of internal services (3.3)

EXAMINATION TYPE QUESTIONS

## 

A transport business operates a fleet of 10 vehicles. Operating data are as follows:

|  |  |  |
| --- | --- | --- |
| **Cost Item** | **K'000** | **Unit of measurement** |
| Purchase of vehicles (depreciated on a straight-line basis over 4 years | 500,000 | For 10 vehicles |
| Vehicle disposal value (after 4 years) | 20,000 | per vehicle |
| Road fund licence and insurance | 11,450 | Per vehicle per year |
| Tyres (8 per vehicle and renewed every 40,000 km) | 1,050 | per tyre |
| Servicing (every 16,000 km) | 3,250 | per vehicle service |
| Fuel (consumption of 1 litre per 3.2 km) | 5 | per litre |
| Drivers (1 driver per vehicle) | 90,000 | per driver per year |
| Vehicle usage (in Kilometres) | 80,000 | Per vehicle per year |

## Required

Calculate the total vehicle operating costs per kilometre.

# UNIT 13

# STANDARD COSTING

## INTRODUCTION

This unit introduces you to the concept of standards, an idea which is fairly common to many days to day activities. For instance, as a student of accountancy how many times have you heard your fellow students comment on the standard of tuition they are receiving. In a similar vein as a management accountant you can set a standard cost for products and services. This unit looks at the uses of standard costing, the standard setting process and review of such standards.

## CONTENTS

1. Standard cost.
2. Standard costing.
3. Types of standard.
4. Preparation of standard costs.
5. The need to review standards.

Outcomes

## LEARNING OUTCOMES

After studying this unit, you should be able to:

* Define standard cost and standard costing.
* Explain types of operations most suited for standard costing.
* Understand how standards are set.
* Explain why standards should be continuously reviewed.

## INTRODUCTION

We shall start this unit by defining the following terms:

* Standards
* Standard cost
* Standard costing

## STANDARD

A standard is a benchmark measurement of resource usage, set in defined conditions.

## STANDARD COST

A standard cost is the planned unit cost of the products, components or services produced in a period. The main uses of standard costs are in performance measurement, control, stock valuation and in the establishment of selling prices.

**(CIMA *Official Terminology)***

## A standard cost is built up using the following elements of cost:

* Labour.
* Materials.
* Variable overheads.
* Fixed overheads.

## STANDARD COSTING

Standard costing involves the establishment of predetermined estimates of the costs of products or services, the collection of actual costs and the comparison of the actual costs with predetermined estimates. The predetermined costs are known as standard costs and the difference between standard and actual costs is known as a variance.

Standard costing was developed primarily for use in the manufacturing industry as a formal method for calculating the expected costs of products. It differs from general budgeting (which is normally concerned with the costs of sections of organisation), because it focuses on the cost of what the organisation produces – the units costs.

## WHERE SHOULD STANDARD COSTING BE USED

Standard costing can be used in a variety of operations such as jobbing manufacture, process manufacture and mass production.

However, the greatest benefit can be gained by operations that are highly repetitive where the average or expected usage of resources can be determined. It is therefore most suited to mass production and repetitive assembly work.

## COMPOSITION OF STANDARD COSTS

## The composition of standard costs whether you are calculating the standard cost of a rubber washer, an aeroplane or ship replacement operation can be analysed into common elements. These are the same elements of cost that you have come across before in the earlier units:

|  |  |
| --- | --- |
| **Direct costs** | **Indirect Costs** |
| Direct materials | Variable overheads |
| Direct Labour | Fixed overheads |
| Direct Expenses |  |

## Traditionally these elements of cost are shown on a standard cost card like the one below:

|  |  |  |
| --- | --- | --- |
| STANDARD COST CARD | | |
| Direct materials |  | **K’000** |
| Material X | 5kgs @ K20,000/Kg | 100 |
| Material Y | 3Kgs @ K10,000/Kg | 30 |
|  |  |  |
| Direct Labour |  |  |
| Grade A | 6hrs @ K15,000/Hr | 90 |
| Grade B | 8hrs @ K20,000/Hr | 160 |
|  |  |  |
| Variable Production overhead | 14 Hrs @ 10,000/hr | 140 |
|  |  |  |
| Fixed Production overhead | 14 Hrs @ 5,000/hr | 70 |
|  |  |  |
| Total standard cost |  | 590 |

## DERIVING STANDARDS

The responsibility for deriving standard costs should be shared between managers able to provide the necessary information about levels of expected efficiency, prices and overheads.

## SOURCES OF INFORMATION FOR STANDARD SETTING

|  |  |
| --- | --- |
| **Element of cost** | **Source of information** |
| Materials price | * Data from suppliers * Record of previous prices paid * Anticipated cost inflation * Anticipated demand for scarce supplies * Production schedules and bulk buying discounts * Seasonality of prices * Anticipated currency exchange rates |
| Material usage | * Product specification * Technical data from suppliers * Historical data on quantities used in the past * Observation of manufacture * Estimates of wastage * Quality of materials * Production equipment |
| Labour rate | * Current pay rates * Anticipated pay rises * The expected effects of bonus schemes * Equivalent pay rates of other employers * Changes in legislation * Grade of labour |
| Labour hours | * Data on previous output and efficiency levels * Results of formal observations (work study) * Anticipated changes in work practices or productivity levels * The level of skills of employees to be used |
| Overheads | * Accounting |

## THE USES OF STANDARD COSTING

Although standard costing has several uses, the two principal uses of standard costing are:

* To act as control device.
* To value stocks and production.

Other use of standard costing includes

* + To assist in budget setting.
  + To provide a prediction of future costs to be used in decision making situations.
  + To motivate staff and management by the provision of challenging targets.
  + To provide guidance on possible ways of improving efficiency.

## TYPES OF STANDARD

* **Ideal standard**- a standard which can be attained under perfect working conditions: no allowance is given for wastage, idle time and break downs.
* **Attainable standard**- a standard which assume efficient levels of operation, but which include allowances for normal losses waste and machine down time.
* **Current standard**- a standards based on current levels of efficiency in terms of allowances for breakdowns, wastage, losses and so on
* **Basic standard**- a standard established for use over a long period of time from which a current standard can be developed.

## IMPACT OF STANDARDS ON EMPLOYEE BEHAVIOR

|  |  |
| --- | --- |
| Type of standard | Impact |
| Ideal | The employees may feel that the goals are unattainable and so they will not work so hard. |
| Attainable | The employees are likely to be motivated to work harder as the standards are challenging but achievable |
| Current | Employees are unlikely to be motivated to do more than they are doing at the moment. |
| Basic | Employees are unlikely to be motivated by these standards which are easily achievable by employees. |

## PROBLEMS OF SETTING STANDARDS

## Common problems encountered in the standard setting process include:

* How to deal with inflation
* Who to set efficiency standards
* How to incorporate the need for continuous improvement.

## REVIEWING STANDARDS

Management should not think that once standards are set, they would remain useful forever. Standards must evolve to reflect the organisation’s changing methods and processes. Comparing out of date standards with actual results will provide misleading information.

Many organizations have adopted the approach of revising standards whenever changes of a permanent and reasonably long-term nature occur.

summary

## UNIT SUMMARY

* A standard cost is an estimated unit cost built from each element of cost.
* Standard costing is primarily used to value production and stocks and as a cost control tool.
* Standard costing is most suited to mass production and other repetitive operations.
* There are four types of standards namely ideal, attainable, current and basic.
* Standards should be revised when there is change of a permanent nature.

STUDENT-SELF TESTING

**SELF REVIEW QUESTIONS**

1. Define a standard (1.1)
2. Define standard cost (1.2)
3. Define standard costing (1.3)
4. Mention some sources of information for preparing standards (2.1)
5. Mention four types of standards (2.4)

EXAMINATION TYPE QUESTIONS

From the following data prepare the standard cost card for one unit of the single product manufactured:

Direct materials:

10kg of material X @ K1 600 per kg

7.5kg of material Y @ K2 500 per Kg

Direct Labour:

Preparation 14 hours @ K3 750 per hour

Assembly 5 hours @ K5 000 per hour

The budgeted total overheads for one year are:

|  |  |  |
| --- | --- | --- |
|  | K’000 | Hours |
| Preparation department | 88 | 20,000 |
| Assembly department | 150 | 24,000 |

The fixed overheads (included in the above figures) are K25 000 and K48 000 respectively.

The standard cost card should show sub totals for:

* Prime cost
* Variable production cost
* Total production cost

# UNIT 14

# VARIANCE ANALYSIS

## INTRODUCTION

Having introduced the concept of standard costing in the previous unit, this unit will deal with the computation of cost variances and explanation of the possible causes of variances.

## CONTENTS

1. Variance accounting.
2. Labour variances.
3. Material variances.
4. Overhead cost variances.
5. Causes of variances.

Outcomes

## LEARNING OUTCOMES

After studying this unit, you will be able to:

* Know what is meant by variance and variance analysis.
* Understand the relationship between variances.
* Calculate cost variances.
* Explain the causes of variances.

## VARIANCE ANALYSIS

A variance is defined as:

The difference between a planned, budgeted, or standard cost and the actual cost incurred.

Variance analysis is defined as:

The evaluation of performance by means of variances, whose timely reporting should maximize the opportunity for managerial action.



When actual results are better than expected results we have a favourable variance and when the actual results are worse than the expected results, we have an adverse variance

Variances can be divided into three main groups

* Variable cost variance
* Fixed production overhead variances
* Sales variance (licentiate level material)

## KEY ILLUSTRATION

The following example will be used to illustrate the computation of all cost variances.

Kipata manufacturing company produces a single product which is known as Kiwaya. The product requires a single operation and the standard cost for this operation is presented in the following standard costs card.

|  |  |  |
| --- | --- | --- |
| STANDARD COST CARD | | |
| Direct materials |  | K’000 |
| Material X | 0.5kgs @ K40,000/Kg | 20 |
|  |  |  |
|  |  |  |
| Direct Labour |  |  |
| Grade A | 2 hours @ K20,000/Hr | 40 |
|  |  |  |
|  |  |  |
| Variable Production overhead | 2 hours @ K3,000/Hr | 6 |
|  |  |  |
| Fixed Production overhead | 2 Hrs @ K37,000/hr | 74 |
|  |  |  |
| Total standard cost |  | 140 |
|  |  |  |
| Standard Profit |  | 60 |
| **Standard Price** |  | **200** |
|  |  |  |

Budgeted output for June was 5,100 units. Actual results for June were as follows:

Production of 4,850 units was sold for K 1,042.75 million.

Materials consumed in production amounted to 2,300 kilos at a cost of

K98.9 million

Labour hours paid amounted to 8,000 hours at a cost of K162 million

Actual variable overheads amounted to K26 million

Fixed over heads amounted to K423 million

REQUIRED

This information will be used to define and calculate the following variances:

## TOTAL DIRECT MATERIAL COST VARIANCES

The direct material cost variance is the difference between what the output actually cost and what it should have cost in terms of materials.

**Total direct material cost variances** =

(Standard material cost per unit **x** Actual units produced) – (Actual cost of materials)

Using the data above:

|  |  |
| --- | --- |
| DIRECT MATERIAL VARIANCE CALCULATION | |
| Standard material cost per unit | K20,000 |
| Number of units produced | 4,850 units |
| Actual cost = | K98,900,000 |
| Total material variance = | (4,850 x K20,000) – (K98,900,000)  K 1,900, 000 (A) |

## DIRECT MATERIAL PRICE VARIANCE

This is the difference between the standard cost and the actual cost of the actual quantity of materials used or purchased. In other words it’s the difference between what the material did cost and what it should have cost.

**Direct Material Price Variances** =

(SP - AP) x QP

where:

SP = Standard Price

AQ = Actual Quantity

QP = Quantity Purchased

Using the data above:

|  |  |
| --- | --- |
| DIRECT MATERIAL PRICE VARIANCE CALCULATION | |
| Standard material price per Kilo | K20,000 |
| Quantity of materials purchased | 4,850 units |
| Cost of materials purchased | K98,900,000 |
| Material Price Variance = | [40,000 – (98,900,000/2300)] x 2,300  (40,000 – 43,000) x 2,300  **K6,900,000 (A)** |

## DIRECT MATERIAL USAGE VARIANCE

This is the difference between the standard quantity of materials that should have been used for the number of units actually produced and the actual quantity of materials used valued at the standard cost per unit of material.

**Direct Material Usage Variances** =

(SU - AU) x SP

Where:

SU = Standard Usage = Number of units produced x standard usage per unit

AU = Actual Usage

SP = Standard Price

|  |  |
| --- | --- |
| DIRECT MATERIAL USAGE VARIANCE CALCULATION | |
| Standard Material price per Kilo | K20,000 |
| Actual materials used | 2,300 kilos |
| Standard material usage per unit | 0.5 kg |
| Number of units produced | 4,850 |
| Material Usage Variance = | [(4,850 x 0.5)- 2300] x K40,000  (2,425- 2,300) x 40,000 **= K5,000,000 (F)** |

## TOTAL DIRECT LABOUR COST VARIANCES

The direct labour cost variance is the difference between what the output actually cost and what it should have cost in terms of labour.

**Total direct labour cost variances** =

(Standard labour cost per unit **x** Actual units produced) – (Actual cost of labour)

Using the data above:

|  |  |
| --- | --- |
| DIRECT LABOUR COST VARIANCE CALCULATION | |
| Standard Labour cost per unit | K40,000 |
| Number of units produced | 4,850 units |
| Actual cost = | K162,000,000 |
| Total material variance = | (4,850 x K40,000) – (162,000,000)  **K 32,000, 000 (F)** |

## DIRECT LABOUR RATE VARIANCE

This is the difference between the standard cost and the actual cost of the actual number of hours used. In other words it is the difference between what the labour did cost and what it should have cost.

**Direct Labour Rate Variances** = (SR - AR) x AH

Where:

SR = Standard Rate

AH = Actual Hours

AR = Actual Rate

Using the data above:

|  |  |
| --- | --- |
| DIRECT LABOUR RATE VARIANCE CALCULATION | |
| Standard Labour rate per hour | K20,000 |
| Labour hours used | 8,000 hours |
| Actual Labour cost | K162,000,000 |
| Labour Rate Variance = | [(K20,000 – (K162,000,000,000/8,000)] x 8,000  (20,000 – 20,250) x 8000  **K2,000,000(A)** |

## DIRECT LABOUR EFFICIENCY VARIANCE

This is the difference between the standard of labour that should have been used for the number of units actually produced and the actual number labour hours used valued at the standard labour hour rate.

**Direct Labour Efficiency Variances** = (SH - AH) x SR

Where:

SH = Standard Hours for actual production = Number of units produced x

standard usage per unit

AH = Actual Hours taken to produce the output

SR = Standard Rate per hour

|  |  |
| --- | --- |
| DIRECT LABOUR EFFICIENCY VARIANCE CALCULATION | |
| Standard Labour Hours per unit | K20,000 |
| Actual Labour hours used | 8,000 Hours |
| Standard Labour hours per unit | 2 Hours |
| Number of units produced | 4,850 |
| Material Usage Variance = | [(4,850 x 2)- 8,000] x K20,000  (9,700- 8,000) x K20,000 = **K34,000,000 (F)** |

## TOTAL VARIABLE PRODUCTION OVERHEAD VARIANCE

The difference between what the output should have cost and what it did cost in terms of variable production overheads.

**TOTAL VARIABLE PRODUCTION OVERHEAD**

(Standard Variable overhead cost per unit **x** Actual units produced) – (Actual cost of Variable production overheads)

Using the data above:

|  |  |
| --- | --- |
| TOTAL VARIABLE PRODUCTION OVERHEAD COST VARIANCE CALCULATION | |
| Standard VOH cost per unit | K6,000 |
| Number of units produced | 4,850 units |
| Actual cost = | K2,600,000 |
| Total VOH cost variance = | (4,850 x K6,000) – (K26,000,000)  **K 3,100, 000 (F)** |

## VARIABLE OVERHEAD EXPENDITURE VARIANCE

This is the difference between the amount of variable overheads that should have been incurred in the actual hours actually worked and the actual amount of variable overheads incurred..

**Variable production overhead expenditure Variances** = (BVOH x AH) - AVOH

Where:

BVOH = Budgeted Variable Overhead Rate

AH = Actual Hours

AVOH = Actual Variable Overhead Rate

Using the data above:

|  |  |
| --- | --- |
| VARIABLE OVERHEAD EXPENDITURE VARIANCE CALCULATION | |
| Budgeted Variable overhead rate per hour | K3,000 |
| Labour hours used | 8,000 hours |
| Actual Variable overhead Cost | K26,000,000 |
| Variable overhead expenditure Variance = | (3,000 x 8000) – K26,000,000  K24,000,000 – K26,000,000  **K2,000,000 (A)** |

## VARIABLE OVERHEAD EFFICIENCY VARIANCE

This is the difference between the standard cost of the hours that should have been worked for the number of units actually produced and the cost for the units actually produced.

**Variable Overhead Efficiency Variances** = (SH - AH) x BVOH

Where:

SH = Standard Hours for actual production = Number of units

produced x standard usage per unit

AH = Actual Hours taken to produce the output

BVOH = Budgeted Variable Overhead Rate

|  |  |
| --- | --- |
| VARIABLE OVERHEAD EFFICIENCY VARIANCE CALCULATION | |
| Budgeted variable overhead rate per hour | K3,000 |
| Actual Labour hours used | 8,000 Hours |
| Standard Labour hours per unit | 2 Hours |
| Number of units produced | 4,850 |
| Variable overhead Efficiency Variance = | [(4,850 x 2)- 8,000] x K3,000  (9,700- 8,000) x K3,000 = **K5,100,000 (F)** |

## TOTAL FIXED OVERHEAD VARIANCES

The difference between fixed overhead incurred and fixed production overhead absorbed. In other words it is the under or over absorption.

**TOTAL FIXED PRODUCTION OVERHEAD=**

(Standard Fixed Overhead Cost per unit **x** Actual units produced) – (Actual cost of Fixed Production Overheads)

Using the data above:

|  |  |
| --- | --- |
| TOTAL FIXED PRODUCTION OVERHEAD COST VARIANCE CALCULATION | |
| Standard FOH cost per unit | K74,000 |
| Number of units produced | 4,850 units |
| Actual cost = | K423,000,000 |
| Total FOH cost variance = | (4,850 x K74,000) – (K423,000,000)  **K64,100, 000 (A)** |

## FIXED OVERHEAD EXPENDITURE VARIANCE

This is the difference between the budgeted fixed overhead expenditure and actual fixed overhead expenditure.

**Fixed production overhead expenditure Variances** = (BFOH - AFOH)

Where:

BFOH = Budgeted Fixed Overhead

AFOH = Actual Fixed Overhead

Using the data above:

|  |  |
| --- | --- |
| FIXED OVERHEAD EXPENDITURE VARIANCE CALCULATION | |
| Budgeted Fixed Overhead | K74,000 x 5,100  K377,400,000 |
| Actual Fixed Overhead Cost | K423,000,000 |
| Fixed Overhead Expenditure Variance = | K377,400,000 – K423,000,000  **K45,600,000 (F)** |

## FIXED OVERHEAD VOLUME VARIANCE

Fixed Overhead Volume Variance is the difference between actual and budgeted production/volume multiplied by budgeted fixed overhead absorption rate per unit.

**Fixed production overhead Volume Variances** =

(BV - AV) x BFOH

Where:

BV = Budgeted Volume

AV = Actual Volume

BFOH = Budgeted Fixed Overhead per unit

|  |  |
| --- | --- |
| FIXED OVERHEAD VOLUME VARIANCE CALCULATION | |
| Budgeted Volume | 5,100 Units |
| Actual Volume | 4,850 Units |
| Budgeted Fixed Overhead rate per unit | K74,000 |
| Fixed Overhead Volume Variance = | (4,850 – 5,100 ) x 74,000  **K18,500,000 (A)** |

## FIXED OVERHEAD VOLUME EFFICIENCY VARIANCE

This is the difference between the standard cost of the hours that should have been worked for the number of units actually produced and the cost for the units actually produced.

**Fixed Overhead Efficiency Variances** = (SH - AH) x BFOH

Where:

SH = Standard Hours for actual production = Number of units

produced x standard usage per unit

AH = Actual Hours taken to produce the output

BFOH = Budgeted Fixed Overhead Rate

|  |  |
| --- | --- |
| FIXED OVERHEAD VOLUME EFFICIENCY VARIANCE CALCULATION | |
| Budgeted Fixed overhead rate per hour | K37,000 |
| Actual Labour hours used | 8,000 Hours |
| Standard Labour hours per unit | 2 Hours |
| Number of units produced | 4,850 |
| Fixed overhead Efficiency Variance = | [(4,850 x 2)- 8,000] x 37,000  (9,700- 8,000) x 37,000 = **K62,900,000 (F)** |

## FIXED OVERHEAD VOLUME CAPACITY VARIANCE

The difference between budgeted hours of work and the actual hours worked multiplied by the standard absorption rate.

**Fixed Overhead volume capacity Variances** = (AH - BH) x BFOH

Where:

BH = Budgeted hours to produce budgeted volume

AH = Actual Hours taken to produce the output

BFOH = Budgeted Fixed Overhead Rate

|  |  |
| --- | --- |
| FIXED OVERHEAD VOLUME CAPACITY VARIANCE CALCULATION | |
| Budgeted Capacity | 5,100 x 2  10,200 Hours |
| Actual Labour hours used | 8,000 Hours |
| Budgeted FOH rate per Hour unit | K37,000 |
| Number of units produced | 4,850 |
| Fixed overhead Efficiency Variance = | (8,000 – 10,200) x K37,000  = **K81,400,000 (A)** |

## THE REASON FOR VARIANCES

There now follows a list of possible cause of variances. This is not an exhaustive list and in an examination question you should review the information given and use your imagination and common sense to suggest possible reasons for variances.

|  |  |  |
| --- | --- | --- |
| **VARIANCE** | **FAVOURABLE** | **ADVERSE** |
| Material Price | Unforeseen discounts received  Great care in purchasing  Change in material standard | Price increase  Careless purchasing  Change in material standard |
| Material Usage | Material used of higher quality than standard  More effective use made of material errors in allocating material to jobs | Defective material  Excessive waste  Theft  Stricter quality control  Errors in allocating material to jobs |
| Labour Rate | Use of workers at a rate of pay lower than standard | Wage rate increase |
| Idle Time | *The idle time variance is always adverse* | Machine breakdown  Non-availability of material  Illness or injury to worker |
| Labour Efficiency | Output produced more quickly than expected, because of work motivation, better quality of equipment or materials  Errors in allocating time jobs | Lost time in excess of standard allowed  Output lower than standard set because of lack of training,  sub-standard material etc.  Errors in allocating time to jobs |
| Overhead Expenditure | Saving in costs incurred  More economical use of services | Increase in cost of services  Excessive use of services  Change in type of services used |
| Overhead Volume | Production or level of activity greater than budgeted | Production or level of activity less than budgeted |

summary

## Unit summary

* Variances measure the difference between actual results and expected results.
* The direct material total variance can be subdivided into the direct material price variance and the direct material usage variance. Direct material price variance are extracted at the time of receipt of materials, not time of usage
* The direct labour total variance can be subdivided into direct labour rate variance and direct labour efficiency variance.
* The variable production overhead total variance can be sub divided into variable production overhead expenditure variance and the variable production overhead efficiency variance
* The fixed production overhead total variance can be subdivided into expenditure variance and volume variance. The volume variance can be subdivided into efficiency variance and capacity variance.

STUDENT-SELF TESTING

**SELF REVIEW QUESTIONS**

1. What is variance analysis ?(1.0 )
2. Mention the sub components of fixed overhead variance. (1.74)
3. Mention some causes of variances (4.0)

## 

EXAMINATION TYPE QUESTIONS

## DIRECT MATERIAL COST VARIANCES

1. C Ltd uses a standard costing system. The standard cost card for one of its products shows that the product should uses 4Kgs of material B per finished unit and the standard price per Kg is K4,500.

For the month of April, the budgeted production level was 1,000 units and the actual units made were 1040 units. The actual material quantity of material B used was 4,100 Kgs. The cost of the material B which was purchased was K14.4 million.

## Required

Calculate total material variances and analyse it into price and usage variances

## DIRECT LABOUR COST VARIANCES

2. Z plc uses a standard costing system and has the following labour cost standard in relation to one of its products:

4 hours direct labour @ K6,000 per hour = K24,000

During October 20X5, 3,350 of these products were made which was 150 units less than budgeted. The labour cost incurred was K79,893,000 and the number of direct labour hours worked was 13,450.

## Required

Calculate total labour variances and analyse it into rate and efficiency variances for the month of October.

## FIXED OVERHEAD COST VARIANCES

A company budgets to produce 1,000 units of product E during august. The expected time to produce a unit of E is five hours, and the budgeted fixed production overheads is K20 million. The standard fixed production overhead cost per unit of product E will therefore be 5 hours @ K4,000 (=K20,000). Actual fixed production overhead expenditure in august turns out to be K20,450,000. The labour force manages to produce 1,100 units of product E in 5,400 hours of work.

## Required

Calculate the following fixed production overhead variances

1. Total variance.
2. Expenditure variance.
3. Volume variance.
4. Volume efficiency variance.
5. Volume capacity variance.

# UNIT 15

# COST BOOKKEEPING

## Introduction

This unit introduces you to the concept of Cost Bookkeeping. This is a systematic way of recording cost accounting transactions in the books of accounts in order to facilitate the preparation of financial statements

CONTENTS

1. Introduction
2. The dichotomy
3. The integrated system
4. The interlocking system

Outcomes

LEARNING OUTCOMES

After studying this unit, you should be able to:

* Understand the theory underlying cost bookkeeping.
* Record systematicallycost accounting transactions in cost ledger accounts.
* Effectively carry out the double entry in the cost ledgers using integrated accounts and interlocking accounts.
* Differentiate interlocking accounts from integrated accounts.

## INTRODUCTION

Cost book keeping is a systematic way of recording cost accounting transactions

in the books of accounts in order to facilitate the preparation of financial

statements relating to the calculation of profits or losses of products or services

offered.

The key areas of cost accounting transactions are mainly those that relate to the

elements of cost or principles of costing which are materials, labour and

overheads. These three elements make up the total cost of a product or

service.

Materials

Materials can be direct and indirect and can be raw materials, work in progress

and finished goods. For direct materials we open in the cost ledger, stores control

account or materials control account, work in progress account and finished goods

account. For indirect materials we open the production overhead control account

**Labour**

Labour can be direct and indirect. For direct labour, in the cost ledger we open the

wages control account and the work in progress accounts. For indirect labour we

open the production overhead control account.

## Overheads

All indirect costs are overheads. Overheads can be production and non-production .all overheads can be absorbed into products using various bases. We determine differences between actual overheads and absorbed overheads the results are over absorption or under absorption which increases or reduces the profits. The full double entry will be shown later.

## THE DICHOTOMY

In the accountancy profession, there are three accounting dimensions: financial accounting, cost accounting and management accounting. In the recent years, the three dimensions have been reduced to only two; that is financial accounting and

management accounting. Cost accounting is now part of management accounting.

Most manufacturing businesses adopt one of the following systems of cost accounting:

1. An independent system
2. A reconciled system
3. An integrated system
4. An interlocking system

## Independent System

In this system, no reconciliations are necessary between cost accounts and financial accounts. The two sets of accounts are kept separately. Some manufacturing businesses have adopted this system.

**Reconciled System**

In this system, financial accounts are independently kept from cost accounts. Both sets of accounts each produces a profit figure. The profit figures produced must be reconciled just as we reconcile the cashbook balance with a bank statement balance.

The reconciliation can begin from the financial profit figure and end with cost accounts profit figure, additions and subtractions have to be made taking into account items in cost accounts and items not in cost accounts. This system is also common to the interlocking system.

## INTEGRATED SYSTEM

In this system, both financial accounts and cost accounts are linked together and presented as one set of accounts, the system uses one common system of input data. There is no need for the reconciliation since only one profit figure is arrived at. In this system there are resource accounts, accounts which record the cost of production items from the start of production work through to cost of sales as mentioned above, sales account, and profit and loss account.

By using the integrated system, savings in administration are made. The disadvantage is that the system is required to serve two purposes i.e. external reporting and internal reporting and this disadvantage has been overcome by the use of computers.

**EXAMPLE**

A LTD manufacturing company operating an integrated system had the following results for the year ended 31st December 2006:

Balances at 1/1/2006:

**K000**

Raw materials control 25

Work in progress control 40

Finished goods control 56

Transactions for the year were:

**K000**

Materials purchased on credit 100

Materials purchased for cash 10

Direct materials issued to production 80

Indirect materials issued 15

Direct wages incurred 50

Indirect wages incurred 20

Actual Selling and administrative overhead 12

Production completed and transferred to cost of sales 150

Production cost of sales 180

Credit sales 250

Depreciation production equipment 5

Direct and indirect wages paid 70

Production overhead is absorbed at the rate of 80 percent of actual direct wages.

**Required**

Prepare the following ledger accounts:

* 1. Raw materials control
  2. Work in progress control
  3. Finished goods control
  4. Production overhead control
  5. Wages control
  6. Selling and administrative overhead control
  7. Cost of sales
  8. Trading and profit and loss.

**SOLUTION**

RAW MATERIAL CONTROL ACCOUNT

**K000 K000**

Balance b/d 25 Work in progress control 80

Creditors 100 Production overhead control 15

Cash 10 Balance c/d 40

135135

WORK IN PROGRESS CONTROL ACCOUNT

**K000 K000**

Balance b/d 40 Finished goods control 150

Raw materials control 80 Balance c/d 60

Wages control 50 -

Production o/head control 40--

210210

FINISHED GOODS CONTROL ACCOUNT

**K000 K000**

Balance b/d 56 Cost of sales 180

Work in progress control 150 Balance c/d 26

206 206

PRODUCTION O/HEAD CONTROL ACCOUNT

**K000 K000**

Raw materials control 15 Work in progress control 40

Wages control 20 -

Depreciation 5 -

40 40

WAGES CONTROL ACCOUNT

**K000 K000**

Bank 70 Work in progress control 50

Production o/head control 20

7070

SELLING AND ADMINISTRATIVE O/HEAD CONTROL A/C

**K000 K000**

Bank 12 Profit and loss 12

1212

COST OF SALES

**K000 K000**

Finished goods control 180 Profit and loss 180

180180

TRADING AND PROFIT AND LOSS ACCOUNT

**K000 K000**

Cost of sales 180 Sales-debtors 250

Gross profit c/d 70 \_\_\_

250250

Gross profit b/d 70

Selling and admin overheads 12

Net profit for the year 58---

**7070**

## INTERLOCKING SYSTEM

In an interlocking system, cost accounts and financial accounts are kept separately but are put together through the use of a cost ledger control account or are reconciled by other means such as a reconciled system described above. A cost ledger control account is an account that represents financial accounts that are not in the cost ledger such as cash, receivables, payables etc.

This system provides solutions to answers for internal reporting purposes and not external reporting.

STUDENT-SELF TESTING

**SELF REVIEW QUESTIONS**

1. Define cost book keeping
2. Explain fully the double entry for materials.
3. Describe fully the treatment of production overheads and non-production overheads in cost accounts.
4. Define explain and give an example of an integrated system.
5. How are expenses dealt with in cost bookkeeping?
6. Differentiate between cost accounts and financial accounts and also between interlocking accounts and integral accounts.
7. Explain fully the key items that differentiate integral accounts from interlocking accounts.
8. Explain fully the double entry for the wages.
9. Over and under absorption are important to cost book keeping for both integral and interlocking accounts. Explain.
10. Explain how depreciation affects cost book keeping.

EXERCISES

**QUESTION ONE – INTEGRATED SYSTEM**

Prepare Journal entries without narrations for the following list of transactions:

1. Purchases of raw materials on credit K20 000

2. Raw materials issued to production K12 000

3. Maintenance materials issued K4 000

4. Cash paid for indirect production wages K10 000

5. Depreciation of machinery used for production K6 000

6. Absorption of production overhead K8 000

**QUESTION TWO – INTERLOCKING SYSTEM**

Given below are incomplete cost accounts for a period for which final accounts are to be prepared.

MATERIALS CONTROL ACOUNT

**K000 K000**

Balance b/d 6 000 JLCA 19 000

G ledger control 27 000 Balance c/d ?

PRODUCTION WAGES CONTROL ACCOUNT

**K000 K000**

G.Ledger control 25 000 JLCA ?

P.O.CONTROL ? PROD O.CONTROL ?

PRODUCTION OVERHEAD CONTROL ACCOUNT.

**K000 K000**

G.ledger control 26 000 Production wages control ?

P.wages control ?

M.control ?

JOB LEDGER CONTROL ACCOUNT

**K000 K000**

Balance b/d 20 000 Cost of sales ?

M.control 19 000 Balance c/d 10 000

Wages control ?

Prod.o/h control ?

SELLING AND ADMINISTRATION O/HEAD ACCOUNT

**K000 K000**

G ledger control 12 000 P&L ?

Cost of sales ?

COST OF SALES

**K000 K000**

JLCA ? P&L ?

S&A O/H account ?

SALES ACCOUNT

**K000 K000**

P&L ? G.Ledger control 110 000

GENERAL LEDGER CONTROL ACCOUNT

**K000 K000**

Sales 110 000 Balance b/d 26 000

M.control account 27 000

Wages control 25 000

Production o/head control 26 000

S&A O/head 12 000

Closing balance 22 000 Net profit ?

80% of the production wages incurred are charged directly to jobs. Production overheads are absorbed at a predetermined rate of 150% of direct wages, and selling and administration overheads at 10% of sales.

**Required**

1. List characteristics of the cost accounting system which identifies the type of system being used.
2. List the missing amounts in the above accounts, determine the profit or loss for the period and list the balances to be carried forward to the following period.
3. What is the purpose of a cost ledger control account in an interlocking system?

summary

# MODULE SUMMARY

We are glad that you have completed studying this module in Cost and Management Accounting, we hope that you are confident enough to:

(i) Explain the purpose and importance of cost accounting for an

Organization

(ii) Distinguish the various cost classifications and explain the reasons for

the different classifications

(iii) Identify and calculate cost information for use in decision-making

(iv) Explain the accounting methods for materials, labour and overheads

(v) Apply the accounting methods for material, labour and overheads

However, if you still have doubts aboutthe material covered herein, kindly revise your course module again. We want to wish you the very best in your studies.

# REFERENCES:

Drury, C. (2008), *Management and Cost Accounting,* 7th ed., Cengage

Learning EMEA.

Lucey, T. (2008), *Costing,* 7th ed., Cengage Learning EMEA.

ZICA T2 Text Book

ACCA F3 Study Manuals

Atkinson, A.A. *et.al*. (2011), *Management Accounting: Information for Decision-Making and Strategy Execution*, 6th ed., FT Prentice Hall.

Walker, J. (2009) *Fundamentals of Management Accounting*, 1st ed.,

Linacre House, Jordan Hill, Oxford.