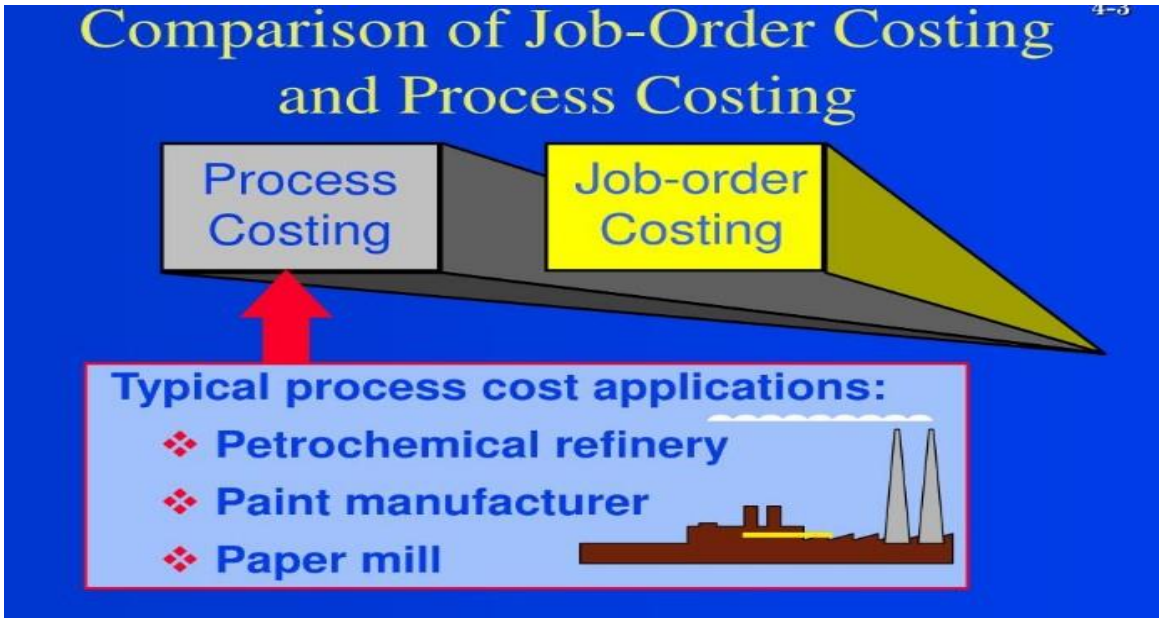
ACCOUNTING AND FINANCE

LEVEL – IV

Based on November ,2023 Curriculum V – II



MODULE TITLE:Producing Job Order and Process Costing System

MODULE CODE: LSA ACF4 M11 1123

NOMINAL DURATION: 150HRS

Prepared by: Ministry of Labor and Skills

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Addis Ababa Ethiopia

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Table of Contents

Acronym

ETL ----------Extract transform load

ELT----------Extract load transform

DR----------Data reconciliation

DVR----------Data validation and reconciliation

ASAP----------As soon as possible

ABC ----------Activity-based costing

TQM----------Total quality management

AIMA ----------Chartered institute of management accountants

Introduction to the Module

Accounting and finance filed; the producing job order costing and process cost stystem ". in the work place helps to know the identify nature of cost,cost allocation,produce cost report,and cost control system.Accounting and finance filed.

This module is designed to meet the industry requirement under the Accounting and Finance occupational standard, particularly for the unit of competency produce ob order and process cost systems.

This module covers the units:

- Nature of Cost
- Cost allocation
- Produce cost report
- Cost control system

Learning Objective of the Module

- To record operating and cost data
- To Produce cost reports
- To Identify cost categories
- To Apply cost allocation
- To Apply costing system
- To Implement Cost control reduction system

Module Instruction

1. For effective use this modules trainees are expected to follow the following module instruction:
2. Read the information written in each unit
3. Accomplish the Self-checks at the end of each unit
4. Perform Operation Sheets which were provided at the end of units
5. Read the identified reference book for examples and exercise

UNIT ONE:Nature Of Cost

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Basic concepts of cost accounting
- Behaviours of Cost
- Classification of costs
- Cost data

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Explaine basic concepts of cost accounting
- Analyse classification of costs
- Determine behaviours of Cost
- Determine cost data

1.1. Basic concepts of cost accounting

Cost accounting refers to the computation of a company's overall expenditure. This procedure includes an assessment of a company's variable and fixed costs involved in each step of production. Cost accounting helps in taking strategic decisions to manage a company's expenses.

Cost accounting tracks, records, and analyses the different costs of production that occur within a business. These costs fall under three main categories: material, labour, and overhead costs. The main goal of cost accounting is to determine the best pricing strategies for products and services.

Cost accounting is the process of capturing, recording, and analysing what it costs to produce or supply a product or service. This process will enable your business's management to make better financial decisions, eliminate inefficient costs, and budget accurately.

Objectives of Cost Accounting

The main objectives of cost accounting can be summarized as follows:

- Determining Selling Price
- Determining and Controlling Efficiency
- Facilitating Preparation of Financial and Other Statements
- Providing Basis for Operating Policy

Types of Cost Accounting

There are four main types of cost accounting:

A. Standard Cost Accounting

With standard costing, rather than assigning the actual costs of direct materials, direct labor, and overhead expenses to a product, a business assigns specific "standard" costs. These standard costs are based on efficient use of materials and labor, under standard operating conditions, which is essentially the planned or budgeted amount for a product.

If the variance analysis determines that your costs are higher than expected, then the variance is unfavorable, and your business has generated less profit than expected. If the costs are less than the standard costs, the variance is favorable, and your business has generated more profit than anticipated.

B. Activity-Based Cost Accounting

Activity-based costing (ABC) is a costing system that breaks down overhead and indirect costs, according to the actual consumption of each product and service. This method is typically used in the manufacturing industry, to make a better calculation of the true cost of production per unit.

To illustrate how this method works, let's take a pharmaceutical company that produces two types of medicine. Medicine A is produced at a high volume through a mostly automated process that only consists of putting chemicals into processing equipment and waiting for the final product.

Medicine B, on the other hand, is produced at a lower volume, as it requires a more manual setup and hands-on effort from the pharmaceutical staff. Considering these circumstances, activity-based costing assigns more overhead costs related to labor to medicine B and more overhead costs related to machine use to medicine A.

C. Lean Cost Accounting

Lean cost accounting is a method that aims to eliminate waste, reduce error, speed up processes, and replace traditional costing methods with value-based pricing. So, lean accounting makes management decisions based on total value stream profits, rather than cost allocation. This method not only increases profits and generates less waste, but also encourages a lean company culture that promotes teamwork and communication.

D. **Marginal Cost Accounting**

Marginal costing, also known as the cost-volume-profit analysis, is a costing method that comes in handy for short-term decisions. More specifically, marginal costing measures the difference in cost with every new additional unit of production. It's calculated by dividing the cost difference by the quantity difference, as shown in the formula below:

$$MC = \Delta C / \Delta Q$$

The goal of marginal costing is to determine at which point a business can reach economies of scale to optimize its production, and overall operations.

1.2.Behaviours of Cost

Cost behaviour is the manner in which expenses are impacted by changes in business activity. A business manager should be aware of cost behaviours when constructing the annual budget, to anticipate whether any costs will spike or decline. For example, if the usage of a production line is approaching its maximum capacity, the relevant cost behaviour would be to expect a large cost increase (to pay for an equipment expansion) if the incremental demand level increases by a small additional amount. Understanding cost behaviour is a critical aspect of cost-volume-profit analysis.

Cost behaviour refers to the way costs change in response to changes in a company's level of activity or production volume. Understanding cost behaviour is essential for effective cost management, budgeting, decision-making, and financial analysis. In management accounting and cost accounting, costs are typically classified into three categories based on their behaviour:

A. Fixed cost
B. Variable cost
C. Mixed cost

Fixed costs: These are costs that remain constant, regardless of the level of production or activity within a relevant range. Fixed costs do not change with fluctuations in output levels in the short term. Examples of fixed costs include rent, insurance, salaries of administrative staff, and depreciation of equipment or buildings. Fixed costs are incurred even if the production level is zero.

Variable costs: These are costs that change in direct proportion to changes in the level of production or activity. As production volume increases, variable costs increase; conversely, as production volume decreases, variable costs decrease. Examples of variable costs include direct materials, direct labor, and production supplies. The total variable cost depends on the number of units produced, while the cost per unit remains constant.

Mixed costs (semi-variable costs): These are costs that have both fixed and variable components. The fixed component remains constant, while the variable component changes with the level of production or activity. Examples of mixed costs include utility bills (where there is a fixed monthly charge plus a variable charge based on usage) and sales commissions (where there is a base salary plus a commission based on the sales volume).

Understanding cost behaviour helps companies make better decisions about pricing, resource allocation, cost control, and performance evaluation. It also aids in forecasting future costs and developing budgets based on anticipated production levels.

Example of Cost Behaviour

Let's consider a fictional company called "TechGadget" that manufactures and sells electronic devices. TechGadget incurs various costs in its production process, and these costs exhibit different behaviours based on the production volume.

Let's examine the costs for producing 1,000 units and 2,000 units:

Fixed costs:

Rent for the production facility: $10,000 per month

Salaries of administrative staff: $5,000 per month

Depreciation of equipment: $3,000 per month

Regardless of the production volume, these fixed costs remain constant. Thus, the total fixed costs for both 1,000 and 2,000 units produced would be:

Total Fixed Costs = $10,000 + $5,000 + $3,000 = $18,000

Variable costs:

Direct materials: $15 per unit

Direct labour: $10 per unit

These variable costs change in direct proportion to the production volume. The total variable costs for each production level would be:

A. for 1,000 units:

Total Variable Costs = ($15 + $10) × 1,000 = $25 × 1,000 = $25,000

B. for 2,000 units:

Total Variable Costs = ($15 + $10) × 2,000 = $25 × 2,000 = $50,000

Now, let's calculate the total costs for each production level:

A. for 1,000 units:

Total Costs = Total Fixed Costs + Total Variable Costs = $18,000 + $25,000 = $43,000

B. for 2,000 units:

Total Costs = Total Fixed Costs + Total Variable Costs = $18,000 + $50,000 = $68,000

1.3. Classification of costs

Cost refers to the amount of resources, typically measured in terms of money, that is required to produce, purchase, or maintain goods and services. In business and accounting, cost is a crucial concept used to evaluate the financial implications of various activities.

Classification of Cost by Element

In this class, costs are categorized based on the factors they are incurred for. Based on their elements, costs may be grouped as:

A. Material cost

B. Labour cost

C. Expenses

Material cost refers to the cost of commodities supplied to an undertaking (e.g., in the case of a textile mill, the cost of cotton or yarn, the cost of cotton waste to clean the machinery, the cost of dyes, the cost of finishing material, and so on).

Labour cost refers to the cost of paying employees in an undertaking, which includes salary, wages, and commission.

Expenses refer to the cost of services provided to an undertaking and include the notional cost of owned assets (e.g., rent for a building, telephone expenses, depreciation of the owned factory building, depreciation of delivery van, and so on).

Classification of Cost by Nature

In this class, costs are classified based on their identifiability with cost centres or cost units. Costs can be grouped as follows based on their nature:

- Direct costs
- Indirect costs

Direct costs are costs that can be directly and easily traced to (or identified with) a product, process, or department.Common examples of direct costs include the materials used and labor employed in manufacturing an article or in a production process.

Indirect costs, on the other hand, are costs that are not traceable to any particular product, process, or department, but which are common in a number of products, processes, or departments.Examples of indirect costs are factory rent, factory insurance, and the salary of the factory manager.

Cost Classification by Controllability

Under this category, costs are classified based on whether or not they are influenced by the action of a given member of an undertaking. The classes of costs are:

A. Controllable costs
B. Uncontrollable costs

Controllable costs are costs that an entity in an undertaking can influence through their action. An undertaking is usually divided into several departments or cost centres that are placed under the direct control and supervision of specified persons.The person in charge of a particular department or cost centre can control only those costs that come directly under their control.

Uncontrollable costs, on the other hand, are costs that cannot be influenced by the action of a specified member of an undertaking. Costs that are controllable for one person may be uncontrollable for another person. Therefore, the issue of whether a cost is controllable or uncontrollable is determined by the individual or level of management in question.

1.3.1 Cost system

Costing system is that system in which we calculate different cost with different methods and also monitor cost for reducing wastage and misuse of resources. Cost system is the branch of cost accounting which is made for achieving the objectives of cost accounting.

Types of cost system

A. **Job Order Costing:** This system is used when products are made based on specific orders from customers. Each job is accounted for separately, and the company tracks the direct materials, direct labour, and manufacturing overhead associated with each job. This system is often used in industries like construction, shipbuilding, or custom furniture. A job order cost sheet accumulates the costs charged to a specific job. It is used within a job costing system. This cost sheet is most commonly compiled for single-unit or batch-sized production runs. The information contained within the cost sheet includes the job number, start and stop dates, the number of units produced, all direct materials and direct labour costs associated with a job, and a factory overhead allocation.

B. **Process Costing:** This system is used when a company produces a large volume of identical products. Costs are accumulated for a “process” or department, and the average cost per unit is calculated. This system is often used in industries like oil refining, food production, or chemical manufacturing.

Features of Process Costing:

The production is continuous

- The product is homogeneous
- The process is standardized
- Output of one process become raw material of another process
- The output of the last process is transferred to finished stock
- Costs are collected process-wise

Advantages of process costing:

- Costs are be computed periodically at the end of a particular period
- It is simple and involves less clerical work that job costing
- It is easy to allocate the expenses to processes in order to have accurate costs.
- Use of standard costing systems in very effective in process costing situations.
- Process costing helps in preparation of tender, quotations
- Since cost data is available for each process, operation and department, good managerial control is possible.

Limitations:

- Cost obtained at each process is only historical cost and are not very useful for effective control.
- Process costing is based on average cost method, which is not that suitable for performance analysis, evaluation and managerial control.
- Work-in-progress is generally done on estimated basis which leads to inaccuracy in total cost calculations.

Table 5.1: Difference between job order costing and process costing

Job-Order Costing	**Process Costing**
Used for custom or unique items Each job is accounted for separately Measures cost based on completed job Examples: Movie, Plane, Custom house	Used for large volumes of similar products Production is continuous Measures costs based on a period of time Examples: cereal, chips, paper towels,

Job Number 16

For Benson Company — Date Ordered April 2, 2013

Item Description Valves — 2013 Date Completed April 24, 2013

Quantity Completed 100 — 2013 Date Shipped April 25, 2013

2013 Direct Materials		Direct Labor				Overhead		
Requisition Number	Amount	Ticket Number	Hours	Rate	Amount	Hours	Rate	Amount
12	$300	68	8	$6	$ 48	8	$10	$ 80
18	450	72	10	7	70	10	10	100
	$750				$118			$180

Cost Summary

Direct Materials	$ 750
Direct Labor	118
Overhead	180
Total Cost	$1,048
Unit Cost	$10.48

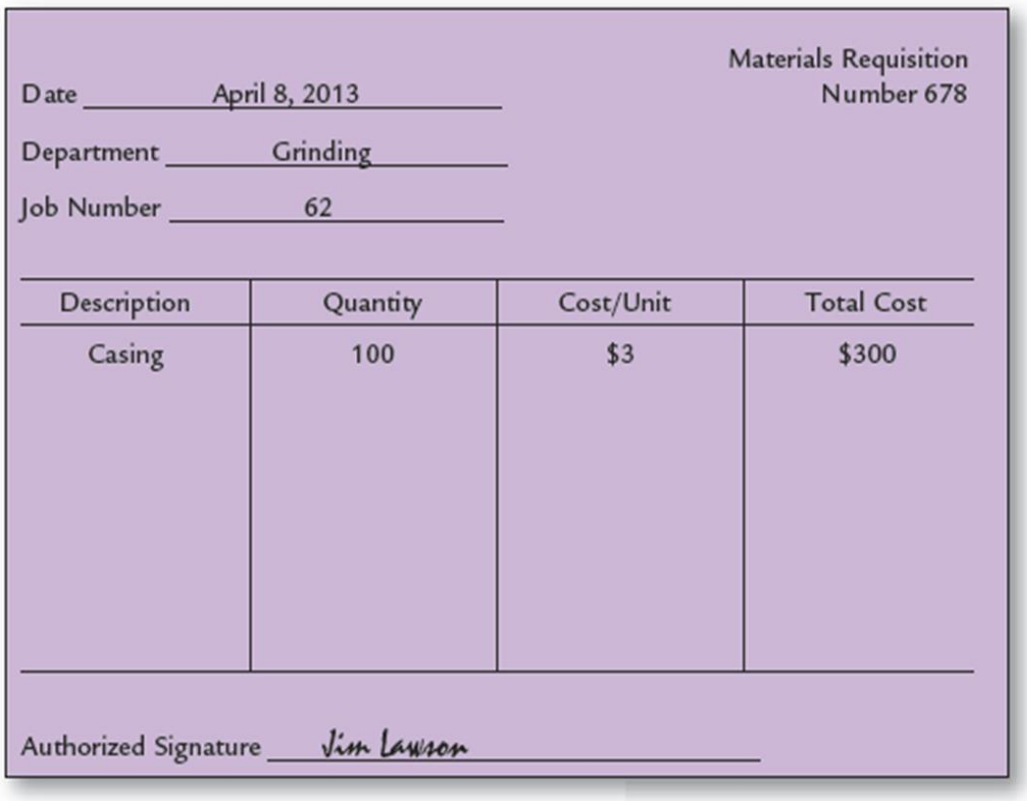
Figure 5.2- the job-order cost sheet

- **Materials Requisitions**

Direct materials cost is assigned to each job through the use of a materials requisition form. The form includes the description, quantity and unit cost of materials issued to each job.

The form provides essential information for assigning direct materials costs to jobs, and also helps maintain proper control over a firm's inventory of direct materials.

Materials Requisition Form



Materials Requisition Number 678

Date April 8, 2013

Department Grinding

Job Number 62

Description	Quantity	Cost/Unit	Total Cost
Casing	100	$3	$300

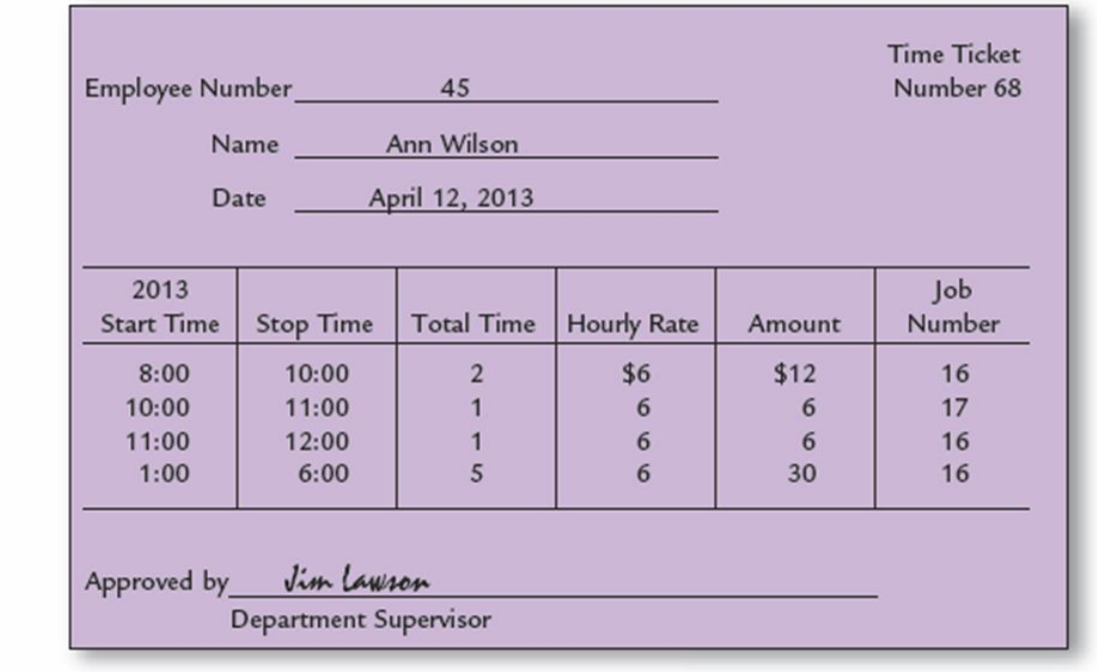
Authorized Signature Jim Lawson

Figure5.3: material requisition form

- **Job Time Tickets**

Direct labour cost is assigned to each job through the use of a job time ticket. The form includes the name, wage rate and hours worked on each job. These forms are only used for direct labour.

Time Ticket



Time Ticket Number 68

Employee Number 45

Name Ann Wilson

Date April 12, 2013

2013 Start Time	Stop Time	Total Time	Hourly Rate	Amount	Job Number
8:00	10:00	2	$6	$12	16
10:00	11:00	1	6	6	17
11:00	12:00	1	6	6	16
1:00	6:00	5	6	30	16

Approved by Jim Lawson

Department Supervisor

Figure 5.3: time tiket

Predetermined Overhead Rate

A predetermined overhead rate is an allocation rate that is used to apply the estimated cost of manufacturing overhead to cost objects for a specific reporting period. This rate is frequently used to assist in closing the books more quickly, since it avoids the compilation of actual manufacturing overhead costs as part of the period-end closing process. However, the difference between the actual and estimated amounts of overhead must be reconciled at least at the end of each fiscal year.

The journal entries to record the costs incurred are as follows:

1) Purchase of raw materials

Raw material inventory xxx

Accounts payable xxx

2) Factory labour costs

Factory Wages Payable xxx

Employer Payroll Taxes Payable xx xxx

3) Manufacturing overhead costs

Manufacturing Overhead	xxx	
Various Payable		xxx
Accumulated Depreciation		xxx

The journal entries to record the costs assigned to Work in Process are as follows:

4) Issue raw materials

Work-in-process inventory (direct)	xxx	
Manufacturing overhead (indirect)		xxx
Raw materials inventory		xxx

5) Labour costs assigned

Work-in-process inventory (direct)	xxx	
Manufacturing overhead (indirect)	xxx	
Factory Labour		xxx

Assign Predetermined Overhead Rate

Manufacturing overhead relates to productions as a whole, and cannot be assigned to specific jobs based on costs incurred. Therefore, it is assigned to each job on an estimated basis using:

Predetermined Overhead Rate=

Estimated Annual Overhead Costs / Estimated Annual Operating Activity

Manufacturing overhead assigned=

Actual Activity Base Used * Predetermined Overhead Rate

6)Manufacturing overhead assigned

Work-in-process inventory	Xxx
Manufacturing overhead	Xxx

Reconcile: Work in Process Inventory = Job Cost Sheet

Assign Costs to Finished Goods

When a job is completed, increase finished goods account, and decrease work in process

7) Assign costs to finished goods

Finished Goods	Xxx
Work in Process	Xxx

Assign Finished Goods to Cost of Goods Sold

When a sale occurs, increase cost of goods sold, and decrease finished goods

8)Assign costs to cost of goods sold

Accounts Receivable	Xxx
Sales Revenue	Xxx
Cost of Goods Sold	Xxx
Finished Goods	Xxx

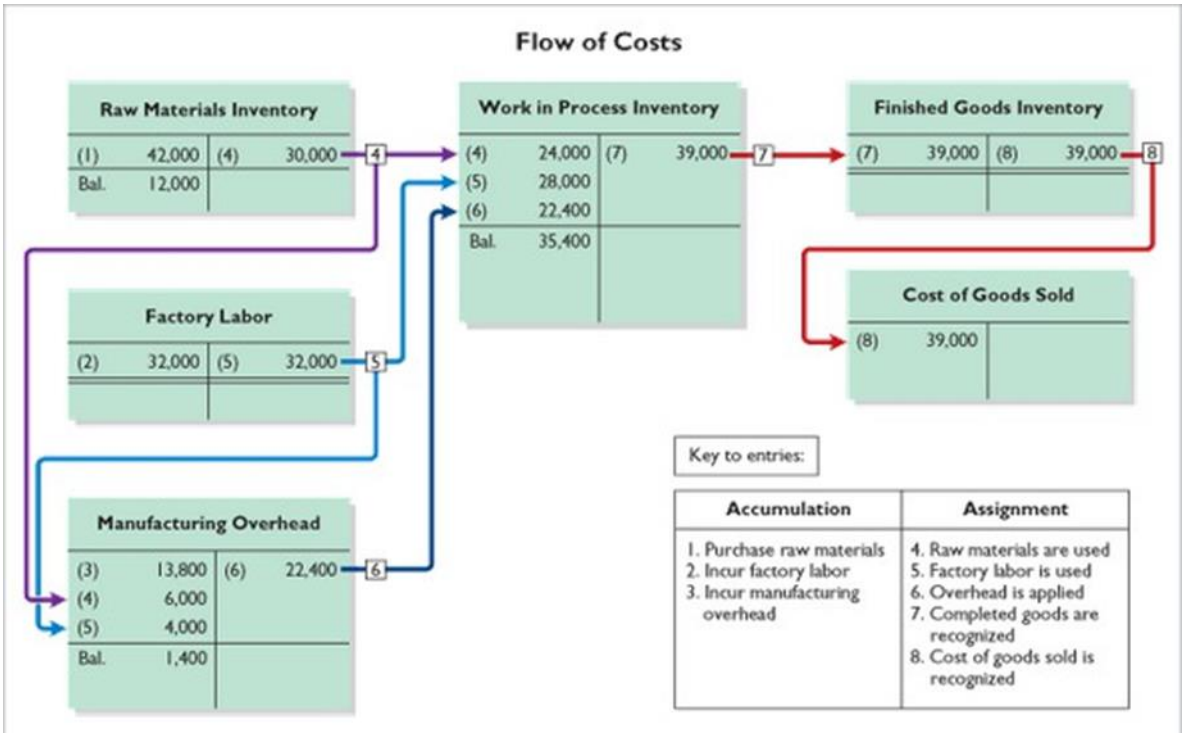


Figure 5.4: flow of cost

Example: Accounting In A Job Order Cost Accounting System

A clothing manufacturer had the following transactions in its first month of operations relating to its only job, Job #101.

a) Purchased 500 yards of silk @ $8 per yard for cash.
b) Requisitioned 300 yards of silk to produce Job #101.
c) Incurred 50 hours of direct labor to produce Job #101; the average labor rate is $9 per hour.
d) Paid various factory overhead costs, $650.
e) Applied factory overhead at the rate of 150% of direct labor costs to Job #101.
f) Completed Job #101.
g) Sold Job #101, receiving cash of $4,400.

INSTRUCTIONS

1. Enter the transactions in the T-accounts below. Assume the opening balance of Cash is $9,000.
2. Determine the ending balance of each account.
3. What was the gross profit earned on Job #101?
4. What was the gross margin ratio earned on Job #101?
5. If management had expected a gross margin ratio of 20% on Job #101, do you believe the actual results warrant further investigation by management? Why or why not?

   Is factory over applied or under applied, and by how much?

SOLUTIONS TO EXAMPLE 1

Cash

Bal	9000	4000	(a)	
(h)	4400	650	(e)	
Bal	8750			

Raw materials inventory

(a)	4000	2400	(b)	
Bal	1600			

Work in Process Inventory

(b)	2400			
©	450			
(f)	675	3525	(g)	
Bal	0			

Finished Goods Inventory

(g)	3525	3525	(h)	
Bal	0			

Wages Payable

		450	©	
		450	Bal	

Sales

		4400		
		4400		

Cost of Goods Sold

(h)	3525			
Bal	3525			

Factory Overhead

(e)	650	675	(f)	
		25	Bal	

3. The gross profit on the job was $875 ($4,400 sales price - $3,525 cost of goods sold).

4. The gross margin ratio was 19.9%, rounded to one decimal ($875 gross profit / $4,400 sales price).

5. The actual gross margin ratio was 19.9%, compared to the plan of 20%. Management should

not investigate the costs further.

6. Factory overhead is over applied by $25.

Actual costing

The actual costing system is also based on three main inputs: the cost of direct materials, direct labor, and actual overhead costs. All the costs are actual amounts and not dependent on any budgeted amounts. It is simple and requires no standard rate determination. However, it may produce spikes in overhead costs, especially during winter or summer. These irregular spikes may pose a problem for financial statements reporting quarterly income.

Companies use actual costing methods to assess their production expenses and determine indirect/direct costs and fixed and variable costs. Knowing the actual cost of producing the goods will help determine break-even values or the number of goods when the cost equals the revenue.

- **Actual Cost Calculation**

In a manufacturing setting, actual cost calculation may involve the actual costs of materials, labor, and overhead:

- Actual material cost = (Number of units of materials) x (Price per unit)
- Actual labor cost = (Total labor hours used) x (Salary of direct workers per hour)
- Actual overhead cost = Sum of all overhead expenses = Utility fees + Rent + Insurance

Actual production cost per unit may be calculated by dividing the sum of all actual costs by the total number of goods produced. That is:

Actual cost per unit = (actual material + actual labor + actual overhead)/ Total number of units produced

If the information on the different types of costs is available, the actual cost is the sum of all these expenses.

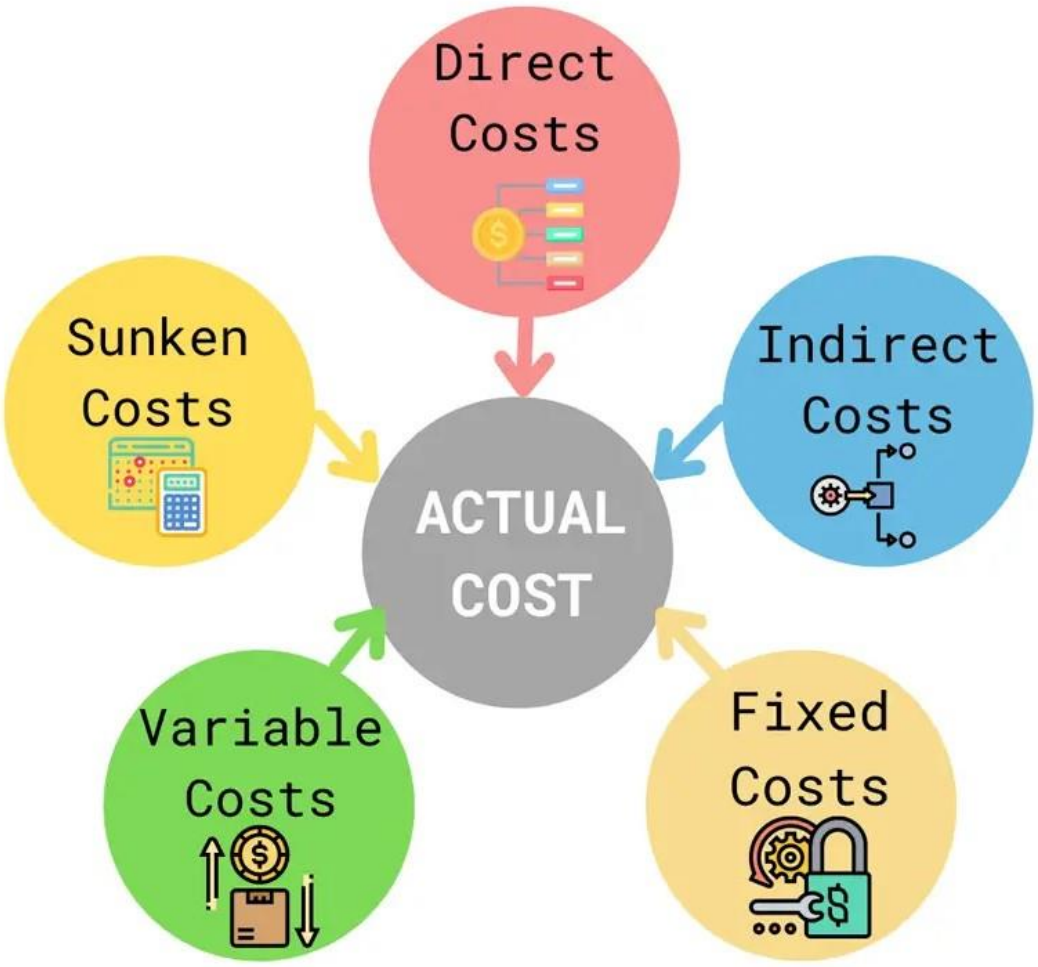


Figure 5.5 actual cost

Actual Cost Formula

The actual cost formula is the sum of different types of project expenses:

Actual cost = direct costs + indirect costs + fixed costs + variable costs + sunken costs

Each of the different types of project expense is described as follows:

Direct costs: These are costs that are directly associated with the project and are easily verifiable.

- Variable costs
- Fixed costs

Indirect costs: These are the costs associated with the support resources of the project.

- Administrative management costs

- Insurance costs

Fixed costs: These are costs that remain constant (cannot be changed) throughout the project. These costs do not change with production or sales volume. They remain fixed throughout the project's duration.

- Property taxes
- Rental fee for equipment
- Labor expenses such as the salary of the company secretary
- Mortgage, rent, or lease payments

Variable cost: These expenses may fluctuate during the project's duration.

- Business analyst wages and consultancy costs may be more expensive at the start of the project
- Test execution phase salaries are expected only during its particular phase
- Project manager wages are based on man hours spent on the project

Sunken costs: These are costs that were incurred due to errors in production.

- Defective batch of products

Example: The actual product cost includes the price it took to make it. So, for example, a manufacturing company estimated $1500 for product repair. But the actual cost was $2000. So the company had a cost variance of $500.

Normal Costing

Normal costing uses the same three main inputs mentioned earlier: direct materials, direct labor, and overhead costs. However, the overhead cost is calculated based on allocated or budgeted values. The total overhead cost value is divided by an approximation or budgeted amount of the number of man-hours used. This creates a standard overhead rate, which is budgeted over budgeted labor hours. When the standard rate is established, the overhead costs will be easily determined by multiplying the standard rate by the man-hours used.

Normal Costing Method

The normal costing method utilizes two main formulas: the standard overhead rate and the main normal cost equation. The standard overhead rate is calculated by using the total budgeted overhead cost and dividing this by the estimated length of time of production hours.

Budget overhead allocation rate = Budget overhead / Budgeted direct labor hours

Example:

If a company spends $50,000 per year on utilities, $200,000 on the wages of the plant manager and supervisors, and $40,000 on security, what is the budgeted overhead allocation rate if 14,000 labor hours are budgeted?

Solution:

Overhead Costs are calculated by adding the costs of utilities, wages, and security.

Overhead Costs = Cost on utilities + Wages paid to plant managers and supervisors + Security cost

- Overhead Costs = $50,000 + $200,000 + $40,000 = $ 290,000
- Budgeted direct labor hours = 14,000 man-hours
- Budget overhead allocation rate = Budget overhead / Budgeted direct labor hours
- Budgeted overhead allocation rate = $290,000/14,000 = $20.71 per labor hour

A formula that calculates the Normal Cost of manufacturing a product is given as follows:

Normal Cost = Direct materials cost + Direct labor cost + Overhead cost

C. **Activity-Based Costing (ABC):** This system assigns costs to products based on the activities used in their production. The cost of each activity is allocated to each product to the extent that the product uses the activity. This system can be more accurate than traditional costing systems, especially for complex, modern manufacturing processes.

D. **Standard Costing:** This system uses estimates or "standards" to assign costs to products. The company then compares the actual costs with the standard costs to measure performance.

1.4. Cost data

Cost data refers to the detailed information and records related to the expenses incurred by a business in the process of manufacturing goods or providing services. It encompasses various elements such as direct materials, direct labor, and overhead costs, providing a comprehensive view of the financial aspects of production. Cost data is crucial for businesses to assess the true expense of producing goods or delivering services, enabling them to make informed decisions, set prices, and analyze profitability.

1.4.1. Extracting Data

Data extraction is the process of collecting or retrieving disparate types of data from a variety of sources, many of which may be poorly organized or completely unstructured. Data extraction makes it possible to consolidate, process, and refine data so that it can be stored in a centralized location in order to be transformed. These locations may be on-site, cloud-based, or a hybrid of the two. Data extraction is the first step in both ETL (extract, transform, load) and ELT (extract, load, transform) processes. ETL/ELT are themselves part of a complete data integration strategy.

A. Data Extraction and ETL

To put the importance of data extraction in context, it's helpful to briefly consider the ETL process as a whole. In essence, ETL allows companies and organizations to 1) consolidate data from different sources into a centralized location and 2) assimilate different types of data into a common format. There are three steps in the ETL process:

Step 1: Extraction

- Data is taken from one or more sources or systems. The extraction locates and identifies relevant data, then prepares it for processing or transformation.

Step 2: Transformation

- Once the data has been successfully extracted, it is ready to be refined. During the transformation phase, data is sorted, organized, and cleansed.

Step 3: Loading

- The transformed, high quality data is then delivered to a single, unified target location for storage and analysis.

B. Data Extraction without ETL

Can data extraction take place outside of ETL? The short answer is yes. However, it's important to keep in mind the limitations of data extraction outside of a more complete data integration process. Raw data which is extracted but not transformed or loaded properly will likely be difficult to organize or analyse, and may be incompatible with newer programs and applications.

Types of Data Extraction

Data extraction is a powerful and adaptable process that can help you gather many types of information relevant to your business. The first step in putting data extraction to work for you is to identify the kinds of data you'll need. Types of data that are commonly extracted include:

- Customer Data: This is the kind of data that helps businesses and organizations understand their customers and donors. It can include names, phone numbers, email addresses, unique identifying numbers, purchase histories, social media activity, and web searches, to name a few.
- Financial Data: These types of metrics include sales numbers, purchasing costs, operating margins, and even your competitor's prices. This type of data helps companies track performance, improve efficiencies, and plan strategically.
- Use, Task, or Process Performance Data: This broad category of data includes information related to specific tasks or operations.

1.4.2. Data coding

Coding is the process of assigning some symbols (either) alphabetical or numerals or (both) to the answers so that the responses can be recorded into a limited number of classes or categories. The classes should be appropriate to the research problem being studied. They must be exhaustive and must be mutually exclusive so that the answer can be placed in one and only one cell in a given category. Further, every class must be defined in terms of only one concept.

Coding for an open-ended question is more tedious than the closed ended question. For a closed ended or structured question, the coding scheme is very simple and designed prior to the field work. For example, consider the following question.

- What is your monthly income?

  < Rs. 5000

  Rs. 5000 - 8999

  Rs. 13000 – 12999

  Rs. 13000 or above.

We may code the class less than Rs.5000' as , 1', Rs. 5000 - 8999' as `2', `Rs. 9000 - 12999' as `3' and `Rs. 13000 or above' as `4'

1.4.3. Calcification of data

There are two general types of data – quantitative and qualitative and both are equally important. You use both types to demonstrate effectiveness, importance or value.

I. Quantitative data are

- Measures of values or counts and are expressed as numbers.

- Data about numeric variables (e.g. how many, how much or how often).

II. Qualitative data are

- Measures of 'types' and may be represented by a name, symbol, or a number code.
- Qualitative data are data about categorical variables (e.g. what type).

Data collected about a numeric variable will always be quantitative and data collected about a categorical variable will always be qualitative. Checking data

Data Check objects provide a mechanism for defining a check on specific data that you want to flag. A data check applies to a particular object type and an advanced filter is used to define which objects meet this data check. Power World's expectation is that user will create filters that look for "bad" data, but it can really be any data you want summary information on.

1.4.4. Reconciling the data

Cost reconciliation is the process of verifying and adjusting the actual costs incurred by contractors and suppliers against the agreed budget and contract terms. It is a vital skill for cost control, as it helps to identify and resolve any discrepancies, errors, or disputes that may arise during or after a project. In this article, you will learn how to handle cost reconciliation issues and disputes with contractors and suppliers effectively and efficiently.

Data reconciliation (DR) is defined as a process of verification of data during data migration. In this process target data is compared with source data to ensure that the migration architecture is transferring data. Data validation and reconciliation (DVR) means a technology that uses mathematical models to process information.

Terminology associated with Data Reconciliation

- Gross Error: Gross errors in measurements. It reflects only bias errors, instrument failures, or abnormal noise spikes if you are using only short time averaging period.
- Observability: Observability analysis can give you details about what variables can be determined for a given set of constraints and a set of measurements.
- Variance: Variance is a measure of the variability of a sensor.
- Redundancy: It helps you to determine which measurements should be estimated from other variables by using the constraint equations.

Data reconciliation techniques

Data reconciliation is not a one-size-fits-all process. Depending on the nature of the data, its source, the systems in use, and the specific requirements of an organization, various techniques can be employed to reconcile data efficiently. Some of these techniques include:

- Automated Reconciliation Software: This software can handle vast amounts of data and can quickly identify and rectify discrepancies, ensuring that the reconciliation process is both efficient and accurate.
- Database Tools: Many advanced database management systems have built-in tools or functions that aid in data comparison and discrepancy identification.
- Spread sheet-Based Reconciliation: For smaller data sets or when dealing with specific types of financial data, spread sheets (like Excel) can be used for reconciliation. Formulas and macros can assist in the comparison of data columns.
- Custom Scripts: In some cases, especially when dealing with unique systems or specific reconciliation needs, custom scripts can be used to compare and reconcile data sets.

Self - Check I

Part I: True /False statement

2. In job order costing, costs are accumulated for a process or department.
3. Fixed costs change in direct proportion to changes in the level of production.
3. Activity-Based Costing (ABC) assigns costs to products based on standard costs.
4. Coding for open-ended questions is simpler than for closed-ended.

Part I: Choose The Best Answer

1. What is the main goal of cost accounting?
    b. Maximizing revenue
    c. Determining selling price
    d. Facilitating financial statements preparation
    e. All of the above
    f. None of the above
2. Which type of cost accounting focuses on eliminating waste and promoting value-based pricing?
    B. Standard Cost Accounting
    C. Activity-Based Costing
    D. Lean Cost Accounting
    E. Marginal Cost Accounting
    F. Both A and B
3. What is the primary purpose of data extraction in the ETL process?
    A. Consolidating data from different sources
    B. Transforming data into a common format
    C. Retrieving disparate types of data
    D. All of the above
    E. None of the above

Operation Sheet-1

Title : Record journal entry

Purpose: To know how to record journal entry and company record transaction systems.

Equipment:

- Pen
- Pen A4 Paper
- Marker
- White board or filip chart

Procedure

1) Purchase of raw materials

Raw material inventory	xxx		
Accounts payable			xxx

2) Factory labour costs

Factory Wages Payable	xxx		
Employer Payroll Taxes Payable		xx	xxx

3) Manufacturing overhead costs

Manufacturing Overhead	xxx		
Various Payable		xxx	
Accumulated Depreciation		xxx	

4) Issue raw materials

Work-in-process inventory (direct)	xxx		
Manufacturing overhead (indirect)		xxx	
Raw materials inventory		xxx	

5) Labour costs assigned

Work-in-process inventory (direct)	xxx		
Manufacturing overhead (indirect)	xxx		
Factory Labour		xxx	

Lap-Test-1

Instructions: Follow all necessary steps and format record journal entry and t- account

XYZ Company uses job-order costing. It applies overhead cost to jobs on the basis of direct labor-hours. The following transactions took place during the year:

a) $300,000 of raw materials were purchased on account
b) Incurred factory labor of $250,000, $25,000 was payroll taxes
c) Utility costs for the factory were $60,000. Depreciation recorded was $200,000
d) Raw materials were assigned into production: $90,000 direct materials and $4,000 indirect materials
e) Labor costs assigned: $40,000 direct, $1,000 indirect
f) Manufacturing overhead of was estimated to be $800,000 and is based on direct labor hours. Total direct labor hours are estimated to be 200,000 hours. Actual direct labor-hours incurred were 72,000.
g) Jobs costing $30,000 were completed and transferred into the finished goods inventory.
h) Jobs with a cost of $15,000 were sold on account for $20,000.
i) Closed the under/over applied overhead for the year.

Required: prepare necessary journal entries

UNIT TWO:Cost Allocation

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Methods for allocating costs
- Designing of costing system

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Determine methods for allocating costs
- Explain design of cost system

2.1. Methods for allocating costs

Cost allocation is a process in which businesses and individuals identify the costs incurred by activity and distribute them to appropriate accounts.

Cost allocation is the process of identifying, accumulating, and assigning costs to costs objects such as departments, products, programs, or a branch of a company. It involves identifying the cost objects in a company, identifying the costs incurred by the cost objects, and then assigning the costs to the cost objects based on specific criteria.

Figure 4.1- cost allocation

Depending on the type of product or service provided by a business, different types of cost allocation may be most useful. The three main types of cost allocation are cost allocation based on direct labour, cost allocation based on machine time, and cost allocation based on square footage.

Cost allocation based on direct labour allocates overhead costs based on the amount of direct labour used on a production unit. Cost allocation based on machine time uses the amount of machine time directly related to production as a way of allocating overhead. For each of these first two types, there is often an industry-standard already available for use. These two methods can present problems because production at a particular business may not match the levels used to calculate the industry standard.

Benefits of Cost Allocation

There are many benefits to cost allocation and here are some of the main points:

- Reducing costs - by properly allocating costs and seeing the true costs of doing business, the company can work to reduce these costs.
- Increasing profits - profits can be increased through reduction of costs as well as a proper understanding of the costs to create the product.
- Increasing efficiency - through a detailed understanding of the costs of doing business, the company can increase efficiency through lessening waste and finding room for improvement.

2.1.1. Concept of service department costs

Service department costs is an essential aspect of cost accounting, particularly in the context of allocating overhead costs within an organization. Service departments are units within a company that provide support services to other departments, contributing to the overall efficiency and functionality of the organization.

A. Direct allocation method

The direct allocation method is a technique for charging the cost of service departments to other parts of a business. This concept is used to fully load operating departments with those overhead costs for which they are responsible.

Example: A company has 2 service departments, Maintenance and Administration, and 2 operating departments (Department 1 and 2 for simplicity).The costs of the maintenance department are allocated based on the machine-hours used. For the administration department, the cost allocation is based on the number of employees. The following information is provided:

	Service Dep't	Operating Dep't

	Maintenanc	Administration	1	2
Costs	$32,000	$36,000	$8,000	$4,000
Machine-hours used	1,000	2,000	1,500	2,500
Numberof Employees	100	200	250	150

Remember how we calculate predetermined overhead rates? We will need that same formula again. The formula to calculate the allocation rate will be slightly modified for service department cost but will be:

Service Dep't Cost

TOTAL Cost Driver (operating depts. only)

Notice, we use the operating department cost drivers only since we are allocating the service department cost to operating departments only and not to another service department. Maintenance uses machine-hours as the cost driver or basis and Administration uses number of employees. We can calculate the service department allocation rates as follows:

Maintenance Dep't Cost / TOTAL Machine Hours (operating depts. only)

= $8,000/(1500 +2500) =$8,000/4000 = $2 per machine hour

Administration Dep't Cost/ TOTAL Employees (operating depts. only)

= $4,000/(250+150) =$4,000/400 = $10 per employee

To allocate the service department costs to each operating department, we will take the amount of the cost driver (machine hours for maintenance and employees for administration) x the allocation rate we just calculated.

	Operating Dept 1	Operating Dept 2
Maintenance	$3,000 (1,500 mach hour x $2 per mach hr)	$5,000 (2,500 mach hour x $2 per mach hr)
Administration	$2,500 (250 employees x $10 per mployee)	$1,500 (150employees x $10 peremployee

Notice how the total maintenance amount allocated to the two departments (3,000 + 5,000) equals the maintenance department cost of $8,000. The same applies to administration as the

total cost is $4,000 and we allocated a total of $4,000 (2,500 + 1,500). We can summarize the changes to the costs of each department:

	Service Dept		Operating Dept	
	Maintenance	Administration	1	2
Costs	$8,000	$4,000	$32,000	$36,000
Allocation of maintenance	($8,000)		3,000	5,000
Allocation of administration			2,500	1,500
Total Costs	$0	($4,000) $0	$37,500	$42,500

B. Step-down method

The step-down method is also called the sequential method. This method allocates the costs of some service departments to other service departments, but once a service department's costs have been allocated, no subsequent costs are allocated back to it. The choice of which department to start with is important. The sequence in which the service departments are allocated usually effects the ultimate allocation of costs to the production departments, in that some production departments gain and some lose when the sequence is changed.

Example: Human Resources (H.R.), Data Processing (D.P.), and Risk Management (R.M.) provide services to the Machining and Assembly production departments, and in some cases, the service departments also provide services to each other:

Percentage of services provided by the service department listed under Service Dep't.

Total cost	Service dept.					
		H.R	D.P	R.M	Machining	Assembly
$80,000	H.R	-	20%	10%	40%	30%
120,000	D.P	8%	-	7%	30%	55%
40,000	R.M	-	-	-	50%	50%
= **$240,000**						

In the table below, the row for each service department allocates the total costs in that department (the original costs incurred by the department plus any costs allocated to it from the previous allocation of other service departments) to the production departments as well as to any service departments that have not yet been allocated.

Percentage of services provided by the service department listed under Service Dept

Total cost	H.R	D.P	R.M	machining	assembly	Total allocated
Cost	$80,000	$120,000	$40,000	-	-	
Allocation of H.R	($80,000)	16,000	8,000	$32,000	$24,000	
Allocation of D.P	-	($136,000)	10,348	44,348	81,304	
Allocation of R.M	$0	$0	$58,348	$29,174	$29,174	
Balance	$0	$0	$0	$105,522	$134,478	**$240,000**

Allocation of HR costs.

H.R. was allocated 20% to D.P., 10% to R.M., 40% to Machining and 30% to Assembly.Since the Step-Down Method only allocates service department costs to departments on its right, the allocation basis for D.P has to be adjusted to base 92%, since 8% of its services are consumed by H.R. (a service department on D.P.'s left). The percentages used have to be normalized on the remaining 92% (100%-8%) as follows:

Allocation of D.P service costs

Risk Management 7% / 92% = 7.6087% 7.6087% x $136,000 = $ 10,348

Machining 30% / 92% = 32.6087% 32.6087% x $136,000 = $44,348

Assembly 55% / 92% = 59.7826% 59.7826% x $136,000 = $81,304

100.00%

Explanation of the above: The adjusted percentages are applied to D.P.'s own cost ($120,000) plus its share of H.R. costs ($16, 0000), or $136,000.

Allocation of R.M costs

R.M. service department costs now contain R.M.'s share of H.R. and D.P. costs, and the this new total must be allocated to the Machining and Assembly departments, Similarly, R.M. service department costs. Each department gets 50% of these costs.

C. Reciprocal Method of Allocation

The final method is the reciprocal method. Although it is the most accurate, it is also the most complicated. In the reciprocal method, the relationship between the service departments is recognized. This means service department costs are allocated to and from the other service departments.

Example 1: Service Centres 1 and 2 wish to allocate 100% of their costs to Operational Departments A and B, and to each other. They will use the reciprocal method to do so.

Department	Overhead Before Distribution	Service 1	Service 2
Ops Dep't A	$22,000	44%	56%
Ops Dep't B	$16,000	36%	24%
Service 1/S1	$8,755		20%
Service 2/S2	$6,512	20%	
TOTAL	$53,267	100%	100%

Simultaneous equations calculate the values necessary to allocate 100% of service centre costs to other service centres and operational departments. It begins by calculating the total overhead costs of the service departments, in our examples S1 and S2:

Equation 1: Service 1, S1 = $8,755 + .2S2

Equation 2: Service 2, S2 = $6,512 + .2S1

First, solve for S1 by substituting the value of S2.

S1 = $8,755 + .2($6,512 + .2S1)

S1 = $8,755 + $1,302.40 + .04S1

S1 - .04S1 = $8,755 + $1,302.40

.96

S1 = $10,057.40

S1 = $10,057.40/0.96

S1 = **$10,476.46**

Next, incorporate the just-calculated value of S1 in equation 2.

S2 = $6,512 + .2($10476.46)

S2 = $6,512 + $2,095.29

S2 = **$8,607.29**

The value of S1 = $10,476.46 and the value of S2 is $8,607.29. Use these values to obtain the final overhead calculations.

2.1.2 General approach of cost allocation

Cost allocation is the process of assigning a cost to an object. The object to which a cost is being assigned can be any item for which you want to measure a separate cost.

Cost allocation is used for financial reporting to help inventory or spread costs among different departments. One example of cost allocation would be a municipality distributing the costs of their IT services to each department within the municipality. Individual departments may include maintenance, media services, utilities, etc. Allocating costs is important for understanding the costs of doing business as well as properly assigning prices to goods or services to ensure a profit. Depending on the type of product or service provided by a business, different types of cost allocation may be most useful. The three main types of cost allocation are cost allocation based on direct labour, cost allocation based on machine time, and cost allocation based on square footage.

Cost allocation based on direct labour allocates overhead costs based on the amount of direct labour used on a production unit

Cost Allocation Technique

Cost allocation methods are the techniques used to assign indirect costs (also known as overhead or shared costs) to different cost objects, such as products, services, departments, or projects, in a systematic and rational manner. Since indirect costs cannot be directly traced to a specific cost object or are not economically feasible to trace directly, organizations use cost allocation methods to distribute these costs and better understand the full cost of their products or services.

Some common cost allocation technique include:

1. **Direct allocation method (Single-stage allocation):** This method allocates each indirect cost item directly to the cost objects based on a single allocation base, such as direct labour hours, machine hours, or square footage. The allocation base should have a logical relationship with the indirect costs being allocated.

2. **Step-down method (Sequential allocation):** This method allocates indirect costs sequentially, starting with the department or cost centre that provides the highest level of support to other departments, and continuing in a hierarchical manner until all costs have been allocated.
3. **Reciprocal allocation method (Simultaneous allocation):** This method accounts for the mutual support and interdependencies between departments by using a system of simultaneous equations to allocate indirect costs. The reciprocal allocation method is more complex but provides a more accurate representation of the true cost relationships between departments.
4. **Activity-based costing (ABC):** This advanced method allocates indirect costs based on the activities that drive the costs, rather than merely distributing costs based on a single allocation base. ABC identifies cost drivers or cost pools and assigns costs to cost objects based on their consumption of the activities, providing a more accurate representation of the resources consumed by different cost objects.

Example of Cost Allocation Technique

1. Suppose PrintPro chooses machine hours as the allocation base for its indirect costs. The company first calculates the total machine hours spent on commercial printing and digital printing during the month. Let's say the company used 800 machine hours for commercial printing and 200 machine hours for digital printing, totalling 1,000 machine hours.

Required: calculate direct allocation method

Solution

- If the total indirect costs for the month are $10,000, the allocation rate per machine hour is:

Allocation rate: Total indirect cost /total machine hours

Allocation cost: $10000/1000hour = $10 per hour

Then, PrintPro allocates the indirect costs to the services using the allocation rate and the machine hours spent on each service:

- Commercial printing: 800 hours × $10 per hour = $8,000
- Digital printing: 200 hours × $10 per hour = $2,000

2. Activity based costing

Instead of using a single allocation base, PrintPro could implement activity-based costing to allocate its indirect costs based on the activities that drive the costs. To do this, the company identifies cost drivers or cost pools, such as equipment maintenance, administrative support, and energy consumption.

For example, let's say PrintPro determines the following cost allocations for its total indirect costs:

- Equipment maintenance: $4,000 (allocated based on machine hours)
- Administrative support: $4,000 (allocated based on the number of jobs)
- Energy consumption: $2,000 (allocated based on square footage)

PrintPro then allocates each cost pool to the services based on their consumption of the activities:

- Commercial printing: $3,200 (equipment maintenance) + $3,200 (administrative support) + $1,600 (energy consumption) = $8,000
- Digital printing: $800 (equipment maintenance) + $800 (administrative support) + $400 (energy consumption) = $2,000

2.1.3. Concept of Joint Cost To Allocate Product Cost

The concept of joint cost allocation is a method used to distribute these common costs among the various products that result from a common production process. Since the joint costs are incurred collectively up to the split-off point, allocating them to individual products can be challenging. Several methods are used for joint cost allocation, and each method has its own set of assumptions and advantages.

Common methods of joint cost allocation include:

I. Physical unit method

The physical unit's method, also known as the physical quantity method, is a cost allocation method used to allocate joint costs among the joint products based on the physical quantities produced. It assigns costs based on the volume, weight, or other measurable units of the products. The underlying assumption is that the physical quantity is a reasonable measure of the benefits obtained from the joint process.

Here's how the physical units method of allocating joint costs works:

1. **Determine the Total Joint Costs**: Calculate the total joint costs incurred up to the split-off point in the joint manufacturing process. These costs include expenses such as

direct materials, direct labour, and factory overhead that are collectively incurred for all the joint products.

2. **Identify the Physical Quantities**: Determine the physical quantities of each joint product produced during the production process. Physical quantities can be measured in units such as weight, volume, length, or any other relevant measure.
3. **Calculate the Allocation Ratio**: Calculate the allocation ratio for each joint product by dividing its physical quantity by the total physical quantities of all the joint products. The allocation ratio represents the proportionate share of the joint costs that each product should bear based on its physical quantity.
4. **Allocate Joint Costs:** Multiply the total joint costs by the allocation ratio for each joint product to determine the allocated joint costs for each product.
5. **Cost Assignment:** Allocate the allocated joint costs to the respective joint products for proper cost assignment.

Example: Mohammed Stationary Brothers Ltd. is a family owned company that manufactures stationary items. The main item that Mohammed Stationary Brothers Ltd. manufactures is pens of different colours. The initial process of manufacturing the body of pens is almost the same. The inks of different colours cost different and this cost is allocated to the individual cost cards of pens depending upon the demand.

The Mohammed Stationary Brother Ltd. runs a joint production batch of producing a total of 1,000,000 pens as follows:

- Blue ink pens: 200,000 units
- Red ink pens: 500,000 units
- Green ink pens: 300,000 units
- The total joint cost of the batch up to split-off point is $400,000.

Required: Allocate the joint cost among all types of pens produced using average unit cost method.

Solution

Step1 – Computation of average cost per unit:

Average cost per unit = Total joint cost/Total number of units produced

= $400,000/1,000,000 units

= $1,200/600 units

= $0.4 per pen

Step 2 – Allocation of joint cost:

Blue ink pen: $200,000 × 0.4 = $80,000

Red ink pen: $500,000 × 0.4 = $200,000

Green ink pen: $300,000 × 0.4 = $120,000

II. Relative sale value method

The relative sales value method is a technique used to allocate joint costs based on the prices at which products will be sold.

Example: A production process incurs $100 of costs in order to create two products, one of which (Product A) will sell for $400 and the other (Product B) for $100. Under this method, 80% of the $100 joint cost is assigned to Product A. The calculation is:

$100 joint cost x ($400 ÷ ($400+$100)) = $80

The remaining 20% of the $100 joint cost is assigned to Product B. The calculation is:

$100 joint cost x ($100 ÷ ($400+$100)) = $20

2.1.4. Concepts of Activity- based Costing

Activity-Based Costing (ABC) is a costing methodology that assigns costs to products or services based on the activities and resources that go into producing them. Unlike traditional costing methods that allocate costs based on a single cost driver, ABC recognizes that products consume activities, and activities consume resources.

Figure 4.1: Explaining activity base costing methods

Activity-based costing (ABC) is a costing method that assigns overhead and indirect costs to related products and services. This accounting method of costing recognizes the relationship between costs, overhead activities, and manufactured products, assigning indirect costs to products less arbitrarily than traditional costing methods. However, some indirect costs, such as management and office staff salaries, are difficult to assign to a product.

ABC is used to improve the accuracy of cost analysis by improving the tracing of costs to products or to individual customers. It is a system which focuses on activities performed to produce product. In this system, first costs are traced to activities and then to products, where as in traditional system, costs are first traced not to activities but to an organisational unit, such as department or plant and then to products.

2.1.5. Calculating activity-based costs

Cost objects are a crucial component in activity-based costing (ABC) for measuring profitability and making informed decisions. They are defined based on the purpose of decision support and are structured to largely correspond to the complexity of a company's revenue stream. Typically, cost objects include products/services and customers, but additional items like channels may be included depending on the field of activity. The number and structure of cost objects can vary from organization to organization.

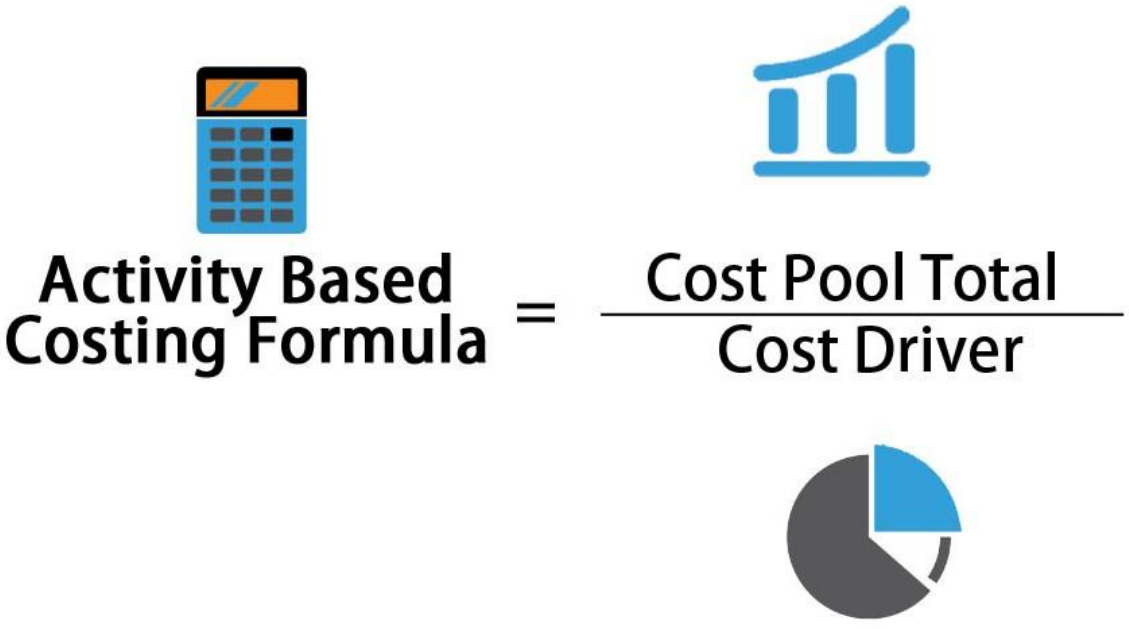


Figure 4.2 ABC calculating formula

In ABC, cost objects represent an object to which costs are allocated using a cause-and-effect relationship. They are divided into two categories: external activities that create added value and internal activities within the organization. This allows for a clear understanding of profitability and the basis for making informed decisions.

- **Steps in ABC System**

For allocating/absorbing overheads to products/services under Activity-Based Costing, the following steps are to be taken:

1. **Identifying Activities:** The first stage is to identify the functional areas or major activities involved in the production. Examples of activities include machine related activities, divert labor related activities and various support activities like ordering, receiving, material handling, packing, dispatching etc. Various activities are identified by carrying out activity analysis. The activities may be basically fall into four categories as suggested by Cooper and Kaplan'.
2. **Unit Level Activities or Primary Activities:** The cost of primary activities (like use of indirect materials and consumables, testing of every item produced) may be correlated to number of units produced (i.e. on volume-basis).
3. **Batch Level Activities:** These are manufacturing support activities (like material ordering, machine set-up costs, inspection of products etc). The cost of such activities is driven by number of batches of units produced.
4. **Product Level Activities:** Activities like designing of the product, keeping technical drawings of product, activities up to date, advertising of a specific product are called product level. The cost of these activities is driven by the creation of a new product line and its maintenance.
5. **Facility Level Activities:** Certain activities cannot be related to a particular product, instead may be related to certain facilities like maintaining the building, security of plant, salaries of production manager, advertisement to promote organization etc.
6. **Assigning Costs to Activity Cost Centers:** The second stage requires that a cost center (also called a cost pool) be created for each activity. After the activities have been identified the cost of resources consumed over a specified period must be assigned to each activity. These costs will have to be apportioned on some suitable basis. For example, the total costs of all

set ups might constitute one cost Centre for all setup related costs.

7. **Selecting Appropriate Cost Drivers:** The third stage of designing ABC system is to identify the factors that influence the cost of a particular activity. The term cost-driver is used to describe the significant determinant of the cost of the activity. The most suitable cost driver in each activity under functional areas should be identified. A cost driver is any factor that influences costs.
8. **Assigning the Cost of the Activities to Products:** The final stage is to trace the cost of the activities to products according to each product's demand for these activities using cost drivers as a measure of demand. A product's demand for the activities is measured by the number of transactions it generates for the cost driver. The cost driver should be measurable in a way that enables it to be identified with individual products

Benefits of ABC

Activity-based costing provides a more accurate method of product/service costing, leading to more accurate pricing decisions. It increases understanding of overheads and cost drivers; and makes costly and non-value adding activities more visible, allowing managers to reduce or eliminate them. ABC enables effective challenge of operating costs to find better ways of allocating and eliminating overheads.

In brief following are main benefits of using ABC technique:

1. ABC helps to reduce costs by providing meaningful information for cost-management. It helps in making the right decision.
2. ABC technique provides due importance to non-manufacturing cost which constitute a substantial portion of total cost. Traditionally non-manufacturing costs have been allocated under volume basis and thus, high volume products have been overvalued.
3. ABC technique provides accurate and reliable cost information. This cost information is essential for recent approaches in productivity improvement like Total Quality Management (TQM) and Business Process Reengineering.
4. ABC enables the management in formulating an effective pricing policy while fixing prices.
5. Cost of each activity is determined with the help of ABC. There is accuracy in indirect cost-allocation to products. This technique is helpful in make or buys decisions and transfer pricing.

Illustration

1. The budget overheads and cost driver volumes of S Ltd. Are as follows-

Cost Pools	Budget Overheads	Cost Driver	Budged Volumes
Machinery Purchased	9,00,000	No. of orders	3,000
Material Handling	4,00,000	No. of Movements	1,000
Setup	3,00,000	No. of Set-ups	600
Maintenance	10,00,000	Maintenance Hours	10,000
Quality control	2,00,000	No. of Inspection	1,000
Machinery	10,00,000	No. of Machine Hours	20,000

The company has produced a batch of 3,000 components of AB-30. Its material cost is Rs. 1,50,000 and direct labor cost Rs.3,00,000. The usage activities of said batch are as follows-

Machine Hours	2,500	Setup	30
Material orders	30	Maintenance Hours	500
Material Movements	15	No. of Inspections	30

1. Calculate cost driver rates that are used for treating appropriate amount of overheads to the said batch.
2. Ascertain the cost of batch of components using Activity Based Costing.

Solution:

a) Calculation of Cost Driver Rates

- Material Purchasing = 9, 00,000/3000 = Rs. 300
- Material Handling = 4, 00,000/1,000 = Rs. 400
- Setup = 3, 00,000/600 = Rs 500
- Maintenance = 10, 00,000/10,000 = Rs 100
- Quality control = 2, 00,000/1,000 = Rs. 200
- Machine = 10, 00,000/20,000 = Rs. 50

b)Calculation of Cost of Batch of 3,000 components of AB-30

Direct Materials			1,50,000
Direct Labour			3,00,000
		Prime Cost	4,50,000
Overheads:			
Material Procurement	30*300	9,000	

Material Handling	15*1,000 =	15,000	
Set-up Cost	30*500	15,000	
Maintenance	500*100 =	50,000	
Quality control	30*200	6,000	
Machine	2,500*50 =	1,25,000	2,20,000
		Total Cost	4,70,000

2.2. Designing of costing system

Implementation of activity based costing system must be initiated by top management due to two reasons. First, without leadership from top management, some managers may not see any reason to change. Second, if top managers do not support the ABC system and continue to play the game by the old rules, their subordinates will quickly get the message that ABC is not important and they will abandon the ABC initiative. Time after time, when accountants have attempted to implement an ABC system on their own with top-management support and active cooperation from other managers, the results have been ignored.

For designing and implementing activity based costing system, management should carefully study the existing cost accounting system and review the articles in professionals and trade journals. In most of the organizations, the new activity based costing system supplement, rather than replace, the existing cost accounting system, which continues to be used for external financial reports. The following chart explains the general structure of activity based (ABC) costing model.

Self – Check II

Part I: True/False Statements

1. In the direct allocation method, service department costs are allocated based on the services provided to other departments.
2. The step-down method is also known as the simultaneous method, and it allocates costs sequentially from one service department to another.
3. The reciprocal method of cost allocation recognizes the mutual support and interdependencies between service departments.
4. Activity-Based Costing (ABC) assigns costs to products or services based on a single cost driver.
5. The physical unit method allocates joint costs based on the prices at which products will be sold.

Part II: Multiple-Choice

1. Which cost allocation method allocates service department costs to other parts of a business by fully loading operating departments with those overhead costs?
    A. Direct allocation method
    B. Step-down method
    C. Reciprocal method
    D. Physical unit method
2. What is the primary basis for allocating joint costs in the relative sales value method?
    A. Physical quantities
    B. Machine hours
    C. Prices at which products will be sold
    D. Maintenance hours

Part III: Practical Demonstration

1. XYZ Manufacturing produces three types of products - A, B, and C. The following information is available for a production batch:

Product A: 5,000 units

Product B: 8,000 units

Product C: 3,000 units

Total Joint Cost: $150,000

Required: Using the Physical Unit Method, calculate the allocated joint cost for each product.

2. ABC Company has two products, X and Y, with the following details:

Product X will sell for $300

Product Y will sell for $150

Total Joint Cost incurred is $50,000

Apply the Relative Sales Value Method to allocate the joint cost between Products X and Y.

Required: Calculate the allocated cost for each product**.**

UNIT THREE: Produce Cost Reports

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Assgning cost
- Cost information
- Structure of budgets and reports
- Budget variances
- Error of free reports

This guide will also assist you to attain the learning outcomes stated in the cover page.

Specifically, upon completion of this learning guide, you will be able to:

- Assgne costs to specified products and services
- Explaine cost information
- Make clear structure and format of budgets and reports
- Identify variances against budget
- Analyse making error free reports

3.1.1. Assigning Cost

Cost assignment is the process of associating costs with cost objects, such as products, services, departments, or projects. It encompasses the identification, measurement, and allocation of both direct and indirect costs to ensure a comprehensive understanding of the resources consumed by various cost objects within an organization. Cost assignment is a crucial aspect of cost accounting and management accounting, as it helps organizations make informed decisions about pricing, resource allocation, budgeting, and performance evaluation.

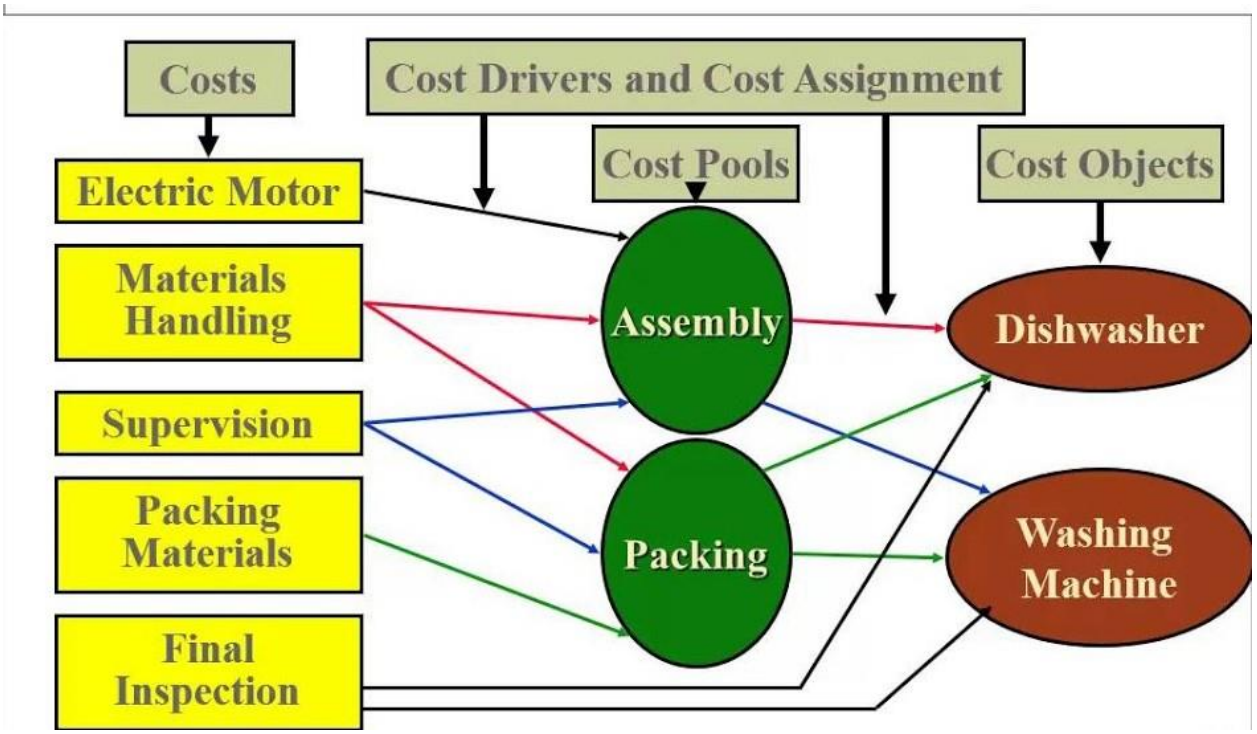


Figure 3.1- cost assigning general principle

There are two main components of cost assignment:

A. **Direct cost assignment**: Direct costs are those costs that can be specifically traced or identified with a particular cost object. Examples of direct costs include direct materials, such as raw materials used in manufacturing a product, and direct labor, such as the wages paid to workers directly involved in producing a product or providing a service. Direct cost assignment involves linking these costs directly to the relevant cost objects, typically through invoices, timesheets, or other documentation.

B. **Indirect cost assignment (Cost allocation):** Indirect costs, also known as overhead or shared costs, are those costs that cannot be directly traced to a specific cost object or are not economically feasible to trace directly. Examples of indirect costs include rent,

utilities, depreciation, insurance, and administrative expenses. Since indirect costs cannot be assigned directly to cost objects, organizations use various cost allocation methods to distribute these costs in a systematic and rational manner. Some common cost allocation methods include direct allocation, step-down allocation, reciprocal allocation, and activity-based costing (ABC).

Average Cost of Production

Average cost of production refers to the per-unit cost incurred by a business to produce a product or offer a service. Production costs may include things such as labour, raw materials, or consumable supplies. In economics, the cost of production is defined as the expenditures incurred to obtain the factors of production such as labour, land, and capital that are needed in the production process of a product. For example, the production costs for a motor vehicle tire may include expenses such as rubber, labour needed to produce the product, and various manufacturing supplies. In the service industry, the costs of production may entail the material costs of delivering the service, as well as the labour costs paid to employees tasked with providing the service.

Types of Costs of Production

A. Fixed costs

Fixed costs are expenses that do not change with the amount of output produced. This means that the costs remain unchanged even when there is zero production or when the business has reached its maximum production capacity. For example, a restaurant business must pay its monthly, quarterly, or yearly rent regardless of the number of customers it serves. Other examples of fixed costs include salaries and equipment leases. Fixed costs tend to be time-limited, and they are only fixed in relation to the production for a certain period. In the long term, the costs of producing a product are variable and will change from one period to another.

B. Variable costs

Variable costs are costs that change with the changes in the level of production. That is, they rise as the production volume increases and decrease as the production volume decreases. If the production volume is zero, then no variable costs are incurred. Examples of variable costs include sales commissions, utility costs, raw materials, and direct labour costs.

For example, in a clothing manufacturing facility, the variable costs may include raw materials used in the production process and direct labour costs. If the raw materials and direct labour costs incurred in the production of shirts are $9 per unit and the company produces 1000 units, then the total variable costs are $9,000.

C. Total cost

Total cost encompasses both variable and fixed costs. It takes into account all the costs incurred in the production process or when offering a service.

For example, assume that a textile company incurs a production cost of $9 per shirt, and it produced 1,000 units during the last month. The company also pays a rent of $1,500 per month. The total cost includes the variable cost of $9,000 ($9 x 1,000) and a fixed cost of $1,500 per month, bringing the total cost to $10,500.

D. Average cost

The average cost refers to the total cost of production divided by the number of units produced. It can also be obtained by summing the average variable costs and the average fixed costs. Management uses average costs to make decisions about pricing its products for maximum revenue or profit. The goal of the company should be to minimize the average cost per unit so that it can increase the profit margin without increasing costs.

E. Marginal cost

Marginal cost is the cost of producing one additional unit of output. It shows the increase in total cost coming from the production of one more product unit. Since fixed costs remain constant regardless of any increase in output, marginal cost is mainly affected by changes in variable costs. The management of a company relies on marginal costing to make decisions on resource allocation, looking to allocate production resources in a way that is optimally profitable.

For example, if the company wants to increase production capacity, it will compare the marginal cost vis-à-vis the marginal revenue that will be realized by producing one more unit of output. Marginal costs vary with the volume of output being produced. They are affected by various factors, such as price discrimination, externalities, information asymmetry, and transaction costs.

3.2. Cost information

Cost Information is Within one hundred twenty (120) days after completion of a Non-Consent Operation, the Operator shall furnish all Parties an itemized statement of the Cost of such

operations and an inventory of the equipment pertaining thereto or, at its option, the Operator in lieu of an itemized statement of such Costs may submit a detailed statement of monthly billings.

Information costs are costs incurred by an individual or a firm while amassing information to help make a financial decision. If these costs are significant enough, it can affect the profitability of a business enterprise or the soundness of a consumer's purchase. Cost information is an important element across several activities that are involved in cost engineering (the practice of managing costs involved on a construction project), such as cost control, budgeting, forecasting, estimating, investment appraisal and risk analysis.

Purpose of cost information

The cost information is important for the managers for of the following three reasons:

- Based on costs it is decided the acquisition, production or abandon a product;
- The costs can be a basis for the price establishment;
- Through the costs it is identified the needs for improvement of the products or services.

3.3. Structure of budget and report

A cost budget, also known as a budgeted cost or cost estimate, is a financial plan that outlines the expected expenditures for a specific project, activity, or business operation over a defined period. It serves as a guideline for managing and controlling costs associated with various aspects of a project or business.

Key aspects of a cost budget include:

A. Estimates: Cost budgets involve estimating the expenses associated with labor, materials, equipment, overhead, and other resources required for the completion of a project or the operation of a business.
B. Time Frame: A cost budget typically covers a specific time frame, such as a fiscal year or the duration of a project. It provides a detailed breakdown of expected costs for each period within the defined timeframe.
C. Allocation: Costs are allocated to different components or activities of the project or business. This allocation helps in identifying and tracking expenses related to specific tasks, departments, or functions.

D. Basis for Decision-Making: Cost budgets provide a basis for decision-making by estimating the financial resources needed for planned activities. They help in resource allocation, setting financial targets, and assessing the feasibility of projects or operations.

3.3.1. Budget Report

A budget report is a financial picture of a business or project over a specific time period. It collects data related to actual spending and compares that to what's been projected for that period in terms of the budget.

This means that a budget report helps determine if you're spending according to your budget or going over or under it. The budget report has at least two columns: one for planned spending that's been budgeted for the reported period and one for the actual spending for that period.

Purpose of Budget Report

The main purpose of a budget report is to compile data on how much you're spending on your business or project over a specific period. This information is crucial to run a successful company or project; you can't spend blindly and expect to stay in business or deliver a successful project.

Being able to have proper spending control is what keeps a business afloat. It's especially true as economies cycle through good and bad times. A business can't ignore the economic landscape and expect to survive; rather, regular budget reports help you stir your business through the choppy waters of the industry.

A budget is also the best guess of what a company or project is going to spend. The accuracy is based on research and historical data. Your budget reports can, therefore, be archived and accessed when planning future budgets to make a better estimate of what your costs and expenses will be.

Components of a Budget Report

A budget report can include different columns depending on the business or project. Often the budget report is part of a larger status report that captures a more wide-ranging set of data points. This can help to put the costs in context and provide a better picture of not only what was spent but why. But if you were to boil a budget report down to its essential elements, it would reveal these four components: actual costs, planned costs, budget and remaining budget. Any budget

report that you create should include these four components. Let's take a closer look at these four parts of a basic budget report.

A. Actual Costs

The actual costs in a budget report are the total expenditure that the company or project spent over the course of time reflected in the report. It's important to understand that a forecast or a budget tries for accuracy but it's never completely right. There are almost always unexpected expenses, costs, etc., which will impact your budget. The actual costs, therefore, give you hard data on how much you spent so you can compare it to what you thought you'd spend over this period.

B. Planned Costs

The planned costs are those that you anticipate for the business over a specific time period or for a period of a longer project. These are estimated costs that are based on a predetermined budget and timeline. Some of these costs include raw materials, labor costs and overhead costs, such as utilities.

C. Budget

The budget is a financial plan that's used by a company or project to illustrate the money needed to operate over a period or for a project to successfully deliver its product or service. It shows how much money is needed and the time in which that money is to be spent to carry on the operations of a business or execute the goal of a project.

D. Remaining Budget

Finally, the remaining budget is what you're left with in terms of your overall budget after the expenditure of the reported period. It shows how much money you have left to continue operating your business or deliver your project.

Example:

Here's an example of a more detailed budget report. This report outlines the organization's projected and final income and expenses for February 2021. Analyzing the data detailed in this report can allow us to more accurately project budget expenses and build goals for upcoming years:

Description	**Budget**	**Final Cost**
Income		

Description	**Budget**	**Final Cost**
Product income	$200,000	$350,000
Service income	$500,000	$730,000
Total	$700,000	$1,080,000
Profit or loss total: **Expenses**	Total amount that you gained or earned based on your budget and final cost	$380,000
Sales	$50,000	$30,000
Product development	$100,000	$70,000
Total	$150,000	$100,000
Costs overrun	$50,000	

3.4. Budget Variance

A budget variance is a periodic measure used by governments, corporations, or individuals to quantify the difference between budgeted and actual figures for a particular accounting category. A favourable budget variance refers to positive variances or gains; an unfavourable budget variance describes negative variance, indicating losses or shortfalls. Budget variances occur because forecasters are unable to predict future costs and revenue with complete accuracy.

Budget variances can occur broadly due to either controlled or uncontrollable factors. For instance, a poorly planned budget and labour costs are controllable factors. Uncontrollable factors are often external and arise from occurrences outside the company, such as a natural disaster.

Types of Budget Variance

I. Adverse Variance

It's important to discuss adverse (or negative) budget variance further because of its damaging and potentially severe consequences for a business.

One of the most common ways that a company experiences adverse budget variance is through poor estimations of future spending. The company may assume that a project will cost less than it ends up costing, whether due to a lack of accurate information about costs or unexpected

expenses. A company may also experience negative variance if it allows office or industry politics to dictate a target spending that is unreasonably low.

II. Positive Variance

Many companies report a positive budget variance. In order to do so, most companies establish a well-padded budget for individual projects or operations in general. They try to be as accurate as possible in allowing for expenses, with a built-in buffer of extra funds to guard against certain costs, namely:

- Unexpected costs connected to supplies
- Complications with a project/task
- Changes in the market
- Company-wide issues (scandal, change in management, procedural/operational changes)

Budget variance formula

To calculate budget variance, you can use one of two formulas.

- Variance = Actual Value - Projected Value Or
- Variance = Projected Value - Actual Value

Examples of budget variance

	Project value	Actual value
Total revenue	$ 8m	$8.5m
Total cost	$7m	$8.2m
Net profit	$1m	$0.3m

In this example, use the first formula: **Variance = Actual Value - Projected Value.**

	Project value	Actual value	Variance
Total revenue	$ 8m	$8.5m	$0.5m
Total cost	$7m	$8.2m	$1.2m
Net profit	$1m	$0.3m	($0.7m)

3.5. Error of Free Report

Error Free means that there are no errors or omissions in the description of the phenomenon and that the process used to produce the information presented was selected and applied without errors in the process. In this context, error- free does not mean perfectly accurate in all aspects.

Error free documents are beneficial as they are good to the company's reputation, customers can have a hard time reading a document which contains a lot of Typo's, poor grammar, and invalid numbers. Achieving an error free document is not very simple however very rewarding.

Proofreading for a document is a difficult task but can be assessed into steps for more accuracy. First of all, by using appropriate software and software tools to ensure that documents/slides are spellchecked, this process could be accomplished easily when you are fully aware of what your software is capable of doing, and by using the right tools tasks such as: spelling check and grammar check can be complete in a click of button.

However normal proof reading is still mandatory to check mistakes that computers can't detect, to guarantee no error employees need to revise and practice entering data with 100% accuracy, and be aware of the methods of proofread documents. Like:

- Read and proof your document thoroughly.
- Read backwards (right to left or bottom to top) to concentrate on spelling instead of content.
- Reread the document for content to find omissions and plurals.
- Wait a couple of hours or a day to proofread what you typed. You are more likely to find errors.
- Have others proofread your documents.
- Verify any words you are not sure of.
- Go through all these steps multiple of times (for more accuracy) before printing and publicizing.

Benefits of Effective Error Reporting

- Reducing customer churn: If customers encounter application-breaking crashes or issues that prevent them from quickly completing key functions, they'll churn to other options. Pinpointing problems ASAP helps companies reduce the risk of customer churn.
- Capturing critical events: Comprehensive error reporting helps your team separate one-off events from more widespread and problematic issues. Complete capture of these issues allows teams to fully investigate them and find a fix.
- Creating reliable analysis: Analysis of error reporting data makes it possible to discover trends that are impacting your operations over time. Regular and reliable analysis,

meanwhile, empowers teams to understand how errors are impacting your network at scale.

- Increasing development speed: The rise of DevOps teams speaks to the need for speed. Employees and end-users want access to new applications and updates as quickly as possible, and teams want built-in processes that empower this effort without compromising security.
- Identifying root causes: The biggest benefit of error reporting? Identifying root causes.

Self- Check III

Part I: True or False statements

1. Fixed costs change with the level of production.
2. The budget is a financial plan illustrating the money needed for a project or business operation.
3. Adverse budget variance refers to positive variances or gains.
4. Actual costs in a budget report are estimated costs based on a predetermined budget.

Part II: Multiple Choice

1. What is cost assignment?
   A. Budgeting process
   B. Allocating costs to cost objects
   C. Profit calculation
   D. Financial forecasting
2. Which of the following is an example of a direct cost?
   A. Rent
   B. Utilities
   C. Raw materials
   D. Administrative expenses
3. What does the average cost of production represent?
   A. Total fixed costs
   B. Total variable costs
   C. Per-unit cost of production
   D. Marginal cost
4. What is the purpose of cost information in managerial decision-making?
   A. Calculating profits
   B. Assessing market trends
   C. Making informed decisions about pricing and resource allocation
   D. Forecasting macroeconomic indicators
5. What is the main goal of budget variance analysis?
   A. Increasing costs
   B. Achieving a positive variance

C. Avoiding budgeting altogether

D. Ignoring actual expenses

Part III : Practical Demonstration

1. Calculate the average cost per unit:

   Total production cost: $50,000

   Number of units produced: 10,000

2. Determine the budget variance using the formula: Variance = Actual Value - Projected Value

   Actual revenue: $120,000

   Projected revenue: $100,000

UNIT FOUR: Cost Control System

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Cost control and cost reduction
- Techniques of cost reduction
- Area of cost reduction
- Unit cost production
- Methods of increasing productivity
- Effects of budget and standard costing

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Identify the deference between cost control and cost reduction
- Apply techniques of cost reduction
- Explaine area of cost reduction
- Demonstrate unit cost production
- Apply methods of increasing productivity
- Identify effects of budget and standard costing

4.1. Cost Control And Cost Reduction

Cost control is a managerial process designed to manage and regulate the expenses incurred by an organization to ensure they align with the planned budget. The primary goal of cost control is to monitor and limit expenditures, prevent unnecessary spending, and optimize the use of resources efficiently. Cost reduction involves a deliberate and planned effort to decrease the overall expenses incurred by an organization without compromising the quality of its products or services.

4.1.1. Cost Control

Cost control is the process of identifying, eliminating or reducing unnecessary business expenses in order to increase profits. Cost control starts with the budgeting process and looks at vendor selection and negotiation, leveraging early payment and volume discounts, using spend management systems, and improving manufacturing or construction efficiency and product quality.

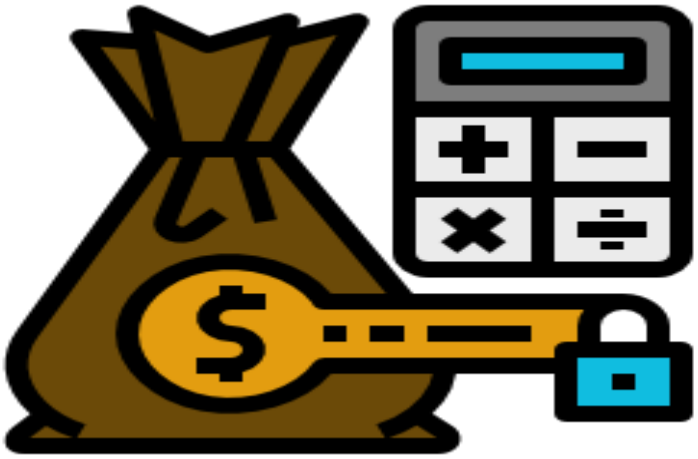


Figure 4.1: cost control

Standard costing and budgetary control are two techniques used in the cost control process. The process is a continuous one and helps to analyse the causes for the variances. It involves:

- Determining the standards
- Comparing the standards and looking at the results
- Analysing the variances
- Establishing the action needed to be taken by the firm

Figure 4.2 cost control management

The major techniques used in cost control are standard costing and budgetary control. It is a continuous process as it helps in analysing the causes for variances which control wastage of material, any embezzlement and so on.

4.1.2. Cost reduction

Cost Reduction is a process, aims at lowering the unit cost of a product manufactured or service rendered without affecting its quality by using new and improved methods and techniques. It ascertains substitute ways to reduce the cost of a unit. It ensures savings in per unit cost and maximisation of profits of the organisation. Cost Reduction aims at cutting off the unnecessary expenses which occur during the production, storing, selling and distribution of the product.

Figure 4.3 : cost reduction

To identify cost reduction, the following are the major elements:

- Savings in per unit cost.
- No compromise with the quality of the product.
- Savings are non-volatile in nature.

Tools of cost reduction are Quality operation and research, Improvement in product design, Job Evaluation & merit rating, variety reduction, etc.

- **The key difference between cost control and cost reduction**

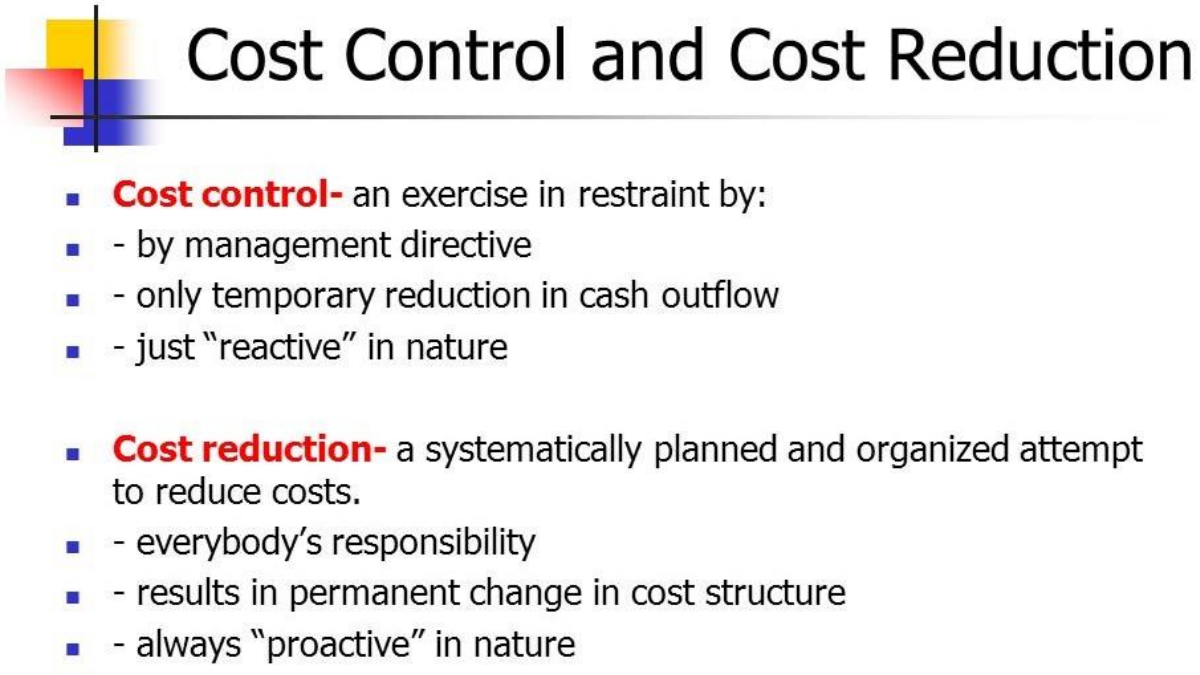


Figure 4.4: The diference between cost control and cost reduction

4.2. Techniques of cost reduction

The process of identifying and eliminating unnecessary costs to improve the profitability of a business is known as cost reduction.

According to the Terminology of Cost Accountancy of the Institute of Cost and Management Accountants London, Cost reduction is to be understood as the success of real and unchanging reduction in the unit costs of goods manufactured without impairing their suitable for the use intended.

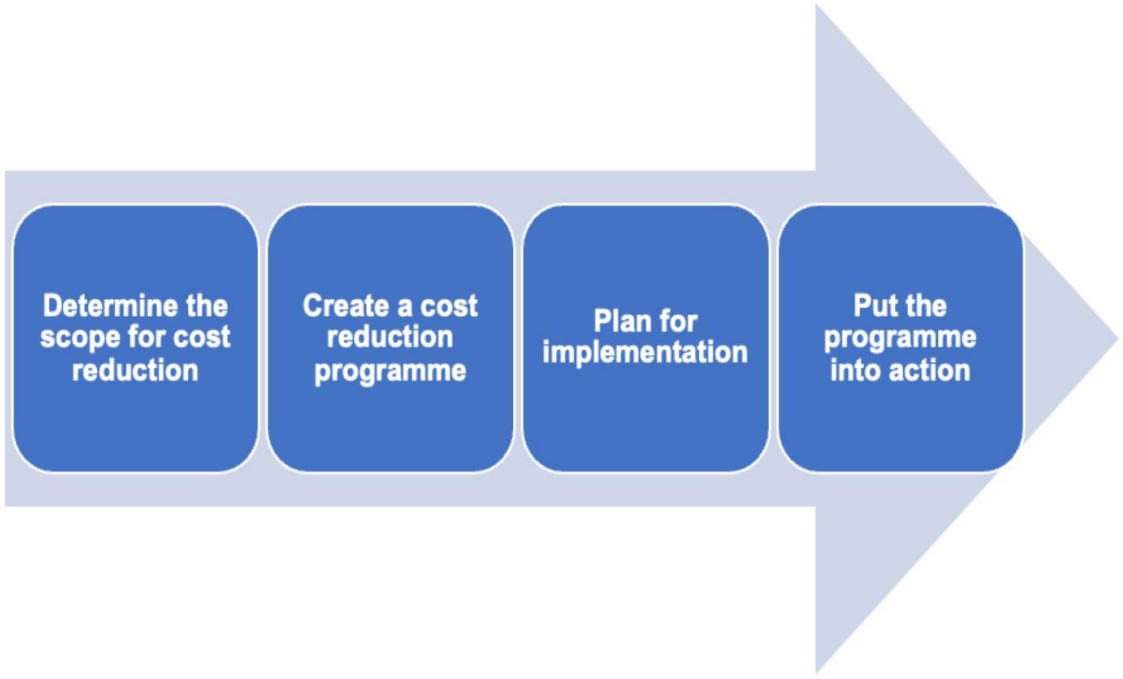


Figure 4.5 :Technic of cost reduction

There are number of cost reduction techniques, such as:

1. Budgetary Control
2. Inventory Control
3. Standard Costing
4. Job Evaluation
5. Reduction in variety of products
6. Value Analysis
7. Uniform Costing
8. Intra-inter firm Comparison
9. Operational Research
10. Productivity

4.3. Area of cost reduction

They are now seen as key business partners, providing valuable insights and strategic guidance to help organisations achieve their financial goals. Cost reduction is a continuous process and in this article, we will discuss several key strategies that finance teams can use to identify areas for reducing costs.

A. Conduct a detailed cost analysis

The first step in reducing costs is to understand your current spending patterns. This can be achieved by conducting a detailed cost analysis. This involves identifying all the costs incurred by your organisation, including direct costs such as materials and labour, and indirect costs such as rent and insurance.

B. Identify non-value-adding activities

Once you have a clear understanding of your current spending patterns, the next step is to identify any non-value-adding activities. These are activities that do not contribute to the delivery of a product or service and can be eliminated or reduced. Examples include unnecessary meetings, duplicated efforts, and inefficient processes.

C. Evaluate vendor contracts

A significant portion of your costs may be associated with vendor contracts. It is essential to regularly evaluate these contracts to ensure that you are getting the best value for your money. This can be done by negotiating better terms, consolidating contracts with multiple vendors, or seeking out alternative suppliers.

D. Implement automation

Automation can help reduce costs by streamlining processes, reducing manual errors, and increasing efficiency. There are a number of different technologies available to finance teams, including accounting software such as Subsystem's, expense tracking systems, and digital invoicing.

E. Utilise data analytics

Data analytics can provide valuable insights into areas for reducing costs. By leveraging data, finance teams can identify trends, patterns and areas for improvement, allowing them to make more informed decisions about cost management.

F. Encourage cost-saving initiatives

Encouraging cost-saving initiatives throughout the organisation can help to reduce costs. This can be done by setting goals, recognising and rewarding cost-saving efforts, and encouraging employees to come forward with their own cost-saving ideas.

4.4. Unit cost production

Ways to reduce costs and increase productivity in manufacturing organization remain competitive; all the companies must offer quality products at cutthroat prices. To make this possible, a company can cut their manufacturing cost per unit and increase productivity with the same amount of input.

Cost cutting isn't restricted to stay ahead in the competition but also to survive in the market due to new entrants today. These new entrants are externally funded and their competitive market approach makes it hard for the already set manufacturers to keep up It is clear that every manufacturer needs to raise up their productivity charts to stay alive. Here are the 5 best ways that can help a manufacturer to reduce costs and increase productivity.

- Work Flow Optimization

Analyse the work flow of the manufacturing of your product. This includes everything related to the manufacturing, from people and resources to communication and procedures. Mapping all of these activities helps business professionals to monitor them and look out for any room for improvement. When you are able to examine a process in detail, you tend to find many cracks which are yet to be filled.

- Reduce labour costs

After analysing your process, if the physical labour turns out to be the biggest burden in your cost sheets, it is better to find out ways to operate on modest labour force. Though labour force in India is much cheaper, but in the companies where highly skilled labour is required, the costs are much higher

- Material costs

When the material cost forms the bigger chunk in the total production costs, noticeably you need to bring its costs down to control your expenditure. Purchase material in bulk to cut down the unit prices. Research is a vital role to be played by a manufacturer to audit which material it requires in what quantity and which it doesn't.

- Overhead costs

Costs of building, utility, supply storage, traveling and administrative costs all add up to become the overhead costs which eventually add up in the manufacturing costs. Setting a budget for these costs and reviewing them constantly could be a measure to keep these costs under control.

- Installing Modern Equipment's

Sometimes to save money, you need to spend some. Investing in equipment to increase productivity doesn't seem a bad idea. You cannot keep using the old machinery and equipment's in today's time and expects it to work wonders for you. As technology advances, better tech keeps hitting the market.

4.5. Methods of increasing productivity

Increasing productivity involves optimizing the efficiency of processes, resources, and systems to achieve higher output with the same or fewer inputs.

Productivity increases when you undertake the following steps that will help you work smarter, faster, and better:

- Establish a morning routine.
- Plan your days and manage your time.
- Take care of your health.
- Work smart, and take breaks.
- Leave room for leisure time.

Best Ways to Increase Productivity

- Create the Perfect Environment

It's important to feel comfortable when you go to work, sit down and open up your task list for the day. If you feel good and relaxed when you work, you'll work better and be more creative. The same goes for your co-workers and employees too. So take steps to create a positive, warm, happy and relaxed environment to work in.

- Take More Breaks

Frequent short bursts of good quality work are better than one long block of work. Studies show that in the case of musical performance, intense and deliberate practice is better than drawn out and unfocused practice. This same approach applies to work too, and if you're taking lots of good quality breaks then you'll find the quality of your work will improve too.

- Find the Best Time of Day

You might not be a 9-5 person. In fact if you're a freelancer you might find that you work best in the evenings or night times. Whenever your most productive time of the day is then try to fit your day around that. Obviously this doesn't work so well if you have to be in the office at

certain times of the day, but perhaps plans your task list around your most productive time of the day instead.

- A Good Diet

Although it's tempting to go out to the cafe for lunch and get that delicious burger, it will wreck your productivity for the afternoon. What you eat throughout the day will affect how you feel and how alert you are, and therefore will have a big effect on your productivity. Perhaps even seek a nutritionist for the best advice on healthy nutrition and the benefits of a popular 3-day diet, etc.

- One Task at a Time

Try to break your task list down in to small actionable items that you can approach one at at time. Looking at the whole list of tasks you've got to complete before your deadline will make you panic as you won't be able to digest everything altogether. It's much better to take one task, address what you need to do, perform the task, complete it, then move on to the next task after a short break.

- Work with Others

It's fun to work with others to achieve a common goal. You'll find yourself spurring one another on and motivating each other. You'll probably find you get more done when you work in a small team than when you work on your own (this may not always be the case for you though). If you work remotely then having video conferencing often will help motivate everyone and bring productivity to the team.

- Reward Yourself!

There are lots of ways you can reward yourself and you'll know the best way. Whatever you do make sure you do it regularly after you achieve your goals and you'll find that the next time a deadline comes up you'll be looking forward to the reward at the end of it.

4.6. Effects of budget and standard costing

Budgeting is a financial planning process that involves setting specific financial targets and allocating resources to achieve those targets.

4.6.1. Effect of budget

The effects of budgeting on an organization are multifaceted, influencing various aspects of financial management and overall business operations. Here are some key effects of budgeting:

A. Goal Setting and Planning:

Effect: Budgeting involves the process of setting specific financial goals and plans for the organization. It provides a roadmap for achieving these goals through the allocation of resources.

B. Resource Allocation:

Effect: Budgets allocate resources, including funds, manpower, and materials, to different departments or projects based on their priority and importance. This ensures that resources are utilized efficiently and in alignment with organizational objectives.

C. Performance Evaluation:

Effect: Budgets serve as benchmarks for evaluating actual performance. By comparing actual results with budgeted figures, organizations can identify areas of success or areas that require improvement.

4.6.2. Standard cost

Standard cost is defined in the CIMA Official Terminology as "'the planned unit cost of the product, component or service produced in a period. The standard cost may be determined on a number of bases. The main use of standard costs is in performance measurement, control, stock valuation and in the establishment of selling prices." From the above definition Standard costs can be said as

- Planned cost
- Determined on a base or number of bases.

Standard costing system is widely accepted as it serves different needs of an organisation. The standard costing is preferred for the following reasons:

i. **Prediction of future cost for decision making:** Standard costs are set after taking all present conditions and future possibilities into consideration. Hence, standard cost is future cost for the purpose of cost estimation and profitability from a proposed project/ order/ activity.

ii. **Provide target to be achieved:** Standard costs are the target cost which should not be crossed by the responsibility centres. Performance of a responsibility centre is continuously monitored and measured against the set standards. Any variance from the standard is noted and reported for appropriate action.

iii. **Used in budgeting and performance evaluation:** Standard costs are used to set budgets and based on these budgets managerial performance is evaluated. This is of two

benefits, one managers of a responsibility centre will not compromise with the quality to fulfil the budgeted quantity and second, variances can be traced with the responsible department or person.

iv. **Interim profit measurement and inventory valuation:** Actual profit can only be known after the closure of the accounts. But an organisation may need to prepare profitability statement for interim periods for managerial reporting and decision making. To arrive at profit figure, standard costs are deducted from the revenue.

Self-check -VI

Part I: True/False

1. Standard costs are the target cost which should not be crossed by the responsibility centres.
2. Actual profit can only be known after the closure of the accounts.
3. Cost Reduction aims at cutting off the unnecessary expenses which occur during the production.
4. Cost control starts with the budgeting process and looks at vendor selection and negotiation

Part –II: fill in the blank space

1. _____is any variances should be addressed straight away to ensure that spending and expenses get back on track.
2. _____are the target cost which should not be crossed by the responsibility centres.
3. _____is the process of identifying, eliminating or reducing unnecessary business expenses in order to increase profits.
4. _____is continuously monitored and measured against the set standards.

Part- III: Give Short Answer

1. Write the difference between budget control and standard cost?
2. List at least five cost reduction techniques
3. List and define benefits of cost control management
4. Briefly write the difference between cost control and cost reduction

Reference

1. Cost accounting for Dummies 2nd edition
2. 4th edition of cost accounting and managerial accounting
3. Cost accounting fundamental 6th edition steven M.Bragg

Developers profile

No	Name	Qualification	Educational background	Region	College	Mobile number	E-mail
1	Kassa Terefe Gelaw	MA	Accounting & Finance	A.A.	Kirkos Manufacturing College	0993298301	kssterefe@gmail.com
2	Remedan Abdurehman	MBA	Accounting & Finance	A. A	GENERAL WINGET PTC	0933233939	Rame.abdu10@gmail.com
3	Sewumehon Anteneh	MSC	Accounting & Finance	A. A	Kirkos Manufacturing College	0948032126	sewumehonanteneh@gmail.com
4	Aynabeba Zewdie	MA	Accounting &Finance	Oromya	Sebeta Polytechnic College	0911724881	Aynabebazewdie81@gmail.com
5	Ejigu Terefe	MA	Accounting &Finance	Oromya	Burayu PTC	0913440478	kenaketejigu@gmail.com