

# *Chapter 2*

**Type of cost, cost assignment,  
methods of cost**

# ***CONTENTS***

## **Chapter 2. Type of cost, cost assignment, methods of cost**

1. Alternative classifications of cost
2. Stages in a costing system
3. Methods of costing inventories

# Learning Objectives

- *Distinguish between direct costs and indirect costs*
- *Explain variable and fixed costs*
- *Describe linear cost functions and three common ways in which they behave*
- *Differentiate between inventoriable costs and period costs*

**REMEMBER.....**

## **Examples of manufacturing costs**

Materials:  
wood, iron,  
paper, etc.

Salaries, wages,  
manufacturing labor

Electric power  
Heat power  
Light power  
Water power  
Telephone line  
Indirect materials  
Lubricants  
Plant maintenance  
Cleaning labour  
Plant rent  
Plant insurance  
Property taxes on plants  
Depreciation of plant  
Depreciation of plant equipment  
Depreciation of plant building  
Property taxes  
Maintenance labor

## 1. Business Function / Value Chain

- a) Research and Development
- b) Design of products, services, or processes
- c) Production or manufacturing
- d) Marketing
- e) Distribution
- f) Customer Service

## 2. Assignment to a cost object

- a) Direct costs
- b) Indirect costs

## 3. Behavior pattern in relation to changes in level of activity or volume

- a) Variable costs
- b) Fixed costs

## 4. Aggregate or average

- a) Total costs
- b) Unit costs

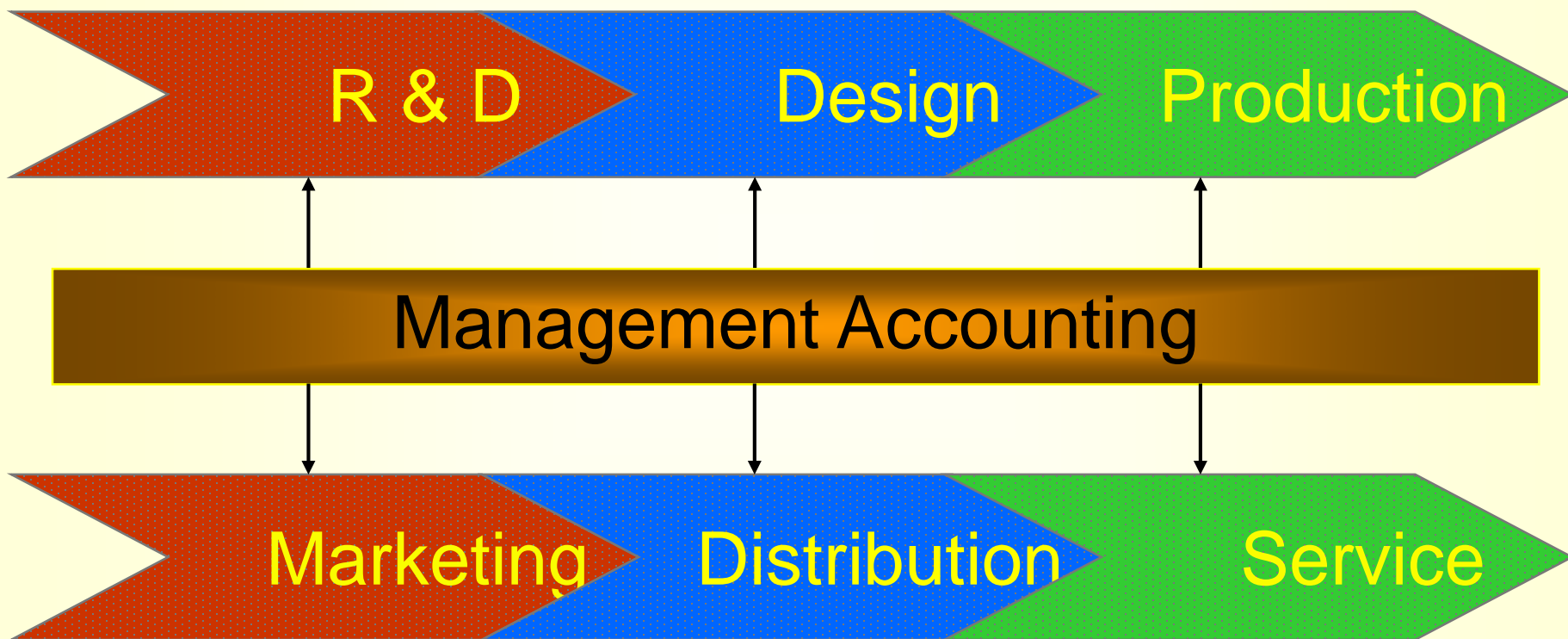
## 5. Assets or expenses

- a) Inventoriable costs
- b) Period costs

## 6. Time-dependent

- a) Actual costs (historical)
- b) Budgeted costs (forecasted, standard)

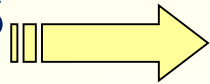
# Value Chain



# Direct and Indirect Costs

Youtube video: Direct Vs Indirect [https://www.youtube.com/watch?v=3SEv1\\_dl86I](https://www.youtube.com/watch?v=3SEv1_dl86I)  
<https://www.youtube.com/watch?v=PT4zQYdQIz4>

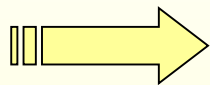
## Direct Costs



**These can be traced to the cost object in an economically feasible (cost-effective) way**

**Example: bottles in a Coca-Cola plant**

## Indirect Costs



**These cannot be traced to the cost object in an economically feasible (cost-effective) way**

**Examples: salaries of supervisors who oversee different soft drink products, electricity, rent**



# Direct and Indirect Costs

## *COST ASSIGNMENT*

### Direct Costs

**Example: Paper on which  
*Sports Illustrated* magazine  
is printed**

### Indirect Costs

**Example: Lease cost for  
Time-Warner building  
housing the senior  
editors of its magazine**

### COST OBJECT

**Example: *Sports  
Illustrated* magazine**

# Careful!

- **Direct and indirect classification depends on the choice of cost object.**
- **A specific cost may be a direct cost of one cost object and an indirect cost of another.**

## Factors Affecting Direct / Indirect Cost Classification

- Cost materiality
- Availability of information-gathering technology
- Operational design

# Cost behavior patterns

## Variable Costs

The total amount of a variable cost changes in accordance with a change in the level of activity.

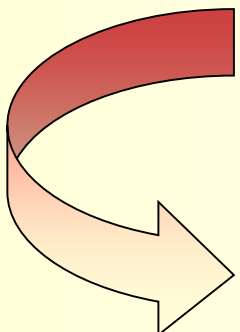
**Example: bottles in a Coca-Cola plant**

## Fixed Costs

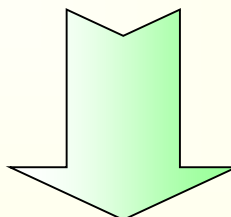
The total amount of a fixed cost does not change in accordance with a change in the level of activity for a given period.

**Example: plant leasing cost**

## What is a cost function?



A mathematical expression that describes how costs change with changes in the level of an activity.


$$y = a + bx$$

*Fixed  
Costs*

*Variable  
Costs*

# Assumptions in Cost-Behavior Estimation

1. Changes in total costs can be explained by changes in the level of a single activity.
2. Cost behavior can be adequately approximated by a linear function of the activity level within the relevant range.

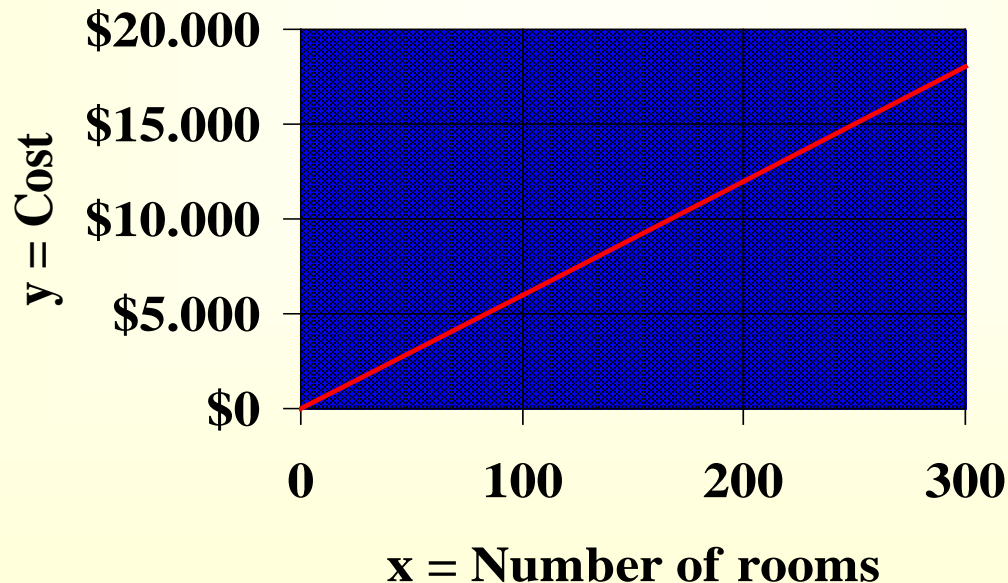
## Example of variable costs

La Playa Hotel offers an airline three alternative cost structures to accommodate its crew overnight:

1. \$60 per night per room

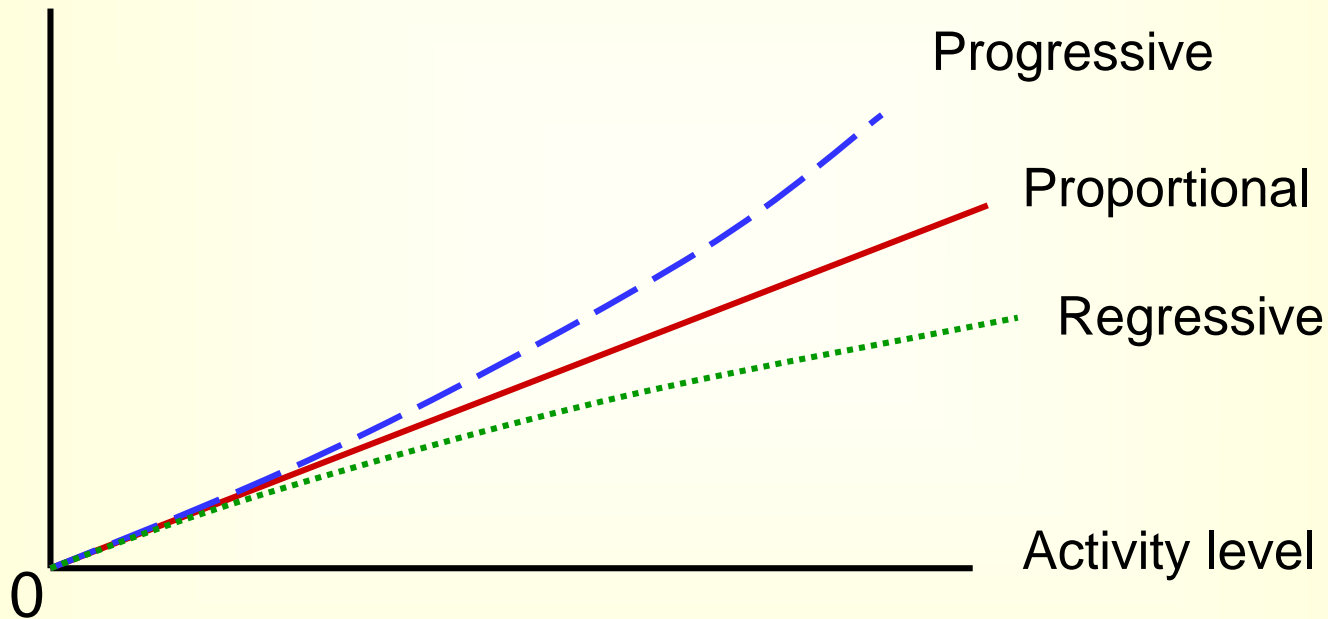
$$y = \$60x$$

Slope of the cost function is \$60.



# Variable costs: proportional, progressive & regressive

Total cost



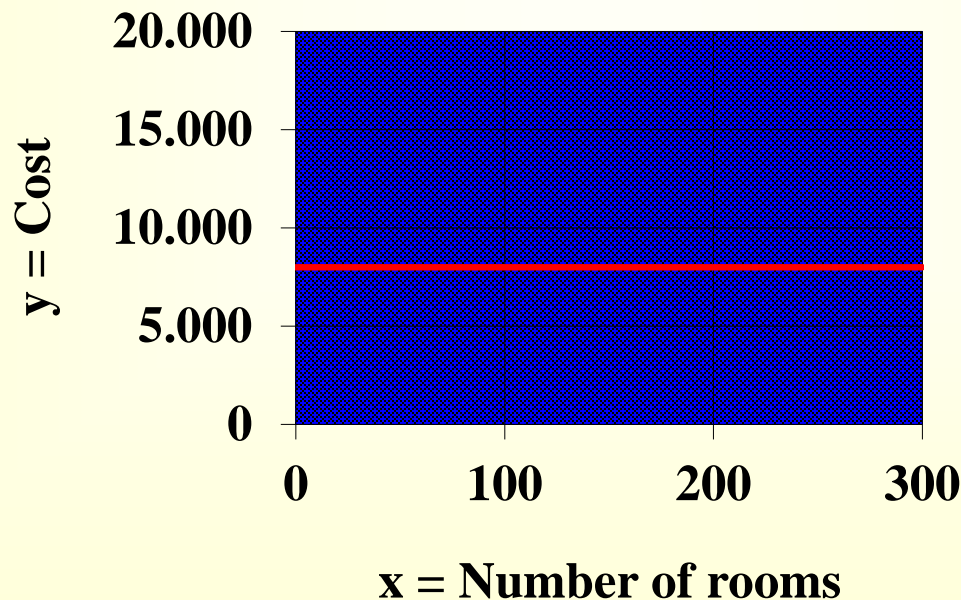
## Example of fixed costs:

2. \$8,000 per month

$$y = \$8,000$$

\$8,000 is called a constant or intercept.

Slope of the cost function is zero.

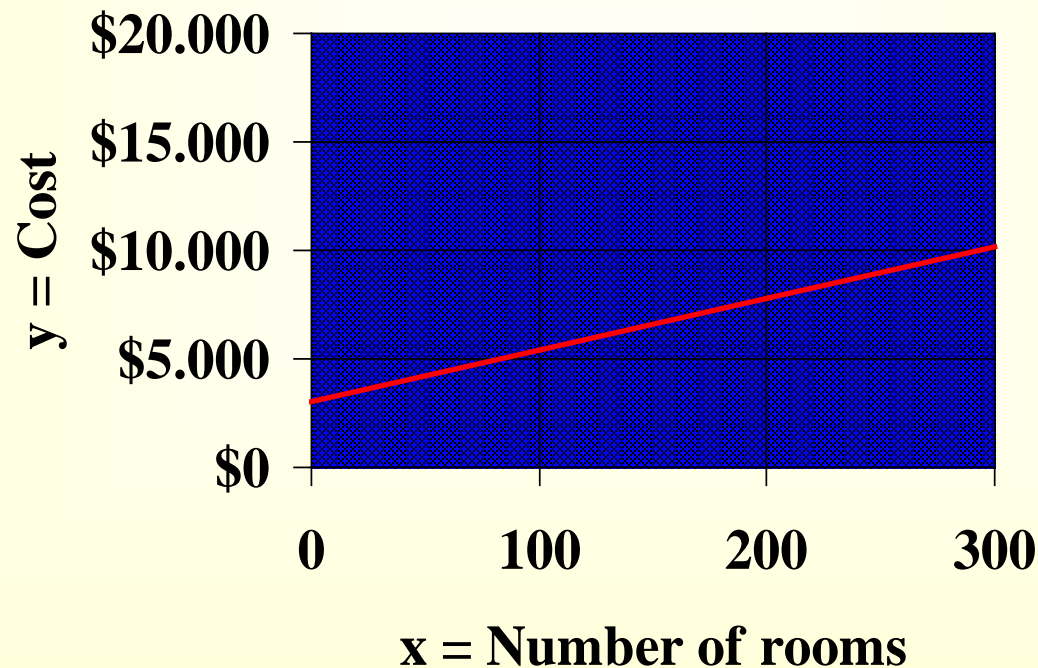




## Example of mixed or semi-variable costs:

3. \$3,000 per month plus \$24 per room

$$y = \$3,000 + \$24x$$



# Nonlinearity and Cost Functions

A nonlinear cost function is a cost function in which the graph of total costs versus the level of a single activity is not a straight line within the relevant range.

Economies of scale

Quantity discounts

Step cost functions

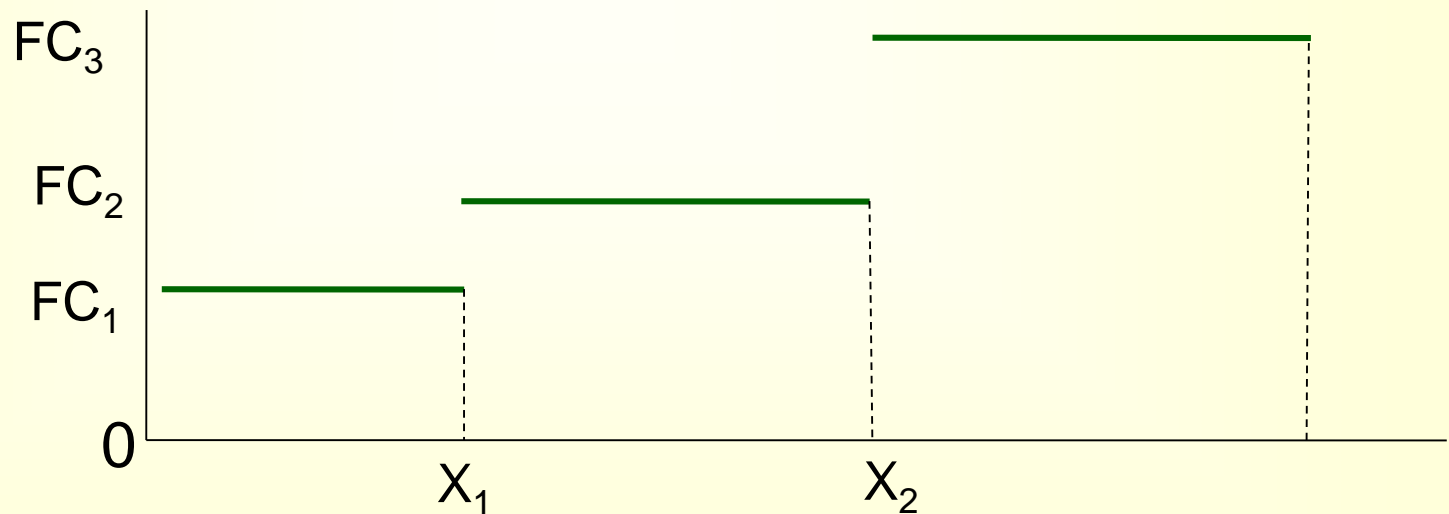
# Nonlinearity and Cost Functions

In advertising, **economies of scale** may enable an advertising agency to double its number of advertisements for less than double the cost.

With larger orders, **quantity** discounts on purchases of direct materials produce a lower cost per unit purchased.

# Nonlinearity and Cost Functions

**A step function** is a cost function in which the cost is constant over various ranges of level of activity but the cost increases by discrete amounts as the level of activity changes from one range to the next.



# Cost Classification and Estimation Function depend on...



Choice of cost object



Time horizon



Relevant range

# Choice of Cost Object

## Example

If the number of taxis owned by a taxi company is the cost object, annual taxi registrations and license fees are examples of variable costs.

If miles driven during a year by a particular taxi is the cost object, registration and license fees for that taxi are examples of fixed costs.



# Time horizon

Whether a cost is variable or fixed with respect to a particular activity depends on the time horizon being considered.

More costs are variable with a longer time horizon. Some costs are typically fixed in the short run but will be variable in the long run.

# Relevant Range

Variable and fixed cost behavior patterns are valid for linear cost functions only within the relevant range.

Costs may behave nonlinearly outside the range.



# Use Unit Costs Cautiously

Generally, total cost amounts should be used in decision-making.

Some decisions need **unit costs** but these should be used cautiously.

Units produced	Variable Cost Per Unit	Total Variable Costs	Total Fixed Costs	Fixed Cost Per Unit	Total Costs	Unit Cost
0	0	0	10,000,000	0	10,000,000	0
100,000	60	6,000,000	10,000,000	100	16,000,000	160
200,000	60	12,000,000	10,000,000	50	22,000,000	110
500,000	60	30,000,000	10,000,000	20	40,000,000	80
800,000	60	48,000,000	10,000,000	12.5	58,000,000	72.5
1,000,000	60	60,000,000	10,000,000	10	70,000,000	70

**Total Variable Costs vary with the number of units produced but Variable Cost Per Unit is constant.**

**Total Fixed Costs are constant but Fixed Cost Per Unit varies with the number of units produced. Total costs and unit cost therefore depend on the number of units produced.**

# Cost Behavior continued

- Variable costs are constant on a per-unit basis. If a product costs 5 \$ of materials each, it stays the same per unit regardless of whether one, ten or a thousand units are produced.
- Fixed costs change inversely with the level of production. As more units are produced, the same fixed cost is spread over more and more units, thus reducing the cost per unit.

# A Cost Caveat

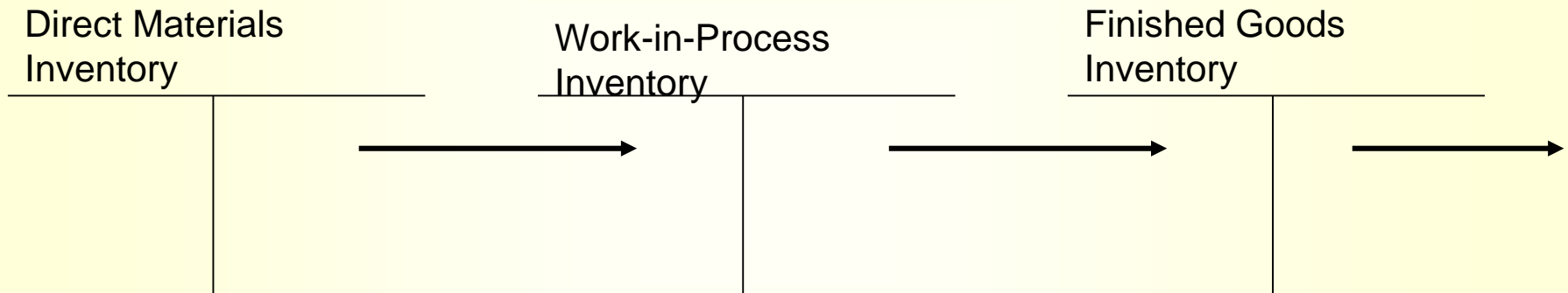
- Unit costs should be used cautiously. Since unit costs change when the level of output or volume changes, it may be more prudent to base decisions on a total dollar basis.
  - Unit costs that include fixed costs should always reference a given level of output or activity.
  - Unit costs are also called average costs.

## Accounting Distinction Between Costs:

- Inventoriable costs are product manufacturing costs. These costs are capitalized as assets (inventory) until they are sold and transferred to Cost of Goods Sold.
- Period costs have no future value and are expensed as incurred.

# Inventoriable and period costs

Manufacturing-sector companies typically have one or more of the following three types of inventories:



- Direct Materials Inventory: resources in-stock and available for use.
- Work-in-Process (or Progress) Inventory: products started but not yet completed. This is often abbreviated as WIP.
- Finished Goods Inventory: products completed and ready for sale.

# Types of Product Costs

Product Costs are also known as Inventoriable Costs:

- Direct Materials
- Direct Labor
- Indirect Manufacturing, i.e. factory costs that are not traceable to the product. Other names for this type of cost include Manufacturing Overhead costs or Factory Overhead costs.

# Period Costs

Period costs are all costs in the income statement other than the costs of the goods sold.

Period costs are recorded as expenses for the accounting period in which they are incurred.

## ***TIME-DEPENDENT COSTS***

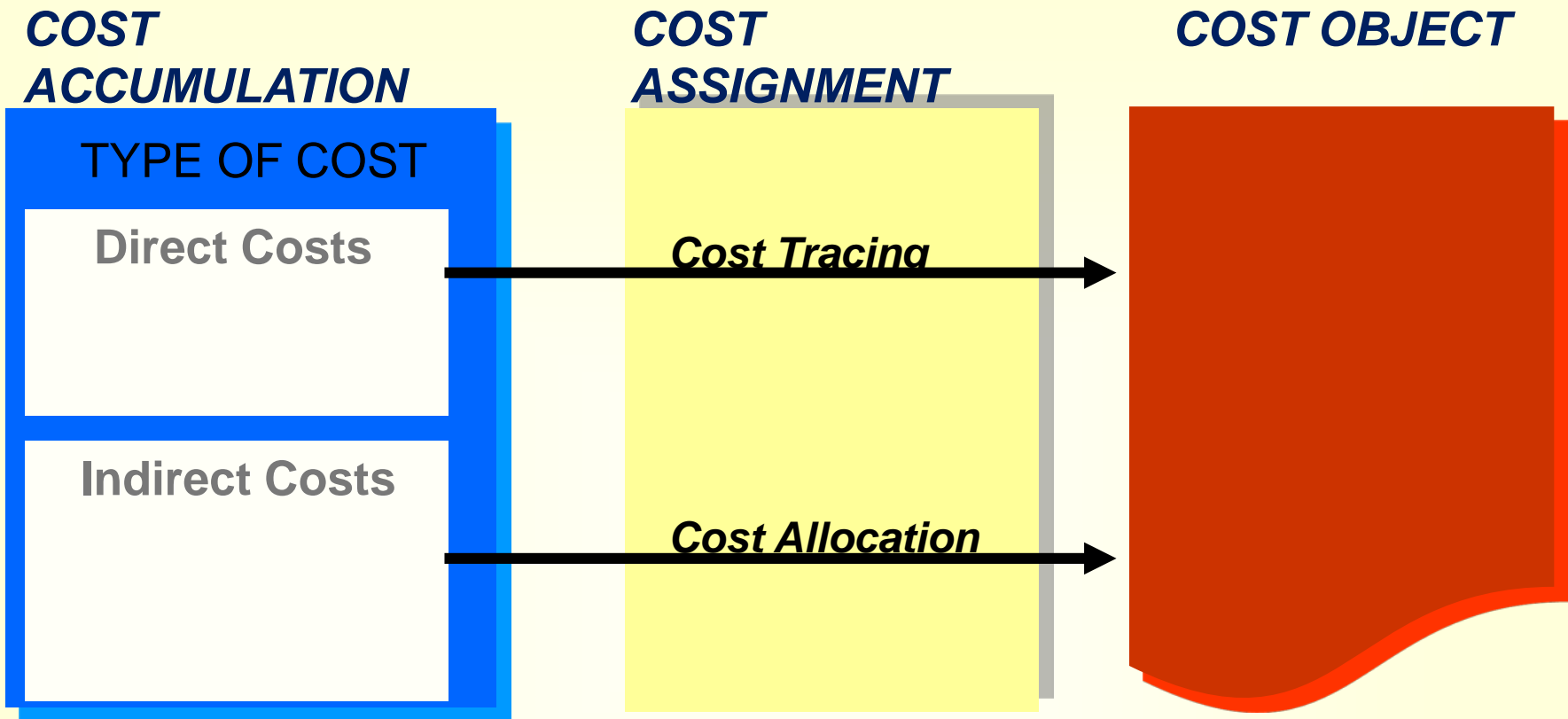
Actual Costing

*This is calculated after the (historical or real) cost is used.*

Standard Costing

*This is calculated before the (forecasted or budgeted) cost is used.*





**Cost accumulation:**  
a collection of cost data  
in an organized manner

**Cost assignment:** a general term that involves  
allocating costs to a cost object. It includes:

- ❑ **Tracing** accumulated costs that have a **direct** relationship with the cost object.
- ❑ **Allocating** accumulated costs that have an **indirect** relationship with a cost object.

<p><b>Job-costing system</b></p>	<p><i>Each job is unique. (Manufactured by small batch, product tailored to customer's specific needs).</i></p>	
	<p><b>Process-costing system</b></p>	<p><i>Mass production of standardized products or services</i></p>
	<p><b>Joint product and by-products</b></p>	<p><i>The production of one product makes the production of other products inevitable.</i></p>
<p><b>Full / absorption costing</b></p>	<p><i>With this system, all the variable manufacturing costs plus fixed manufacturing overheads are allocated to products.</i></p>	
	<p><b>Variable costing</b></p>	<p><i>With this system, only variable manufacturing costs are assigned to products.</i></p>
	<p><b>Activity-Based Costing (ABC)</b></p>	<p><i>With this system, activities are used to assign costs to other cost objects such as products or services.</i></p>
	<p><b>Standard Costs</b></p>	<p><i>This system uses expected or budgeted costs rather than actual costs. The variances (the difference between the standard costs and the actual costs) are then recorded periodically.</i></p>



**End of Chapter 2**

***Any questions?***

***Thank you for your attention.***