Topic 3:

An introduction to cost terms and concepts

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3.1. Costs and cost terminology.

3.2. Direct and indirect costs.

3.3. Cost classification by nature.

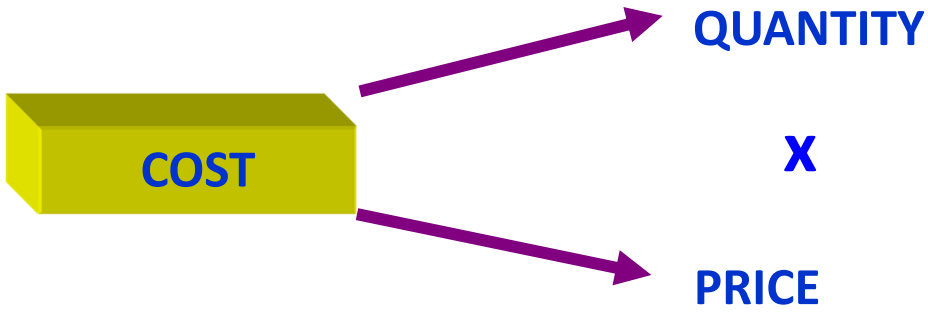
3.4. Variable and fixed costs. Separation of costs into their variable and fixed elements.

3.5. Relevant and avoidable costs.

3.6. Cost assignment.

3.1: COSTS AND COST TERMINOLOGY.

Economic sacrifice associated with the use of economic goods in the production process.



3.2: DIRECT AND INDIRECT COSTS.

COST OBJECT: Any activity for which a separate measurement of costs is necessary.

DIRECT COSTS → They can be specifically and exclusively identified with a particular cost object.

INDIRECT COSTS → They cannot be identified specifically and exclusively with a given cost object.

3.3: COST CLASSIFICATION BY NATURE.

- **DIRECT MATERIAL COSTS: acquisition costs of all materials that eventually become part of the cost object and can be traced to the cost object in an economically feasible way .**
- **DIRECT MANUFACTURING LABOUR COSTS: compensation of all manufacturing labour that can be traced to the cost object in an economically feasible way.**
- **INDIRECT MANUFACTURING COSTS (OVERHEADS): all manufacturing costs that are related to the cost object but cannot be traced to that cost object in an economically feasible way.**

3.4: VARIABLE AND FIXED COSTS.

- **FIXED COSTS: remain constant over wide ranges of production level for a specified time period.**
- **VARIABLE COSTS: vary in direct proportion to the production level (doubling the level of activity will double the total variable cost).**
- **MIXED COSTS: They include both a fixed and a variable component.**

SEPARATION OF COSTS INTO THEIR VARIABLE AND FIXED ELEMENTS.

There are different techniques that can be used to separate costs in this way:

1. HIGH-LOW METHOD: examining past costs and activity, selecting the highest and lowest activity levels and comparing the changes in costs that result from the two levels. Assume that the following activity levels and costs are extracted:

	Volume of production (units)	**Total costs (€)**
Lowest activity	46	700
Highest activity	100	1,350

If variable costs are constant per unit and fixed costs remain unchanged, the increase in costs will be due entirely to an increase in variable costs:

$$1{,}350 - 700 = (100 - 46)\ x\ \text{vc}$$

Variable cost per unit: €12.04 per unit

$$700 = (46\ x\ 12.04) + \text{FC}$$

Fixed costs: €146.30

2. REGRESSION ANALYSIS METHOD: statistical method that measures the average amount of change in the dependent variable associated with a unit change in one independent variable (the dependent variable is total costs and the independent variable is the volume of production).

The least-squares technique determines the regression line by minimizing the sum of the squared vertical differences from the data points to the regression line.

If the estimated cost function is: $Y = 12.50 X + 150.23$

- The estimate of the slope coefficient (b) indicates that costs vary at the average amount of €12.50 for every manufactured unit.
- The estimate of the constant indicates that FC = €150.23.

This method computes a formal measure of goodness of fit, called the coefficient of determination (R^2), which measures the percentage of variation in Y explained by the independent variable (X).

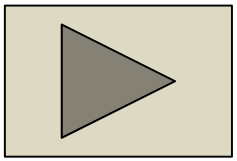
This method is more accurate than the high-low method because regression analysis estimates costs using information from all observations, whereas the high-low method uses information from only two observations.

3.5: RELEVANT AND AVOIDABLE COSTS.

For decision-making, costs and revenues can be classified according to whether they are relevant to a particular decision.

RELEVANT COSTS → They are future costs that will change because of a particular decision.

IRRELEVANT COSTS → They will not be affected by the decision.



Task: try to solve problem 3.1.

Non-routine decisions:

• Short-term decisions: they involve a relatively short time horizon from the commitment of funds to the receipt of the benefits:

- ✓ Product mix decisions.
- ✓Pricing decisions.

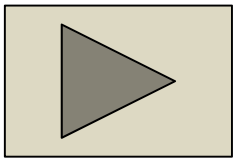
• Capital decisions: a significant period of time elapses between the commitment of funds and the receipt of the benefits. The discounted cash flow (DCF) analysis is used.

PRODUCT MIX DECISIONS WHEN CAPACITY CONSTRAINTS DO NOT EXIST: Fixed costs will remain the same, hence they are irrelevant for decisions suchs as accepting or rejecting a one-time order.

PRODUCT MIX DECISIONS WHEN CAPACITY CONSTRAINTS EXIST:

When sales demand is in excess of a company's productive capacity, the resources responsible for limiting the output should be identified. These scarce resources are known as LIMITING FACTORS.

Within a short-term time period it is unlikely that constraints can be removed and additional resources acquired. When limiting factors apply, profit is maximized when the greatest possible contribution to profit is obtained each time the scarce or limiting factor is used.



Task: try to solve problem 3.2.

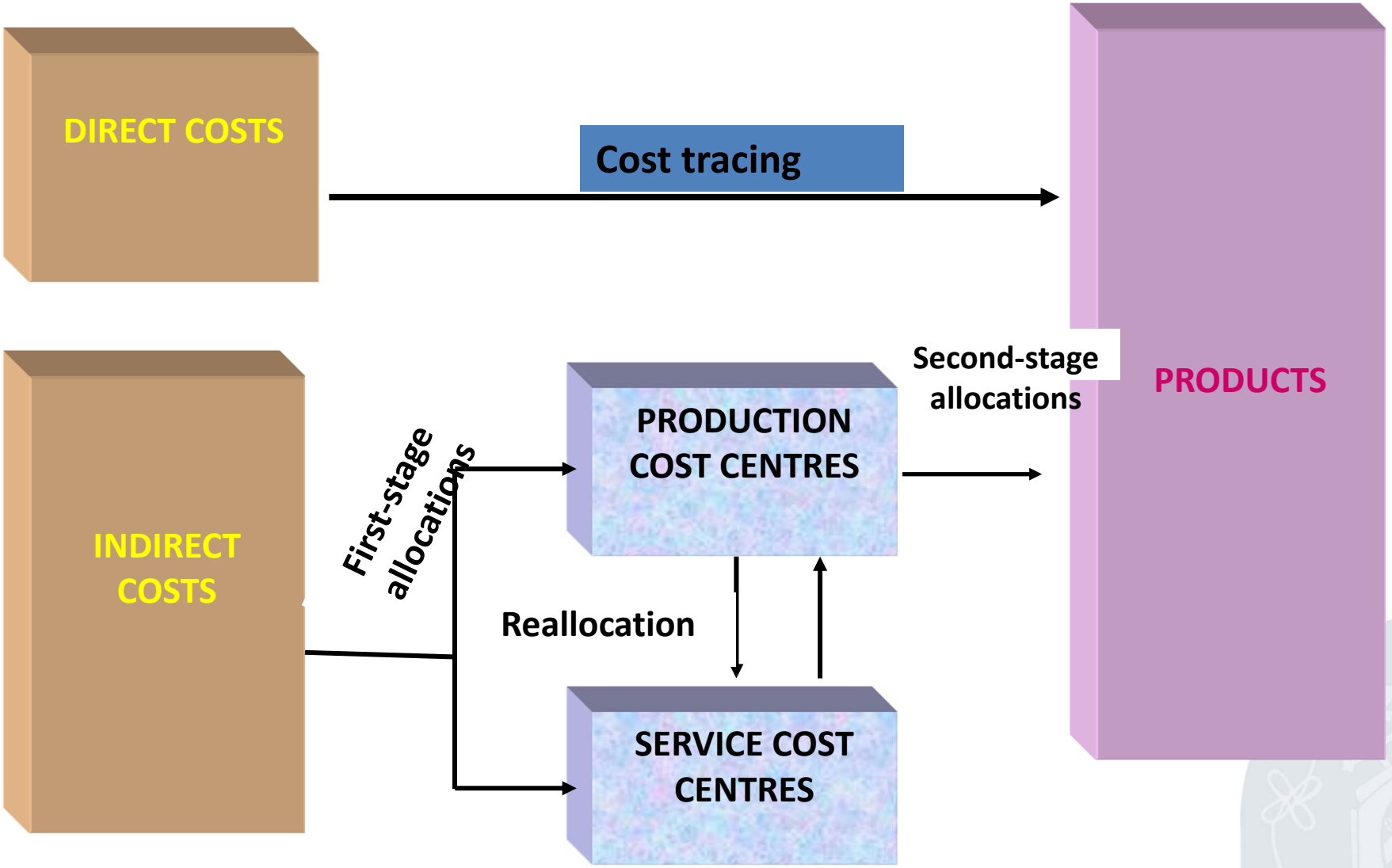
PRICING DECISIONS:

Pricing decisions will be influenced by the cost of the product, the actions of competitors and the extent to which customers value the product.

3.6: COST ASSIGNMENT.

Indirect costs (overheads) cannot be identified specifically and exclusively with a given cost object.

They comprise a sizeable percentage of the costs assigned to products.


DIRECT COSTS
Cost tracing
PRODUCTS
INDIRECT COSTS
First-stage allocations
PRODUCTION COST CENTRES
Second-stage allocations
Reallocation
SERVICE COST CENTRES

THE TWO-STAGE ALLOCATION PROCESS:

1. Indirect costs (or overheads) are allocated to cost centres (or cost pools).
2. Costs accumulated in cost centres are allocated to products using selected **allocation bases.**

COST CENTRE OR COST POOL: location to which overheads are initially assigned.

HOW TO CHOOSE WHICH COST CENTRES (OR COST POOLS) TO ALLOCATE COSTS TO:

•A cost centre / pool should be homogeneous: all the activities whose costs are included in the pool should have the same or similar cause-and-effect relationship with the cost-allocation base.

•The basis to use for allocating indirect costs must bear a relationship to the services provided by the cost centre.

ALLOCATION BASES:

- An allocation base is a measurement of a characteristic used to distribute indirect costs of a cost pool to products.
- For accurate assignment of indirect costs to products, cause-and-effect allocation bases should be used.

APPLYING THE TWO-STAGE ALLOCATION PROCESS REQUIRES 4 STEPS:

1. Allocating all manufacturing overheads to both production and service cost centres.
2. Reallocating the costs assigned to service cost centres to production cost centres.

STAGE 1

3. Computing separate overhead rates for each production cost centre.
4. Assigning production cost centre overheads to products.

STAGE 2

STEP 1: ALLOCATING ALL MANUFACTURING OVERHEADS TO BOTH PRODUCTION AND SERVICE COST CENTRES.

It requires the preparation of an overhead analysis sheet.

There are costs which can be directly assigned to cost centres .

There are other costs which cannot be traced directly to the cost centres, so they must be allocated to cost centres using appropriate **first-stage allocation bases.**

After this first step, all manufacturing overheads have been assigned to production and service cost centres.

STEP 2: REALLOCATING THE COSTS PREVIOUSLY ASSIGNED TO SERVICE COST CENTRES TO PRODUCTION COST CENTRES.

SERVICE COST CENTRES: they exist to provide services of various kinds to other units within the organization. They do not deal directly with products, so it is not possible to allocate their costs to products.

PRODUCTION COST CENTRES: they actually work on the products.

After this step, all overheads have been assigned to production cost centres.

The overhead allocation procedure is more complicated where service cost centres serve each other.

When such interactions occur, the allocation process can become complicated, because each service department begins to accumulate costs from other service cost centres from which it receives services and these must be reallocated back to the user department.

STEP 3: COMPUTING SEPARATE OVERHEAD RATES FOR EACH PRODUCTION COST CENTRE.

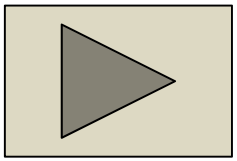
An allocation base (or cost driver) should be chosen for each production centre. The most frequently used allocation bases are based on the amount of time products spend in each production centre.

The overhead rates are calculated in this way:

$$\frac{\text{Cost centre overheads}}{\text{Cost centre direct labour hours/machine hours}}$$

STEP 4: ASSIGNING PRODUCTION COST CENTRE OVERHEADS TO PRODUCTS.

The final step is to allocate the overheads to products through the production cost centres, using the overhead rates calculated in Step 3.



Task: try to solve problem 3.3.