MANAGERIAL ACCOUNTING

2nd topic

COST CLASSIFICATION
Structure of the lecture 2

2.1 Definition of cost and related terms
2.2 Types of cost classification
2.3 Identification of cost classification
2.4 Reporting manufacturing activities
2.1 Definition of cost

Cost

resource sacrificed or forgone to achieve a specific objective (an organization’s goal).

Example:
Total cost for product = material + labour + overhead.

Cost objects

anything for which a separate measurement of costs is desired.

(department, product, service, project, customer, brand category, activity, program ...
2.1 Definition of cost

**Cost driver (cost generator, cost determinant)**

any factor that affects costs.

*Example*: number of direct-labour hours in manufacturing; number of sales personnel

**Cost systems**

are designed to collect, summarize and, report costs for the purpose of product costing, inventory valuation, or operational control/performance measurement.
2.2 Types of cost classifications

Costs are classified differently, depending on mngrs’ needs (different costs for different purposes).

Types of cost classifications

- Classification by behaviour
- Classification by traceability (assignment to a cost object)
- Classification by controllability
- Classification by relevance (avoidable x unavoidable)
- Classification by function
- Cost in financial statements
- Classification by manufacturing-cost system
- Classification by business function of the value chain
- Classification by aggregate or average
- Concept of incremental and marginal costs, ...
2.2 Types of cost classifications

Classification by behaviour: FIXED x VARIABLE

**Fixed cost**
- does not change with changes in a cost driver (the volume of activity)
  (i.e. *straight-line depreciation on equipment*)

**Variable (marginal) cost**
- It changes in total in proportion to changes in a cost driver (the volume of activity)
  (i.e. *sales commissions computed as a percent of sales revenue*)

When cost items are combined, total cost can be fixed, variable, or mixed (semi-fixed, semi-variable).
(i.e. *equipment rental: amount of service – fixed; amount of usage – variable.*)

**Usage:** cost-volume-profit analyses, short-term decision making.
2.2 Types of cost classifications

Classification by behaviour: FIXED x VARIABLE

Major assumptions:

1. Costs are defined as variable or fixed with respect to a specific cost object.
2. The time span must be specified.
3. Total costs are linear.
4. There is only one cost driver.
5. Variations in the level of cost driver are within a relevant range, in which a specific relationship between cost and driver is valid.
2.2 Types of cost classifications

Classification by traceability: DIRECT x INDIRECT

Direct costs
when cost is traced to a cost object (product, process, department, customer) to which costs are assigned in an economically feasible (cost-effective) way. Direct costs are incurred for the benefit of one specific cost object
(material and labour costs usually, when cost object is product; when it is 1 department: salaries, equipment, materials, depreciation).

Indirect costs
they related to the particular cost object but cannot be traced to it in an economically feasible (cost-effective) way, they are incurred for the benefit of more than one cost object. They are allocated to the cost object using a cost allocation method.
(2 or more departments, factory: accounting, administration, rents, managers salaries, light and heat, internal audit, intranet,...).

Usage: cost assignment (cost tracing and cost allocation to the chosen cost object)
2.2 Types of cost classifications

**Factors affecting DIRECT/INDIRECT cost classifications**

1. Materiality of the cost in question.
   
   *(courier charges for delivering a package: direct cost; the cost of the invoice paper for delivery service: indirect cost)*

2. Available information-gathering technology.

3. Design of operations.


!!! One particular cost may be both direct and indirect!!!

(It depends on the choice of the cost object)
2.4 Types of cost classifications

Classification by controllability:

**CONTROLLABLE x NOT CONTROLLABLE**

Whether a *cost is controllable or not* depends on the *employee’s responsibilities*; is referred to as hierarchical levels in management of the company.

**Example:**

*Senior manager* controls costs of investment in land, buildings, and equipment.

*Supervisor* controls daily expenses such as supplies, maintenance, and overtime.

**Usage:** for assigning responsibility to and evaluating managers.
2.4 Types of cost classifications

Classification by relevance:
**SUNK COST x OUT-OF-POCKET COST x OPPORTUNITY COST**

**Sunk cost (unavoidable cost)**
- has already been incurred and cannot be avoided or changed. It is **irrelevant** to future making financial decisions.
  
  *(i.e. cost of a company’s office equipment previously purchased).*

**Out-of-pocket cost (avoidable cost)**
- requires a future outlay of cash and is **relevant** for decision making; cost that may be saved by not adopting a given alternative.
  
  *(future purchases of equipment).*

**Opportunity cost**
- is the potential benefit lost by choosing a specific action from two or more alternatives. It is **not recorded** by the accounting system.
  
  *(taking on the new contract will result in a lost profit contribution of the present production – opportunity cost should be included when negotiating for the new contract)*
2.4 Types of cost classifications

Classification by function:
PRODUCT COST x PERIOD COST

Product costs
are costs capitalized as inventory, which refer to expenditures necessary and integral to finished products. They pertain to activities carried out to manufacture the product. They are assigned to inventory in the balance sheet.

(period material + direct labour + overhead)

Period costs
are „expensed“ – refer to expenditures identified more with a time period than with finished products. They pertain to activities that are not part of the manufacturing process. They are expensed in the income statement.

(selling and general administrative expenses)

Usage: interpreting a manufacturing statement.
2.4 Types of cost classifications

Classification by financial statements:
CAPITALIZED COST x NONCAPITALIZED COST

Capitalized costs
are first recorded as an assets (capitalized) when they are incurred. These costs are presumed to provide future benefits to the company.

(costs to acquiring new computer)

Non-capitalized costs
are recorded as expenses of the accounting period when they are incurred.

(salaries paid to marketing personnel, monthly rent paid for administrative offices)

Usage: interpreting a financial statement.
2.2 Types of cost classifications

PRODUCT and PERIOD COSTS in financial statements

- Non-manufacturing costs – *Period costs* (expenses)
- Year 20X1 Cost incurred
- Manufacturing costs – *Product costs* (inventory)
- Inventory produced but not sold in 20X1
- Inventory sold in year 20X1
- Income Statement, 31.12.20X1
  - Operating expenses
  - Cost of inventory sold
- Balance Sheet, 31.12.20X1
  - Inventory:
    - material
    - work in process
    - finished products
    - merchandise
2.2 Types of cost classifications

Classification in manufacturing activities
PRIME x CONVERSION COSTS

Prime costs (= direct material + direct labour costs)
– expenditures directly associated with the manufacture of finished products.

Conversion costs (= direct labour + manufacturing overhead)
– expenditures incurred in the process of converting raw materials into finished products.
# 2.2 Types of cost classifications

*Classification by business function of the value chain*

<table>
<thead>
<tr>
<th>Business function</th>
<th>Cost driver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and development</td>
<td>• number of research projects</td>
</tr>
<tr>
<td></td>
<td>• personnel hours on a project</td>
</tr>
<tr>
<td></td>
<td>• technical complexity of projects</td>
</tr>
<tr>
<td>Design of products, services, and processes</td>
<td>• number of products in design</td>
</tr>
<tr>
<td></td>
<td>• number of parts per product</td>
</tr>
<tr>
<td></td>
<td>• number of engineering hour</td>
</tr>
<tr>
<td>Production</td>
<td>• number of units produced</td>
</tr>
<tr>
<td></td>
<td>• direct manufacturing labour costs</td>
</tr>
<tr>
<td></td>
<td>• number of setups</td>
</tr>
<tr>
<td></td>
<td>• number of engineering change orders</td>
</tr>
<tr>
<td>Marketing</td>
<td>• number of advertisements run</td>
</tr>
<tr>
<td></td>
<td>• number of sales personnel</td>
</tr>
<tr>
<td></td>
<td>• sales dollars</td>
</tr>
<tr>
<td>Distribution</td>
<td>• number of items distributed</td>
</tr>
<tr>
<td></td>
<td>• number of customers</td>
</tr>
<tr>
<td></td>
<td>• weight of items distributed</td>
</tr>
<tr>
<td>Customer service</td>
<td>• number of service calls</td>
</tr>
<tr>
<td></td>
<td>• number of products serviced</td>
</tr>
<tr>
<td></td>
<td>• hours spent servicing products</td>
</tr>
</tbody>
</table>
2.2 Types of cost classifications

Classification by AGGREGATE x AVERAGE cost

Accounting systems typically report both total-cost (aggregate) and unit-cost (average) numbers.

Unit cost is computed by dividing some total cost by some number of units.

( €980,000 of manufacturing costs were incurred to produce 10,000 units of finished products: Unit cost = €98).

Usage: assignment of total costs for the income statement and balance sheet

(8,000 units are sold; 2,000 units remain in ending inventory)
2.2 Types of cost classifications

Concept of INCREMENTAL x MARGINAL cost

Incremental (differential) costs are the difference between the costs of each alternative action that is being considered. They result from a group of additional units of outputs.

(We have to options: 1. no increase in the production; 2. increase by 20%. If “2.” is chosen, there are totally added (incremental, differential) cost €150,000).

Marginal costs represent the additional cost of one extra unit of output.

Usage: in business comparing two alternatives and their impact in total. Marginal costs are mostly used for explanation of the economic phenomena by theoretical economists.
2.3 Identification of cost classification

Cost can be classified using any one or combination of the different means. There is necessary being able to identify:

- **Activity** (for behaviour)
- **Cost object** (for traceability)
- **Management hierarchical level** (for controllability)
- **Opportunity cost** (for relevance)
- **Benefit period** (for function).
2.3 Identification of cost classification

- Example of multiple cost classifications:

<table>
<thead>
<tr>
<th>Cost item</th>
<th>By behaviour</th>
<th>By traceability</th>
<th>By function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine</td>
<td>Variable</td>
<td>Direct</td>
<td>Product</td>
</tr>
<tr>
<td>Wages of assembly workers</td>
<td>Variable</td>
<td>Direct</td>
<td>Product</td>
</tr>
<tr>
<td>Advertising</td>
<td>Fixed</td>
<td>Indirect</td>
<td>Period</td>
</tr>
<tr>
<td>Salary of production manager</td>
<td>Fixed</td>
<td>Indirect</td>
<td>Product</td>
</tr>
<tr>
<td>Office depreciation</td>
<td>Fixed</td>
<td>Indirect</td>
<td>Period</td>
</tr>
</tbody>
</table>
2.4 Reporting manufacturing activities

**Balance Sheet items:**

**Raw material**

is used in making products directly and indirectly (direct x indirect material). *Materiality principle*: some direct materials are classified as indirect when their costs are low (insignificant) – keeping detailed records is not cost beneficial.

**Work in process, semi-finished products**

are products being manufactured but not yet completed.

**Finished products**

consists of completed products ready for sale.
2.4 Reporting manufacturing activities

**Income Statement items:**

**COST OF SOLD PRODUCTION:**

**Direct material costs**

are the expenditures for direct materials that are separately and readily traced through the manufacturing process to finished products.

*Example of manufacturing the mountain bikes: tires, seat, frame, pedals, brakes, cables, gears, handlebars.*

**Direct labour**

refers to the efforts of employees who physically convert materials to finished products. Costs of wages and salaries are separately and readily traced through the manufacturing process to finished products.

*labour costs of welding, painting, forming*
2.4 Reporting manufacturing activities

**Income Statement items:**

**COST OF SOLD PRODUCTION:**

**Factory overhead**

Involves components or activities that support the manufacturing process, but are not direct material or direct labour.

Such costs are the expenditures for factory overhead that cannot be separately or readily traced to finished products. They include indirect materials and indirect labour, cost not directly traceable to the product.

*paid overtime, maintenance of the factory, supervision of the employees, repairing of the equipment, water-gas-electricity, manager’s salary, rents, depreciations of buildings and equipment, accounting and legal service.*

Factory overhead *does not include* selling and administrative expenses.
2.4 Reporting manufacturing activities

FLOW OF MANUFACTURING ACTIVITIES:

1. **Materials activity**
   
   Beginning raw material + acquisition additional raw material = total raw material available for use in production

2. **Production activity**
   
   Beginning work in process + used raw material + used direct labour + used factory overhead = partly finished, partly unfinished

3. **Sales activity**
   
   Beginning finished products + newly completed units = total finished product available for sale in the current period.
2.4 Reporting manufacturing activities

MANUFACTURING STATEMENT

is used for plans and control of the company’s manufacturing activities. It is prepared monthly, weekly, or even daily. It is not general-purpose financial statement. It includes:

1. Direct materials available for use; used
2. Direct labour cost for period
3. Overhead – each important factory overhead item and its cost
4. Cost of production manufactured (completed) = total manufacturing cost (1-3) + beginning work in process – ending work in process