



# FINANCIAL and MANAGEMENT ACCOUNTING

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# Learning Objectives:

- On completion of the management accounting module of the course, students:
  - will be able to understand the basic concepts management accounting,
  - will be familiar with current trends applied internationally,
  - will have the skills to use management accounting techniques, tools and methods in practice,
  - will be able to select the most suitable management accounting method, tool or technique to extract and process accounting information for decision making.



# Course Outline

Lecture	Topic	
5	Introduction to cost management – product costing concepts and systems.	ch. 1, 2 and 3
6	Activity based costing.	ch. 11
7	Budgeting and financial planning.	ch. 14
8	Break-Even and short-term decision analysis.	ch. 8 and ch. 10

The basic textbook for the management accounting module for this course is:

- Horngren, C.T., Bhimani, A., Datar, S.M. and Foster, G. (2012). Management and cost accounting. Prentice Hall, 5<sup>TH</sup> eds. (or newer edition).

Besides the above textbook, the educational material of the course includes power point presentations, exercises and any other educational material distributed within the class or via e-class.



# Marking Scheme

At the end of the semester students will sit an exam (which will consist of two modules: one for financial accounting and the other one for management accounting). They, also, will have to prepare two assignments (one for financial accounting and the other for management accounting).

The deadline of assignment: exam day!

The final grade is determined by the following algorithm:

$$70\% \times \text{Exam Grade} + 30\% \times \text{Assignment Grade}$$

**Note:** a student is required to receive at least 50% (pass) of the corresponding mark of both exam modules and assignments.



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# Financial versus Management Accounting



# What is Accounting?

Process of

- identifying,
- measuring,
- accumulating,
- analyzing,
- preparing,
- interpreting, and
- communicating

**information** to meet the needs of the intended audience

Two main types:

- Financial Accounting
- Management Accounting





# Financial and Management Accounting

- Financial accounting focuses on **external reporting** that is directed by authoritative guidelines. Organizations are required to follow these guidelines in their financial reports to outside parties.
- Financial accounting is guided by **prescribed accounting principles and regulatory frameworks** (e.g., IFRS, US GAAPs, etc.). These principles define the set of revenue and expense measurement rules and the types of item that are classified as assets, liabilities or owners' equity in balance sheets.
- Management accounting measures and reports financial information as well as other types of information that **are intended primarily to assist managers in fulfilling the goals of the organization.**
- A management accounting system is an important facet of **overall organizational control**



# Financial and Management Accounting

- Management accounting focuses on the identification, generation, presentation, interpretation and use of relevant information relevant to:
  - inform strategic decisions and formulate business strategy;
  - plan long, medium and short-term operations;
  - determine capital structure and fund that structure;
  - design reward strategies for executives and shareholders;
  - inform operational decisions;
  - control operations and ensure the efficient use of resources;
  - measure and report financial and non-financial performance to management and other stakeholders;
  - implement corporate governance procedures, risk management and internal controls (CIMA 2005).





# Differences between Financial and Management Accounting

- **Regulations.** Management accounting reports are generally prepared for internal use and no external regulations govern their preparation. Conversely, financial accounting reports are generally required to be prepared according to accounting regulations and guidelines imposed by law and the accounting profession.
- **Range and detail of information.** Management accounting reports may encompass financial, non-financial and qualitative information which may be very detailed or highly aggregated. Financial accounting is usually broad based, lacking detail and intended to provide an overview of the position and performance of an organization over a time period. It tends to focus on financial information.



# Differences between Financial and Management Accounting

- **Reporting interval.** Management accounting reports may be produced frequently – on an hourly, daily or weekly basis, possibly to span several years. The interval covered by management accounting information will be dictated by the decision-making and control needs of the information users. Conversely, financial accounting reports are produced annually. Some large companies also produce semi-annual and quarterly reports.
- **Time period.** Management accounting reports may include historical and current information but also often provide information on expected future performance and position of an organization for the past period. They tend to be backward-looking.



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# Introduction to Cost Elements in Shipping



# Costing System, Cost and Cost Object

- A **costing system** is the systematic procedure of categorizing, aggregating and properly allocating the total expenditures in order for the cost of a service, a product, a facility or another cost object to be calculated.
- Accountants usually define **cost** as a resource sacrificed or forgone to achieve a specific objective.
- Managers often want to know how much a certain thing (such as a new product, a machine, a service or a process) costs. We call this 'thing' **cost object**, which is anything for which a separate measurement of costs.



# Illustrations of Cost Objects

<b>Cost object</b>	<b>Illustration</b>
Product	An eighteen-speed bicycle
Service	An airline flight from Paris to Dubai
Project	An airplane assembled by Airbus for BA
Customer	All products purchased by Rolls-Royce (the customer) from Lucas
Brand category	All soft drinks sold by a Pepsi-Cola bottling company with 'Pepsi' in their name
Activity	A test to determine the quality level of a television set
Department	A department within a government environmental agency that studies air emissions standards
Programme	An athletic programme of a university



# The Classification of Costs in Shipping

- Three broad categories:
  - Vessel's cost
    - Fuel consumption, number of crew, physical condition
  - The cost of bought in items
    - Bunkers, consumables, crew wages, ship repairs, interest rates
  - Management efficiency
    - Administrative overheads, operational efficiency

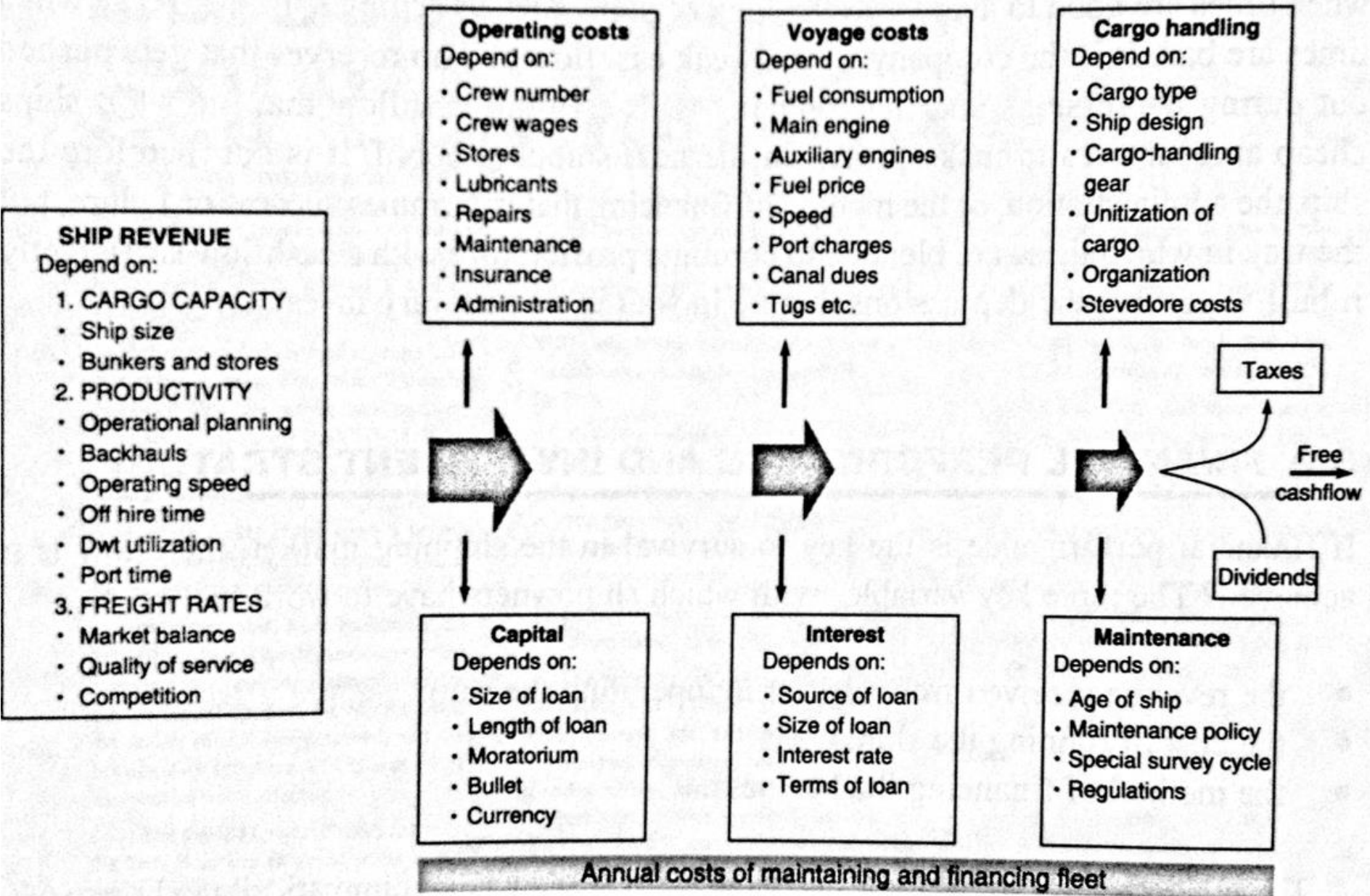


# Basic Categories of Operating Costs in Shipping

- Crew wages
- Other crew
- Lubricants
- Stores
- Spares
- Repair and Maintenance
- Hull and Machinery Insurance (H&M)
  - Insurance in respect of third party liabilities and expenses arising out of ownership or operating of ships
- Protection and Indemnity insurance (P&I)
  - Insurance against vessel damage (e.g. total loss, salvage expenses, vessel going missing, war risks)
- Management Fees
- Drydock

Moore Stephens  
2016 Future operating cost  
survey

## Annual costs of operating fleet







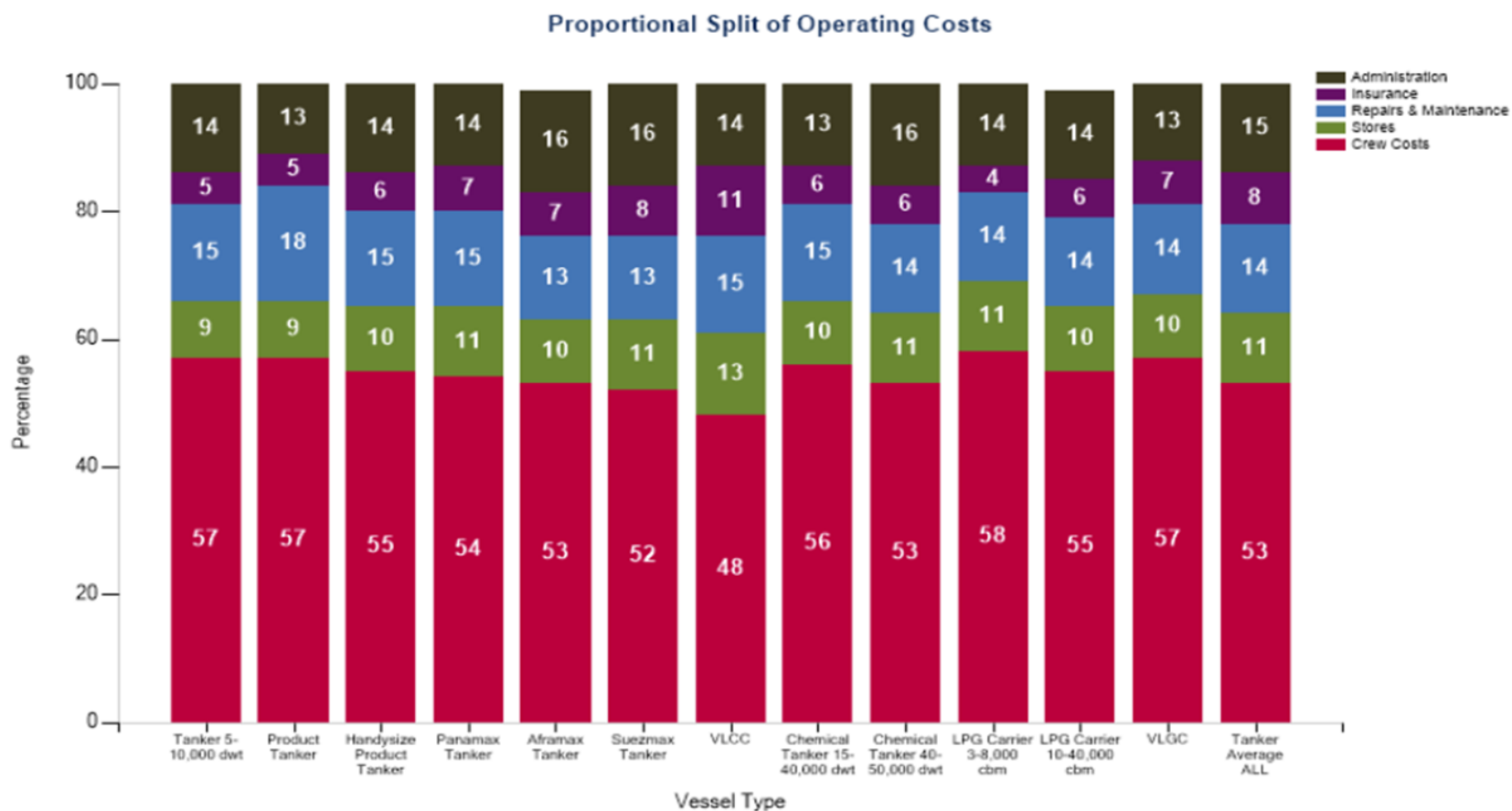
# Evolution of operating costs in shipping



Source: Moore Stephens OpCost 2016



# Cost analysis per vessel type (2013)



Source: Moore Stephens LLP





# Expected increases in costs

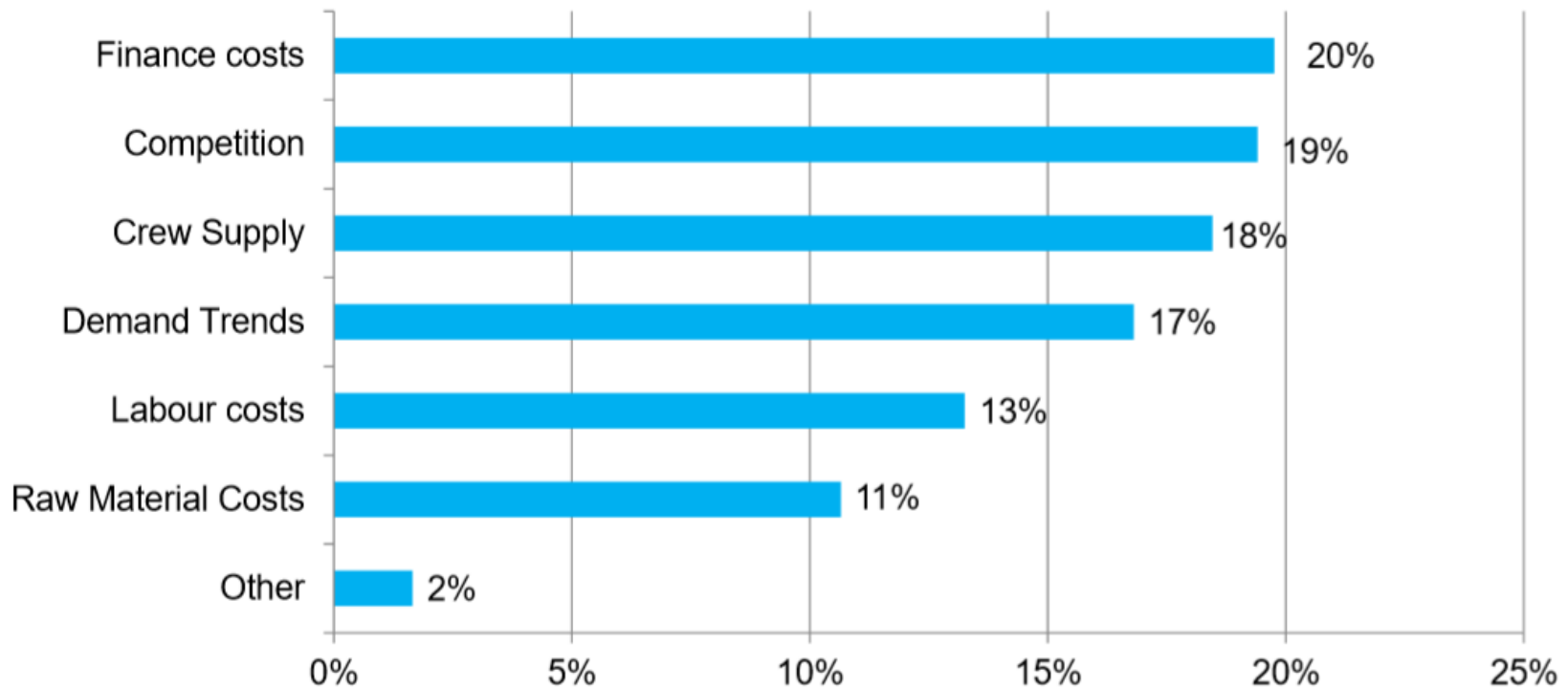
Cost type – mean	2016	2017
Crew wages	1.3%	1.8%
Other crew	1.2%	1.4%
Lubricants	0.8%	1.4%
Stores	1.3%	1.7%
Spares	1.7%	1.8%
R&M	1.7%	1.9%
H&M	0.9%	1.1%
P&I	1.1%	1.2%
Management fees	1.0%	1.2%
Drydock	1.5%	1.8%

Source: Moore Stephens,  
2016 Future operating costs survey



# Factors influencing costs

**Most influential factors on vessel operating costs over the next 12 months**



Source: Moore Stephens,  
2016 Future operating costs survey



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# Introduction to Cost Management – Product Costing Concepts and Systems

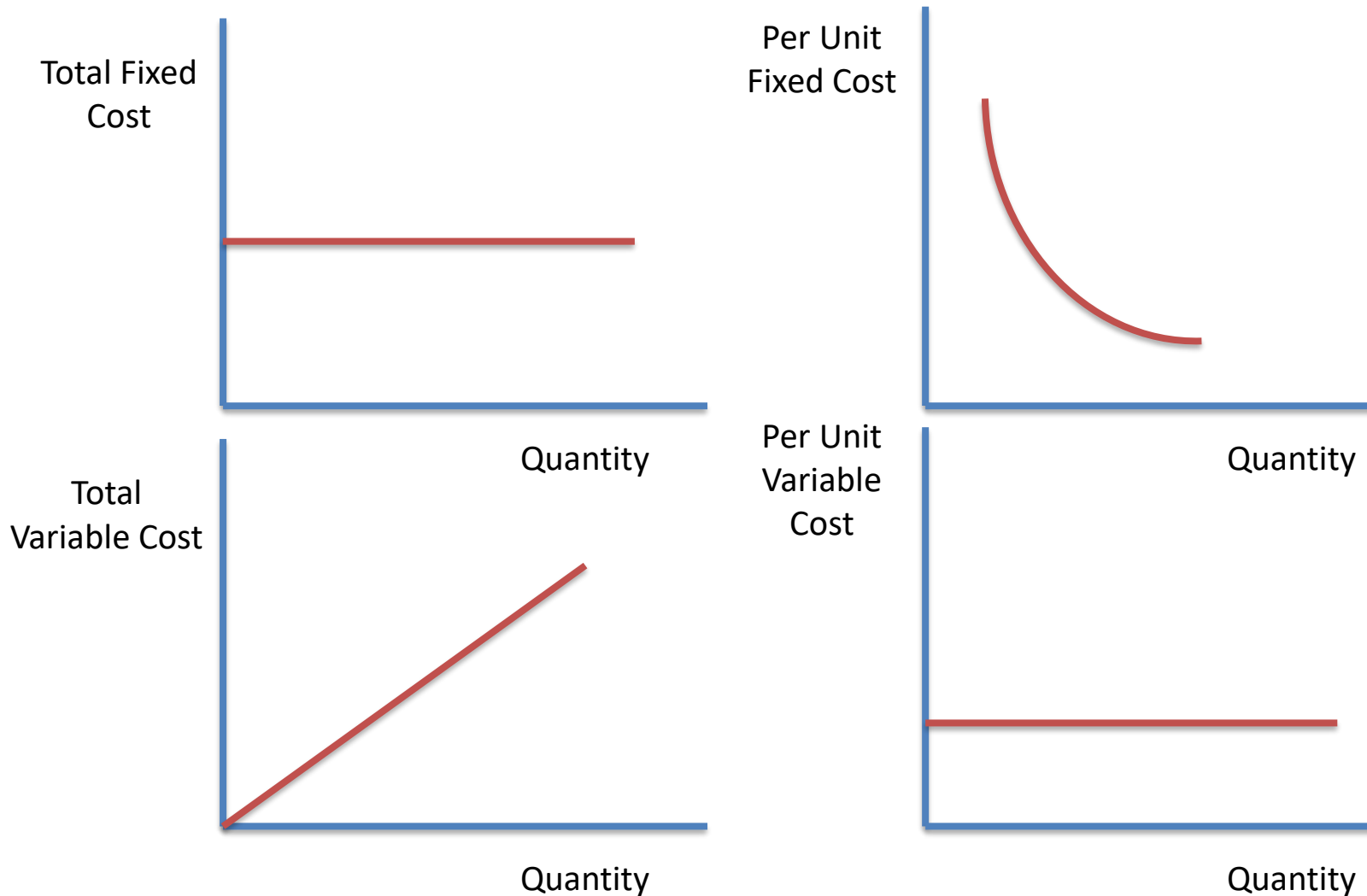


# Cost Behavior

- Cost behavior means how a cost will react to changes in the level of business activity.
  - Total **variable costs** change when activity level changes.
  - Total **fixed costs** remain unchanged when activity level changes.
- **Major assumptions:**
  - Costs are defined as variable or fixed with respect to a specific cost object.
  - The time span must be specified.
  - Total costs are linear (i.e., an unbroken straight line).
  - There is only one cost driver.
  - Variations in the level of the cost driver are within a relevant range.



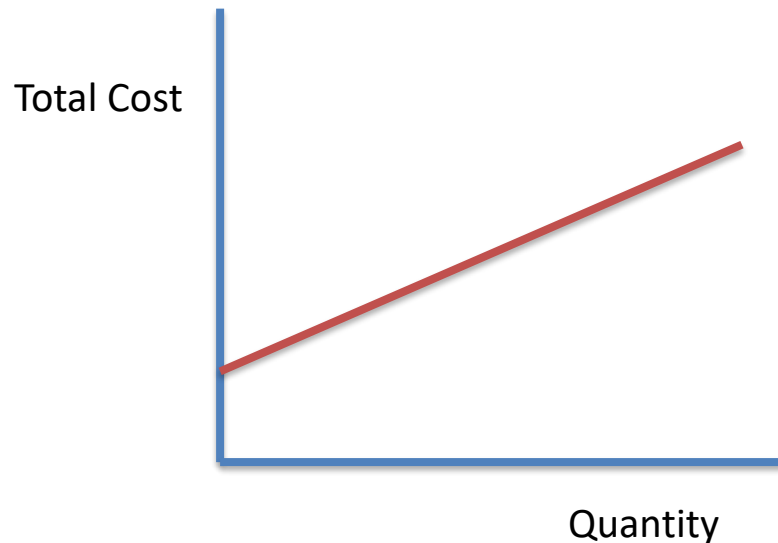
# Cost Behavior





# Cost Behavior: Semi Variable Cost

- The fixed part of the semi-variable cost usually corresponds to the minimum cost in order a good or a service to be acquired even if it will not be used at all.
- The variable part corresponds to the actual use.

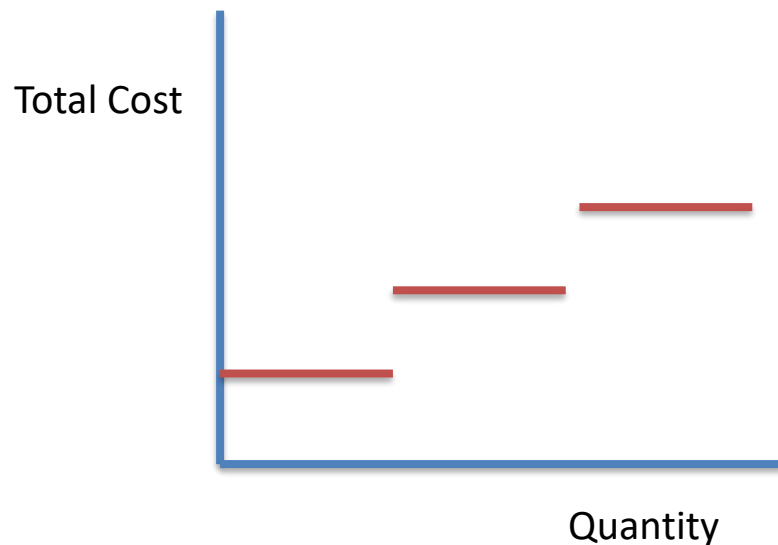






# Cost Behavior: Step Cost

- This type of cost changes non linearly (abruptly) in several levels of the production capacity.
- It corresponds to fixed costs that are created in integer quantities





# Cost Behavior: Example

## Pizza

**Variable costs** -- The cost of the ingredients used to make the pizzas.

**Fixed costs** -- Depreciation, property taxes, and property insurance.

**Semi-variable costs** -- Cost of electricity.

**Step costs** – Supervisors' wages (e.g., 1 supervisor for 10 employees).





# Product and Period Cost

The use of valuable resources,  
in order to achieve a stated  
purpose.

## Product Costs

- Related to the purchase or manufacture of goods for resale.
- Assigned to inventory and cost of goods sold.

## Period Costs

- Related to selling and administrative operations.
- Recognized as expenses in the same time period.



# Product and Period Cost: Example

Which of the following costs would be considered a period rather than a product cost in a manufacturing company?

- A. Manufacturing equipment depreciation.
- B. Property taxes on corporate headquarters.
- C. Direct materials costs.
- D. Electrical costs to light the production facility.
- E. Sales commissions.



# Other Types of Costs

- **Opportunity cost:** the potential benefit that is given up when one alternative is selected over another.
  - If you were not attending college, you could be earning \$20,000 per year.  
Your opportunity cost of attending college for one year is \$20,000.
- **Sunk Costs:** past payments for resources that cannot be changed by any current or future decision.
  - You bought an automobile for \$12,000 two years ago. Whatever you do with the automobile in the future, you cannot nullify the original transaction. If it has a trade-in value, that value would become an opportunity cost in your future decisions.
- **Out-of-pocket costs:** those costs or expenses that require a cash payment in the current period or during a project.



# Comparing Service, Retail and Manufacturing Companies

## Service firms . . .

- Provide a service that is consumed when produced.
- Have no inventories.



## Retailers . . .

- Buy finished goods.
- Sell finished goods.

## Manufacturers . . .

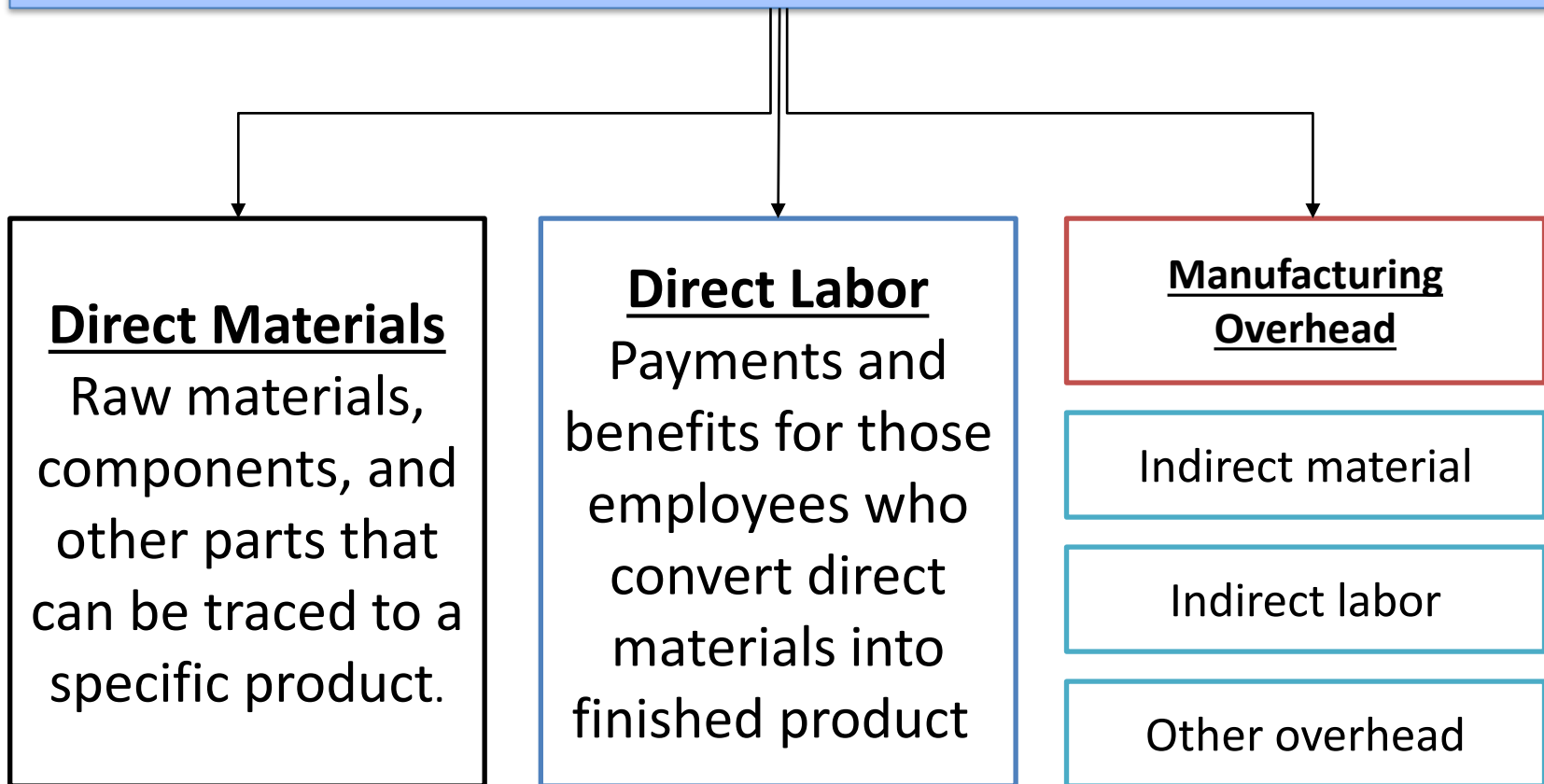
- Buy raw materials.
- Produce and sell finished goods.





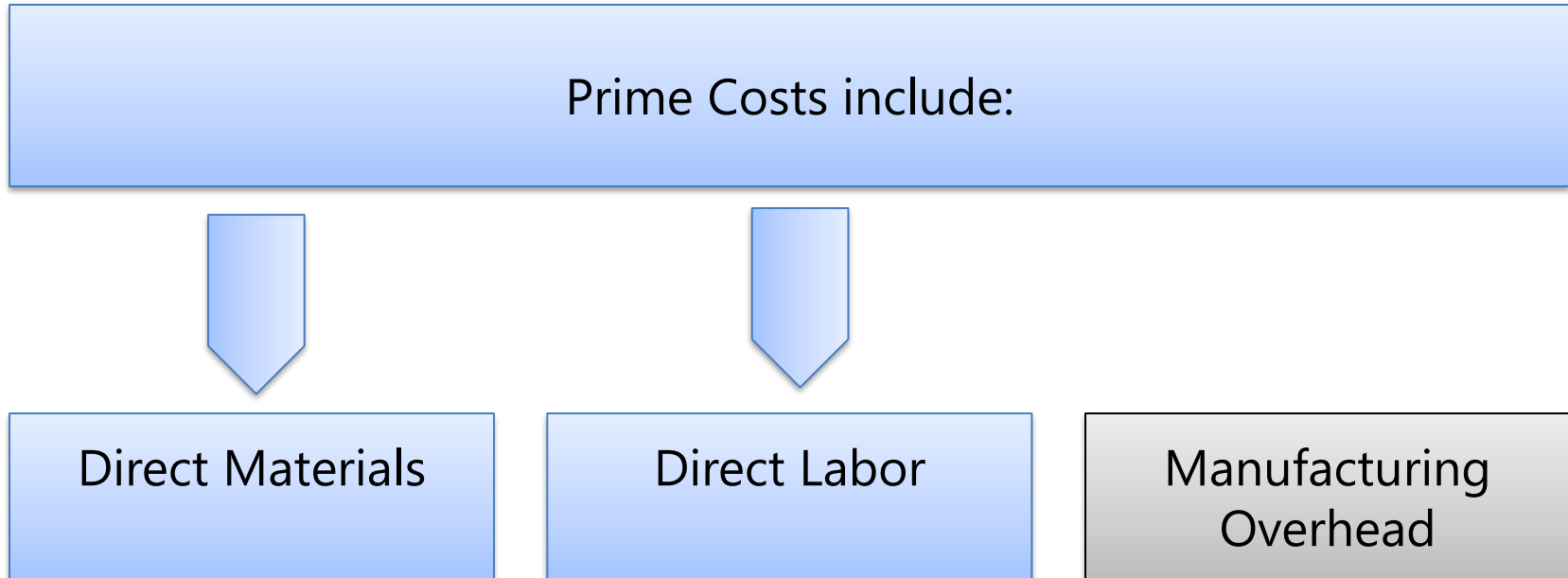
# Manufacturing Companies

The 3 major categories of manufacturing costs:





# Prime and Conversion Cost







# Prime and Conversion Cost

Conversion Costs include:

Direct Materials

Direct Labor

Manufacturing  
Overhead



# Product/Period and Prime/Conversion Cost: Example

- Administrative costs
- Depreciation manufacturing
- Direct labor
- Finished – goods inventory, January 1
- Finished – goods inventory, December 31
- Heat, light and power (manufacturing)
- Marketing costs
- Miscellaneous manufacturing costs
- Plant maintenance and repairs
- Raw materials purchases
- Raw materials inventory, January 1
- Raw materials inventory, December 31
- Sales revenue
- Supervisory and indirect labor
- Supplies and indirect materials
- Work in progress inventory, January 1
- Work in progress inventory, December 31

## **Required:**

- Indicate which costs are Period or Product cost.
- Indicate which costs are prime costs, conversion costs or both.



# Product/Period and Prime/Conversion Cost: Example

- |   |         |
|---|---------|
| • Administrative costs                    | Period  |
| • Depreciation manufacturing              | Product |
| • Direct labor                            | Product |
| • Finished – goods inventory, January 1   | -----   |
| • Finished – goods inventory, December 31 | -----   |
| • Heat, light and power (manufacturing)   | Product |
| • Marketing costs                         | Period  |
| • Miscellaneous manufacturing costs       | Product |
| • Plant maintenance and repairs           | Product |
| • Raw materials purchases                 | -----   |
| • Raw materials inventory, January 1      | -----   |
| • Raw materials inventory, December 31    | -----   |
| • Sales revenue                           | -----   |
| • Supervisory and indirect labor          | Product |
| • Supplies and indirect materials         | Product |
| • Work in progress inventory, January 1   | -----   |
| • Work in progress inventory, December 31 | -----   |



# Product/Period and Prime/Conversion Cost: Example

• Administrative costs		-----
• Depreciation manufacturing		Conversion
• Direct labor		Prime and conversion
• Finished – goods inventory, January 1		-----
• Finished – goods inventory, December	31	-----
• Heat, light and power (manufacturing)		Conversion
• Marketing costs		-----
• Miscellaneous manufacturing costs		Conversion
• Plant maintenance and repairs		Conversion
• Raw materials purchases		-----
• Raw materials inventory, January 1		-----
• Raw materials inventory, December 31		-----
• Sales revenue		-----
• Supervisory and indirect labor		Conversion
• Supplies and indirect materials		Conversion
• Work in progress inventory, January 1		-----
• Work in progress inventory, December	31	-----



# Cost accumulation and cost assignment

- A costing system typically accounts for costs in two basic stages:
  - **Accumulates** costs by some 'natural' (often self-descriptive) classification such as materials, labour, fuel, advertising or shipping. Cost accumulation is the collection of cost data in some organized way through an accounting system.
  - **Assigns** these costs to cost objects. Cost assignment is a general term that encompasses both (1) tracing accumulated costs to a cost object, and (2) allocating accumulated costs to a cost object.



# Cost Tracing and Cost Allocation

- Costs that are traced to a **cost object** are **direct costs**, and costs that are allocated to a **cost object** are **indirect costs**.
- **Direct costs** of a cost object are costs that are related to the particular cost object and that can be traced to it in an economically feasible (cost-effective) way. **Cost tracing** is the assignment of direct costs to the chosen cost objects.
- **Indirect costs** of a cost object are cost items that are related to the specific cost object but cannot be traced to it in an economically feasible (cost-effective) way. Indirect costs are allocated to the cost object using a cost allocation method.
- **Cost allocation** is the assigning of indirect costs to the chosen cost object.
- **Cost assignment** encompasses both **cost tracing** and **cost allocation**.



# Factors Affecting Direct/Indirect Cost Classifications

- **The materiality of the cost in question.** The higher the cost in question, the more likely the economic feasibility of tracing that cost to a particular cost object.
- **Available information-gathering technology.** Improvements in this area are enabling an increasing percentage of costs to be classified as direct.
- **Design of operations.** Facility design can impact on cost classification.



# Product/Period, Variable/Fixed and Prime/Conversion Cost: Example

Cost Elements	(in total)		Period Cost	Product Cost			Direct Cost	Indirect Cost
	Variable Cost	Fixed Cost		Direct Materials	Direct Labor	Over head		
Raw materials (500€ per product)	×			×			×	
Labor for the manufacturing (250€ per product)	×				×		×	
Supervisory labor (14.000 € per year)		×				×		×
Heat, light and power (7 € per product)	×					×		×
Depreciation of machineries (9000 € per year)		×				×		×
CEO salary (70.000 € per year)		×	×					
Marketing costs (39.000 € per year)		×	×					
Sales bonus (100 € per product)	×		×					





# Cost Accumulation and Cost Assignment

**Step 1:** Identify the job that is the chosen cost object.

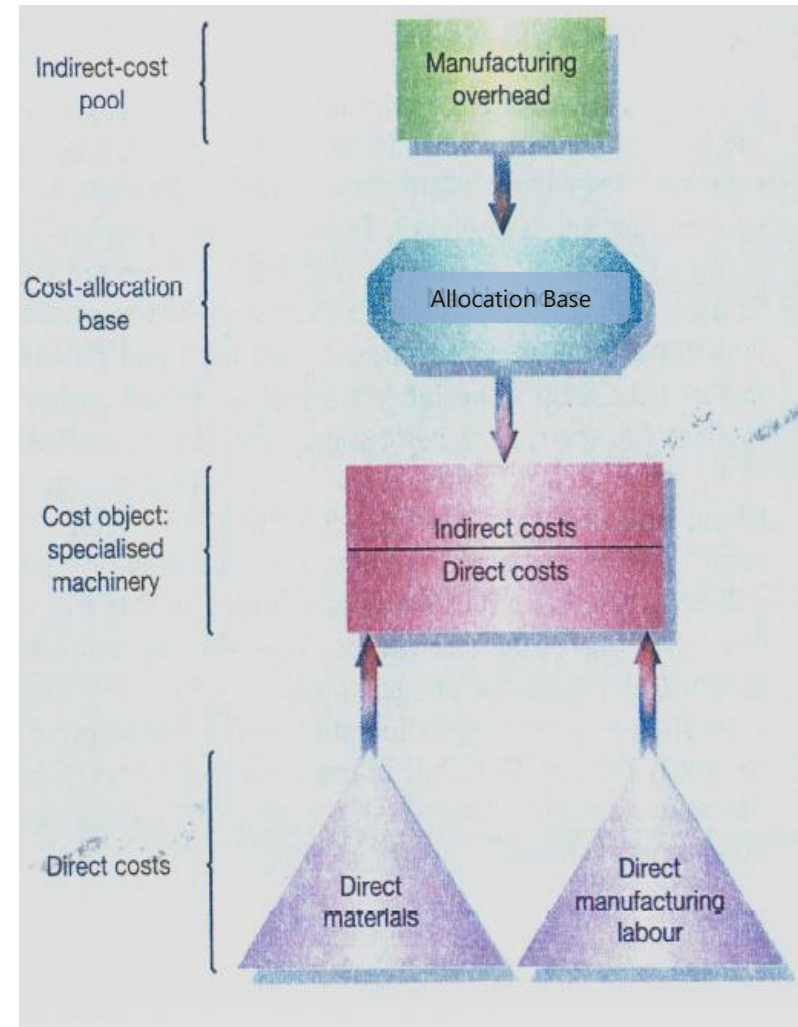
**Step 2:** Identify the direct costs for the job order (usually direct materials and direct manufacturing labour).

**Step 3:** Identify the indirect-cost pools associated with the job.

**Step 4:** Select the cost-allocation base to use in allocating each indirect-cost pool (manufacturing overhead) to the job.

**Step 5:** Develop the rate per unit of each cost-allocation base used to allocate indirect costs to the job.

**Step 6:** Assign the costs to the cost object by adding all direct costs and all indirect costs.





# Allocation of Production Overhead

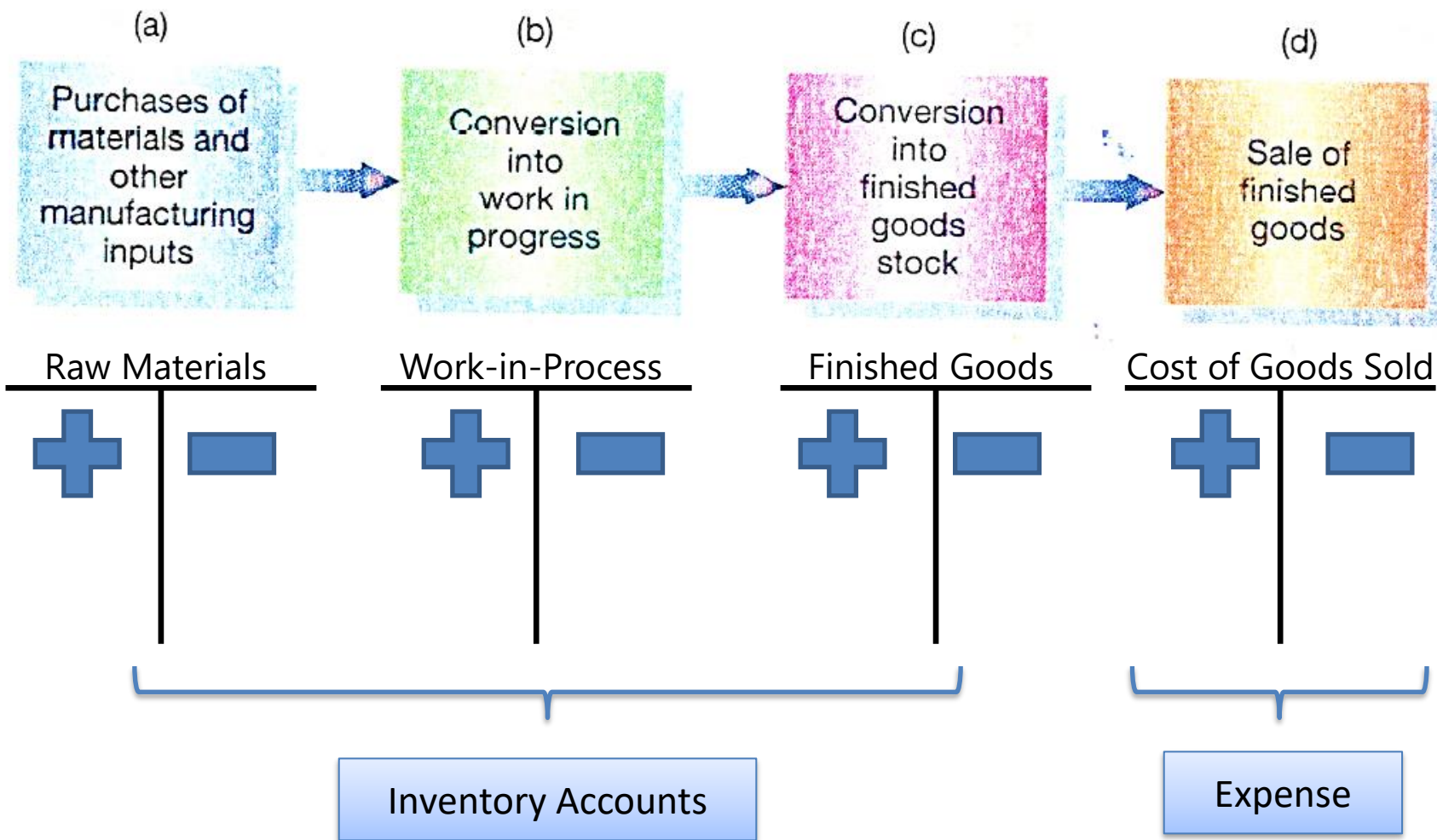
- Production overhead is allocated to production cost on the basis of an allocation rate (e.g., Direct labor cost, direct materials values, Direct Labor Hours, etc)
- The O/H allocation rate is computed as follows:

- $$\text{O/H Allocation rate} = \frac{\text{Overhead Cost}}{\text{Allocation Base}}$$

- Example:
  - Overhead € 100,000
  - Direct labor cost € 200,000
  - Allocation Rate = € 100,000 / € 200,000 = 50% of Direct Labor Cost



# Stages of Production and the Flow of Costs





# Balance Sheet

## Merchandiser

### Current assets

- ◆ Cash
- ◆ Receivables
- ◆ Prepaid Expenses
- ◆ **Merchandise Inventory**

## Manufacturer

### Current Assets

- Cash
- Receivables
- Prepaid Expenses
- Inventories
  - Raw Materials**
  - Work in Process**
  - Finished Goods**



# Stages of Production and the Flow of Costs

## Raw Materials

Beg. Inventory

Add: Purchases

---

= Raw Materials Available for Production

Less: Raw Materials Transferred to Production

---

= Ending Inventory

## Work-In-Process

Beg. WIP Inventory

Add: Raw Materials Transferred In

Direct Labor

Manufacturing Overhead

---

= Manufacturing Costs for the Period

Less: Goods Completed and Transferred to Finished Goods

---

= Ending WIP Inventory

## Finished Goods

Beg. Inventory

Add: Goods Completed and Transferred from WIP

---

= Goods Available for Sale

Less: Cost of Goods Sold

---

= Ending Inventory





# Stages of Production and the Flow of Costs - Example

## Raw Materials

Beg. Inventory

Add: Purchases

---

= Raw Materials

Available for  
Production

Less: Raw Materials

Transferred to  
Production

---

= Ending Inventory

What is Ending Inventory in February?

ABC Electronics makes toasters. On February 1, ABC has \$15,000 of raw material on hand. ABC's purchase and transfers to the production floor are indicated below.

Date	Cost of Purchases	Cost of Transfers
3-Feb	\$8,000	\$5,000
10-Feb	\$12,000	\$11,000
15-Feb	\$14,000	\$7,000
20-Feb		\$6,000
22-Feb	\$9,000	
27-Feb		\$16,000



# Stages of Production and the Flow of Costs - Example

## Raw Materials

	\$15,000
Add:	43,000
=	<u>\$58,000</u>
Less:	45,000
=	<u><u>\$13,000</u></u>

ABC Electronics makes toasters. On February 1, ABC has \$15,000 of raw material on hand. ABC's purchase and transfers to the production floor are indicated below.

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22-Feb	\$9,000	
27-Feb		\$16,000

Now let's look at Work-in-Process!



# Stages of Production and the Flow of Costs - Example

## Raw Materials

	\$15,000
Add:	43,000
=	<u>\$58,000</u>
Less:	45,000
=	<u><u>\$13,000</u></u>

What is the amount of cost transferred to Finished Goods in February?

## Work-In-Process

Beg. WIP Inventory
Add: Raw Materials
Transferred In
Direct Labor
Allocated
Manufacturing
Overhead
= Manufacturing Costs for the Period
Less: Goods Completed and Transferred to Finished Goods
= <u><u>Ending WIP Inventory</u></u>

On February 1, ABC had WIP of \$30,000 on the factory floor. During February, ABC paid \$92,000 in direct labor wages. Overhead is applied at 150% of direct labor. On 2/28, \$22,000 is still in WIP.





# Stages of Production and the Flow of Costs - Example

<u>Raw Materials</u>		<u>Work-In-Process</u>	
	\$15,000		\$30,000
Add:	43,000	Add:	45,000
	<hr/>		<hr/>
=	\$58,000		92,000
			138,000
Less:	45,000		<hr/>
	<hr/>		\$305,000
=	\$13,000		
	<hr/> <hr/>	Less:	283,000
			<hr/>
		=	\$22,000
			<hr/> <hr/>

Transferred to  
Finished Goods

On February 1, ABC had WIP of \$30,000 on the factory floor. During February, ABC paid \$92,000 in direct labor wages. Overhead was \$138,000. On 2/28, \$22,000 is still in WIP.

Now let's look at Finished Goods.



# Stages of Production and the Flow of Costs - Example

<u>Raw Materials</u>		<u>Work-In-Process</u>		<u>Finished Goods</u>	
	\$15,000		\$30,000		Beg. Inventory
Add:	43,000	Add:	45,000	Add:	Goods Completed and
=	<u>\$58,000</u>		92,000		<u>Transferred from WIP</u>
Less:	45,000		138,000	=	Goods Available for
=	<u>\$13,000</u>	=	<u>\$305,000</u>		Sale
		Less:	283,000	Less:	<u>Cost of Goods Sold</u>
		=	<u>\$22,000</u>	=	<u>Ending Inventory</u>

On February 1, ABC had Finished Goods of \$125,000 on hand. At the end of February, a physical inventory count revealed \$96,000 in Finished Goods still on hand.

What was Cost of Goods Sold for February?



# Stages of Production and the Flow of Costs - Example

<u>Raw Materials</u>		<u>Work-In-Process</u>		<u>Finished Goods</u>	
	\$15,000		\$30,000		\$125,000
Add:	43,000	Add:	45,000	Add:	283,000
=	<u>\$58,000</u>	=	92,000	=	<u>\$408,000</u>
Less:	45,000		138,000	Less:	312,000
=	<u><u>\$13,000</u></u>	=	<u>\$305,000</u>	=	<u><u>\$96,000</u></u>
		Less:	283,000		
		=	<u><u>\$22,000</u></u>		

On February 1, ABC had Finished Goods of \$125,000 on hand. At the end of February, a physical inventory count revealed \$96,000 in Finished Goods still on hand.

What was Cost of Goods Sold for February?



# Schedule of goods manufactured and sold

- An internal report.
- Summarize and reports manufacturing costs for management (internal) use.



# Schedule of Cost of Goods Manufactured: Example

• Raw materials inventory, January 1 <sup>st</sup>	\$200,000
• Purchases of raw materials	\$800,000
• Raw materials inventory, December 31 <sup>st</sup>	\$150,000
• Direct labor	\$700,000
• Total manufacturing Overhead	\$1,850,00
• Work-in-Progress inventory, January 1 <sup>st</sup>	\$350,000
• Work-in-Progress inventory, December 31 <sup>st</sup>	\$400,000
• Finished goods inventory, January 1 <sup>st</sup>	\$920,000
• Finished goods inventory, December 31 <sup>st</sup>	\$1,460,000
• Sales revenue	\$4,500,000
• Selling and Administrative Expenses	\$1,440,000

On the basis of the information above prepare:

- The Schedule of Cost of Goods manufactured
- The Income statement



# Schedule of Cost of Goods Manufactured: Example

## Schedule of Cost of Goods Manufactured

Raw material used	\$ 850,000
Direct labor	700,000
Total manufacturing overhead	1,850,000
Total manufacturing costs	\$ 3,400,000
Add: Work-in-process inventory, January 1	350,000
Subtotal	\$ 3,750,000
Deduct: Work-in-process inventory, December 31	400,000
Cost of goods manufactured	\$ 3,350,000



tured:

Computation of Cost of Raw Material Used	
Raw-material inventory, January 1	\$ 200,000
Add: Purchases of raw materials	800,000
Raw material available for use	1,000,000
Deduct: Raw material inventory, December 31	150,000
Raw material used	\$ 850,000

Schedule of Cost of Goods Manufactured	
Raw material used	\$ 850,000
Direct labor	700,000
Total manufacturing overhead	1,850,000
Total manufacturing costs	\$ 3,400,000
Add: Work-in-process inventory, January 1	350,000
Subtotal	\$ 3,750,000
Deduct: Work-in-process inventory, December 31	400,000
Cost of goods manufactured	\$ 3,350,000



# Schedule of Cost of Goods Manufactured: Example

Include all direct labor costs incurred during the current period.

## Schedule of Cost of Goods Manufactured

Raw material used	\$ 850,000
Direct labor	700,000
Total manufacturing overhead	1,850,000
Total manufacturing costs	\$ 3,400,000
Add: Work-in-process inventory, January 1	350,000
Subtotal	\$ 3,750,000
Deduct: Work-in-process inventory, December 31	400,000
Cost of goods manufactured	\$ 3,350,000





# Schedule of Cost of Goods Manufactured: Example

Include all direct labor costs incurred during the current period.

## Schedule of Cost of Goods Manufactured

Raw material used	\$ 850,000
Direct labor	700,000
Total manufacturing overhead	1,850,000
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Add: Work-in-process inventory, January 1	350,000
Subtotal	\$ 3,750,000
Deduct: Work-in-process inventory, December 31	400,000
Cost of goods manufactured	\$ 3,350,000



# Schedule of Cost of Goods Manufactured: Example

Beginning work-in-process inventory is carried over from the prior period.

## Schedule of Cost of Goods Manufactured

Raw material used	\$ 850,000
Direct labor	700,000
Total manufacturing overhead	1,850,000
Total manufacturing costs	\$ 3,400,000
Add: Work-in-process inventory, January 1	350,000
Subtotal	\$ 3,750,000
Deduct: Work-in-process inventory, December 31	400,000
Cost of goods manufactured	\$ 3,350,000



# Schedule of Cost of Goods Manufactured: Example

Ending work-in-process inventory contains the cost of unfinished goods, and is reported in the current assets section of the balance sheet.

## Schedule of Cost of Goods Manufactured

Raw material used	\$ 850,000
Direct labor	700,000
Total manufacturing overhead	1,850,000
Total manufacturing costs	\$ 3,400,000
Add: Work-in-process inventory, January 1	350,000
Subtotal	\$ 3,750,000
Deduct: Work-in-process inventory, December 31	400,000
Cost of goods manufactured	\$ 3,350,000



# Income Statement for a Manufacturer

Income Statement For the Year Ended December 31, 20X2	
Sales revenue	\$ 4.500.000
Less: Cost of goods sold	2.810.000
Gross margin	\$ 1.690.000
Selling and administrative expenses	1.440.000
Operating profit before taxes	\$ 250.000



# Income Statement for a Manufacturer

Schedule of Cost of Goods Sold For the Year Ended December 31, 20X2	
Finished-goods inventory, Jan. 1	\$ 920.000
Add: Cost of goods manufactured	3.350.000
Cost of goods available for sale	4.270.000
Deduct Finished-goods inventory, Dec. 31	1.460.000
Cost of goods sold	\$ 2.810.000

Income Statement For the Year Ended December 31, 20X2	
Sales revenue	\$ 4.500.000
Less: Cost of goods sold	2.810.000
Gross margin	\$ 1.690.000
Selling and administrative expenses	1.440.000
Operating profit before taxes	\$ 250.000



# Job Costing versus Process Costing

- **Job (order) costing system:** In this system, costs are assigned to a distinct unit, batch or lot of a product or service. A job (order) is a task for which resources are expended in bringing a distinct product or service to market. The product or service is often custom made.
- **Process costing system:** In this system, the cost object is masses of identical or similar units. The cost of a product or service is obtained by using broad averages to assign cost to masses of identical or similar units.

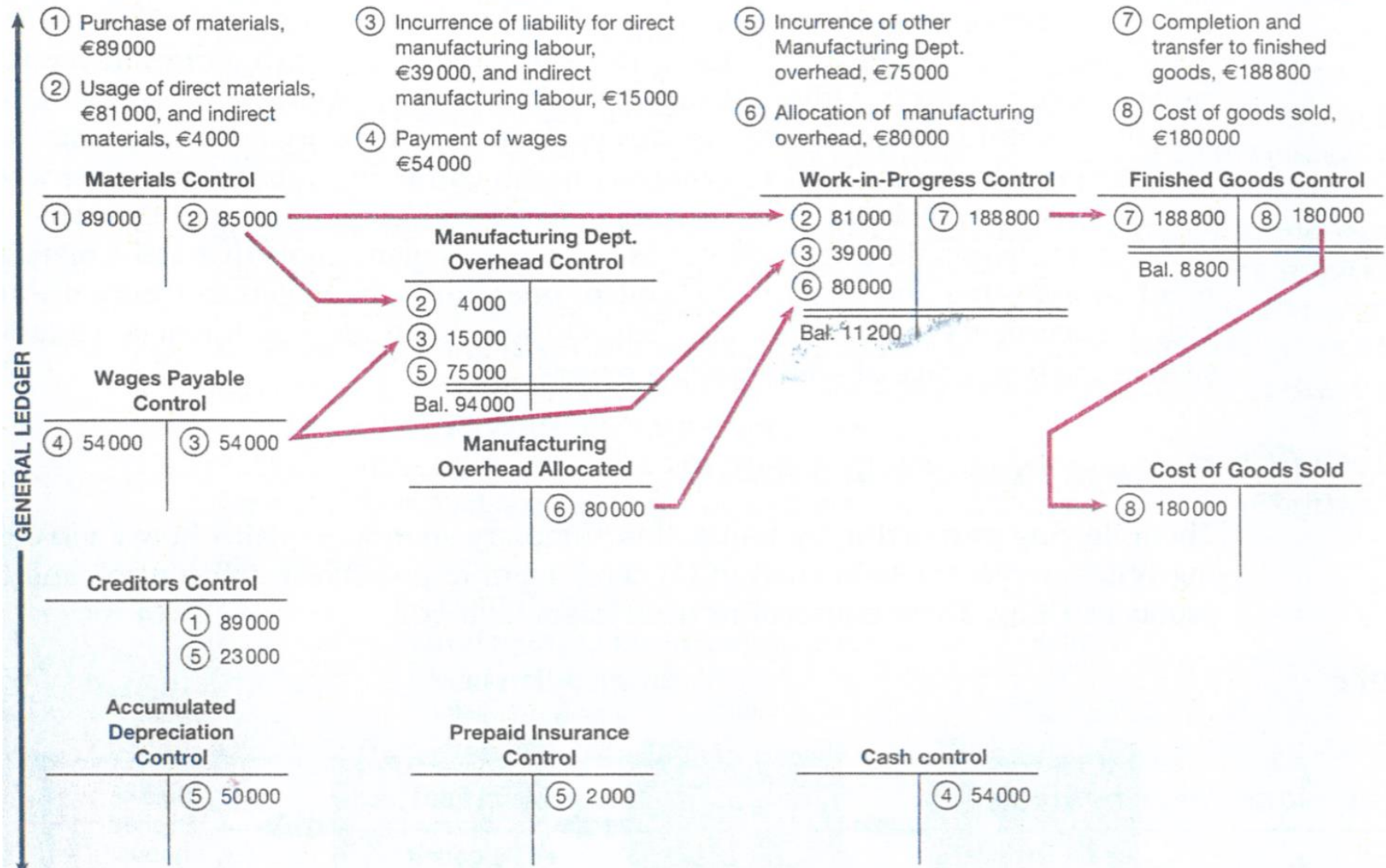


# Job Costing versus Process Costing

	<b>Service sector</b>	<b>Merchandising sector</b>	<b>Manufacturing sector</b>
<b>Job costing</b>	<ul style="list-style-type: none"><li>• Accounting firm audits</li><li>• Advertising agency</li></ul>	<ul style="list-style-type: none"><li>• Sending a catalogue to a mailing list</li><li>• Special promotion of a new store product</li></ul>	<ul style="list-style-type: none"><li>• Aircraft assembly</li><li>• House construction</li></ul>
<b>Process costing</b>	<ul style="list-style-type: none"><li>• Deposit processing</li><li>• Postal delivery</li></ul>	<ul style="list-style-type: none"><li>• Grain dealing</li><li>• Processing new magazine subscriptions</li></ul>	<ul style="list-style-type: none"><li>• Oil refining</li><li>• Beverages production</li></ul>



# An Illustration of a Job-costing System in Manufacturing: General Ledger







# An Illustration of a Job-costing System in Manufacturing: Explanation of Transactions

1. Transaction: Purchases of materials (direct and indirect), €89 000 on account.

- Analysis: The asset Materials Control is increased. The liability Creditors Control is increased.
- Journal entry:

---

Materials Control	89 000	
Creditors Control		89 000

---

- Post to General Ledger:

	Materials Control		Creditors Control	
a	89000		89 000	a



# An Illustration of a Job-costing System in Manufacturing: Explanation of Transactions

2. Transaction: Materials sent to manufacturing plant floor: direct materials, €81 000 and indirect materials, €4000.

- Analysis: The accounts Work-in-Progress Control and Manufacturing Overhead Control are increased. The account Materials Control is decreased.
- Journal entry:

---

Work-in-Progress Control	81 000	
Manufacturing Overhead Control	4 000	
Materials Control		85 000

---



# An Illustration of a Job-costing System in Manufacturing: Explanation of Transactions

2. Transaction: Materials sent to manufacturing plant floor: direct materials, €81 000 and indirect materials, €4000.

- Post to General Ledger:

Materials Control		Work-in Progress Control	
a	89 000   85 000	b	81 000

Manufacturing Overhead Control	
b	4 000



# An Illustration of a Job-costing System in Manufacturing: Explanation of Transactions

3. Transaction: Manufacturing labour wages liability incurred, direct (€39 000) and indirect (€15 000).

- Analysis: The accounts Work-in-Progress Control and Manufacturing Department Overhead Control are increased. Wages Payable Control is also increased.
- Journal entry:

---

Work-in-Progress Control	39 000	
Manufacturing Overhead Control	15 000	
Wages Payable Control		54 000

---



# An Illustration of a Job-costing System in Manufacturing: Explanation of Transactions

3. Transaction: Manufacturing labour wages liability incurred, direct (€39 000) and indirect (€15 000).

- Post to General Ledger:

Wages Payable Control		Work-in Progress Control	
	54 000	b	81 000
	c	c	39 000

Manufacturing Overhead Control	
b	4 000
c	15 000



# An Illustration of a Job-costing System in Manufacturing: Explanation of Transactions

4. Transaction: Payment of total manufacturing payroll for the month, € 54 000.

- Analysis: The liability Wages Payable Control is decreased. The asset Cash Control is decreased.
- Journal entry:

---

Wages Payable	54 000	
Cash Control		<i>54 000</i>

---

- Post to General Ledger:

Wages Payable Control		Cash Control	
d	54 000	54 000	c
			d 54 000



# An Illustration of a Job-costing System in Manufacturing: Explanation of Transactions

5. Transaction: Additional manufacturing overhead costs incurred during the month, €75 000. These costs consist of utilities and repairs, €23 000; insurance expired, €2000; and depreciation on equipment, €50 000.

- Analysis: The indirect-cost account of Manufacturing Overhead Control is increased. The liability Creditors Control is increased, the asset Prepaid Insurance Control is decreased and the asset Equipment is decreased by means of a related contra asset account Accumulated Depreciation Control.
- Journal entry:

---

Manufacturing Overhead Control	75 000	
Creditors Control		23 000
Accumulated Depreciation Control		50 000
Prepaid Insurance Control		2 000

---



# An Illustration of a Job-costing System in Manufacturing: Explanation of Transactions

5. Transaction: Additional manufacturing overhead costs incurred during the month, €75 000. These costs consist of utilities and repairs, €23 000; insurance expired, €2000; and depreciation on equipment, €50 000.

- Post to General Ledger:

Creditors Control		Manufacturing Overhead Control		
	89 000	a	b	4 000
	23 000	e	c	15 000
			e	75 000
Accumulated Depreciation Control		Prepaid Insurance Control		
	50 000	e	e	2 000





# An Illustration of a Job-costing System in Manufacturing: Explanation of Transactions

6. Transaction: Allocation of manufacturing overhead to products, €80 000.

- Analysis: The asset Work-in-Progress Control is increased. The indirect-cost account of Manufacturing Overhead Control is, in effect, decreased by means of its contra account, called Manufacturing Overhead Allocated. This is the record of manufacturing overhead allocated to individual jobs on the basis of the budgeted rate multiplied by actual units used of the allocation base. It comprises all manufacturing costs that are assigned to a product (or service) using a cost-allocation base because they cannot be traced to it in an economically feasible way.
- Journal entry:

---

Work-in-Progress Control	80 000	
Manufacturing Overhead Allocated		80 000

---



# An Illustration of a Job-costing System in Manufacturing: Explanation of Transactions

6. Transaction: Allocation of manufacturing overhead to products, €80 000.

- Post to General Ledger:

Manufacturing Overhead Allocated			Work-in-Progress Control	
	80 000	f	b	81 000
			c	39 000
			f	80 000



# An Illustration of a Job-costing System in Manufacturing: Explanation of Transactions

7. Transaction: Completion and transfer to finished goods of eight individual jobs, € 188 800.

- Analysis: The asset Finished Goods Control is increased. The asset Work-in-Progress Control is decreased. The total costs of each job are calculated in the subsidiary ledger as each job is completed.
- Journal entry:

---

Finished Goods Control	188 800	
Work-in-Progress Control		188 800

---



# An Illustration of a Job-costing System in Manufacturing: Explanation of Transactions

7. Transaction: Completion and transfer to finished goods of eight individual jobs, € 188 800.

- Post to General Ledger:

Finished Goods Control		Work-in-Progress Control		
g	188 800	b	81 000	188 800 g
		c	39 000	
		f	80 000	



# An Illustration of a Job-costing System in Manufacturing: Explanation of Transactions

8. Transaction: Cost of Goods Sold, €180 000.

- Analysis: The €180 000 amount represents the cost of goods sold in sales transactions with customers during September 2011. The account Cost of Goods Sold is increased. The asset Finished Goods Control is decreased.
- Journal entry:

---

Cost of Goods Sold	180 000	
Finished Goods Control		180 000

---



# An Illustration of a Job-costing System in Manufacturing: Explanation of Transactions

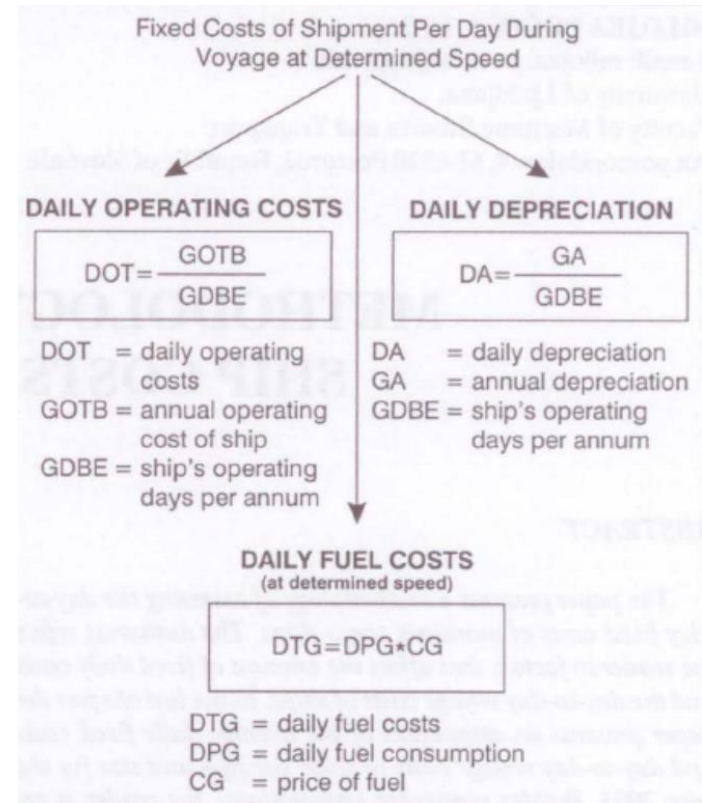
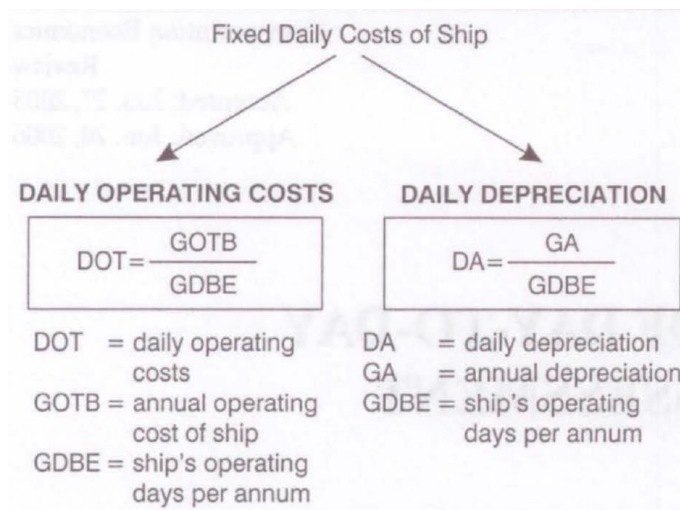
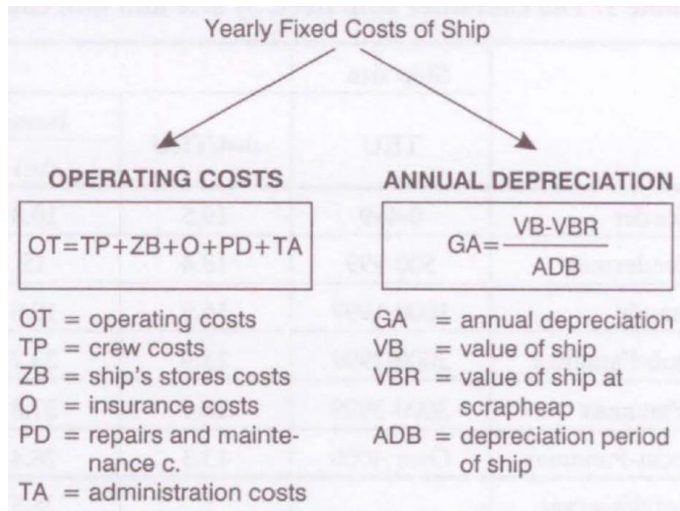
8. Transaction: Cost of Goods Sold, €180 000.

- Post to General Ledger:

Finished Goods Control			Cost of Goods Sold		
g	188 800	180 000	h	h	180 000



# Ship Costs Assessment: An empirical approach (Počuča, 2006)





# Ship Costs Assessment: An empirical approach (Počuča, 2006)

Sample of operating costs of handysize bulker from database of OpCost 2004, Moore Stephens

Type of vessel	Handysize bulker
DWT	20,000-40,000
World fleet- 2003 – number of ships	2,156
Average size of group in-2003 DWT(TEU)	29,605
Average age of fleet	1985
Number of ships in the sample	89
Average age of sample	1985
Average size of sample-DWT(TEU)	28,909
Average 1 year Time Charter per day	9,043

	annual costs US\$	daily costs US\$
Crew wages	443,424	1,215
Victuals	45,154	124
Other crew costs	60,213	165
Total crew costs	548,791	1,504
Lubricants	60,019	164
Stores other	87,442	240
Stores total	147,461	404
Spares	85,041	233
Repairs & maintenance	77,155	211
Repairs & maintenance total	162,196	444
P&I insurance	72,292	198
Insurance	59,631	163
Insurance total	131,923	361
Registration costs	6,992	19
Management fees	141,608	388
Sundries	59,676	164
Administration total	208,276	571
Total operating costs 2003	1,198,647	3,284
Total operating costs 2002	1,108,136	3,033





# Ship Costs Assessment: An empirical approach (Počuča, 2006)

Sample of depreciation calculus for a ship purchased on credit against a 20% downpayment for an 8-year repayment and an 8% interest rate

Type of vessel	Handysize bulker
Year of building	1985
DWT	28,909
Price of ship for payment in cash	11,000,000
Downpayment share 20%	2,200,000
Amount of credit	8,800,000
Coefficient of credit for 8 instalments at 8% interest	0.17401476
Annuity	1,531,329
Credit amount with cost of interest	12,250,639
Price of ship with cost of capital	14,450,639
Liquidation value % of price of new vessel	2%
Liquidation value	2,890,128
Depreciation basis	11,560,511
Annual depreciation during the ship's 20 year life span	578,026
Daily depreciation -365 days	1,584



# Ship Costs Assessment: An empirical approach (Počuča, 2006)

## Daily fixed costs of ship

Type of vessel	Handysize bulker
Year of building	1985
DWT	28,909
TEU	
Speed	14.6
Fuel consumption per day	32.5
Price of fuel in \$	152
Lifespan of ship 20 years	
365 days of service	365
Operating costs per day in \$	3,284
Daily depreciation in \$	1,584
Fixed costs per day in \$	4,868

## Daily voyage costs of ship

Type of vessel	Handysize bulker
Year of building	1985
DWT	28,909
TEU	
Speed	14.6
Fuel consumption per day	32.5
Price of fuel in \$	152
Lifespan of ship 20 years	
Days of service 365	365
Operating costs of ship per day in \$	3,284
Daily depreciation in \$	1,584
Fixed costs of ship per day in \$	4,868
Daily cost of fuel in \$	4,940
Daily voyage costs of ship	9,808