Managerial Accounting and Cost Concepts

Chapter 2

AC202 Managerial Accounting

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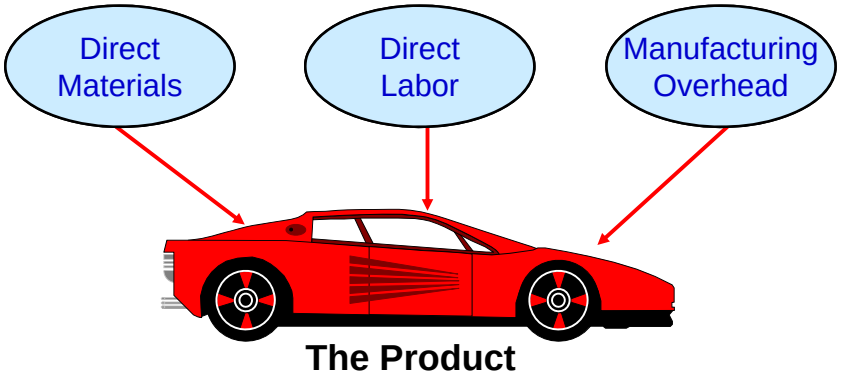
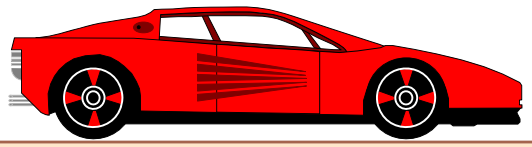
Classifications of Manufacturing Costs



Direct Materials

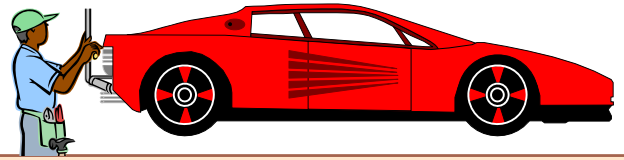
Raw materials that become an integral part of the product and that can be conveniently traced directly to it.



Example: A radio installed in an automobile

Direct Labor

Those labor costs that can be easily traced to individual units of product.



Example: Wages paid to automobile assembly workers

Manufacturing Overhead

Manufacturing costs that cannot be easily traced directly to specific units produced.

Examples: Indirect materials and indirect labor

Materials used to support the production process.

Examples: lubricants and cleaning supplies used in the automobile assembly plant.

Wages paid to employees who are not directly involved in production work.
Examples: maintenance workers, janitors, and security guards.

Nonmanufacturing Costs

Selling Costs

Costs necessary to secure the order and deliver the product.

Administrative Costs

All executive, organizational, and clerical costs.

Product Costs Versus Period Costs

Product costs include direct materials, direct labor, and manufacturing overhead.

Inventory → Sale → Cost of Good Sold

Balance Sheet

Income Statement

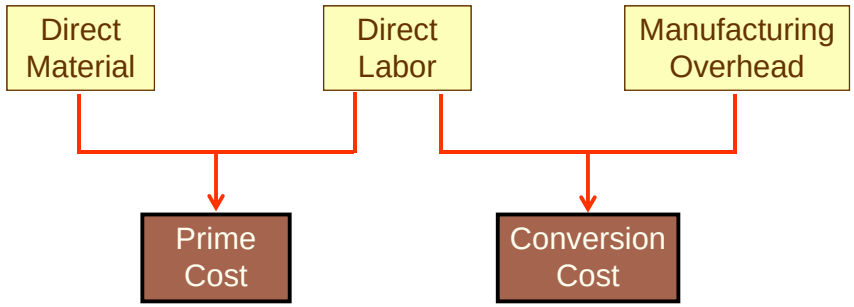
Period costs include all selling costs and administrative costs.

Expense

Income Statement

Classifications of Costs

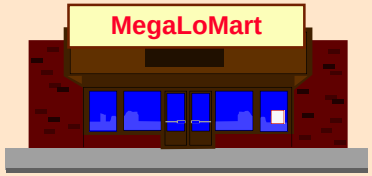
Manufacturing costs are often classified as follows:



Comparing Merchandising and Manufacturing Companies

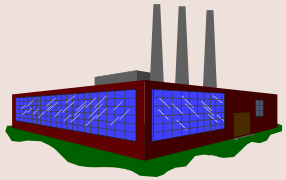
Merchandisers . . .

- Buy finished goods.
- Sell finished goods.



Manufacturers . . .

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



Balance Sheet

Merchandiser	Manufacturer
Current assets	Current Assets
◆Cash	◆ Cash
◆Receivables	◆ Receivables
◆Merchandise Inventory	◆ Inventories
	• Raw Materials
	• Work in Process
	• Finished Goods

Balance Sheet

Merchandiser

Current assets

- ◆Cash
- ◆Receivables
- ◆Merchandise Inventory

Partially complete products—some material, labor, or overhead has been added.

Manufacturer

Current Assets

Materials waiting to be processed.

- ◆ Inventories
  - • Raw Materials
  - • Work in Process
  - • Finished Goods

Completed products awaiting sale.

The Income Statement

Cost of goods sold for manufacturers differs only slightly from cost of goods sold for merchandisers.

Merchandising Company

Cost of goods sold:	
Beg. merchandise inventory	$ 14,200
+ Purchases	234,150
Goods available for sale	$248,350
- Ending merchandise inventory	(12,100)
= Cost of goods sold	$236,250

Manufacturing Company

Cost of goods sold:	
Beg. finished goods inv.	$ 14,200
+ Cost of goods manufactured	234,150
Goods available for sale	$248,350
- Ending finished goods inventory	(12,100)
= Cost of goods sold	$236,250

Basic Equation for Inventory Accounts

Beginning balance + Additions to inventory = Ending balance + Withdrawals from inventory

Schedule of Cost of Goods Manufactured

Calculates the cost of raw material, direct labor, and manufacturing overhead used in production.

Calculates the manufacturing costs associated with goods that were finished during the period.

Product Cost Flows

Raw Materials	Manufacturing Costs	Work In Process
Beginning raw materials inventory	Direct materials	
+ Raw materials purchased		
= Raw materials available for use in production		
– Ending raw materials inventory		
= Raw materials used in production		

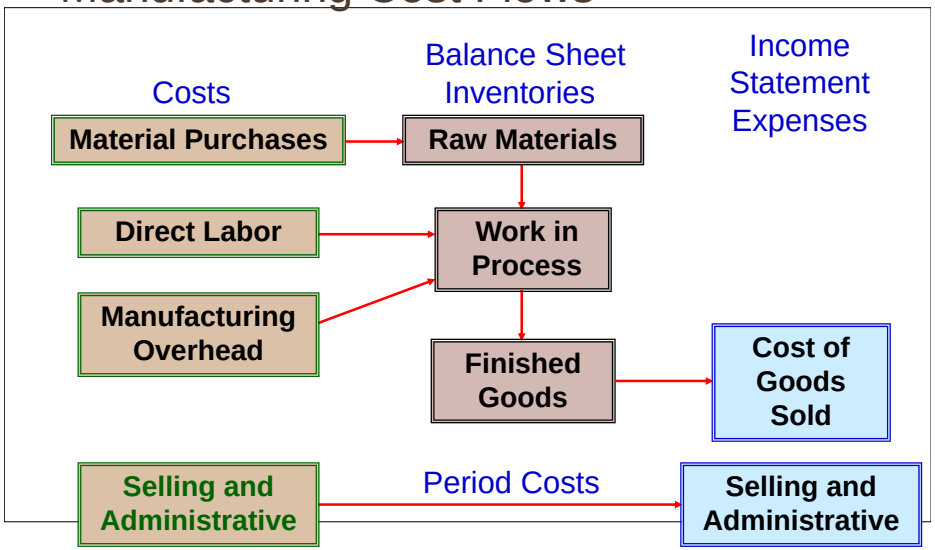
- As items are removed from raw materials inventory and placed into the production process, they are called direct materials.
- Conversion costs are costs incurred to convert the direct material into a finished product.
- All manufacturing costs incurred during the period are added to the beginning balance of work in process.

Product Cost Flows

Work In Process	Finished Goods
Beginning work in process inventory	Beginning finished goods inventory
+ Manufacturing costs for the period	+ Cost of goods manufactured
= Total work in process for the period	= Cost of goods available for sale
– Ending work in process inventory	- Ending finished goods inventory
= Cost of goods manufactured	Cost of goods sold

Costs associated with the goods that are completed during the period are transferred to finished goods inventory.

Manufacturing Cost Flows



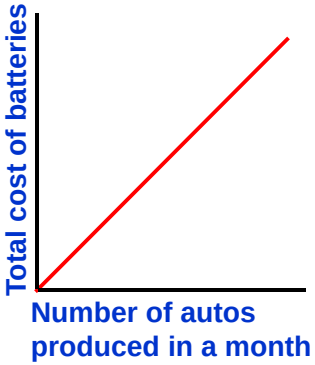
Cost Classifications for Predicting Cost Behavior

How a cost will react to changes in the level of activity within the relevant range.

- Total **variable costs** change when activity changes.
- Total **fixed costs** remain unchanged when activity changes.

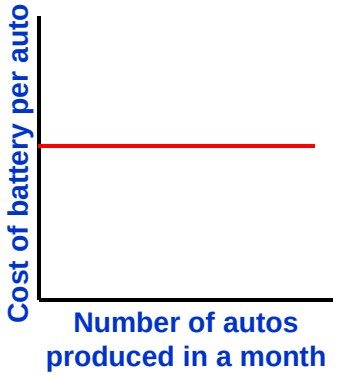
Total Variable Cost

The **total cost of batteries** is based on the number of autos produced in a month



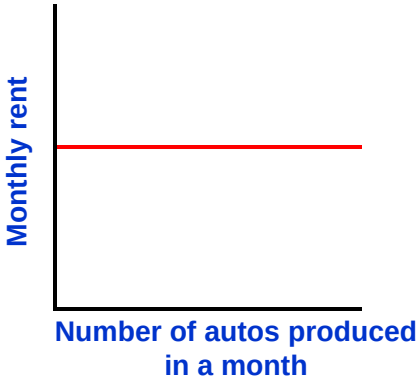
Variable Cost Per Unit

The **cost of battery** is constant per each auto produced



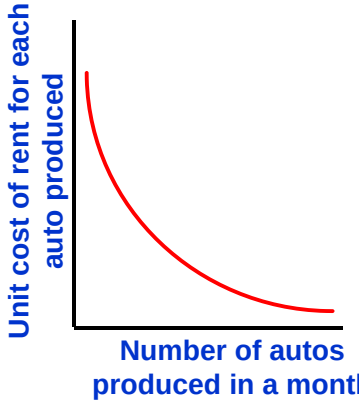
Total Fixed Cost

The **monthly rent** for an auto factory is fixed regardless of the number of autos produced



Fixed Cost Per Unit

The **average monthly rent per auto** decreases as more autos are produced



Cost Classifications for Predicting Cost Behavior

Behavior of Cost (within the relevant range)		
Cost	**In Total**	**Per Unit**
Variable	Total variable cost changes as activity level changes.	Variable cost per unit remains the same over wide ranges of activity.
Fixed	Total fixed cost remains the same even when the activity level changes.	Average fixed cost per unit goes down as activity level goes up.

Assigning Costs to Cost Objects

Direct costs

- Costs that can be easily and conveniently traced to a unit of product or other cost object.
- Examples: direct material and direct labor

Indirect costs

- Costs that cannot be easily and conveniently traced to a unit of product or other cost object.
- Example: manufacturing overhead

Learning Objective 7

Understand cost classifications used in making decisions: differential costs, opportunity costs, and sunk costs.

Cost Classifications for Decision Making

- Every decision involves a choice between at least two alternatives.
- Only those costs and benefits that differ between alternatives are relevant in a decision. All other costs and benefits can and should be ignored.

Differential Cost and Revenue

Costs and revenues that differ among alternatives.

Example: You have a job paying $1,500 per month in your hometown. You have a job offer in a neighboring city that pays $2,000 per month. The commuting cost to the city is $300 per month.

Differential revenue is:
$2,000 – $1,500 = $500

Differential cost is:
$300

Opportunity Cost

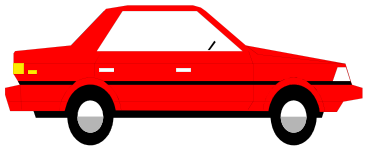
The potential benefit that is given up when one alternative is selected over another.

Example: If you were not attending college, you could be earning $15,000 per year. Your opportunity cost of attending college for one year is $15,000.

Sunk Costs

Sunk costs have already been incurred and cannot be changed now or in the future. These costs should be ignored when making decisions.

Example: You bought an automobile that cost $10,000 two years ago. The $10,000 cost is sunk because whether you drive it, park it, trade it, or sell it, you cannot change the $10,000 cost.



Summary of the Types of Cost Classifications

- **Financial Reporting**
- **Predicting Cost Behavior**
- **Assigning Costs to Cost Objects**
- **Making Business Decisions**

Further Classification of Labor Costs

Appendix 2A

Idle Time

- **Machine Breakdowns**
- **Material Shortages**
- **Power Failures**

The labor costs incurred during idle time are ordinarily treated as manufacturing overhead.

Overtime

The overtime premiums for all factory workers are usually considered to be part of manufacturing overhead.

What if a company consistently has overtime? Can the overtime costs be part of labor expenses?

Labor Fringe Benefits

Fringe benefits include employer paid costs for insurance programs, retirement plans, supplemental unemployment programs, Social Security, Medicare, workers' compensation, and unemployment taxes.

Some companies include all of these costs in manufacturing overhead.

Other companies treat fringe benefit expenses of direct laborers as additional direct labor costs.

Cost of Quality

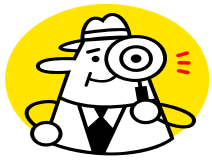
Appendix 2B

Quality of Conformance

When the overwhelming majority of products produced conform to design specifications and are free from defects.

Prevention and Appraisal Costs

Prevention Costs → **Support activities whose purpose is to reduce the number of defects**



Appraisal Costs → **Incurred to identify defective products before the products are shipped to customers**

Internal and External Failure Costs

Internal Failure Costs → **Incurred as a result of identifying defects before they are shipped**

External Failure Costs → **Incurred as a result of defective products being delivered to customers**

Examples of Quality Costs

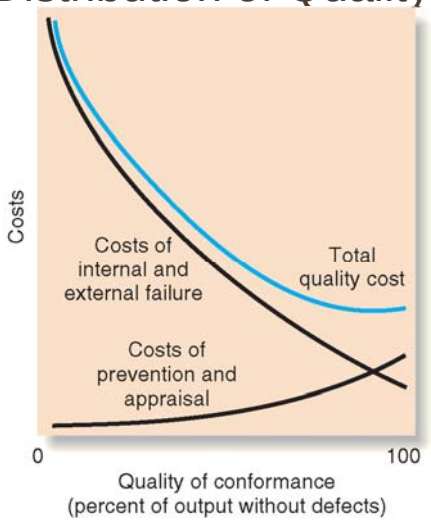
Prevention Costs
- Quality training
- Quality circles
- Statistical process control activities

Appraisal Costs
- Testing and inspecting incoming materials
- Final product testing
- Depreciation of testing equipment

Internal Failure Costs
- Scrap
- Spoilage
- Rework

External Failure Costs
- Cost of field servicing and handling complaints
- Warranty repairs
- Lost sales

Distribution of Quality Costs



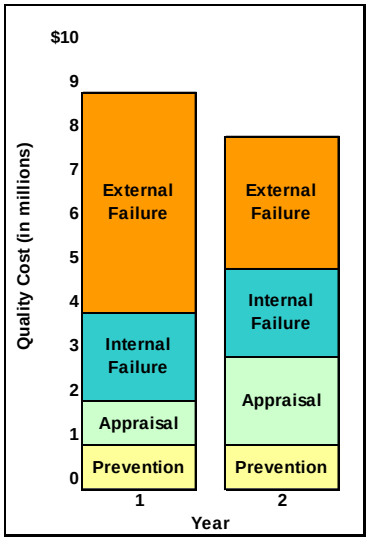
Quality Cost Report
For Years 1 and 2

	Year 2		Year 1	
	Amount	Percent*	Amount	Percent*
Prevention costs:				
Systems development	$ 400,000	0.80%	$ 270,000	0.54%
Quality training	210,000	0.42%	130,000	0.26%
Supervision of prevention activities	70,000	0.14%	40,000	0.08%
Quality improvement	320,000	0.64%	210,000	0.42%
Total prevention cost	1,000,000	2.00%	650,000	1.30%
Appraisal costs:				
Inspection	600,000	1.20%	560,000	1.12%
Reliability testing	580,000	1.16%	420,000	0.84%
Supervision of testing and inspection	120,000	0.24%	80,000	0.16%
Depreciation of test equipment	200,000	0.40%	140,000	0.28%
Total appraisal cost	1,500,000	3.00%	1,200,000	2.40%
Internal failure costs:				
Net cost of scrap	900,000	1.80%	750,000	1.50%
Rework labor and overhead	1,430,000	2.86%	810,000	1.62%
Downtime due to defects in quality	170,000	0.34%	100,000	0.20%
Disposal of defective products	500,000	1.00%	340,000	0.68%
Total internal failure cost	3,000,000	6.00%	2,000,000	4.00%
External failure costs:				
Warranty repairs	400,000	0.80%	900,000	1.80%
Warranty replacements	870,000	1.74%	2,300,000	4.60%
Allowances	130,000	0.26%	630,000	1.26%
Cost of field servicing	600,000	1.20%	1,320,000	2.64%
Total external failure cost	2,000,000	4.00%	5,150,000	10.30%
Total quality cost	$ 7,500,000	15.00%	$ 9,000,000	18.00%

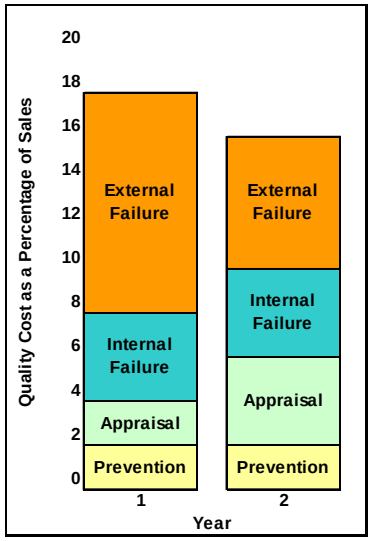
* As a percentage of total sales. In each year sales totaled $50,000,000.

Quality cost reports provide an estimate of the financial consequences of the company's current defect rate.

Quality Cost Reports in Graphic Form



Quality reports can also be prepared in graphic form.



Uses of Quality Cost Information

Help managers see the financial significance of defects.

Help managers identify the relative importance of the quality problems.

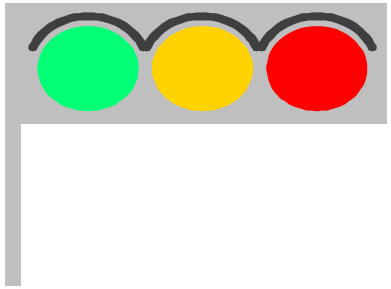
Help managers see whether their quality costs are poorly distributed.

Limitations of Quality Cost Information

Simply measuring and reporting quality cost problems does not solve quality problems.

Results usually lag behind quality improvement programs.

The most important quality cost, lost sales, is often omitted from quality cost reports.



ISO 9000 Standards

ISO 9000 standards have become international measures of quality.

To become ISO 9000 certified, a company must demonstrate:

1. **A quality control system is in use, and the system clearly defines an expected level of quality.**
2. **The system is fully operational and is backed up with detailed documentation of quality control procedures.**
3. **The intended level of quality is being achieved on a sustained basis.**

End of Chapter 2