

Chapter 2

Basic Cost Management Concepts and Accounting for Mass Customization Operations

Process of Management



What Do We Mean By a Cost?

p.38

**A cost
is the measure of
resources given
up to achieve a
particular purpose.**



Product costs are costs associated with goods for sale until the time period during which the products are sold, at which time the costs become expenses.

Period costs are costs that are expensed during the time period in which they are incurred.

Cost Classifications on Financial Statements – Income Statement

產品成本

Product Costs



Cost of goods sold

銷貨成本

期間成本

Period Costs

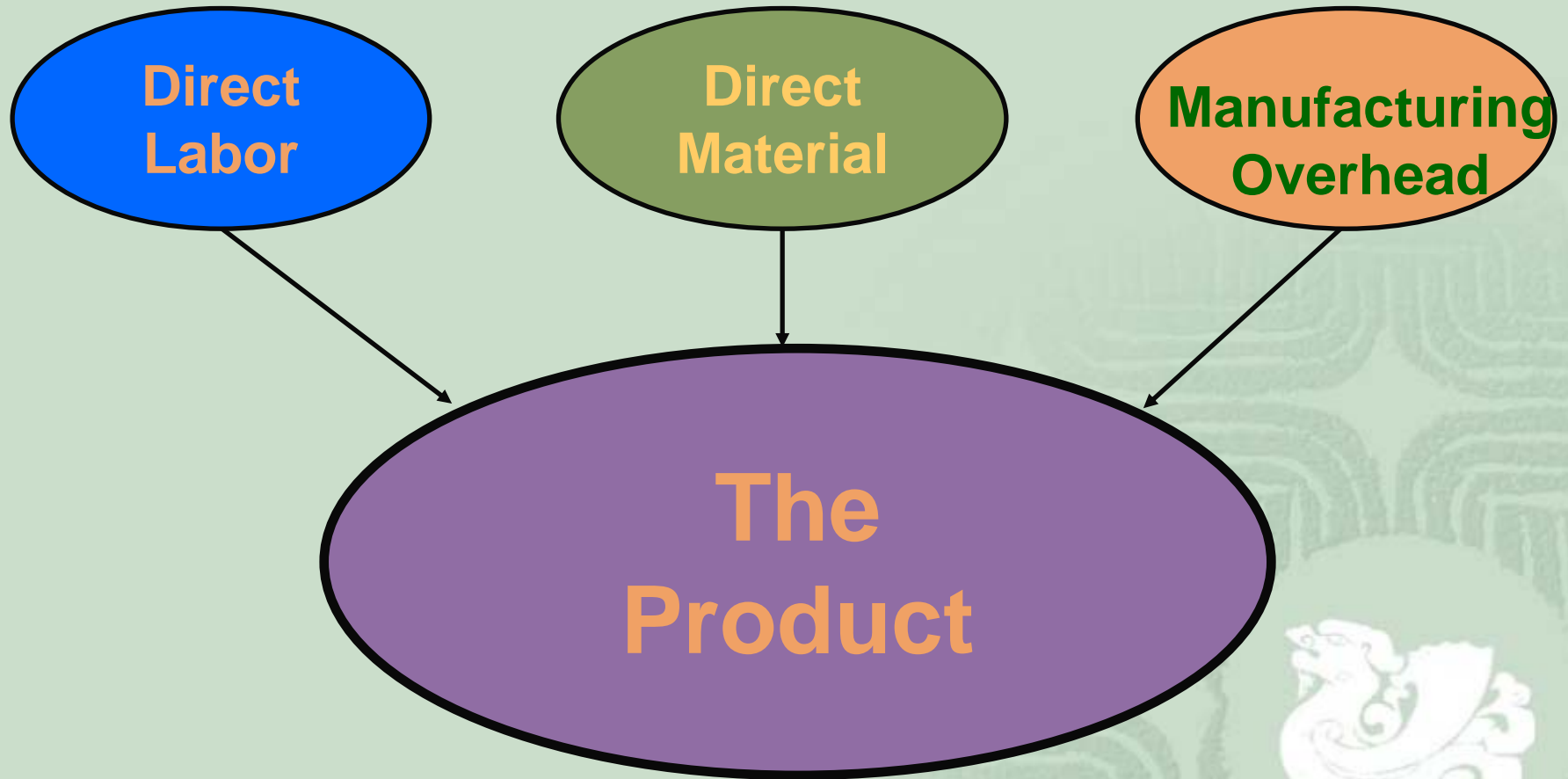


Operating expenses

營業費用

Manufacturing Costs

p.45



材料：



人工：



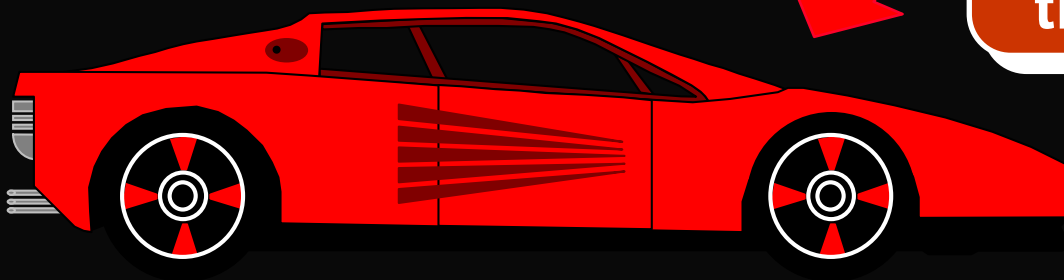
製造費用：



Direct Material 直接材料

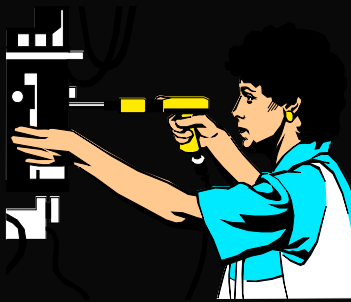
Cost of raw material that is used to make, and can be conveniently traced, to the finished product.

Example:
Steel used to
manufacture
the automobile.



Direct Labor 直接人工

Cost of salaries, wages, and fringe benefits for personnel who work directly on manufactured products.



Example:
Wages paid to an automobile assembly worker.

Overtime premium 加班津貼

p.46



Idle time 閒置時間



Manufacturing Overhead 製造費用

All other manufacturing costs

Indirect
Material

Indirect
Labor

Other
Costs

Materials used to support
the production process.
**Examples: lubricants and
cleaning supplies used in
an automobile assembly
plant.**



Manufacturing Overhead

All other manufacturing costs

Indirect
Material

Indirect
Labor

Other
Costs

Cost of personnel who do not work directly on the product. Examples: maintenance workers, janitors and security guards.



Manufacturing Overhead

All other manufacturing costs

Indirect
Material

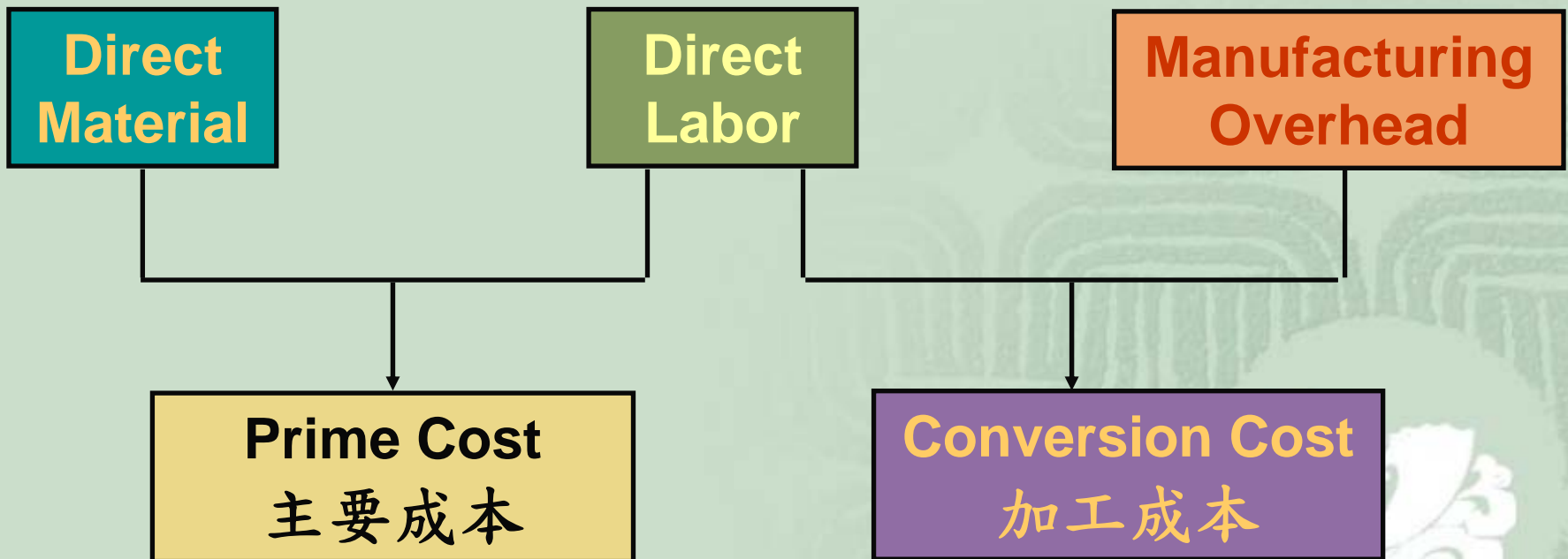
Indirect
Labor

Other
Costs

Examples: depreciation on plant and equipment, property taxes, insurance, utilities, overtime premium, and unavoidable idle time.

Manufacturing costs are often combined as follows:

p.47



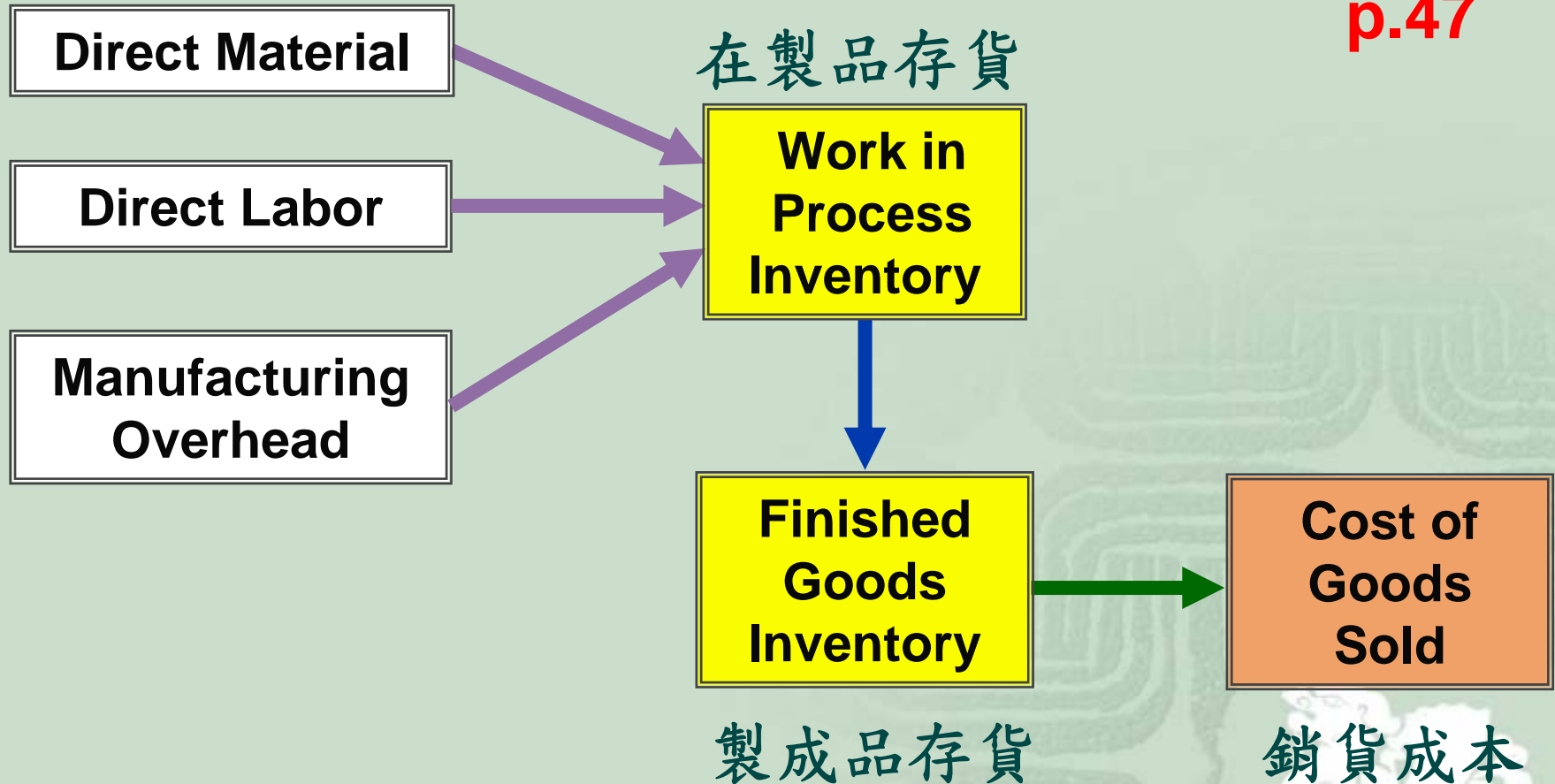
主要成本=
加工成本=

■ 產品成本



Manufacturing Cost Flows

p.47



Cost Classifications on Financial Statements – 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**

Schedule of Cost of Goods Manufactured

製成品成本表

Comet Computer Corporation Schedule of Cost of Goods Manufactured

Raw material used	\$ 134,980
Direct labor	50,000
Total manufacturing overhead	230,000
Total manufacturing costs	\$ 414,980
Add: Work-in-process inventory, January 1	120
Subtotal	\$ 415,100
Deduct: Work-in-process inventory, December 31	100
Cost of goods manufactured	\$ 415,000

Computation of Cost of Raw Material Used

Raw-material inventory, January 1	\$ 6,000
Add: Purchases of raw materials	134,000
Raw material available for use	140,000
Deduct: Raw material inventory, December 31	5,020
Raw material used	\$ 134,980

Schedule of Cost of Goods Manufactured

Raw material used	\$ 134,980
Direct labor	50,000
Total manufacturing overhead	230,000
Total manufacturing costs	\$ 414,980
Add: Work-in-process inventory, January 1	120
Subtotal	\$ 415,100
Deduct: Work-in-process inventory, December 31	100
Cost of goods manufactured	\$ 415,000

Schedule of Cost of Goods Manufactured

Include all direct labor costs incurred during the current period.

Schedule of Cost of Goods Manufactured

Raw material used	\$ 134,980
Direct labor	50,000
Total manufacturing overhead	230,000
Total manufacturing costs	\$ 414,980
Add: Work-in-process inventory, January 1	120
Subtotal	\$ 415,100
Deduct: Work-in-process inventory, December 31	100
Cost of goods manufactured	\$ 415,000

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Computation of Total Manufacturing Overhead

Indirect material	\$ 10,000
Indirect labor	40,000
Depreciation on factory	90,000
Depreciation on equipment	70,000
Utilities	15,000
Insurance	5,000
Total manufacturing overhead	\$ 230,000

Raw mater

Direct labor

Total manufacturing overhead

Total manufacturing costs

Add: Work-in-process inventory, January 1

Subtotal

Deduct: Work-in-process inventory, December 31

Cost of goods manufactured

50,000

230,000

\$ 414,980

120

\$ 415,100

100

\$ 415,000

Schedule of Cost of Goods Manufactured

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

Comet Computer Schedule of Cost of Goods Manufactured

Raw material used	\$ 134,980
Direct labor	50,000
Total manufacturing overhead	230,000
Total manufacturing costs	\$ 414,980
Add: Work-in-process inventory, January 1	120
Subtotal	\$ 415,100
Deduct: Work-in-process inventory, December 31	100
Cost of goods manufactured	\$ 415,000

Schedule of Cost of Goods Manufactured

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

Raw material used	\$ 134,980
Direct labor	50,000
Total manufacturing overhead	230,000
Total manufacturing costs	\$ 414,980
Add: Work-in-process inventory, January 1	120
Subtotal	\$ 415,100
Deduct: Work-in-process inventory, December 31	100
Cost of goods manufactured	\$ 415,000

Income Statement for a Manufacturer

Comet Computer Corporation
Income Statement
For the Year Ended December 31, 20X2

Sales revenue	\$ 700,000
Less: Cost of goods sold	415,010
Gross margin	\$ 284,990
Selling and administrative expenses	174,490
Income before taxes	\$ 110,500
Income tax expense	30,000
Net income	\$ 80,500

Income Statement for a

Comet Computer Corporation
Schedule of Cost of Goods Sold
For the Year Ended December 31, 20X2

Finished-goods inventory, Jan. 1	\$ 200
Add: Cost of goods manufactured	415,000
Cost of goods available for sale	415,200
Deduct Finished-goods inventory, Dec. 31	190
Cost of goods sold	\$ 415,010

Sales revenue	\$ 700,000
Less: Cost of goods sold	415,010
Gross margin	\$ 284,990
Selling and administrative expenses	174,490
Income before taxes	\$ 110,500
Income tax expense	30,000
Net income	\$ 80,500

Cost Drivers 成本動因

p.50

Cost Examples

Activities

Cost Driver

Machining
Setup
Production
Inspection
Purchasing
Shop order handling
Valve assembly support

Activities that
cause costs to be
incurred are called
cost drivers.

hours
during orders
ected
se orders
op orders
customer requisitions

Cost Classifications



Cost Behavior 成本習性

Cost behavior means how a cost will react to changes in the level of business activity.

∞ **variable costs** 變動成本

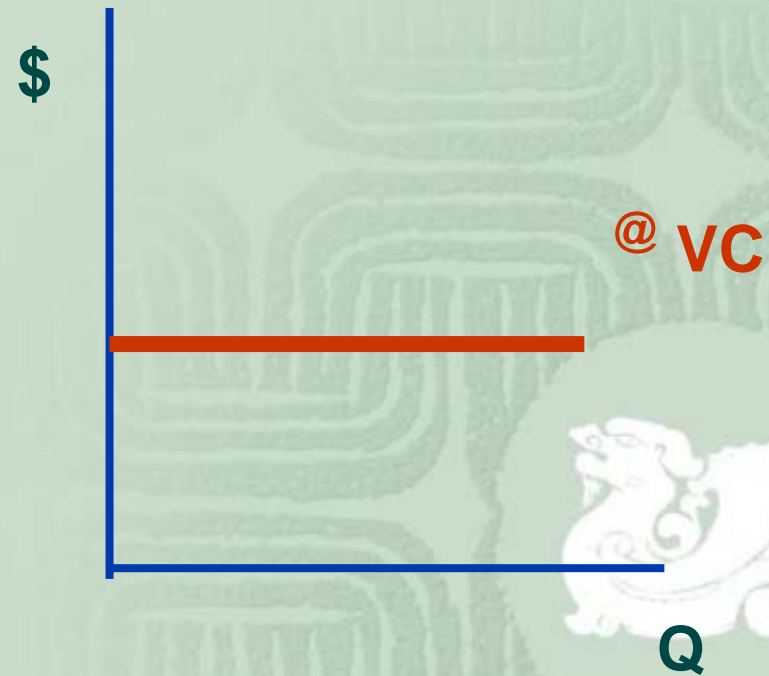
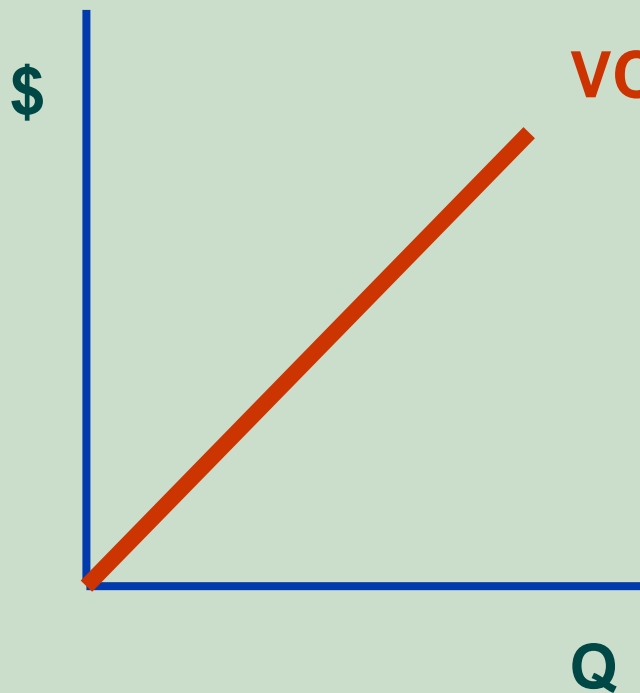
∞ **fixed costs** 固定成本

∞ **semi-variable costs** 半變動成本



Variable Cost

- **Total** variable costs change when activity changes.
- The variable cost **per unit** is constant.



變動成本例子：

p.52

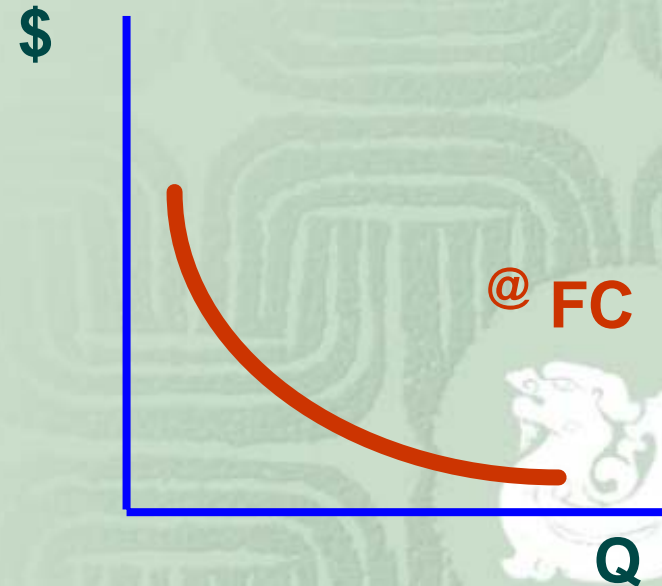
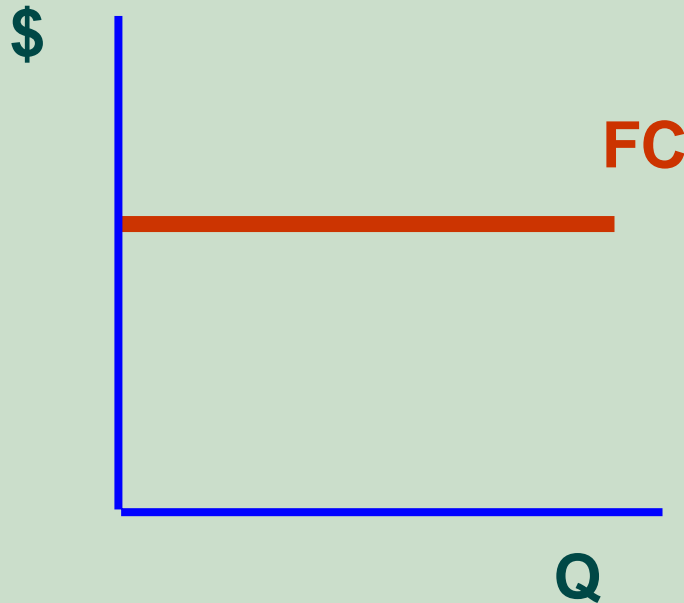
B. Tabulation of Variable Cost

Activity (or cost driver)	Variable Cost per Unit	Total Variable Cost
1.....	\$100	\$ 100
4.....	100	400
18.....	100	1,800
30.....	100	3,000



Fixed Cost

- **Total** fixed costs remain unchanged when activity changes.
- The average cost **per unit** decreases as more units are made.



固定成本例子：

p.53

B. Tabulation of Fixed Cost

Activity (or cost driver)	Fixed Cost per Unit	Total Fixed Cost
1	\$150,000	\$150,000
2	75,000	150,000
5	30,000	150,000
10	15,000	150,000
11	13,636*	150,000
20	7,500	150,000
21	7,143*	150,000
30	5,000	150,000

*Rounded.



半變動成本



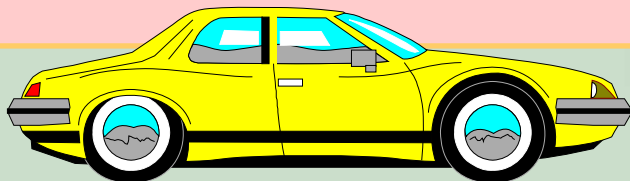
Summary of Variable and Fixed Cost Behavior

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.	Fixed cost per unit goes down as activity level goes up.

Direct and Indirect Costs p.55

Direct costs 直接成本

- Costs that can be easily and conveniently traced to a product or department.
- **Example:** cost of paint in the paint department of an automobile assembly plant.



Indirect costs 間接成本

- Costs that must be allocated in order to be assigned to a product or department.
- **Example:** cost of national advertising for an airline is indirect to a particular flight.



Direct and Indirect Costs

- A cost can be direct to the department, but indirect to units of product produced in the department.
 - ∞ Example: department manager's salary.
- **Cost objective** 成本標的



Controllable and Uncontrollable Costs

可控制成本

不可控制成本

A cost that can be significantly influenced by a manager is a controllable cost.

Cost item	Manager	Classification
Cost of food used in a restaurant	Restaurant manager	Controllable
Cost of national advertising by a restaurant chain	Restaurant manager	Uncontrollable

Cost Item	Manager	Classification
Cost of raw material used to produce computer chips in an Intel factory	Supervisor of the production department for computer chips	Controllable (The production supervisor can exercise some control over the quantity of material used by ensuring that waste and defective units are minimized.)
Cost of food used in a Subway restaurant	Restaurant manager	Controllable (The restaurant manager exercises some control over the quantity of food used by scheduling production to ensure that excess food is not produced and wasted.)
Cost of national advertising for the Alamo car rental company	Manager of the Alamo rental agency at the Orlando airport	Uncontrollable
Cost of national accounting and data processing operations for Target	Manager of a Target store in Gainesville, Florida	Uncontrollable

Opportunity Cost 機會成本

p.56

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 \$20,000 per year. Your opportunity cost of attending college for one year is \$20,000.

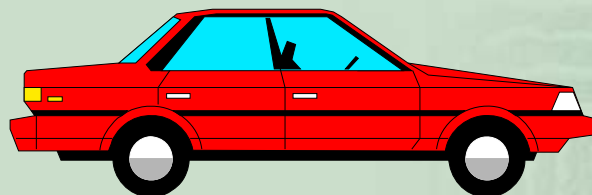


Sunk Costs 沈沒成本

p.56

All costs incurred in the past that cannot be changed by any decision made now or in the future are sunk costs. Sunk costs should not be considered in decisions.

Example: You bought an automobile that cost \$12,000 two years ago. The \$12,000 cost is sunk because whether you drive it, park it, trade it, or sell it, you cannot change the \$12,000 cost.



Differential Costs 差異成本

p.58

Costs that differ between alternatives.

Example: You can earn \$1,500 per month in your hometown or \$2,000 per month in a nearby city. Your commuting costs are \$50 per month in your hometown and \$300 per month to the city.

What is your differential cost?

$$\mathbf{\$300 - \$50 = \$250}$$



Marginal Costs and Average Costs

邊際 成本



The extra cost incurred to produce one additional unit.

平均 成本



The total cost to produce a quantity divided by the quantity produced.

Marginal and average costs are largely a function of cost behavior -- variable and fixed costs.

Number of Laptop Computers Produced	Total Cost of Producing Laptops	Marginal Cost of Producing a Laptop
1.....	\$ 2,000	
2.....	3,900	Difference is \$1,900 → Marginal cost of 2nd laptop is \$1,900
<hr/>		
10.....	18,000	
11.....	19,690	Difference is \$1,690 → Marginal cost of 11th laptop is \$1,690
<hr/>		
100.....	150,000	
101.....	150,995	Difference is \$995 → Marginal cost of 101st laptop is \$995