

Project Cost Management

PMG 213

Lecture 2

**Prepared by
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Cost Classifications



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Purposes of cost classification:

Managerial accounting is concerned with providing information to managers within an organization so that they can formulate plans, control operations, and make decisions.

Purposes of cost classification

Assigning costs to cost objects

Accounting for costs in manufacturing companies

Preparing financial statements

Predicting cost behavior in response to changes in activity

Making decisions

Cost classification

Classifications of Manufacturing Costs

Direct
Materials

Direct
Labor

Manufacturing
Overhead

Cost classification

- A **cost** is a sacrifice made to obtain some benefit.
 1. In managerial accounting, costs are often classified according to the decision-making needs of management.
 - For example, costs are often classified by their relationship to a segment of operations, called a **cost object**.
 - A cost object may be a product, a sales territory, a department, or an activity, such as research and development.

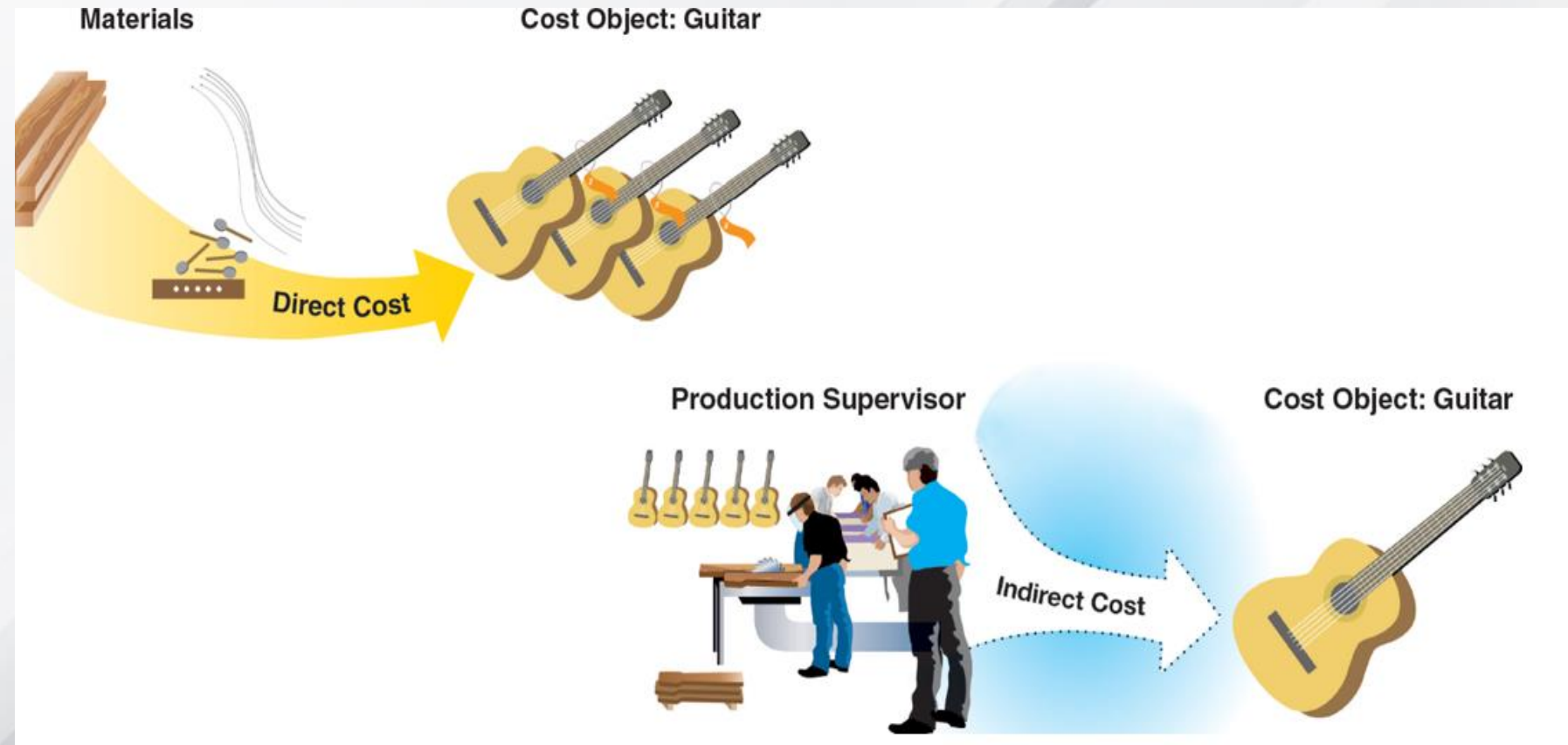
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Cost classification

- Costs identified with cost objects are either direct costs or indirect costs.
 1. **Direct costs** are identified with and can be traced to a cost object.
 - For example, the cost of wood used to make guitars is a direct cost.
 2. **Indirect costs** cannot be identified with or traced to a cost object.
 - For example, the salaries of production supervisors are indirect costs of producing a guitar because their salaries cannot be identified with or traced to any individual guitar.

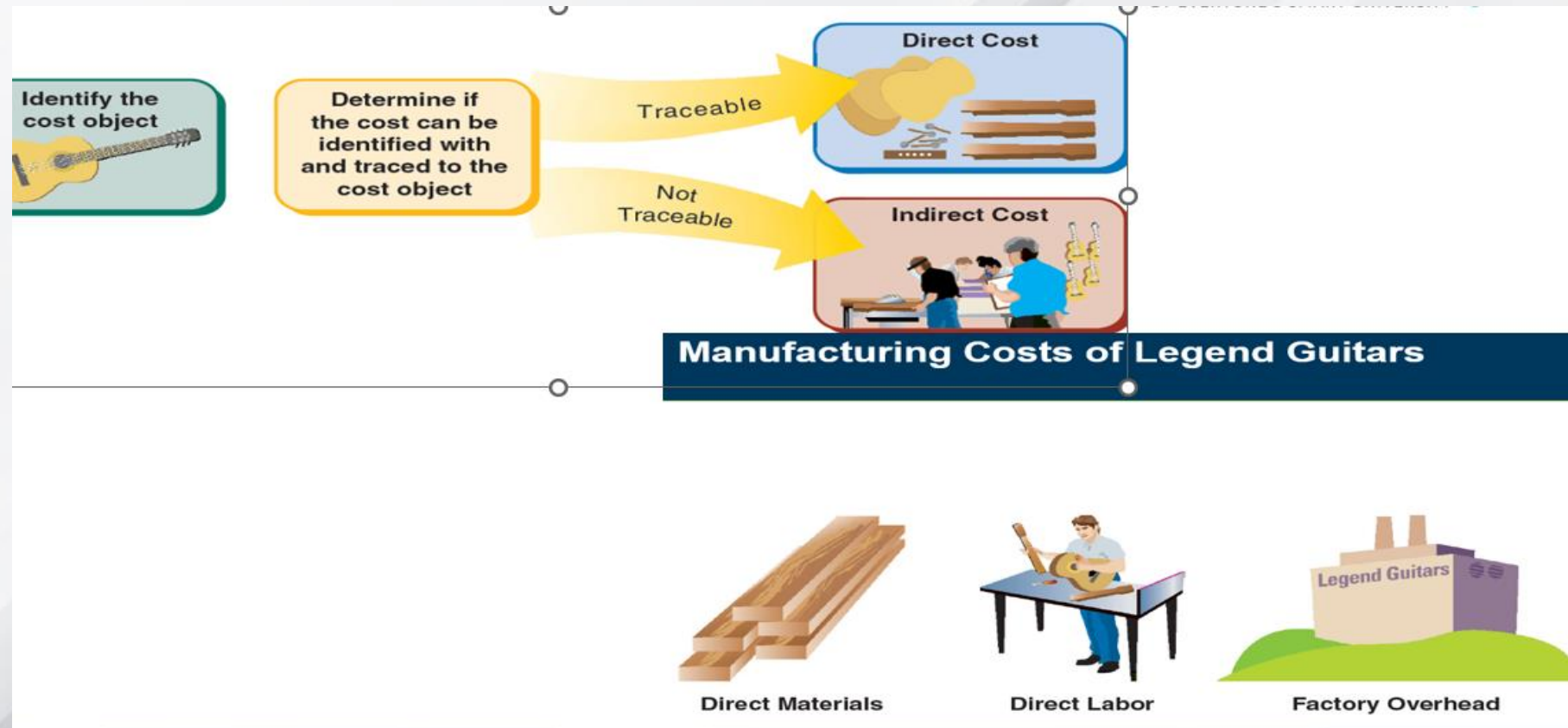
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Cost classification



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Cost classification



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Manufacturing Costs:

- The cost of a manufactured product includes the cost of materials used in making the product.
- In addition, the cost of a manufactured product includes the cost of converting the materials into a finished product.
- Thus, the cost of a finished product includes:
 1. Direct materials cost
 2. Direct labor cost
 3. Factory overhead cost

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

Common costs

- Indirect costs incurred to support a number of cost objects. These costs cannot be traced to any individual cost object.

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Example for Direct Cost (Traceable)

A company manufactures smartphones (e.g., Apple iPhone). The cost of the OLED screen display is a **Direct Material**, and the assembly-line worker's wage is **Direct Labor**. Both can be easily traced directly to each phone.

Example for Indirect Cost (Not Traceable) & Common Cost

The factory building's electricity bill and the salary of the factory security guard. These costs support the production of all phone models. They cannot be traced to an individual phone, making them Indirect/Common Costs.

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Direct materials Cost:

- Manufactured products begin with raw materials that are converted into finished products.
- To be classified as a **direct materials cost**, the cost must be both of the following:
 1. An integral part of the finished product
 2. A significant portion of the total cost of the product
- Examples of direct materials costs include the following:
 1. The cost of the wood used in producing a guitar
 2. The cost of electronic components for a television
 3. Silicon wafers for microcomputer chips
 4. Tires for an automobile

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Direct Labor Cost:

- Most manufacturing processes use employees to convert materials into finished products.
- The cost of employee wages that is an integral part of the finished product is classified as **direct labor cost**.
- A direct labor cost must meet both of the following criteria:
 1. An integral part of the finished product
 2. A significant portion of the total cost of the product
- Examples of direct labor costs include the following:
 1. The wages of employees who cut guitars out of raw lumber and assemble them
 2. Mechanics' wages for repairing an automobile
 3. Machine operators' wages for manufacturing tools
 4. Assemblers' wages for assembling a laptop computer

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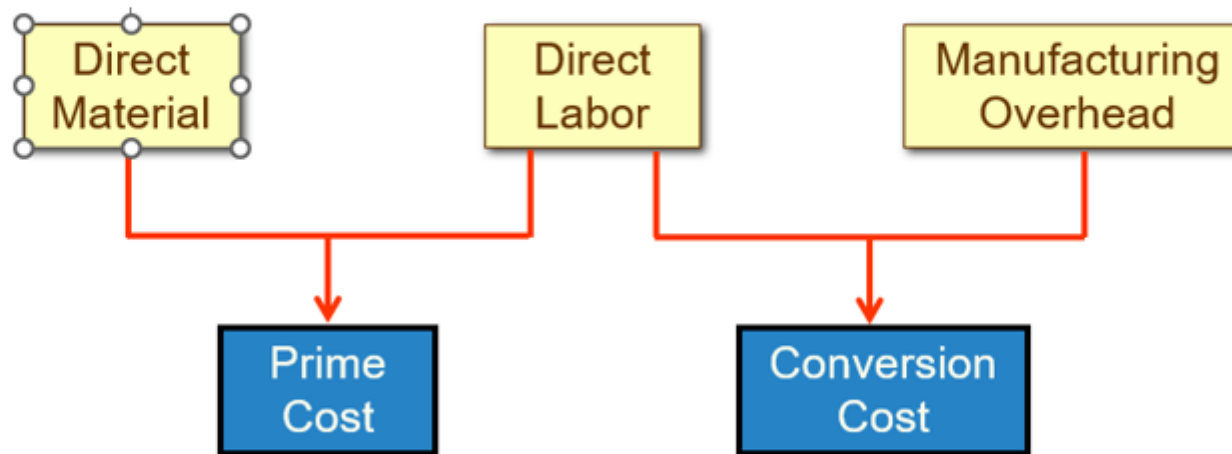
Factory overhead Cost:

- Costs other than direct materials cost and direct labor that are incurred in the manufacturing process are combined and classified as **factory overhead cost** (sometimes called **manufacturing overhead** or **factory burden**).
- All factory overhead costs are indirect costs of the product.
- Some factory overhead costs include the following:
 1. Heating and lighting the factory
 2. Repairing and maintaining factory equipment
 3. Property taxes on factory buildings and land
 4. Insurance on factory buildings
 5. Depreciation of factory plant and equipment

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Prime and Conversion costs

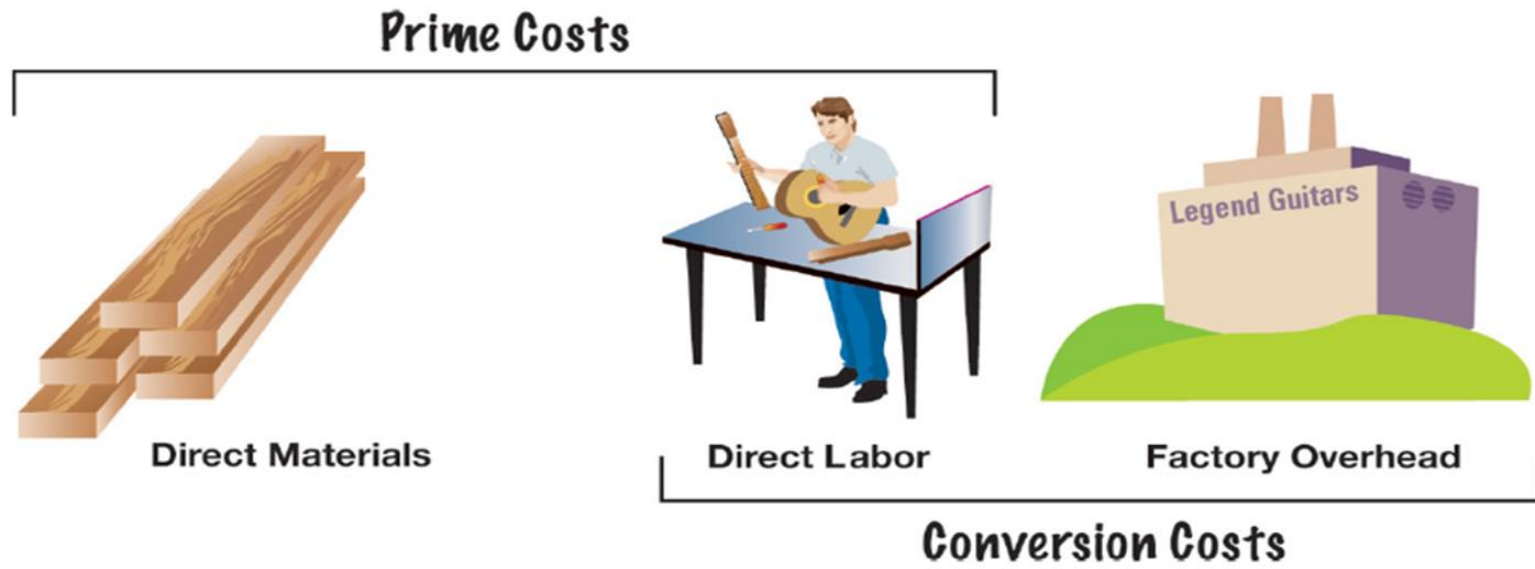
Manufacturing costs are often classified as follows:



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Prime and Conversion costs

- Direct materials, direct labor, and factory overhead costs may be grouped together for analysis and reporting.
 1. Two such common groupings are as follows:
 - **Prime costs**, which consist of direct materials and direct labor costs
 - **Conversion costs**, which consist of direct labor and factory overhead costs
 - Conversion costs are the costs of converting the materials into a finished product.
- Direct labor is both a prime cost and a conversion cost.



Prime and
Conversion costs

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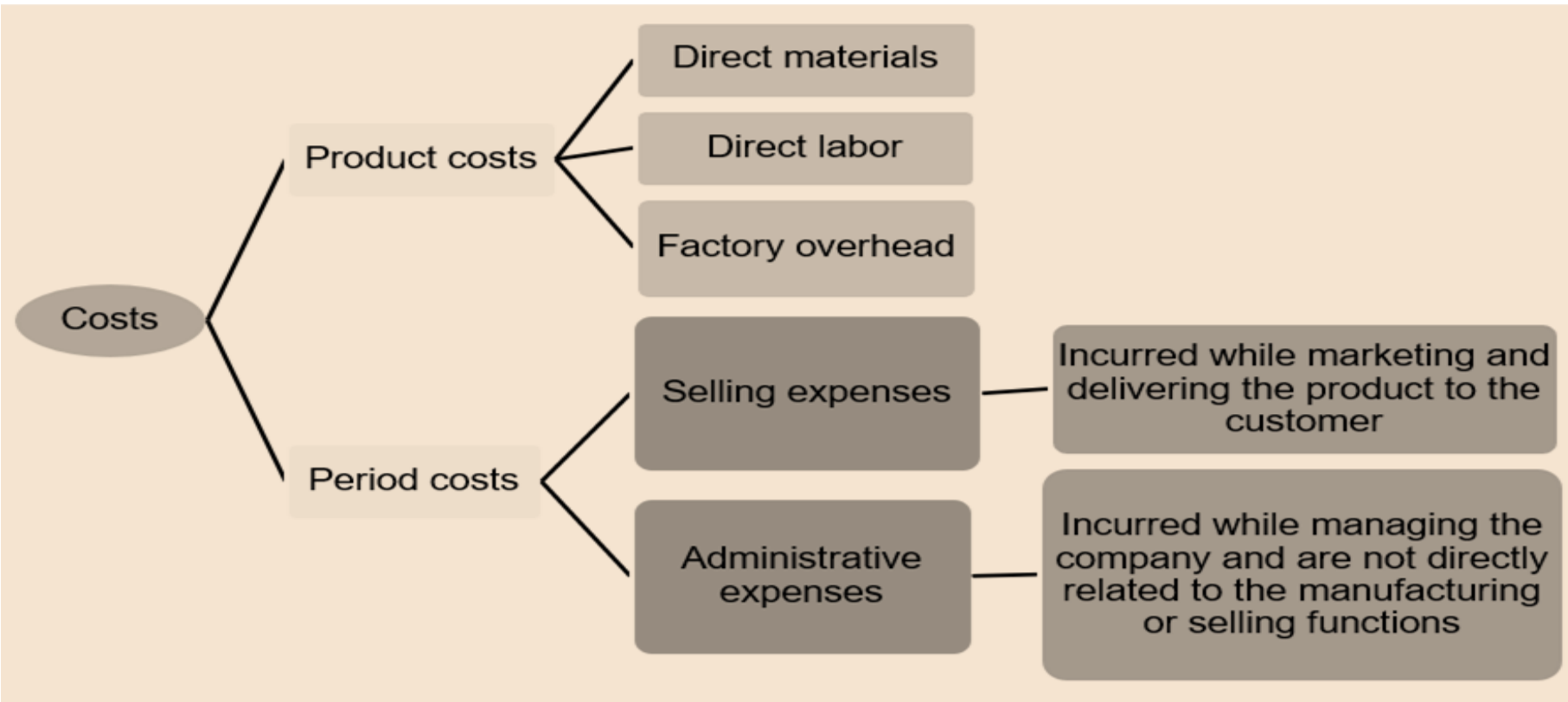
Cost Classifications

Cost classifications used to prepare financial statements: product costs and period costs.

Product Costs

Product costs includes all the costs that are involved in acquiring or making a product.

Product costs “attach” to a unit of product as it is purchased or manufactured and they stay attached to each unit of product as long as it remains in inventory awaiting sale.



Period and Product costs

Product (Manufacturing) Costs



Direct Materials Cost

- Wood used in neck and body



Direct Labor Cost

- Wages of saw operator
- Wages of employees who assemble the guitar



Factory Overhead

- Guitar strings
- Wages of janitor
- Power to run the machines
- Depreciation expense—factory building
- Sandpaper and buffing materials
- Oil used to lubricate machines
- Salary of production supervisors

Period (Nonmanufacturing) Costs

Selling Expenses

- Advertising expenses
- Sales salaries expenses
- Commissions expenses

Administrative Expenses

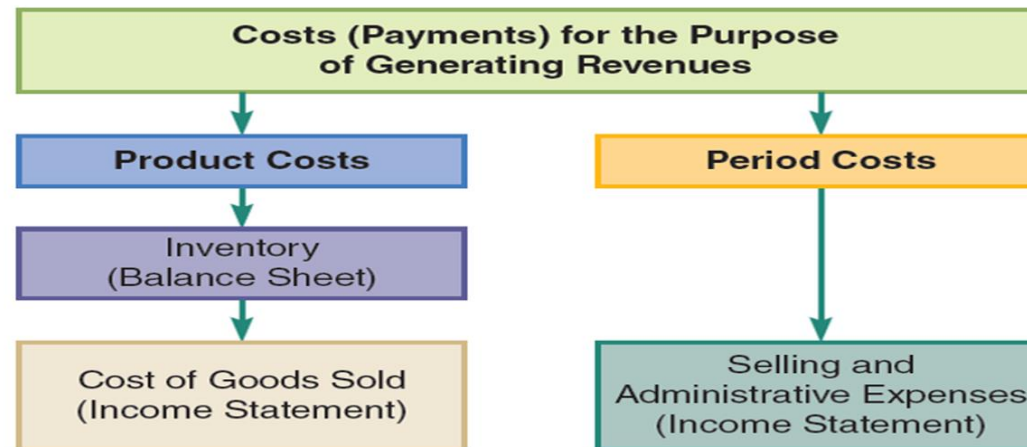
- Office salaries expense
- Office supplies expense
- Depreciation expense—office building and equipment

Examples
of
Period
and
Product
costs

- As product costs are incurred, they are recorded and reported on the balance sheet as inventory. When the inventory is sold, the cost of the manufactured product sold is reported as cost of goods sold on the income statement.
- Period costs are reported as expenses on the income statement in the period in which they are incurred, and, thus, they never appear on the balance sheet.



**Period
and
Product
costs**



Product vs. Period Costs: Product Cost (Manufacturing Inventory) : In an automobile plant, the steel sheets used for the car body, the wages of the welding team, and the factory equipment depreciation are Product Costs. They are stored as assets (Inventory) on the Balance Sheet until the car is sold.

Period Cost (Nonmanufacturing Expense) The salary of the car company's CEO, the rent for the corporate sales showroom, and TV commercial costs are **Period Costs**. They are expensed immediately on the Income Statement.

**Period
and
Product
Costs and
Financial
statements**

For manufacturing companies, product costs include:

- **Raw materials:** includes any materials that go into the final product.
- **Work in process:** consists of units of product that are only partially complete and will require further work before they are ready for sale to the customer.
- **Finished goods costs:** consists of completed units of product that have not yet been sold to customers.

Manufacturing
Product
Costs

- When direct materials are used in production, their costs are transferred from Raw Materials to Work in Process.
- Direct labor and manufacturing overhead costs are added to Work in Process to convert direct materials into finished goods.
- Once units of product are completed, their costs are transferred from Work in Process to Finished Goods.
- When a manufacturer sells its finished goods to customers, the costs are transferred from Finished Goods to Cost of Goods Sold.

Transfer
Of
Product
costs

Cost Classifications for Preparing Financial Statements

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



Period costs include all selling costs and administrative costs.



Cost
Classification

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

The most common classifications are:

- **Variable costs.**
- **Fixed costs.**
- **Mixed costs.**

**Cost
Classification
For
Predicting
Cost
Behavior**

A cost that varies, in total, in direct proportion to changes in the level of activity.

A variable cost per unit is constant.

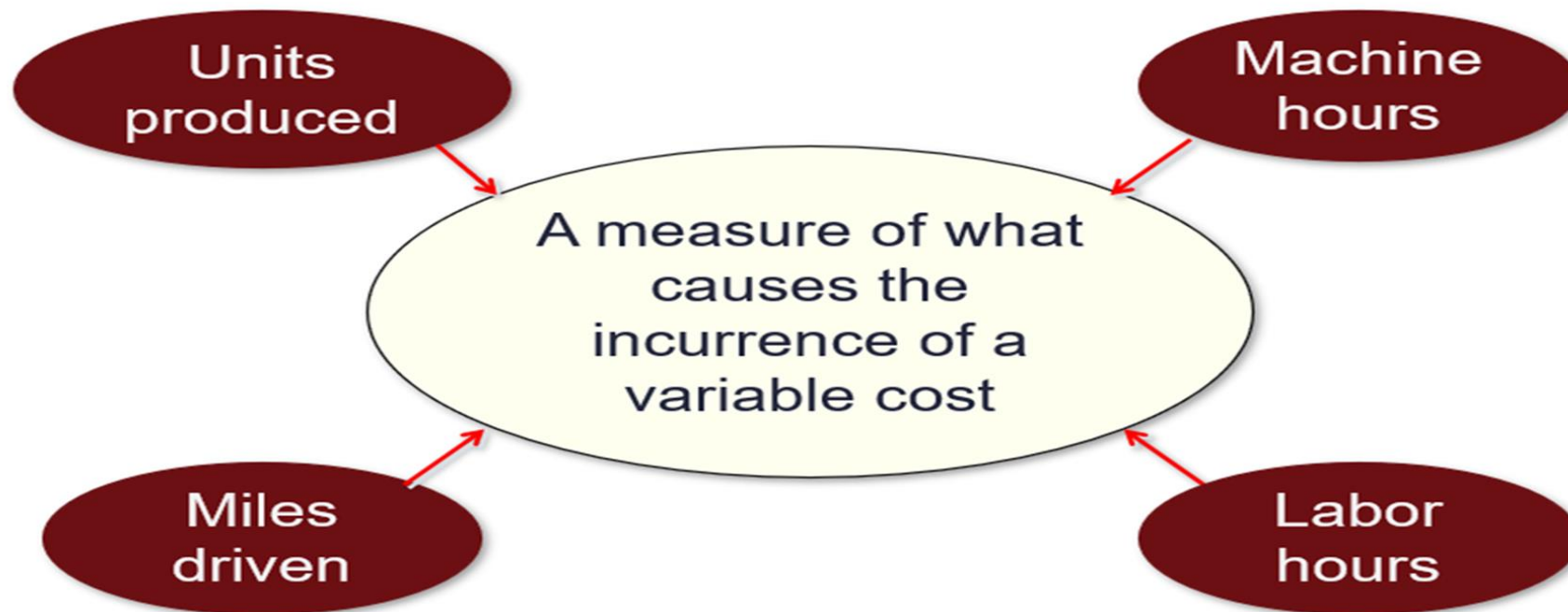
**Variable
cost**

A cost that remains constant, in total, regardless of changes in the level of the activity.

If expressed on a per unit basis, the average fixed cost per unit varies inversely with changes in activity.

**Fixed
cost**

An Activity Base (Cost Driver)



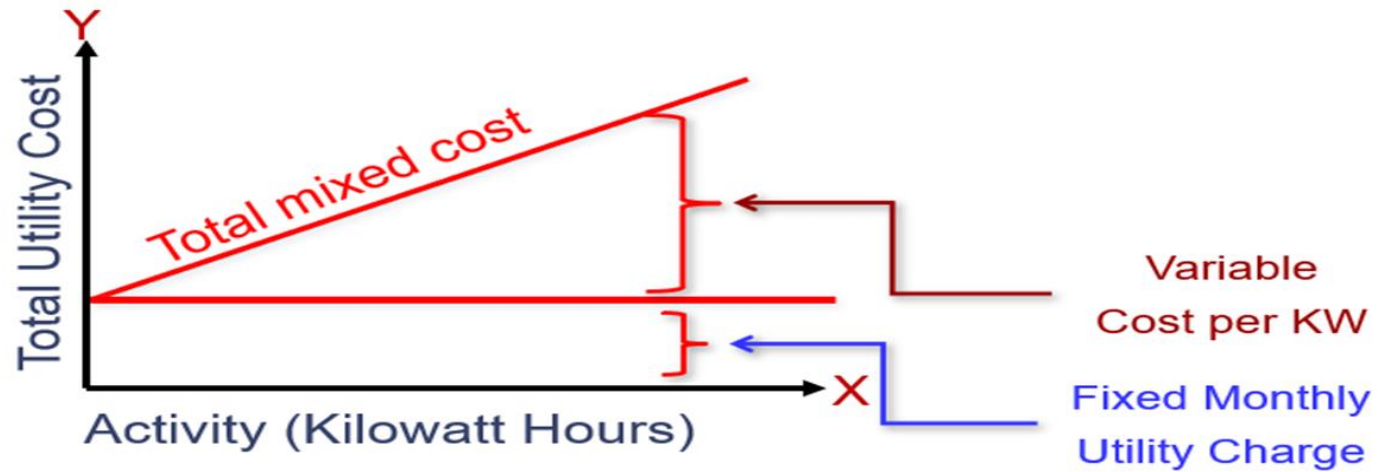
Behavior of Cost (within the relevant range)		
Cost	In Total	Per Unit
Variable	Total variable cost Increase and decrease in proportion to changes in the activity level.	Variable cost per unit remains constant.
Fixed	Total fixed cost is not affected by changes in the activity level within the relevant range.	Fixed cost per unit decreases as the activity level rises and increases as the activity level falls.

Variable Cost Example: A bakery produces cakes. The cost of flour and sugar is a Variable Cost. If they bake 0 cakes, the total cost is \$0. If they bake 1,000 cakes, the total cost rises in direct proportion. However, the cost of flour per individual cake remains constant

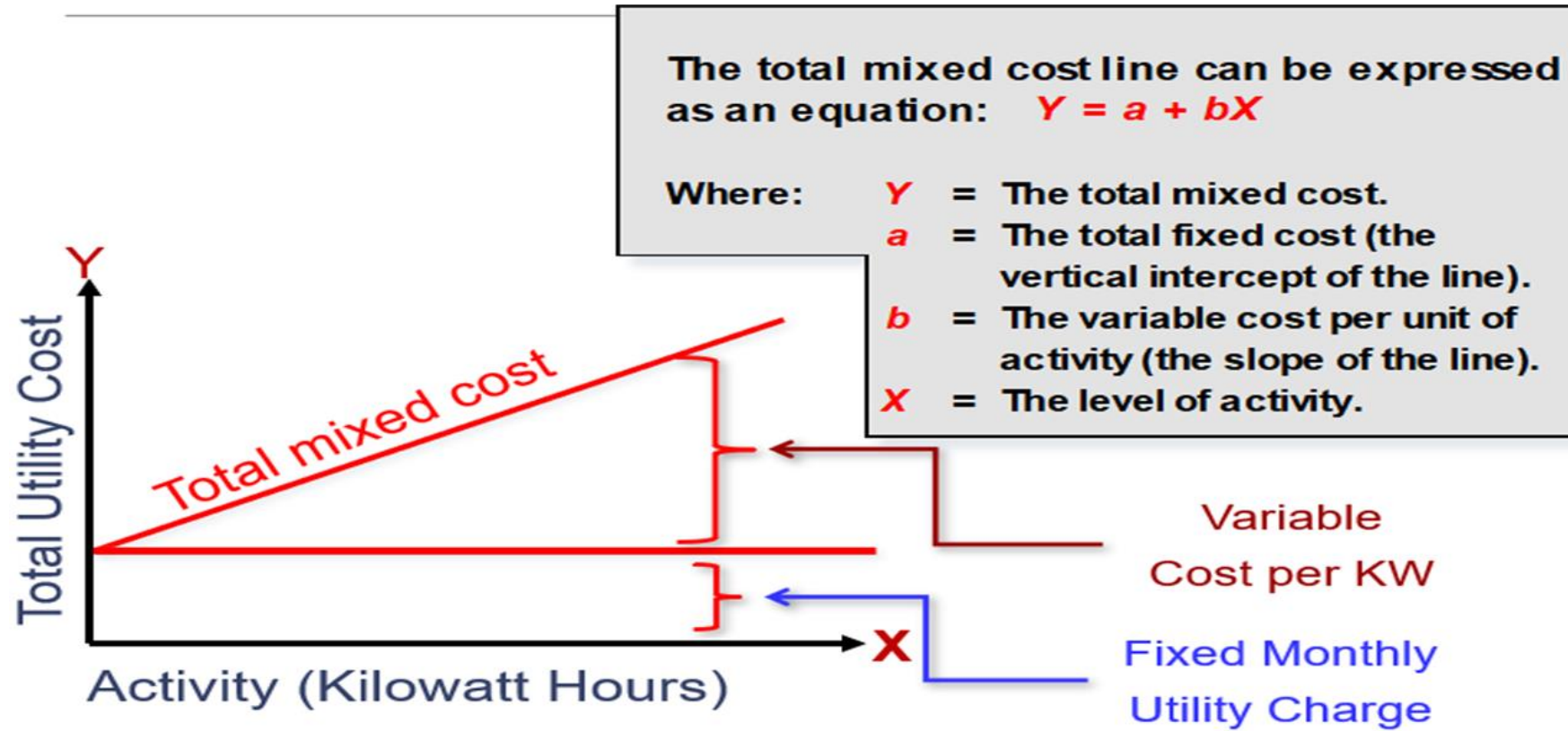
Fixed Cost Example: The bakery pays \$2,000 per month in rent for its shop. This is a Fixed Cost. Whether they bake 10 cakes or 2,000 cakes, the total rent is strictly \$2,000. If they produce more cakes, the average rent cost *per cake* decreases.

Comparison
Of
Cost
Classifications
For
Predicting
Cost
behavior

A mixed cost contains both variable and fixed elements. Consider the example of utility cost.



Mixed
costs



Mixed
costs

Mixed Costs – An Example

If your fixed monthly utility charge is \$40, your variable cost is \$0.03 per kilowatt hour, and your monthly activity level is 2,000 kilowatt hours, what is the amount of your utility bill?

$$Y = a + bX$$

$$Y = \$40 + (\$0.03 \times 2,000)$$

$$Y = \underline{\$100}$$

Mixed
costs

**Selling
Costs**



Costs necessary to secure the order and deliver the product. Selling costs can be either direct or indirect costs.

**Administrative
Costs**



All executive, organizational, and clerical costs. Administrative costs can be either direct or indirect costs.

**Nonmanufacturing
Costs**

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Cost classifications for decision making

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

Decisions involve choosing between alternatives. The goal of making decisions is to identify those costs that are either relevant or irrelevant to the decision.

To make decisions, it is essential to have a grasp on three concepts: differential costs, sunk costs, and opportunity costs.

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Cost classifications for decision making

Differential costs (or incremental costs) are the difference in cost between any two alternatives.

A difference in revenue between two alternatives is called differential revenue.

Both are always relevant to decisions.

Differential costs can be either fixed or variable.

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Cost classifications for decision making

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

Sunk Cost Example

A tech firm spent \$50,000 last year developing a software prototype that failed. This \$50,000 is a **Sunk Cost**. When deciding today whether to scrap the project or start a completely new one, that money is gone and must be ignored.

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OPPORTUNITY COST

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

These costs are not usually found in accounting records but must be explicitly considered in every decision.

For students: What is the opportunity cost you incur by attending class?

Example: You own an empty warehouse. Alternative A is to use it for your own inventory storage. Alternative B is to rent it out to another business for \$3,000 a month. If you choose Alternative A, the \$3,000 of lost rental income is your **Opportunity Cost**.

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The Traditional and Contribution Formats

Prepare income statements for a merchandising company using the traditional and contribution formats.

Comparison of the Contribution Income Statement with the Traditional Income Statement			
Traditional Format		Contribution Format	
Sales	\$ 100,000	Sales	\$ 100,000
Cost of goods sold	70,000	Variable expenses	60,000
Gross margin	\$ 30,000	Contribution margin	\$ 40,000
Selling & admin. expense	20,000	Fixed expenses	30,000
Net operating income	\$ 10,000	Net operating income	\$ 10,000

Used primarily for external reporting.

Used primarily by management.

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The contribution income statement format is used as an internal planning and decision-making tool. this approach is used for:

- Cost-volume-profit analysis .
- Segmented reporting of profit data .
- Budgeting .
- Special decisions such as pricing and make-or-buy analysis .

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- ____ .1 Prime Costs
- 2. ____ Sunk Costs
- 3. ____ Period Costs
- 4. ____ Mixed Costs
- 5. ____ Common Costs
- 6. ____ Variable Costs
- 7. ____ Conversion Costs
- 8. ____ Opportunity Costs

- A.** The prospective benefit or forgone revenue that is given up when choosing one alternative operational path over another.
- B.** Costs that remain completely unchanged in total amount within the relevant range, but vary inversely per unit when activity volume shifts.
- C.** Costs containing both a baseline flat-rate financial obligation and a usage-driven operational rate that scales up with machine hours.
- D.** The foundational direct outlays required to begin manufacturing an item, calculated mathematically as Direct Materials plus Direct Labor.
- E.** Outlays that are expensed immediately on the Income Statement in the specific timeframe they occur because they do not relate to physical manufacturing.
- F.** An indirect operational expenditure that supports multiple individual segments or products simultaneously and cannot be traced to a single item.
- G.** Past financial expenditures that have already occurred, cannot be recovered by any future corporate action, and must be completely ignored during managerial decisions.
- H.** Expenditures that remain completely constant on a per-unit basis, but scale up or down in direct, straight-line proportion to total production activity.
- I.** The combined operational outlays required to transform raw materials into finished wholesale products, calculated as Direct Labor plus Manufacturing Overhead.

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- **1. D Explanation:** Prime costs represent the direct, basic building blocks of production: Direct Materials + Direct Labor.
 - **2. G Explanation:** Sunk costs are historical outlays that cannot be changed and carry no relevance for forward-looking decisions.
 - **3. E Explanation:** Period costs are nonmanufacturing costs (selling and administrative) that are deducted from revenue immediately.
 - **4. C Explanation:** Mixed costs contain a fixed cost component combined with a variable rate driven by volume.
 - **5. F Explanation:** Common costs are shared by multiple cost objects and cannot be logically split or traced to just one.
 - **6. H Explanation:** Total variable costs change proportionally with activity, while the variable cost per unit remains uniform.
 - **7. I Explanation:** Conversion costs are the manual workforce and factory resources needed to convert inventory: Direct Labor + Manufacturing Overhead.
 - **8. A Explanation:** Opportunity costs represent the financial sacrifice of the next best alternative that you did not choose.
- **Note:** Option B is a distractor describing Fixed Costs.



Thank You