Activity-Based Costing

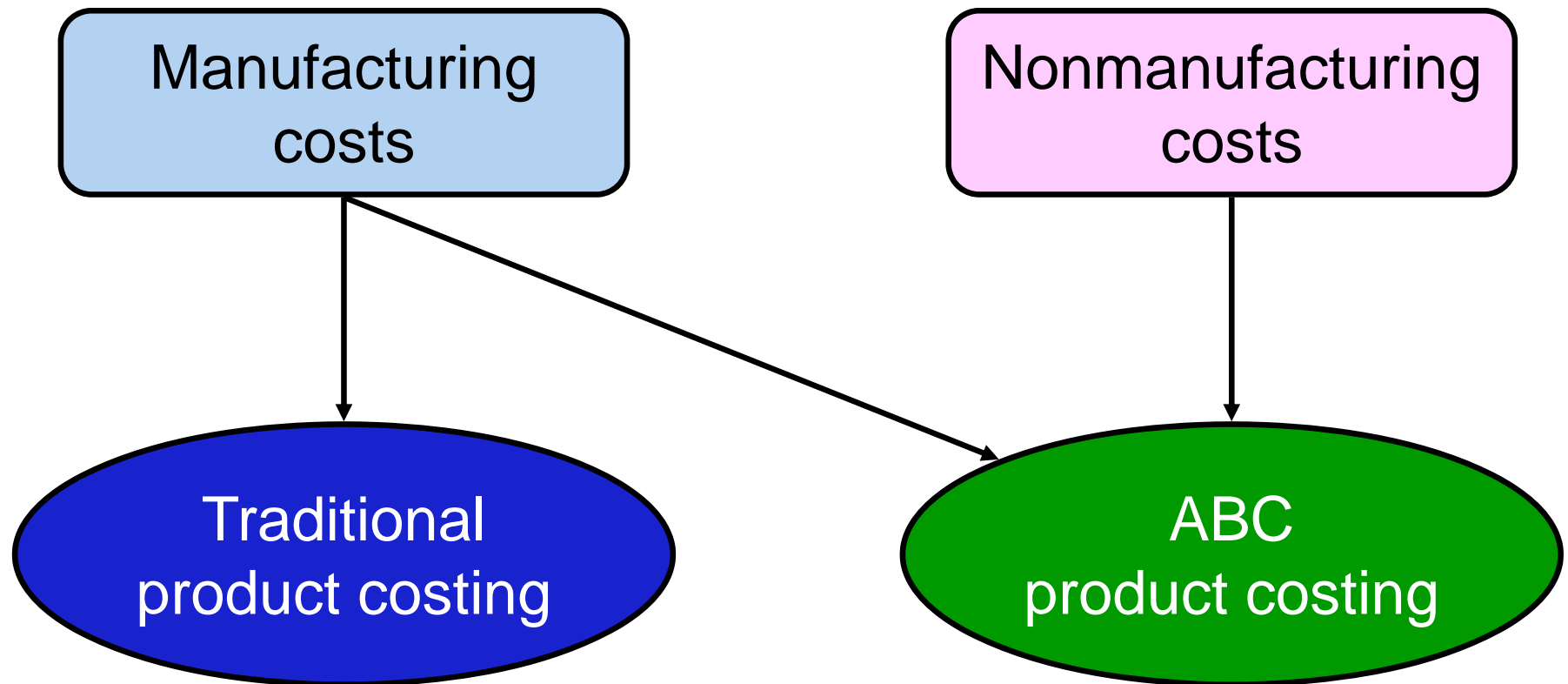# Volume-Based vs. Activity-Based

How Costs are Treated Under ABC

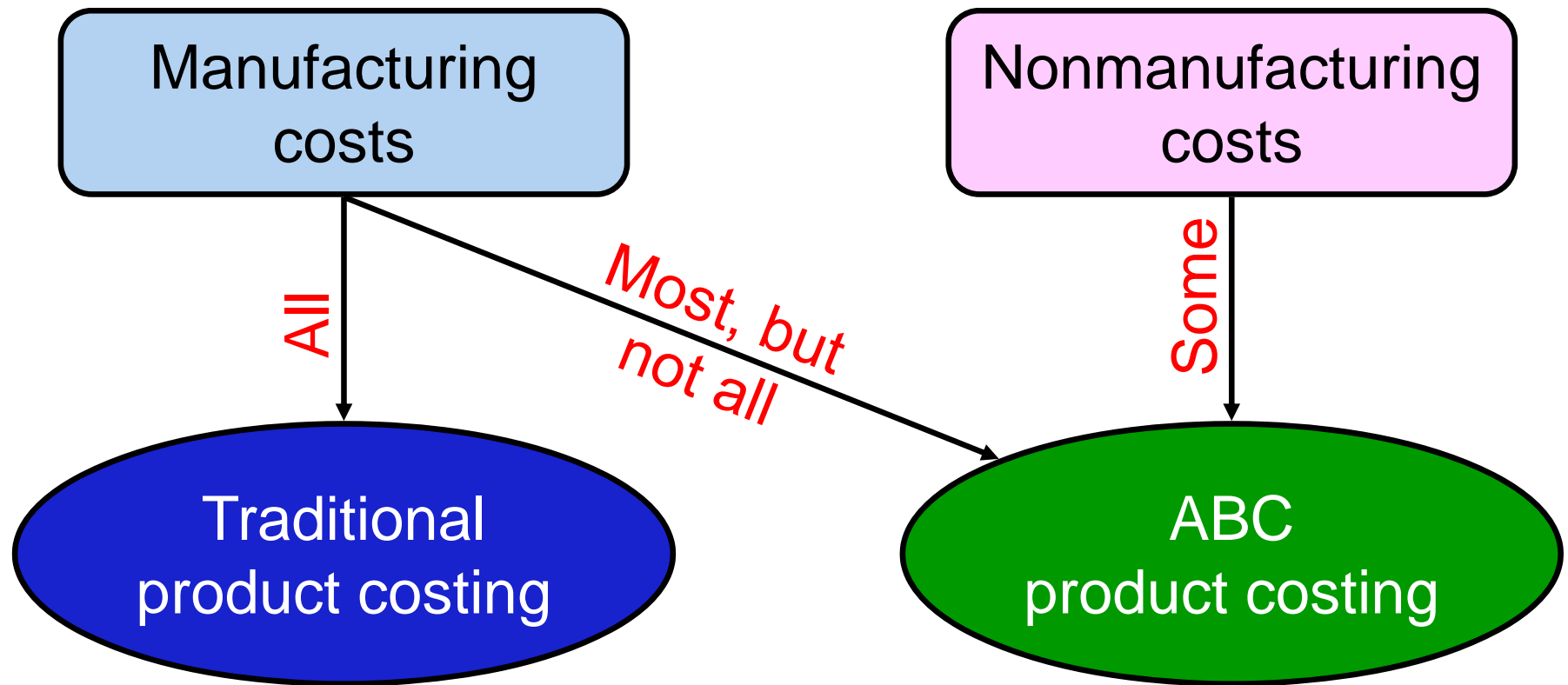ABC differs from traditional cost accounting in three ways.

Manufacturing costs	Nonmanufacturing costs

Traditional product costing

ABC product costing

❶ ABC assigns both types of costs to products.

How Costs are Treated Under ABC

ABC differs from traditional cost accounting in three ways.

Manufacturing costs

Nonmanufacturing costs

All

Most, but not all

Some

Traditional product costing

ABC product costing

❷ ABC does not assign all manufacturing costs to products.

How Costs are Treated Under ABC

ABC differs from traditional cost accounting in three ways.

Level of complexity (y-axis) / Number of cost pools (x-axis)

Plantwide Overhead Rate

Departmental Overhead Rates

Activity–Based Costing
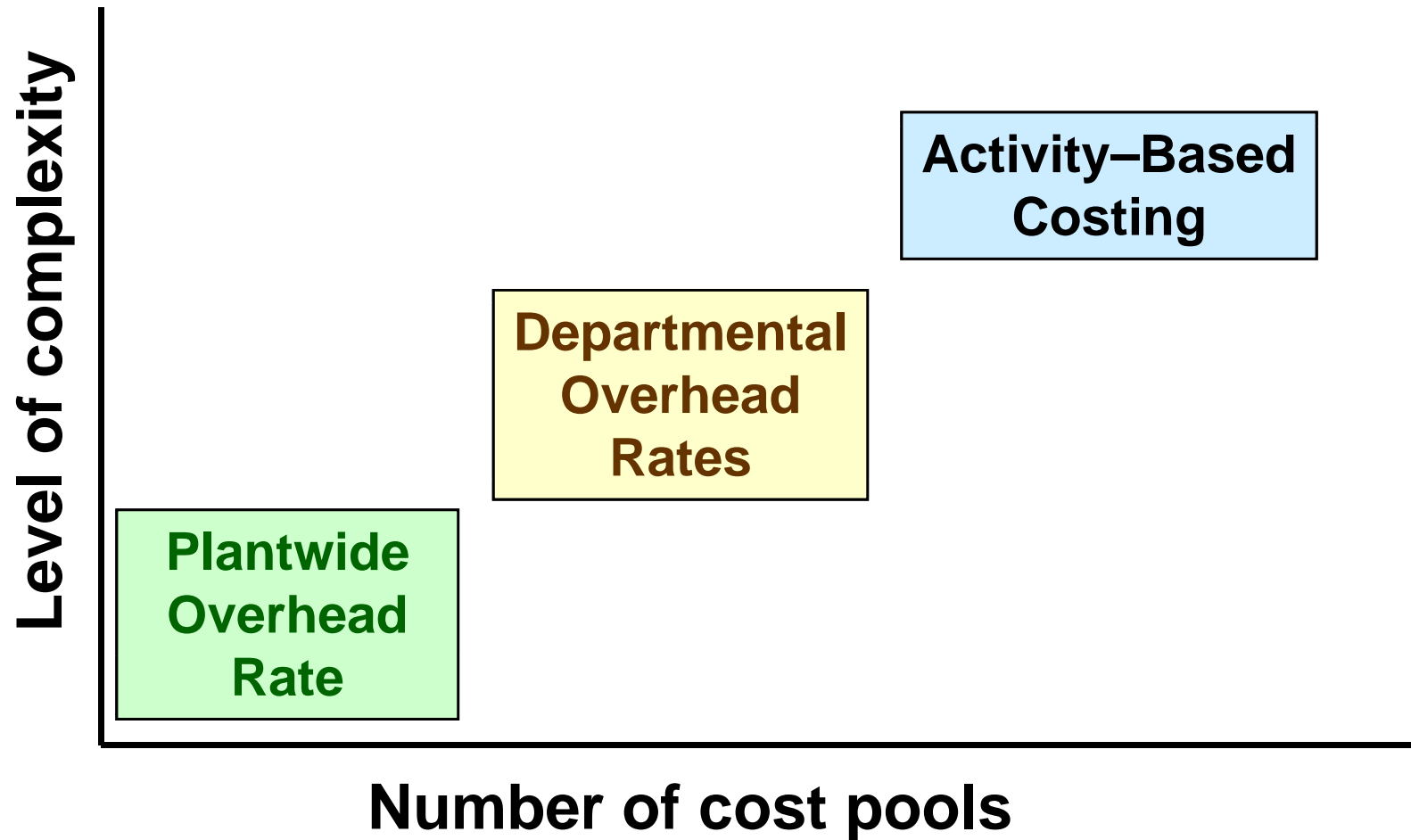
❸ ABC uses more cost pools.
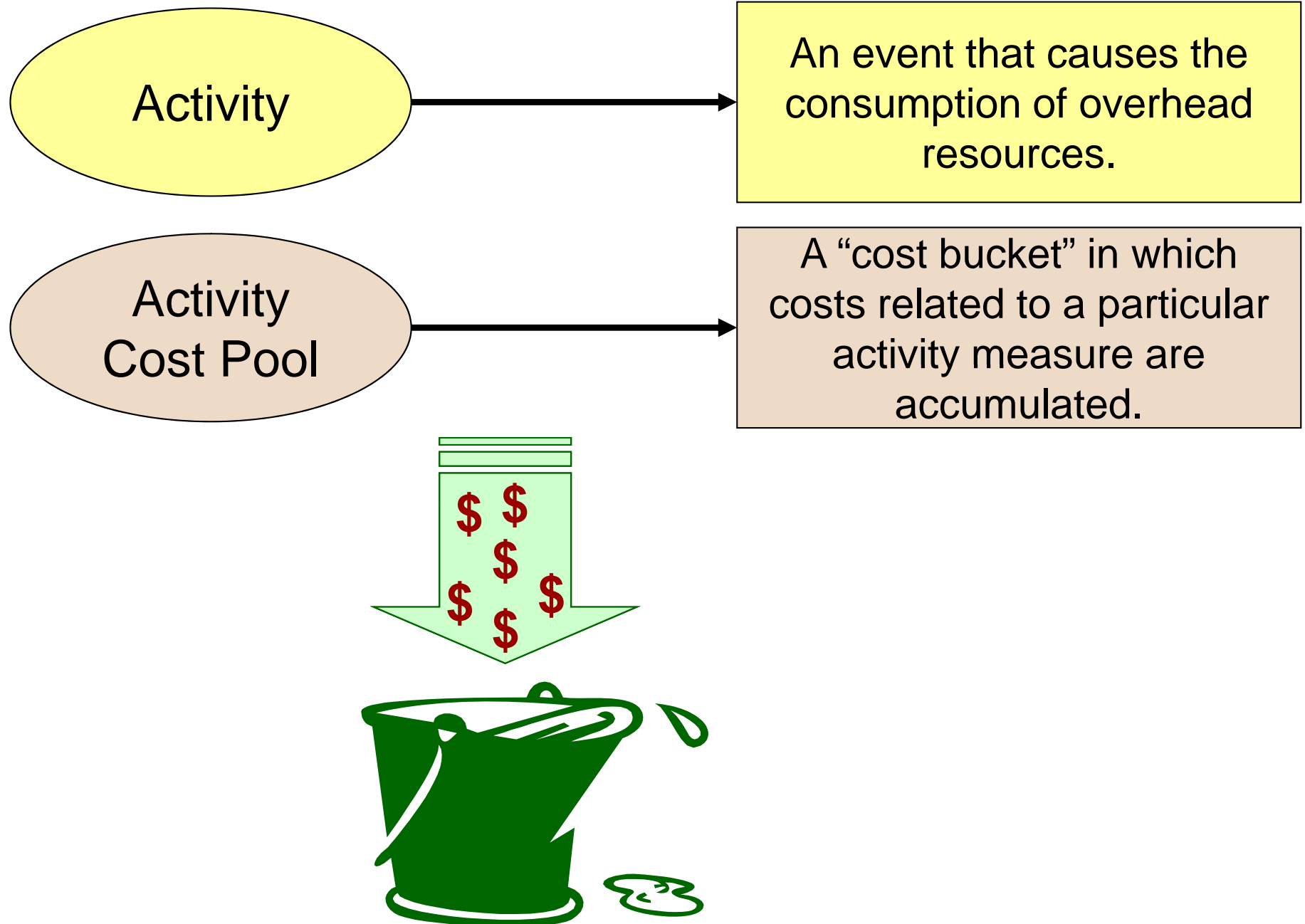
How Costs are Treated Under ABC

ABC differs from traditional cost accounting in three ways.

Each ABC cost pool has its own unique measure of activity.

Traditional cost systems usually rely on volume measures such as direct labor hours and/or machine hours to allocate all overhead costs to products.

❸ ABC uses more cost pools.

How Costs are Treated Under ABC

Activity → An event that causes the consumption of overhead resources.

Activity Cost Pool → A "cost bucket" in which costs related to a particular activity measure are accumulated.

How Costs are Treated Under ABC

Activity Measure

The term cost driver is also used to refer to an activity measure.

An allocation base in an activity-based costing system.

How Costs are Treated Under ABC

Two common types of activity measures:

Transaction driver

Duration driver

Simple count of the number of times an activity occurs.

A measure of the amount of time needed for an activity.
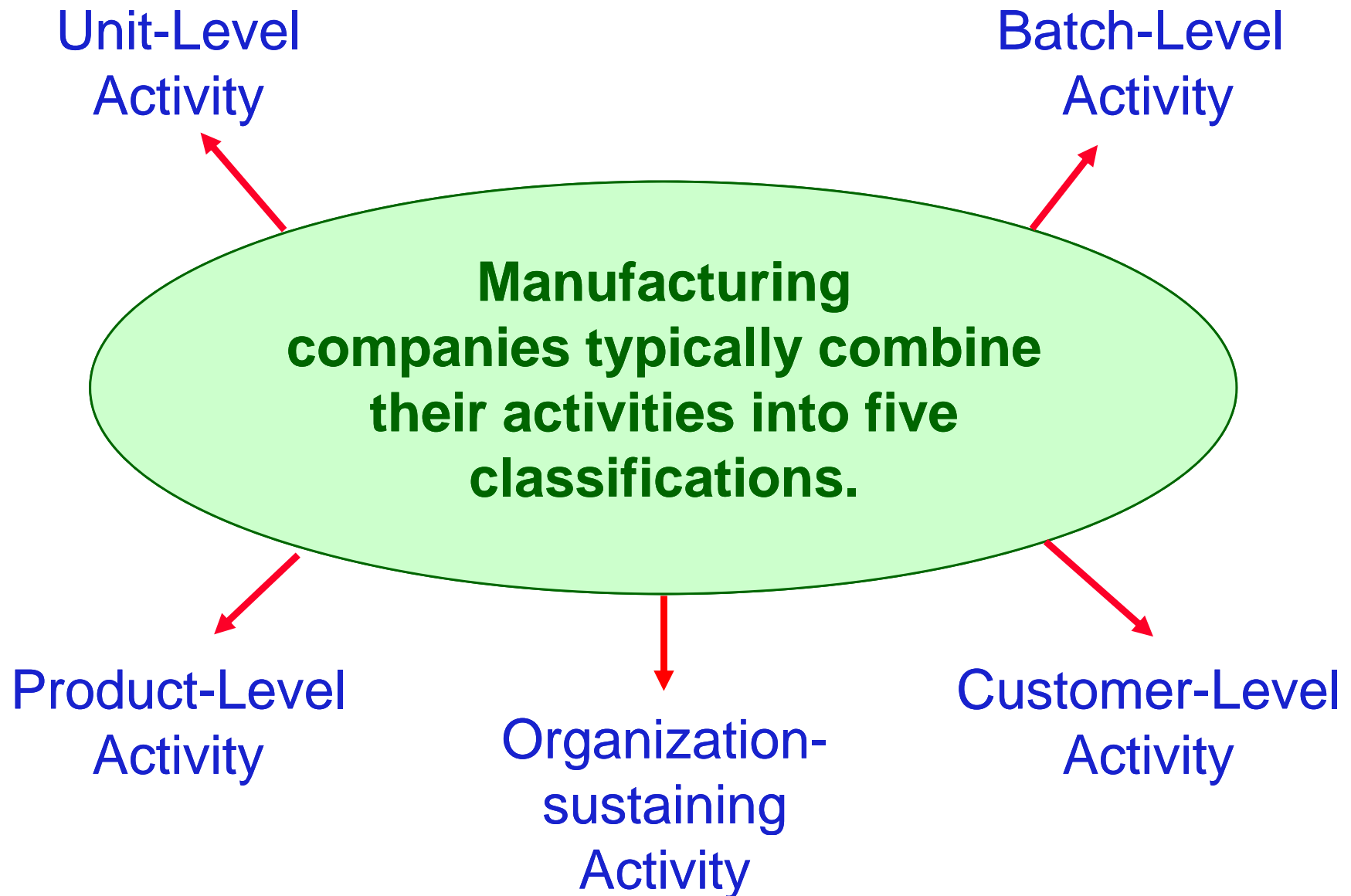
How Costs are Treated Under ABC

ABC defines five levels of activity that largely do not relate to the volume of units produced.

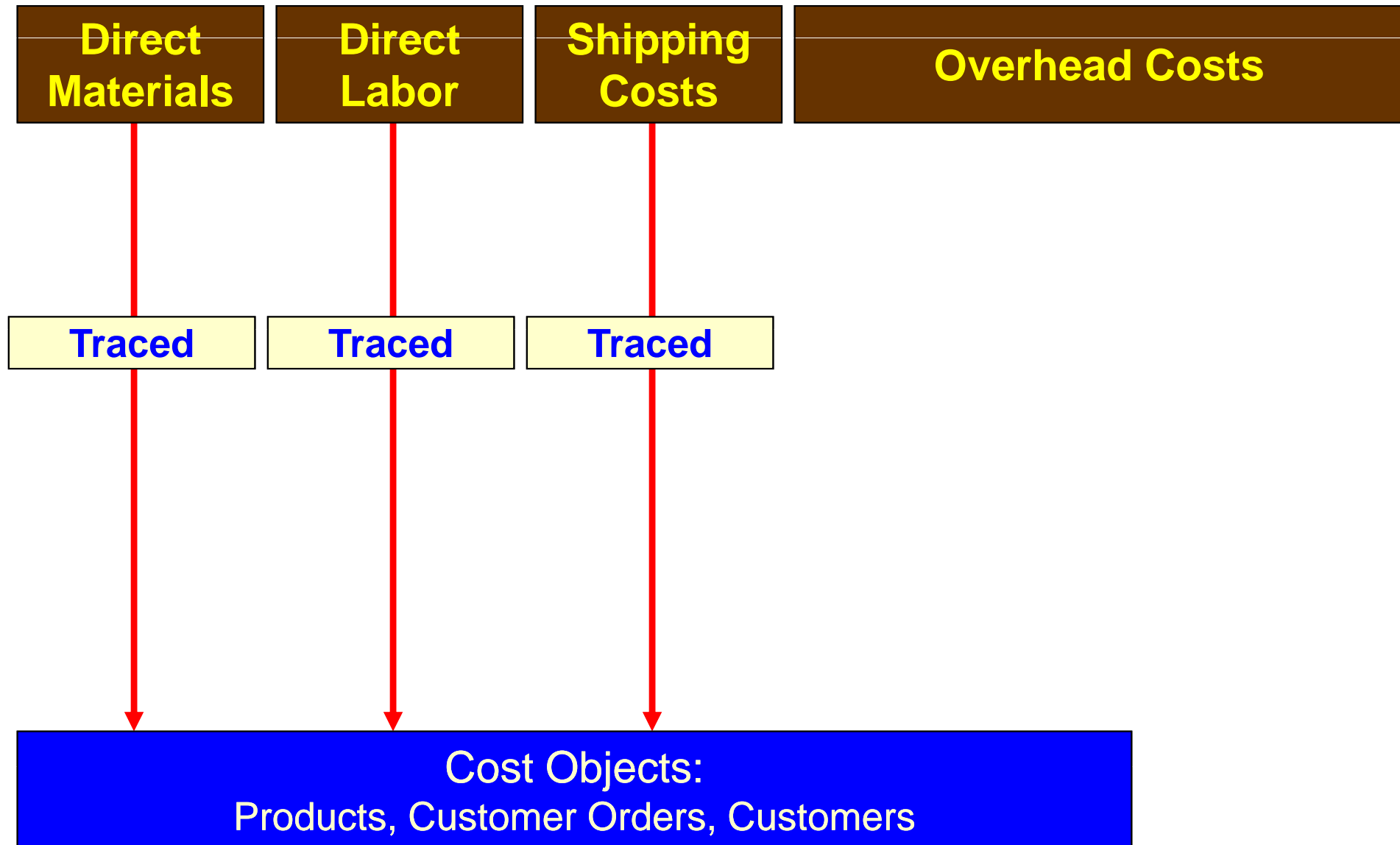Traditional cost systems usually rely on volume measures such as direct labor hours and/or machine hours to allocate all overhead costs to products.

How Costs are Treated Under ABC

Unit-Level
Activity

Batch-Level
Activity

Manufacturing companies typically combine their activities into five classifications.

Product-Level
Activity

Organization-
sustaining
Activity

Customer-Level
Activity

Activity-Based Costing: Two Stages

Direct Materials	Direct Labor	Shipping Costs	Overhead Costs

Traced	Traced	Traced

Cost Objects:
Products, Customer Orders, Customers

Activity-Based Costing: Two Stages

Direct Materials	Direct Labor	Shipping Costs	Overhead Costs

First-Stage Allocation

Order Size	Customer Orders	Product Design	Customer Relations	Other

Cost Objects:
Products, Customer Orders, Customers

Activity-Based Costing: Two Stages

Direct Materials	Direct Labor	Shipping Costs	Overhead Costs

First-Stage Allocation

Customer Orders	Product Design	Order Size	Customer Relations	Other

Second-Stage Allocations

$/Order	$/Design	$/MH	$/Customer

Cost Objects:
Products, Customer Orders, Customers

Unallocated

ACTIVITY-BASED COSTING

- An activity is any event or transaction that is a cost driver. Examples of activities that are cost drivers include:

  - Machine setups.
  - Purchase orders.
  - Quality inspections.
  - Production orders.
  - Blood tests run.

  - Maintenance requests.
  - Machine time.
  - Power consumed.
  - Beds occupied.
  - Flight-hours logged.

ACTIVITY-BASED COSTING EXAMPLE

Sarver Company manufactures 4,000 units of Product A and 20,000 units of Product B each year. The company currently has a traditional cost system in which direct labor-hours is used to assign overhead cost to products. The predetermined overhead rate is:

$$\frac{\text{Manufacturing overhead cost}}{\text{Direct labor-hours}} = \underline{\qquad} =$$

Product A requires 2.5 DLH and Product B requires 2.0 DLH. According to the current cost system, the unit product costs are:

	Product A	Product B
Direct materials	$36.00	$30.00
Direct labor	17.50	14.00
Manufacturing overhead		
....		
....		
Unit product cost.....................		

Suppose, however, that overhead costs are actually caused by the five activities listed below rather than by direct labor hours.

	Estimated
Activity Center	*Overhead Cost*
Machine setups	
Quality inspections	
Production orders	
Machine-hours worked	
Material receipts	_____
Total	_____

Also suppose the following activity data have been estimated:

| | Expected Activity | | |
Activity Center	Total	Product A	Product B
Machine setups			
Quality inspections			
Production orders			
Machine-hours worked			
Material receipts			

These data can be used to develop overhead rates for each of the five activities:

Activity Center	Estimated Overhead Costs	Expected Activity	Overhead Rate
Machine setups			
Quality inspections			
Production orders			
Machine-hours worked			
Material receipts			

Product A

Activity Center	Overhead Rate	Activity	Amount
Machine setups.....................			
Quality inspections...............			
Production orders..................			
Machine-hours worked..........			
Material receipts			
Total overhead (a)................			
Number of units (b).............			
Overhead per unit (a) ÷ (b)...			

Product B

Activity Center	Overhead Rate	Activity	Amount
Machine setups.....................			
Quality inspections...............			
Production orders..................			
Machine-hours worked..........			
Material receipts			
Total overhead (a)................			
Number of units (b).............			
Overhead per unit (a) ÷ (b)...			

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ACTIVITY-BASED COSTING EXAMPLE (cont'd)

Product costs computed using the two different methods can now be contrasted:

Product costs using activity-based costing:

	Product A	Product B
Direct materials....................................		
Direct labor..		
Manufacturing overhead		
Unit product cost		

Product costs using the old costing system:

	Product A	Product B
Direct materials....................................		
Direct labor..		
Manufacturing overhead		
Unit product cost		

- **Activity-based costing improves costing systems in three ways:**

  1. *It increases the number of cost pools used to accumulate overhead costs.* Rather than accumulate all overhead costs in a single, company-wide pool (or in departments), costs are accumulated by activity.

  2. *It changes the bases used to assign overhead cost to products.* Rather than assigning costs on the basis of a measure of volume (such as direct labor-hours or machine-hours), costs are assigned on the basis of the activities that generate the costs.

  3. *It changes the nature of many overhead costs.* Costs that were formerly indirect (depreciation, power, inspection) are traced to specific activities.

- Adopting activity-based costing usually results in shifting overhead costs from high volume to low volume products.

  - The per unit costs of the low volume products increase and the per unit costs of the high volume products decrease.

  - The effects are not symmetrical—there is a bigger dollar effect on the per unit costs of the low volume products.

Activity-Based Costing and External Reporting

Most companies do not use ABC for external reporting because . . .

1. External reports are less detailed than internal reports.

2. It may be difficult to make changes to the company's accounting system.

3. ABC does not conform to GAAP.

4. Auditors may be suspect of the subjective allocation process based on interviews with employees.

ABC Limitations

Substantial resources required to implement and maintain.

Resistance to unfamiliar numbers and reports.

Desire to fully allocate all costs to products.

Potential misinterpretation of unfamiliar numbers.

Does not conform to GAAP. Two costing systems may be needed.