

HILTON CHAPTER 5 ADOBE CONNECT

ACTIVITY-BASED COSTING AND MANAGEMENT

TRADITIONAL, VOLUME-BASED COSTING SYSTEMS

Many companies still use traditional **volume-based** (sometimes called **throughput-based**) costing systems (as described in Chapters 3 and 4).

These systems generally group overhead into one cost pool and apply overhead to products based on direct labor, with labor being a measure of volume.

NOTE: A traditional volume-based, product-cost system may function in a satisfactory manner for inventory valuation. The overhead applied via the traditional product-costing system, however, does not bear a close enough relationship to the resources required to build different products or perform different services.



ACTIVITY-BASED COSTING (ABC) SYSTEMS

Many organizations are implementing **activity-based costing (ABC) systems**. The purpose of ABC is to improve product costing and management decision making

ABC INVOLVES TWO STAGES IN ALLOCATING MANUFACTURING OVERHEAD.

STAGE ONE: The overhead costs of an organization's significant activities are first isolated into **cost pools**.

The **two-stage approach** separates plant, or manufacturing, overhead into two or more cost pools.

The cost pools (and related costs) fall into the following broad categories, which collectively are known as a **cost hierarchy**:

Unit level—activities that must be done for each unit of production (e.g., machining)

Batch level—activities that are performed for each batch of product (e.g., setup, quality-assurance, and receiving)

Product-sustaining level—activities that are performed to support an entire product line (e.g., engineering)

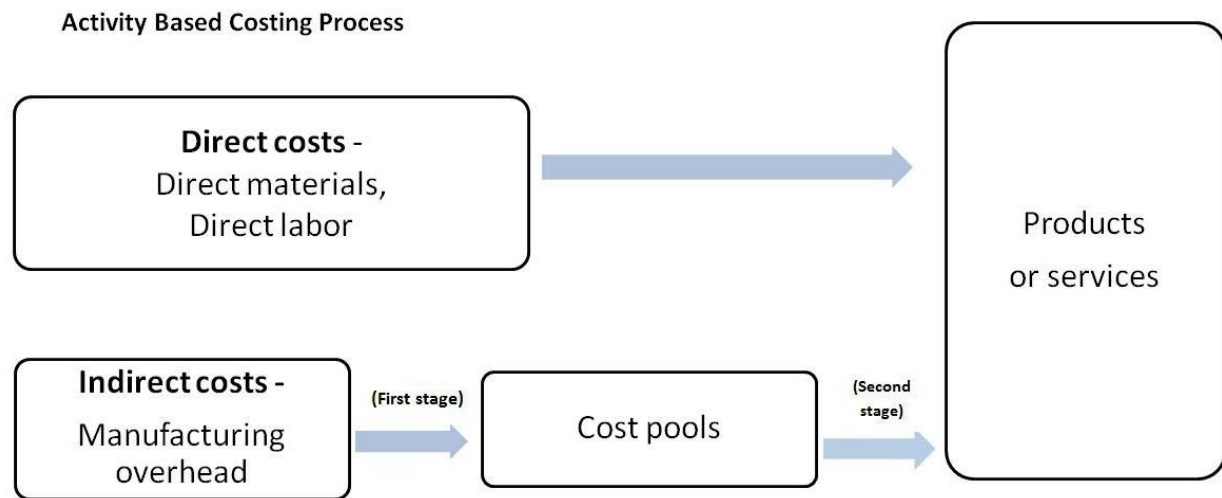
Facility (or general operations) level—activities that are required for the entire manufacturing process to occur (e.g., plant management, plant maintenance, and depreciation)

STAGE TWO: The next step involves identification of a **cost driver** for each pool.

The system then assigns overhead costs by using the cost drivers and assessing the relative proportion of the activity consumed by a product.

- This process results in the calculation of a **pool rate**, a per-unit cost of the cost driver, and an eventual cost for each product line.
- Predetermined overhead rates are used for each cost pool
- Conceptually, the denominator in the ratio of cost per unit of activity should be the **Practical Capacity** of the facility.
 - **Practical capacity** represents the maximum possible capacity, allowing for normal repairs and maintenance.

ACTIVITY BASED COSTING PROCESS



The degree of correlation between activity consumption and consumption of the driver has a significant impact on the accuracy of the ABC-costing effort.

The cost of measurement as well as behavioral effects must also be considered in the selection of cost drivers.

For example, assume the cost driver selected is the number of material moves to allocate material-handling cost. This may induce managers to reduce the number of times materials are moved, thus reducing total material-handling costs.

THE DISTINCTIVE FEATURE OF ACTIVITY-BASED COSTING IS THAT IT RECOGNIZES THAT OVERHEAD COSTS ARE CAUSED BY ACTIVITIES AND THAT ACTIVITIES MAY NOT BE CAUSED SOLELY BY VOLUME, BUT BY OTHER TYPES OF ACTIVITIES.

COST DRIVERS FOR THE ACTIVITIES SHOULD REFLECT THE COST INCURRENCE IN THE ACTIVITY, EVEN IF COST IS NOT CAUSED BY VOLUME.

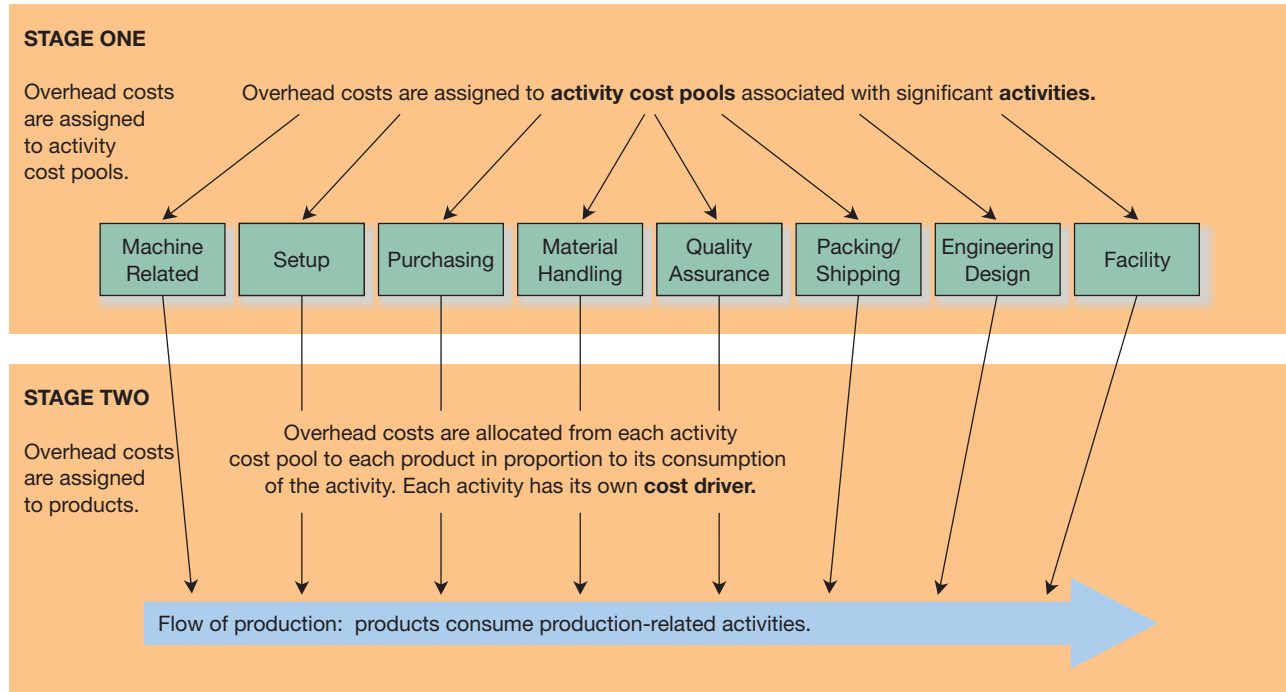
Identifying activities that use resources is the most interesting and challenging part of the ABC process, from which much of the value of activity-based costing comes. A cost-benefit consideration dictates that companies identify only the most important activities.

IMPROVED COSTING UNDER ABC

Complexity and special handling required during production may distort the product costs reported when the traditional costing method is used. The two-stage system, on the other hand, allows the firm to develop product costing systems that more closely align the allocation of costs with the use of resources.

Costing is improved when ABC is used, as the system identifies products that were overcosted or undercosted by traditional methods.

- In many cases, traditional, volume-costing systems overcost high-volume product lines and undercost complex, relatively low-volume lines. Thus, high-volume products essentially subsidize the low-volume lines.
- Costing is more equitable especially in the case of diverse products (and widely varying **consumption ratios**, which show the proportion of an activity consumed by a given product).
- No single cost driver can accurately assign overhead when products use activities differently and consume costs in a disproportionate manner.



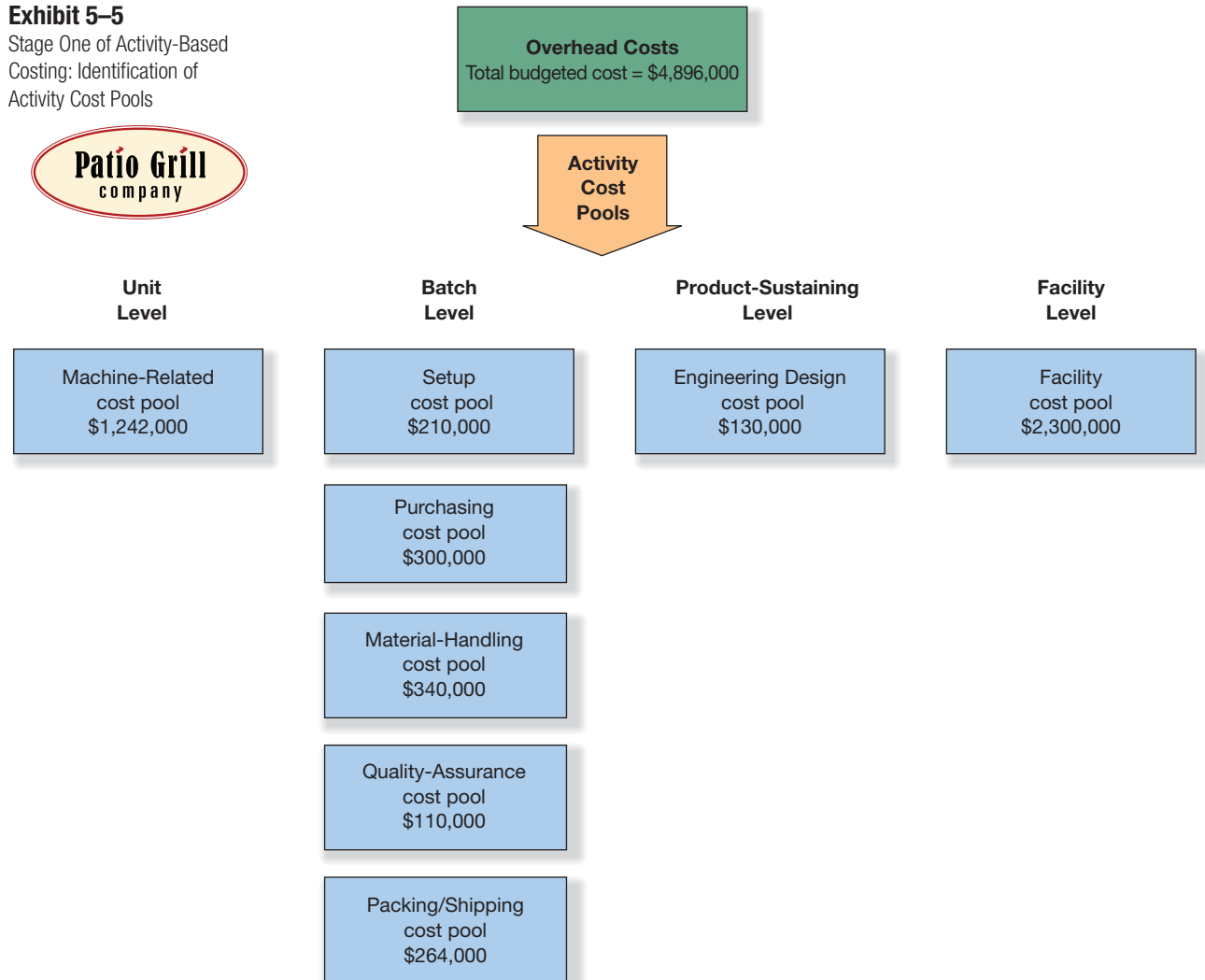
The two-stage cost-assignment process of activity-based costing is depicted in Exhibit 5–4.

Exhibit 5–4
Activity-Based
Costing System

Burger discussed activity-based costing with Patty Cook, the assistant director of

Exhibit 5-5

Stage One of Activity-Based
Costing: Identification of
Activity Cost Pools



Problem 5-52

Activity Cost Pools; Cost Drivers; Pool Rates

(LO 5-1, 5-2, 5-5)

- Assigned overhead cost, machine setups: \$24,000
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- Predetermined overhead rate: \$62.50 per machine hr.

Rapid City Technology, Inc. manufactures chemicals used in agricultural pest control. The controller has established the following activity cost pools and cost drivers.

Activity Cost Pool	Budgeted Overhead Cost	Cost Driver	Budgeted Level for Cost Driver	Pool Rate
Machine setups	\$1,000,000	Number of setups	250	\$4,000 per setup
Material handling	300,000	Weight of raw material	75,000 lb.	\$4 per pound
Hazardous waste control	100,000	Weight of hazardous chemicals used	10,000 lb.	\$10 per pound
Quality control	300,000	Number of inspections	2,000	\$150 per inspection
Other overhead costs	800,000	Machine hours	40,000	\$20 per machine hour
Total	<u>\$2,500,000</u>			

An order for 1,000 boxes of a chemical product designated JLRP has the following production requirements.

Machine setups	6 setups
Raw material	9,000 pounds
Hazardous materials	2,100 pounds
Inspections	8 inspections
Machine hours	550 machine hours

Required:

- Compute the total overhead that should be assigned to the JLRP order.
- What is the overhead cost per box of JLRP chemicals?
- Suppose the company were to use a single predetermined overhead rate based on machine hours. Compute the rate per hour.
- Under the approach in requirement (3), how much overhead would be assigned to the JLRP chemical order?
 - In total.
 - Per box of JLRP chemical.

PROBLEM 5-52

1. Overhead to be assigned to chemical order:

Activity Cost Pool	Pool Rate		Level of Cost Driver	Assigned Overhead Cost
Machine setups	\$4,000 per setup	×	6 setups	\$24,000
Material handling	\$4 per pound	×	9,000 pounds	36,000
Hazardous waste control	\$10 per pound	×	2,100 pounds	21,000
Quality control	\$150 per inspection	×	8 inspections	1,200
Other overhead costs	\$20 per machine hour	×	550 machine hours	<u>11,000</u>
Total				<u><u>\$93,200</u></u>

2. Overhead cost per box of chemicals = $\frac{\$93,200}{1,000 \text{ boxes}} = \93.20 per box

3. Predetermined overhead rate = $\frac{\text{total budgeted overhead cost}}{\text{total budgeted machine hours}} = \frac{\$2,500,000}{40,000}$
= \$62.50 per machine hr.

4. Overhead to be assigned to chemical order, given a single predetermined overhead rate:

a. Total overhead assigned = \$62.50 per machine hr. × 550 machine hr.
= \$34,375

b. Overhead cost per box of chemicals = $\frac{\$34,375}{1,000 \text{ boxes}} = \34.375 per box