Learning Objective

LO1

To distinguish between process costing and job-order costing and identify companies that would use each costing method

Types of Product Costing Systems

- Process Costing
  - A company produces many units of a single product.
  - One unit of product is indistinguishable from other units of product.
  - The identical nature of each unit of product enables assigning the same average cost per unit.

- Job-order Costing
Types of Product Costing Systems

Process Costing | Job-order Costing

Example companies:
1. Weyerhaeuser (paper manufacturing)
2. Reynolds Aluminum (refining aluminum ingots)
3. Coca-Cola (mixing and bottling beverages)

- Many different products are produced each period.
- Products are manufactured to order.
- The unique nature of each order requires tracing or allocating costs to each job, and maintaining cost records for each job.

Example companies:
1. Boeing (aircraft manufacturing)
2. Bechtel International (large scale construction)
3. Walt Disney Studios (movie production)
Comparing Process and Job-Order Costing

<table>
<thead>
<tr>
<th>Number of jobs worked</th>
<th>Job-Order</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost accumulated by</td>
<td>Many</td>
<td>Single Product</td>
</tr>
<tr>
<td>Average cost computed by</td>
<td>Job</td>
<td>Department</td>
</tr>
</tbody>
</table>

Quick Check

Which of the following companies would be likely to use job-order costing rather than process costing?

- b. Architects.
- c. Heinz for ketchup.
- d. Caterer for a wedding reception.
- e. Builder of commercial fishing vessels.

Quick Check

Which of the following companies would be likely to use job-order costing rather than process costing?

- b. Architects.
- c. Heinz for ketchup.
- d. Caterer for a wedding reception.
- e. Builder of commercial fishing vessels.
Manufacturing Overhead

Charge direct material and direct labor costs to each job as work is performed.

Manufacturing Overhead, including indirect materials and indirect labor, are allocated to jobs rather than directly traced to each job.

Learning Objective

To identify the documents used in a job-order costing system
Job-Order Cost Accounting

PearCo Job Cost Sheet
Job Number: A-143
Date Initiated: March 4
Department: B3
Item: 2 Wooden cargo crates

For Stock

<table>
<thead>
<tr>
<th>Req. No.</th>
<th>Material</th>
<th>Ticket</th>
<th>Hours</th>
<th>Amount</th>
<th>Rate</th>
<th>Hours</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>X7 - 6890</td>
<td>Direct Materials</td>
<td>$116.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cost Summary
Direct Materials $116.00
Direct Labor $116.00
Manufacturing Overhead $116.00
Total Cost $116.00
Unit Product Cost $116.00

Materials Requisition Form

PearCo Materials Requisition Form
Materials Requisition Number: X7 - 6890
Date: March 4
Job Number to Be Charged: A-143
Department: B3

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 x 4, 12 feet</td>
<td>12</td>
<td>$3.00</td>
<td>$36.00</td>
</tr>
<tr>
<td>1 x 6, 12 feet</td>
<td>20</td>
<td>$4.00</td>
<td>$80.00</td>
</tr>
</tbody>
</table>

Authorized Signature: Will E. Delite

Job-Order Cost Accounting

PearCo Job Cost Sheet
Job Number: A-143
Date Initiated: March 4
Department: B3
Item: 2 Wooden cargo crates

For Stock

<table>
<thead>
<tr>
<th>Req. No.</th>
<th>Material</th>
<th>Ticket</th>
<th>Hours</th>
<th>Amount</th>
<th>Rate</th>
<th>Hours</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>X7 - 6890</td>
<td>Direct Materials</td>
<td>$116.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cost Summary
Direct Materials $116.00
Direct Labor $116.00
Manufacturing Overhead $116.00
Total Cost $116.00
Unit Product Cost $116.00
Employee Time Ticket

PearCo Employee Time Ticket

<table>
<thead>
<tr>
<th>Time Ticket No.</th>
<th>Date</th>
<th>Employee</th>
<th>Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>March 5</td>
<td>I. M.</td>
<td>42</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Started</th>
<th>Ended</th>
<th>Time Completed</th>
<th>Rate</th>
<th>Amount</th>
<th>Job No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00</td>
<td>12:00</td>
<td>4.0</td>
<td>11.00</td>
<td>$44.00</td>
<td>A-143</td>
</tr>
<tr>
<td>1:00</td>
<td>5:00</td>
<td>4.0</td>
<td>11.00</td>
<td>$44.00</td>
<td>A-143</td>
</tr>
</tbody>
</table>

Supervisor: C. M. Workman

Job-Order Cost Accounting

PearCo Job Cost Sheet

<table>
<thead>
<tr>
<th>Job Number</th>
<th>Date Initiated</th>
<th>Department</th>
<th>Units Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-143</td>
<td>March 4</td>
<td>B3</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Req. No.</th>
<th>Amount</th>
<th>Ticket</th>
<th>Direct Labor</th>
<th>Manufacturing Overhead</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Wooden cargo crates</td>
<td>X7 - 6890</td>
<td>$116</td>
<td>36</td>
<td>$88</td>
<td>$88</td>
</tr>
</tbody>
</table>

Cost Summary

<table>
<thead>
<tr>
<th>Units Shipped</th>
<th>Direct Materials</th>
<th>Direct Labor</th>
<th>Manufacturing Overhead</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
<td>$88</td>
<td>$88</td>
</tr>
</tbody>
</table>

Manufacturing Overhead Application

Manufacturing overhead is applied to jobs that are in process. An allocation base, such as direct labor hours, direct labor dollars, or machine hours, is used to assign manufacturing overhead to individual jobs.

We use an allocation base because:
1. It is impossible or difficult to trace overhead costs to particular jobs.
2. Manufacturing overhead consists of many different items ranging from the grease used in machines to a production manager’s salary.
3. Many types of manufacturing overhead costs are fixed even though output fluctuates during the period.
Learning Objective

LO3

To compute predetermined overhead rates and explain why estimated overhead costs (rather than actual overhead costs) are used in the costing process.

Manufacturing Overhead Application

Using a predetermined overhead rate (POHR) makes it possible to estimate total job costs sooner.

Actual overhead for the period is not known until sometime after the period has ended.

Manufacturing Overhead Application

Based on estimates, and determined before the period begins.

Overhead applied = POHR × Actual activity

Actual amount of the allocation based upon the actual level of activity.
**Manufacturing Overhead Application**

For each direct labor hour worked on a particular job, $4.00 of factory overhead will be applied to that job.

**Estimated total manufacturing overhead cost for the coming period**

**Estimated total units in the allocation base for the coming period**

\[
POHR = \frac{\text{Estimated total manufacturing overhead cost for the coming period}}{\text{Estimated total units in the allocation base for the coming period}}
\]

**POHR = $640,000**

\[
POHR = \frac{\$640,000}{160,000 \text{ direct labor hours (DLH)}}
\]

**POHR = $4.00 per DLH**

---

**Job-Order Cost Accounting**

**PearCo Job Cost Sheet**

<table>
<thead>
<tr>
<th>Job Number</th>
<th>A-543</th>
<th>Date Initiated</th>
<th>March 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>B3</td>
<td>Date Completed</td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>2 Wooden cargo crates</td>
<td>For Stock</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Req. No.</th>
<th>Amount</th>
<th>Ticket Hours</th>
<th>Amount</th>
<th>Rate</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>X7 - 6890</td>
<td>116</td>
<td>36</td>
<td>8</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>

**Cost Summary**

<table>
<thead>
<tr>
<th>Units Shipped</th>
<th>Direct Materials</th>
<th>Direct Labor</th>
<th>Manufacturing Overhead</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$116</td>
<td>$88</td>
<td>$32</td>
<td>$236</td>
</tr>
</tbody>
</table>

**Unit Product Cost**

$118
Chapter 2-9

Interpreting the Average Unit Cost

The average unit cost should not be interpreted as the costs that would actually be incurred if an additional unit were produced.

Fixed overhead would not change if another unit were produced, so the incremental cost of another unit may be somewhat less than $118.

Quick Check

Job WR53 at NW Fab, Inc. required $200 of direct materials and 10 direct labor hours at $15 per hour. Estimated total overhead for the year was $760,000 and estimated direct labor hours were 20,000. What would be recorded as the cost of job WR53?

a. $200.
b. $350.
c. $380.
d. $730.

Pred. ovhd. rate $760,000/20,000 hours $38
Direct materials $200
Direct labor $15 x 10 hours $150
Manufacturing overhead $38 x 10 hours $380
Total cost $730

Quick Check

Job WR53 at NW Fab, Inc. required $200 of direct materials and 10 direct labor hours at $15 per hour. Estimated total overhead for the year was $760,000 and estimated direct labor hours were 20,000. What would be recorded as the cost of job WR53?

a. $200.
b. $350.
c. $380.
d. $730.

Pred. ovhd. rate $760,000/20,000 hours $38
Direct materials $200
Direct labor $15 x 10 hours $150
Manufacturing overhead $38 x 10 hours $380
Total cost $730
Let's summarize the document flow in a job-order costing system.

A sales order is the basis of issuing a production order. A production order initiates work on a job.

Materials used may be either direct or indirect. Direct materials go to Job Cost Sheets, and Indirect materials go to the Manufacturing Overhead Account.
An employee’s time may be either direct or indirect.

Direct Labor → Job Cost Sheets

Employee Time Ticket

Indirect Labor → Manufacturing Overhead Account

Job-Order Costing Document Flow Summary

Job-Order Costing Document Flow Summary

Employee Time Ticket → Indirect Labor

Other Actual OH Charges → Manufacturing Overhead Account

Materials Requisition → Indirect Material

Learning Objective

LO4

To prepare journal entries to record costs in a job-order costing system
Learning Objective

LO7

To use T accounts to show the flow of costs in a job-order costing system

Job-Order System Cost Flows

Let’s examine the transactions in T-account and journal entry form in a job-order costing system.

Summary of Cost Flows

Raw Materials
- Material Purchases
- Direct Materials
- Indirect Materials

Mfg. Overhead
- Actual
- Applied
- Indirect Materials

Work in Process (Job Cost Sheet)
- Direct Materials
Cost Flows – Material Purchases

Raw material purchases are recorded in an inventory account.

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Post. Ref.</th>
<th>Debit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw Materials</td>
<td>XXXXX</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accounts Payable</td>
<td>XXXXX</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cost Flows – Material Usage

Direct materials issued to a job increase Work in Process and decrease Raw Materials. Indirect materials used are charged to Manufacturing Overhead and also decrease Raw Materials.

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Post. Ref.</th>
<th>Debit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Work in Process</td>
<td>XXXXX</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manufacturing Overhead</td>
<td>XXXXX</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Raw Materials</td>
<td>XXXXX</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Summary of Cost Flows

Salaries and Wages Payable
- Direct Labor
- Indirect Labor

Work in Process (Job Cost Sheet)
- Direct Materials
- Direct Labor

Mfg. Overhead
- Actual Indirect Materials
- Applied Indirect Labor
Cost Flows – Labor

The cost of direct labor incurred increases Work in Process and the cost of indirect labor increases Manufacturing Overhead.

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<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Post. Ref.</th>
<th>Debit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Work in Process</td>
<td>YYYY</td>
<td>XXXXX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manufacturing Overhead</td>
<td>YYYY</td>
<td>XXXXX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Salaries and Wages Payable</td>
<td></td>
<td>XXXXX</td>
<td></td>
</tr>
</tbody>
</table>

Summary of Cost Flows

In addition to indirect materials and indirect labor, other actual manufacturing overhead costs are debited to the Manufacturing Overhead account.

**GENERAL JOURNAL**

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Post. Ref.</th>
<th>Debit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Manufacturing Overhead</td>
<td>YYYY</td>
<td>XXXXX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accounts Payable</td>
<td>YYYY</td>
<td>XXXXX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Property Taxes Payable</td>
<td>YYYY</td>
<td>XXXXX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prepaid Insurance</td>
<td>YYYY</td>
<td>XXXXX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accumulated Depreciation</td>
<td>YYYY</td>
<td>XXXXX</td>
<td></td>
</tr>
</tbody>
</table>

Cost Flows – Actual Overhead

In addition to indirect materials and indirect labor, other manufacturing overhead costs are charged to the Manufacturing Overhead account as they are incurred.
Learning Objective

LO5

To apply overhead cost to Work in Process using a predetermined overhead rate

Summary of Manufacturing Overhead Cost Flows

<table>
<thead>
<tr>
<th>Mfg. Overhead</th>
<th>Work in Process (Job Cost Sheet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>Applied</td>
</tr>
<tr>
<td>Indirect</td>
<td>Direct</td>
</tr>
<tr>
<td>Materials</td>
<td>Materials</td>
</tr>
<tr>
<td>Indirect</td>
<td>Direct</td>
</tr>
<tr>
<td>Labor</td>
<td>Labor</td>
</tr>
<tr>
<td>Other Overhead</td>
<td>Overhead</td>
</tr>
</tbody>
</table>

If actual and applied manufacturing overhead are not equal, a year-end adjustment is required.

Cost Flows – Overhead Applied

Work in Process is increased when Manufacturing Overhead is applied to jobs.

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<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Post Ref.</th>
<th>Debit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Work in Process</td>
<td>XXXXX</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manufacturing Overhead</td>
<td>XXXXX</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Nonmanufacturing Cost Flows

Nonmanufacturing costs are not assigned to individual jobs, rather they are expensed in the period incurred.

Examples:
1. Salary expense of employees that work in a marketing, selling, or administrative capacity.
2. Advertising expenses are expensed in the period incurred.

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<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Post. Ref.</th>
<th>Debit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Salaries Expense</td>
<td>XXXXX</td>
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</tr>
<tr>
<td></td>
<td>Salaries Payable</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Advertising Expense</td>
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<tr>
<td></td>
<td>Accounts Payable</td>
<td></td>
<td>XXXXX</td>
<td></td>
</tr>
</tbody>
</table>

Summary of Goods Manufactured Cost Flows

Work in Process (Job Cost Sheet)
- Direct Materials
- Direct Labor
- Overhead Applied

Cost of Goods Mfd.

Finished Goods
- Cost of Goods Mfd.
Cost Flows – Cost of Goods Manufactured

As jobs are completed, the Cost of Goods Manufactured is transferred to Finished Goods from Work in Process.

**GENERAL JOURNAL**

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Post. Ref.</th>
<th>Debit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Finished Goods</td>
<td>XXXXX</td>
<td></td>
<td>XXXXX</td>
</tr>
<tr>
<td></td>
<td>Work in Process</td>
<td></td>
<td></td>
<td>XXXXX</td>
</tr>
</tbody>
</table>

**Learning Objective**

**LO6**

To prepare schedules of cost of goods manufactured and cost of goods sold

**Job-Order System Cost Flows**

- **Work in Process (Job Cost Sheet)**
  - Direct Materials
  - Direct Labor
  - Overhead Applied
  - Cost of Goods Mfd.

- **Finished Goods**
  - Cost of Goods Mfd.
  - Cost of Goods Sold

- **Cost of Goods Sold**
  - Cost of Goods Sold
Cost Flows – Sales

When finished goods are sold, two entries are required: (1) to record the sale, and (2) to record COGS and reduce Finished Goods.

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Post Ref.</th>
<th>Debit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accounts Receivable</td>
<td>XXXXX</td>
<td>XXXXX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sales</td>
<td></td>
<td></td>
<td>XXXXX</td>
</tr>
<tr>
<td></td>
<td>Cost of Goods Sold</td>
<td>XXXXX</td>
<td></td>
<td>XXXXX</td>
</tr>
<tr>
<td></td>
<td>Finished Goods</td>
<td></td>
<td>XXXXX</td>
<td></td>
</tr>
</tbody>
</table>

Learning Objective

LO8

To compute underapplied or overapplied overhead cost and prepare the journal entry to close the balance in Manufacturing Overhead to the appropriate accounts.

Defining Under- and Overapplied Overhead

The difference between the overhead cost applied to Work in Process and the actual overhead costs of a period is termed either underapplied or overapplied overhead.

- **Underapplied overhead** exists when the amount of overhead applied to jobs during the period using the predetermined overhead rate is less than the total amount of overhead actually incurred during the period.

- **Overapplied overhead** exists when the amount of overhead applied to jobs during the period using the predetermined overhead rate is greater than the total amount of overhead actually incurred during the period.
Quick Check ✓

Tiger, Inc. had actual manufacturing overhead costs of $1,210,000 and a predetermined overhead rate of $4.00 per machine hour. Tiger, Inc. worked 290,000 machine hours during the period. What is Tiger's over- or underapplied overhead?

a. $50,000 overapplied.

b. $50,000 underapplied.

c. $60,000 overapplied.

d. $60,000 underapplied.

---

Disposition of Under- or Overapplied Overhead

<table>
<thead>
<tr>
<th>PearCo’s Mfg. Overhead</th>
<th>PearCo’s Cost of Goods Sold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual overhead costs</td>
<td>Unadjusted Balance</td>
</tr>
<tr>
<td>$650,000</td>
<td>$30,000</td>
</tr>
<tr>
<td>$30,000</td>
<td>Adjusted Balance</td>
</tr>
<tr>
<td>$680,000</td>
<td></td>
</tr>
<tr>
<td>$30,000</td>
<td></td>
</tr>
<tr>
<td>overapplied</td>
<td></td>
</tr>
<tr>
<td>$30,000</td>
<td></td>
</tr>
</tbody>
</table>
Quick Check

What effect will the overapplied overhead have on PearCo’s net operating income?

a. Net operating income will increase.
b. Net operating income will be unaffected.
c. Net operating income will decrease.

Multiple Predetermined Overhead Rates

To this point, we have assumed that there is a single predetermined overhead rate called a plantwide overhead rate.

Large companies often use multiple predetermined overhead rates.

May be more complex but . . .

May be more accurate because it reflects differences across departments.
Job-Order Costing in Service Companies

Job-order costing is used in many difference types of service companies.

End of Chapter 2