



مجموعة جامعة
الجميع الذكية
للتعليم القابضة

MIDOCEAN
UNIVERSITY

Accounting for Managers

Prepared by Dr. Sara Ahmed

MGM341

Lecture 4



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Chapter 3: Job Costing

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Chapter
03

Learning Objectives

- What is meant by Job costing
- Understand the flow of production and how direct materials and direct labor are traced to jobs
- Compute a predetermined manufacturing overhead rate and use it to allocate MOH to jobs
- Determine the cost of a job
- How to dispose over-allocated or under-allocated manufacturing overhead

Job-order costing systems are used when:

- 1. Many different products are produced each period.**
- 2. Products are manufactured to order. Many service industries use job-order costing.**
- 3. The unique nature of each order requires tracing and allocating costs to each job and maintaining cost records for each job.**

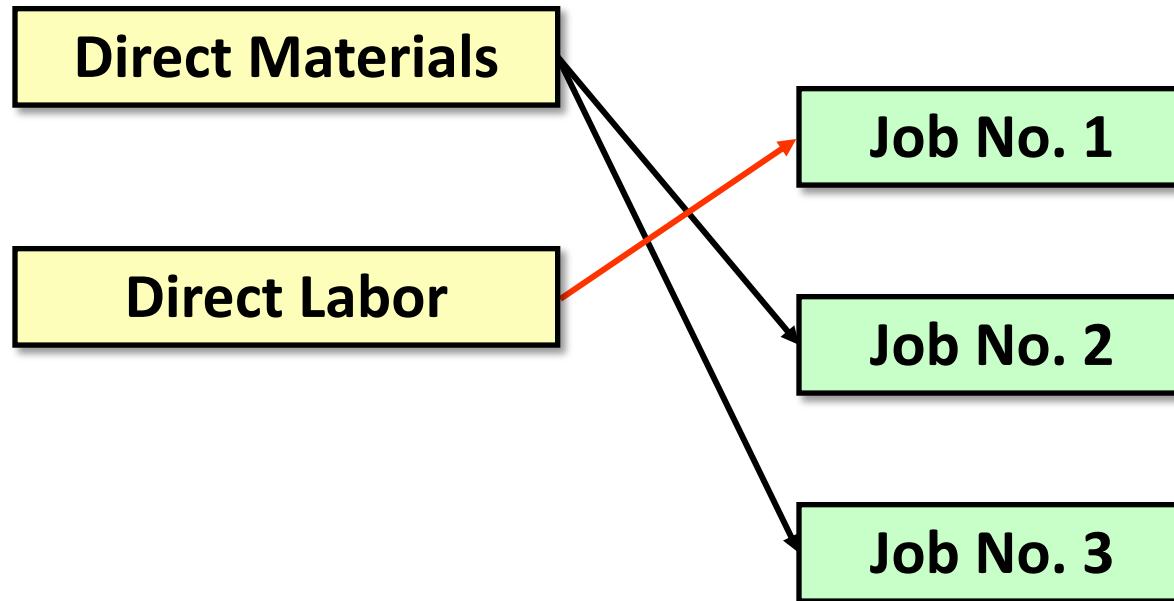
Job Order Costing: An Overview

Examples of companies that would use job-order costing include:

1. Boeing (aircraft manufacturing)
2. Bechtel International (large scale construction)
3. Walt Disney Studios (movie production)

Job Order Costing-Cost Flow 1

Direct Costs



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

Job Order Costing-Cost Flow 2

Direct Costs

Direct Materials

Direct Labor

Indirect Costs

Manufacturing
Overhead

Job No. 1

Job No. 2

Job No. 3

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

Job Cost Sheet

PearCo Job Cost Sheet

Job Number A - 143Date Initiated 3-4-17Department B3

Date Completed _____

Item Wooden cargo crate

Units Completed _____

Direct Materials		Direct Labor			Manufacturing Overhead		
Req. No.	Amount	Ticket	Hours	Amount	Hours	Rate	Amount

Cost Summary				Units Shipped		
Direct Materials				Date	Number	Balance
Direct Labor						
Manufacturing Overhead						
Total Cost						
Unit Product Cost						

Measuring Direct Materials Cost

PearCo Materials Requisition Form

Requisition No. **X7 - 6890**

Date **3-4-17**

Job No. **A - 143**

Department **B3**

Description	Quantity	Unit Cost	Total Cost
2 x 4, 12 feet	12	\$ 3.00	\$ 36.00
1 x 6, 12 feet	20	4.00	80.00
			\$ 116.00

Authorized
Signature

Measuring Direct Materials Cost

PearCo Job Cost Sheet

Job Number **A - 143**Date Initiated **3-4-17**Department **B3**

Date Completed _____

Item **Wooden cargo crate**

Units Completed _____

Direct Materials		Direct Labor			Manufacturing Overhead		
Req. No.	Amount	Ticket	Hours	Amount	Hours	Rate	Amount
X7-6890	\$ 116						

Cost Summary		Units Shipped		
Direct Materials	\$ 116	Date	Number	Balance
Direct Labor				
Manufacturing Overhead				
Total Cost				
Unit Product Cost				

Measuring Direct Labor Costs

PearCo Employee Time Ticket

Time Ticket No. 36Date 3-5-17Employee I. M. SkilledStation 42

Starting Time	Ending Time	Hours Completed	Hourly Rate	Amount	Job No.
0800	1600	8.00	\$ 15.00	\$ 120.00	A-143
Totals		8.00	\$ 15.00	\$ 120.00	A-143

Supervisor C. M. Workman

Job Order Costing

PearCo Job Cost Sheet

Job Number A - 143

Date Initiated 3-4-17

Date Completed

Department B3

Units Completed

Item Wooden cargo crate

Direct Materials		Direct Labor			Manufacturing Overhead		
Req. No.	Amount	Ticket	Hours	Amount	Hours	Rate	Amount
X7-6890	\$ 116	36	8	\$ 120			

Cost Summary		Units Shipped		
Direct Materials	\$ 116	Date	Number	Balance
Direct Labor	\$ 120			
Manufacturing Overhead				
Total Cost				
Unit Product Cost				

Allocation of Manufacturing Overhead

Compute a predetermined
overhead rate.

Why Use an Allocation Base?

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:

- a. It is impossible or difficult to trace overhead costs to particular jobs.
- b. Manufacturing overhead consists of many different items ranging from the grease used in machines to the production manager's salary.
- c. Many types of manufacturing overhead costs are fixed even though output fluctuates during the period.

Manufacturing Overhead Application/Allocation

The predetermined overhead rate (**POHR**) used to apply overhead to jobs is determined before the period begins.

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

Ideally, the allocation base is a **cost driver** that causes overhead.

The need for POHR

Predetermined overhead rates that rely upon estimated data are often used because:

1. Actual overhead for the period is not known until the end of the period, thus inhibiting the ability to estimate job costs during the period.
2. Actual overhead costs can fluctuate seasonally, thus misleading decision makers.

Computing Predetermined Overhead Rate (POHR)

The predetermined overhead rate is computed before the period begins using a four-step process.

1. Estimate the total amount of the allocation base (the denominator) that will be required for next period's estimated level of production.
2. Estimate the total fixed manufacturing overhead cost for the coming period and the variable manufacturing overhead cost per unit of the allocation base.

Computing Predetermined Overhead Rate (POHR)

3. Use the following equation to estimate the total amount of manufacturing overhead:

$$Y = a + bX$$

Where,

Y = The estimated total manufacturing overhead cost

a = The estimated total **fixed** manufacturing overhead cost

b = The estimated **variable** manufacturing overhead cost per unit of the allocation base

X = The estimated total amount of the allocation base.

4. Compute the predetermined overhead rate.

Apply overhead cost to jobs
using a predetermined
overhead rate.

Overhead Application Rate

PearCo estimates that it will require 160,000 direct labor-hours to meet the coming period's estimated production level. In addition, the company estimates total fixed manufacturing overhead at \$200,000, and variable manufacturing overhead costs of \$2.75 per direct labor-hour.

$$Y = a + bX$$

$$Y = \$200,000 + (\$2.75 \text{ per direct labor-hour} \times 160,000 \text{ direct labor-hours})$$

$$Y = \$200,000 + \$440,000$$

$$Y = \$640,000$$


$$\text{POHR} = \frac{\$640,000 \text{ estimated total manufacturing overhead}}{160,000 \text{ estimated direct labor hours (DLH)}}$$

$$\text{POHR} = \$4.00 \text{ per direct labor-hour}$$

Recording manufacturing Overhead

PearCo Job Cost Sheet

Job Number A - 143

Date Initiated 3-4-17

Date Completed 3-5-17

Department B3

Units Completed **2**

Item Wooden cargo crate

Direct Materials		Direct Labor			Manufacturing Overhead		
Req. No.	Amount	Ticket	Hours	Amount	Hours	Rate	Amount
X7-6890	\$ 116	36	8	\$ 88	8	\$ 4	\$ 32

Cost Summary		Units Shipped		
		Date	Number	Balance
Direct Materials	\$ 116			
Direct Labor	\$ 120			
Manufacturing Overhead	\$ 32			
Total Cost				
Unit Product Cost				

Unit Product Cost Calculation

Compute the total cost and the unit product cost of a job using a plantwide predetermined overhead rate.

Calculating TOTAL Cost of a Job

PearCo Job Cost Sheet

Job Number A - 143

Date Initiated 3-4-17

Date Completed 3-5-17

Department B3

Units Completed 2

Item Wooden cargo crate

Direct Materials		Direct Labor			Manufacturing Overhead		
Req. No.	Amount	Ticket	Hours	Amount	Hours	Rate	Amount
X7-6890	\$ 116	36	8	\$ 120	8	\$ 4	\$ 32

Cost Summary		Units Shipped		
Direct Materials	\$ 116	Date	Number	Balance
Direct Labor	\$ 120			
Manufacturing Overhead	\$ 32			
Total Cost	\$ 268			
Unit Product Cost				

Calculating Unit Product Cost

PearCo Job Cost Sheet

Job Number A - 143

Date Initiated 3-4-17

Date Completed 3-5-17

Department B3

Units Completed 2

Item Wooden cargo crate

Direct Materials		Direct Labor			Manufacturing Overhead		
Req. No.	Amount	Ticket	Hours	Amount	Hours	Rate	Amount
X7-6890	\$ 116	36	8	\$ 120	8	\$ 4	\$ 32

Cost Summary		Units Shipped		
Direct Materials	\$ 116	Date	Number	Balance
Direct Labor	\$ 120			
Manufacturing Overhead	\$ 32			
Total Cost	\$ 268			
Unit Product Cost	\$ 134			

Concept 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.

Concept 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.

POHR = \$760,000/20,000 hours		\$38
Direct materials		\$200
Direct labor	\$15 x 10 hours	\$150
Manufacturing overhead	\$38 x 10 hours	<u>\$380</u>
Total cost		<u><u>\$730</u></u>

Job Order Costing: A Managerial Perspective

Inaccurately assigning manufacturing costs to jobs adversely influences planning and decisions made by manager.

1. Job-order costing systems can accurately trace *direct* materials and *direct* labor costs to jobs.
2. Job-order costing systems often fail to accurately allocate the manufacturing overhead costs used during the production process to their respective jobs.

Job Order Costing: A Managerial Perspective

Choosing an Allocation Base

Job-order costing systems often use allocation bases that do not reflect how jobs actually use overhead resources. The allocation base in the predetermined overhead rate must *drive* the overhead cost to improve job cost accuracy. A **cost driver** is a factor that causes overhead costs.

Job Order Costing: A Managerial Perspective

Many companies use a single predetermined **plantwide overhead rate** to allocate all manufacturing overhead costs to jobs based on their usage of direct labor-hours.

1. It is often overly-simplistic and incorrect to assume that direct labor-hours is a company's *only* manufacturing overhead cost driver.
2. If more than one overhead cost driver can be identified, job cost accuracy is improved by using *multiple predetermined overhead rates*.

Multiple Overhead Rates

Compute the total cost and the unit product cost of a job using multiple predetermined overhead rates.

Information to Calculate multiple Predetermined Overhead Rates

Dickson Company has two production departments, Milling and Assembly. The company uses a job-order costing system and computes a predetermined overhead rate in each production department. The predetermined overhead rate in the Milling Department is based on machine-hours and in the Assembly Department it is based on direct labor-hours. The company uses cost-plus pricing (and a markup percentage of 75% of total manufacturing cost) to establish selling prices for all of its jobs. At the beginning of the year, the company made the following estimates:

Information to Calculate multiple Predetermined Overhead Rates

	Department	
	Milling	Assembly
Machine-hours.....	60,000	3,000
Direct labor-hours.....	8,000	80,000
Total fixed manufacturing overhead cost.....	\$ 390,000	\$ 500,000
Variable manufacturing overhead per machine-hour.....	\$ 2.00	—
Variable manufacturing overhead per direct labor-hour.....	—	\$ 3.75

Step 1 – Calculate the Predetermined Overhead Cost for Each Department

During the current month the company started and completed Job 407. It wants to use its predetermined departmental overhead cost and rate for the Milling and Assembly Departments.

- Milling Department = $\$390,000 + (\$2.00 \text{ per MH} \times 60,000 \text{ MHs}) = \$510,000$
- Assembly Department = $\$500,000 + (\$3.75 \text{ per DLH} \times 80,000 \text{ DLHs}) = \$800,000$

Step 2 – Calculate the Predetermined Overhead Rate for Each Department

Use the amounts determined on the previous slide to calculate the predetermined overhead rate (POHR) of each department.

- Milling Department = $\$510,000 \div 60,000$ MHs = \$8.50 per MH
- Assembly Department = $\$800,000 \div 80,000$ DLHs = \$10.00 per DLH

Step 3 – Calculate the Amount of Overhead Applied from Both Departments to a Job

Use the POR calculated on the previous slide to determine the overhead applied from both departments to Job 407:

Job 407	Department	
	Milling	Assembly
Machine-hours.....	90	4
Direct labor-hours.....	5	20
Direct materials.....	\$ 800	\$ 370
Direct labor cost.....	\$ 70	\$ 280

Milling Department = 90 MHs × \$8.50 per MH = \$765

Assembly Department = 20 DLHs × \$10 per DLH = \$200

Step 4 – Calculate the Total Job Cost for Job 407

We can use the information given to calculate the amount of the total cost of Job 407. Here is the calculation:

	<i>Milling</i>	<i>Assembly</i>	<i>Total</i>
Direct materials.....	\$ 800	\$ 370	\$ 1,170
Direct labor.....	\$ 70	\$ 280	350
Manufacturing overhead applied.....	\$ 765	\$ 200	<u>965</u>
Total cost of Job 407.....			<u>\$ 2,485</u>

Step 5 – Calculate the Selling Price for Job 407 (1 of 2)

Here is the selling price of Job 407 assuming a 75% markup:

Total cost of Job 407.....	\$ 2,485.00
Markup ($\$2,485 \times 75\%$).....	<u>1,863.75</u>
Selling price of Job 407.....	<u>\$ 4,348.75</u>

Step 5 – Calculate the Selling Price for Job 407 (2 of 2)

- It is important to emphasize that using a departmental approach to overhead application results in a different selling price for Job 407 than would have been derived using a plantwide overhead rate based on either direct labor-hours or machine-hours.
- The appeal of using predetermined departmental overhead rates is that they presumably provide a more accurate accounting of the costs caused by jobs, which in turn, should enhance management planning and decision making.

Multiple Predetermined Overhead Rates— An Activity-Based Approach

- When a company creates overhead rates based on the activities that it performs, it is employing an approach called *activity-based costing*.
- **Activity-based costing** is an alternative approach to developing multiple predetermined overhead rates. Managers use activity-based costing systems to more accurately measure the demands that jobs, products, customers, and other cost objects make on overhead resources.

Job-Order Costing for Financial Statements to External Parties

The amount of overhead applied to all jobs during a period will differ from the actual amount of overhead costs incurred during the period.

1. When a company applies less overhead to production than it actually incurs, it creates what is known as *underapplied overhead*.
2. When it applies more overhead to production than it actually incurs, it results in *overapplied overhead*.

The cost of goods sold reported on a company's income statement must be adjusted to reflect underapplied or overapplied overhead.

1. The adjustment for **underapplied** overhead **increases cost of goods sold** and decreases net operating income.
2. The adjustment for **overapplied** overhead **decreases cost of goods sold** and increases net operating income.

Job Cost Sheets: A Subsidiary Ledger

All of a company's job cost sheets collectively form a **subsidiary ledger**.

PearCo Job Cost Sheet

Job Number A - 143 Date Initiated 3-4-17
 Department B3 Date Completed 3-5-17
 Item Wooden cargo crate Units Completed 2

Direct Materials		Direct Labor			Manufacturing Overhead		
Req. No.	Amount	Ticket	Hours	Amount	Hours	Rate	Amount
X7-6890	\$ 116	36	8	\$ 120	8	\$ 4	\$ 32

Cost Summary		Units Shipped		
		Date	Number	Balance
Direct Materials	\$ 116			
Direct Labor	\$ 120			
Manufacturing Overhead	\$ 32			
Total Cost	\$ 268			
Unit Product Cost				

Job Cost Sheets: Balance Sheet Reporting (1 of 2)

The job costs sheets provide an underlying set of financial records that explain what specific jobs comprise the amounts reported in *Work-in-Process* and *Finished Goods* on the balance sheet.

Job Cost Sheets: Balance Sheet Reporting (2 of 2)

PearCo Job Cost Sheet

Job Number A - 143 Date Initiated 3-4-17
 Department B3 Date Completed 3-6-17
 Item Wooden cargo crate Units Completed 2

Direct Materials		Direct Labor			Manufacturing Overhead		
Req. No.	Amount	Ticket	Hours	Amount	Hours	Rate	Amount
X7-8880	\$ 118	38	8	\$ 120	8	\$ 4	\$ 32

Cost Summary		Units Shipped		
		Date	Number	Balance
Direct Materials	\$ 118			
Direct Labor	\$ 120			
Manufacturing Overhead	\$ 32			
Total Cost	\$ 268			
Unit Product Cost				

Job Cost Sheets: Income Statement Reporting (2 of 2)

PearCo Job Cost Sheet

Job Number A - 143 Date Initiated 3-4-17
 Department B3 Date Completed 3-5-17
 Item Wooden cargo crate Units Completed 2

Direct Materials		Direct Labor			Manufacturing Overhead		
Req. No.	Amount	Ticket	Hours	Amount	Hours	Rate	Amount
X7-6890	\$ 116	36	8	\$ 120	8	\$ 4	\$ 32

Cost Summary		Units Shipped		
		Date	Number	Balance
Direct Materials	\$ 116			
Direct Labor	\$ 120			
Manufacturing Overhead	\$ 32			
Total Cost	\$ 268			
Unit Product Cost				

Job Cost Sheets: Income Statement Reporting (1 of 2)

The job costs sheets provide an underlying set of financial records that explain what specific jobs comprise the amounts reported in *Cost of Goods Sold* on the income statement.

Job-Order Costing in Service Companies

Although our attention has focused upon manufacturing applications, it bears re-emphasizing that job-order costing is also used in service industries.

Job-order costing is used in many different types of service companies such as law firms, accounting firms, and medical treatment.

Which of the following is the correct formula to compute the predetermined overhead rate?

- A) Predetermined overhead rate = Estimated total units in the allocation base ÷ Estimated total manufacturing overhead costs
- B) Predetermined overhead rate = Estimated total manufacturing overhead costs ÷ Estimated total units in the allocation base
- C) Predetermined overhead rate = Actual total manufacturing overhead costs ÷ Estimated total units in the allocation base
- D) Predetermined overhead rate = Estimated total manufacturing overhead costs ÷ Actual total units in the allocation base.

Which of the following is the correct formula to compute the predetermined overhead rate?

- A) Predetermined overhead rate = Estimated total units in the allocation base ÷ Estimated total manufacturing overhead costs
- B) Predetermined overhead rate = Estimated total manufacturing overhead costs ÷ Estimated total units in the allocation base
- C) Predetermined overhead rate = Actual total manufacturing overhead costs ÷ Estimated total units in the allocation base
- D) Predetermined overhead rate = Estimated total manufacturing overhead costs ÷ Actual total units in the allocation base.

Steele Corporation uses a predetermined overhead rate based on machine-hours to apply manufacturing overhead to jobs. Steele Corporation has provided the following estimated costs for next year:

Direct materials	\$ 20,000
Direct labor	\$ 60,000
Sales commissions	\$ 80,000
Salary of production supervisor	\$ 40,000
Indirect materials	\$ 8,000
Advertising expense	\$ 16,000
Rent on factory equipment	\$ 20,000

Steele estimates that 10,000 direct labor-hours and 16,000 machine-hours will be worked during the year. The predetermined overhead rate per hour will be:

- A) \$4.25
- B) \$8.00
- C) \$9.00
- D) \$10.25

Salary of production supervisor	\$ 40,000
Indirect materials	8,000
Rent on factory equipment	20,000
Manufacturing overhead	\$ 68,000

Predetermined overhead rate = Estimated total manufacturing overhead ÷ Estimated total amount of the allocation base

Predetermined overhead rate = \$68,000 ÷ 16,000 machine-hours = \$4.25 per machine-hour

Steele estimates that 10,000 direct labor-hours and 16,000 machine-hours will be worked during the year. The predetermined overhead rate per hour will be:

- A) \$4.25
- B) \$8.00
- C) \$9.00
- D) \$10.25

Helland Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on direct labor-hours. The company based its predetermined overhead rate for the current year on the following data:

Total direct labor-hours		30,000
		189,00
Total fixed manufacturing overhead cost	\$	0
Variable manufacturing overhead per direct labor-hour	\$	2.50

The predetermined overhead rate is closest to:

- A) \$2.50 per direct labor-hour
- B) \$11.30 per direct labor-hour
- C) \$6.30 per direct labor-hour
- D) \$8.80 per direct labor-hour

Explanation: Estimated total manufacturing overhead cost =
Estimated total fixed manufacturing overhead cost + (Estimated
variable overhead cost per unit of the allocation base $\times$ Estimated
total amount of the allocation base) = \$189,000 + (\$2.50 per direct
labor-hour $\times$ 30,000 direct labor-hours) = \$189,000 + \$75,000 =
\$264,000

Predetermined overhead rate = Estimated total manufacturing
overhead cost $\div$ Estimated total amount of the allocation base =
\$264,000 $\div$ 30,000 direct labor-hours = \$8.80 per direct labor-hour

The predetermined overhead rate is closest to:

- A) \$2.50 per direct labor-hour
- B) \$11.30 per direct labor-hour
- C) \$6.30 per direct labor-hour
- D) \$8.80 per direct labor-hour



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Thank You

