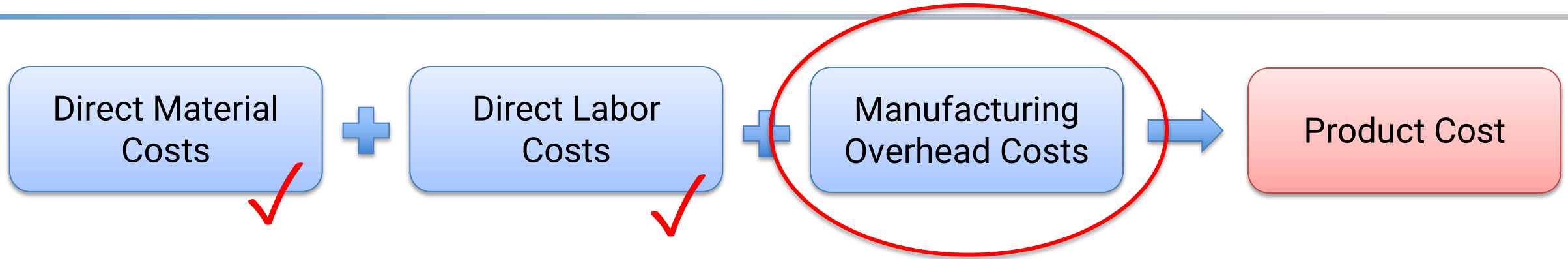


All about Manufacturing Overhead!



Product Costs



We now understand how direct material costs are established...

And we see how direct labor is determined.

The last step is to see how manufacturing overhead is allocated across all the different jobs!



Model XT5 Commuter e-Bike
One of your best sellers!

Manufacturing Overhead

Allocating the MOH to the Job Cost Record

Now its time to allocate manufacturing overhead (MOH) to Job 403.

Job Cost Record	
Job Number: 403	
Customer: <u>For Stock</u>	
Job Description: <u>50 units of Model XT5 Commuter e-Bike</u>	
Date Started: <u>March 2</u> Date Completed: _____	
Manufacturing Cost Information	Cost Summary
Direct Materials Req. #528: \$63,250 Req. #529: \$ 4,000 Req. #530: \$ 1,500	\$68,750
Direct Labor Employee 177: 21 DL Hours (\$630) Employee 192: 13 DL Hours (\$325) Employee 233: 12 DL Hours (\$360) ... (a total of 500 hours)	\$15,750
Manufacturing Overhead	
Total Job Cost	
Number of Units	50
Cost per Unit	

Manufacturing Overhead

What about Manufacturing Overhead?...

- So far we've only worried about tracking costs for Job 403: the 50 Model XT5 Commuter e-Bikes4.
- Every job looks like this so far...
- But how do you figure in the electricity used per job, perhaps depreciation expense on all the equipment, plus all the support staff (supervisors, maintenance folks, etc.)

Manufacturing Overhead

- You don't...you just sum up all the overhead costs associated with the production process and allocate it in some way to each job.

The Manufacturing Overhead Allocation Process...

A Simple Approach...

Step 1: Estimate what the Manufacturing Overhead (MOH) will be for the year...

- Estimate everything associated with production for the year: add it up.

Step 2: Decide how you're going to allocate the MOH to each job (the "*basis*")

- Labor Intensive Production: by total # of direct labor hours per year
- Machine Intensive Production: by total # of machine hours per year

Step 3: Calculate the Manufacturing Overhead (MOH) Rate using the basis

$$\text{MOH Rate} = \frac{\text{Total Estimated MOH}}{\text{Total Amount of the Basis}}$$

Step 4: Allocate the MOH to each job according to the rate and the basis...

- MOH for Each Job = (MOH Rate) x (Actual Amount of Allocation Base used by the Job)

The Manufacturing Overhead Allocation Process...

Now applied to Job 403...

Step 1: Estimate what the Manufacturing Overhead (MOH) will be for the year...

- Management estimates total MOH = \$1,000,000 per year

Step 2: Decide how you're going to allocate the MOH to each job (the "*basis*")

- Your company decides to use the total # of direct labor hours per year, which it further estimates to be 62,500 hours (based on previous year's figures)

Step 3: Calculate the Manufacturing Overhead (MOH) Rate using the basis

$$\text{MOH Rate} = \frac{\$1,000,000 \text{ per year}}{62,500 \text{ hours per year}} = \$16 \text{ per direct labor hour}$$

Step 4: Allocate the MOH to each job according to the rate and the basis...

- Job 403: \$16/hr x 500 hours = \$8,000

The Final Job Cost Record

We now have all 3 cost components:

- *Direct Materials*
- *Direct Labor*
- *MOH*

The Job Cost Record is updated with allocation of the Manufacturing Overhead.

\$8,000 of the plant's MOH is allocated to Job 403 based on its 500 Direct Labor hours.

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Manufacturing Overhead	\$8,000
Total Job Cost	
Number of Units	50
Cost per Unit	

The Final Job Cost Record

Now for the Product Cost...

Simply add the 3 cost components together to get the total Job Cost.

The Product Cost is just the Total Job Cost / Units Produced!

Now we add it all up and see the total cost for Job 403 is \$92,500.

Which means each XT5 Commuter e-Bike costs \$1,850.

...and we're done!

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Job Description: <u>50 units of Model XT5 Commuter e-Bike</u>	
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Manufacturing Cost Information	Cost Summary
Direct Materials Req. #528: \$63,250 Req. #529: \$ 4,000 Req. #530: \$ 1,500	\$68,750
Direct Labor Employee 177: 21 DL Hours (\$630) Employee 192: 13 DL Hours (\$325) Employee 233: 12 DL Hours (\$360) ... (a total of 500 hours)	\$15,750
Manufacturing Overhead	\$8,000
Total Job Cost	\$92,500
Number of Units	50
Cost per Unit	\$1850

The Cost of an XT5 Commuter e-Bike

The Final Figures...

Total Unit Cost per XT5 Commuter e-Bike: \$1850

Cost Breakdown:

Materials:	\$68,750 / 50 units:	\$1,375
Labor:	\$15,750 / 50 units:	\$ 315
MOH:	\$ 8,000 / 50 units:	\$ 160
		<u>Total: \$1,850</u>

Cost Breakdown (%):

Materials:	74%
Labor:	17%
MOH:	9%
<u>Total: 100%</u>	



Model XT5 Commuter e-Bike
One of your best sellers!

The Cost of an XT5 Commuter e-Bike

What does management do with these numbers?

Total Unit Cost per XT5 Commuter e-Bike: \$1850

Is this cost in line with our pricing strategy? (e.g., is the XT5 profitable enough)?

*If the company got an order for 500 (high-volume),
how much of a volume discount should it give?*

Cost Breakdown (%):

Materials: 74%

Labor: 17%

MOH: 9%

Total: 100%

*Where are the real cost-reduction
opportunities?*



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Main Takeaways...

- The Job Cost method to determine unit product cost is very common in production environments where manufacturing is often done in “batches”.
- Job Cost Analysis considers:
 - ✓ Cost of Direct Materials per job
 - ✓ Cost of Direct Labor per job
 - ✓ Allocated Manufacturing O/H
- Allocating MOH depends on “*basis*” selected – often Direct Labor Hours, Machine Operating Hours, or some other measurable production parameter.
- Accurately knowing the product cost allows management to validate pricing strategies, assess profitability, and identify potential cost-reduction opportunities.

Next Time...

Product Cost using the Activity-Based Cost Method



Credits & References

Slide 1: Bicycle factory, worker packs teen bike in box by Nomad_Soul, Adobe Stock (389658850.jpeg).

Slide 2, 9, 10: Black electric bike isolated with clipping path by eshma, Adobe Stock (222853589.jpeg).

Slide 12: Activity based costing illustration with a man writing on paperwork with money, calculator and folder document on top of table by teguhjatipras, Adobe Stock (140854016.jpeg).