

chapter

17(2)

Job Order Costing

OPENING COMMENTS

Chapter 17(2) introduces students to managerial job order cost systems. Students will be exposed to the terminology used to describe costs related to manufacturing.

The first of two basic manufacturing accounting systems, job order, is described in this chapter. Students learn how costs flow through a manufacturing system and the basis for determining product costs under job order costing.

After studying the chapter, your students should be able to:

1. Describe cost accounting systems used by manufacturing businesses.
2. Describe and illustrate a job order cost accounting system.
3. Describe the use of job order cost information for decision making.
4. Describe the flow of costs for a service business that uses a job order cost accounting system.

STUDENT FAQs

- Why is it necessary to calculate a predetermined overhead rate?
- Why is factory overhead “Actual” debited to record factory overhead?
- If all material goes into a materials account when purchased, then why is it designated direct or indirect material when it is taken out of the materials account?
- What is the difference between under- and overapplied factory overhead?
- Basically, job order is custom-ordered items from a customer. Then why is it necessary to keep up with all costs when an estimate has been given before the job is taken?
- Can a business use both process and job order costing?
- Why is it necessary to keep up with the flow of costs in a job order system?
- When we credit accumulated depreciation for the factory depreciation, why don't we debit depreciation expense?

OBJECTIVE 1

Describe cost accounting systems used by manufacturing businesses.

KEY TERMS

Cost Accounting Systems	Process Cost System
Job Order Cost System	

SUGGESTED APPROACH

Transparency Master (TM) 17(2)-1 describes the focus and information provided by cost accounting systems. After reviewing this information, introduce students to job order and process cost systems. Emphasize that job order systems are used by companies that make custom, special-order type goods or produce a high variety of products. Process cost systems are used by companies that make “a whole bunch of stuff that all looks the same” under a continuous manufacturing process. Ask your students to name types of manufacturers that would make products suitable to a job order system (such as new-construction homes, replacement windows, class rings, business cards, and wedding invitations). Repeat this exercise to identify process cost manufacturers.

OBJECTIVE 2

Describe and illustrate a job order cost accounting system.

KEY TERMS

Activity Base	Materials Requisition
Activity-Based Costing	Overapplied Factory Overhead
Cost Allocation	Predetermined Factory Overhead Rate
Finished Goods Ledger	Receiving Report
Job Cost Sheets	Time Tickets
Materials Ledger	Underapplied Factory Overhead

SUGGESTED APPROACH

Objective 2 introduces students to the various documents and procedures used in accumulating the accounting data under a job order system. Two different approaches to cover the documents in a job order system are described below.

CLASS DISCUSSION — Information Needed in a Job Order System

Ask your students to assume that they manage the manufacturing operations for the custom order division of a company that makes fine jewelry. The company's raw materials consist mainly of gold (10 karat and 14 karat), precious stones, and semiprecious stones. Ask your students to describe manufacturing information that would be important to track. List their responses on the board.

Your students should list many of the following concerns. Point out the accounting documents used to gather and report this information.

The amount of each type of material on hand	Materials Ledger — shows a record of the amount of each material on hand
The quantity of material used on each customer order	Materials Requisition — provides authorization for materials to be released from the inventory storage area; shows specific quantity of materials used in each customer order
The labor costs used on each customer order.	Time Tickets — filled out by employees; shows the amount of time spent working on each job and the labor cost
The total cost of making a customer's order	Job Cost Sheet — lists materials (from materials requisitions), labor costs (from time tickets), and overhead used on each customer job
The costs incurred on jobs currently in process	Cost Ledger — job cost sheets for all orders in process
The total cost of all completed jobs	Finished Goods Ledger — job cost sheets for all finished orders

CLASS DISCUSSION — Documents and Procedures in a Job Order System

You can also cover this objective through a bit of role playing. Tell your class to assume that they are workers for the custom order division of a manufacturer that makes fine jewelry. Assign specific manufacturing job responsibilities to various class members. Ask your students the questions listed below concerning the procedures and documents they would use in their jobs.

The goal is for students to understand the information needed by various manufacturing personnel and then attach a name to documents that report that information. You may need to be the person who attaches the name to the students' ideas. For example, when you ask the production scheduler how he or she will inform the storeroom clerk of the need for inventoried materials, he or she will probably suggest writing a note or memo. (If the production scheduler says, "I'd call the storeroom clerk," state that all

requests need to be in writing because of the volume of requests for raw materials.) Next, ask the scheduler what information would be on the memo. Then you can attach a name to this memo; the document used to request that materials is a materials requisition.

1. Appoint one of your students to be the production scheduler for your company. Whenever this student receives a customer order, he or she is to schedule when the item will be made. Tell that student to assume that the company has just received an order to make World Series rings for the winning baseball team. Ask him or her to name the steps that would need to be taken to schedule the job. The student should mention the following (with a little prodding from you, if necessary):
 - a. Look at other jobs scheduled to see when workers will have time to start this job.
 - b. Determine whether the materials are on hand to make the rings.

Tell the student to assume that materials need to be ordered (the details of purchasing raw materials are not specifically described in this chapter, you may wish to skip to step 3 which is covered in the chapter). The company's purchasing agent orders all materials. Ask the student how he or she would tell the purchasing agent what to order. (Answer: Fill out a purchase requisition.)

2. Name one student as the purchasing agent. Ask what he or she would do after receiving the purchase requisition. (Answer: Fill out a purchase order and transmit it to the vendor.)
3. Appoint a student to be the receiving department. Ask what he or she would do when goods are received. (Answer: Inspect and count the items, fill out a receiving report, and take the materials to the storeroom.)
4. Name a storeroom supervisor. Ask this student what he or she would do when the materials are received. (Answer: Put them away, preferably where they are locked up.)

Next, ask this student whether he or she would give materials to any employee who asked for them. What would the storeroom supervisor need in order to give materials to a production employee? (Answer: a materials requisition)

5. Ask one student to be the skilled craftsman who is going to make the rings. Tell the student that the company wants to know the labor cost of all orders. Ask what information he or she would record so the company could determine the labor cost. (Answer: The time spent working on the order would be recorded on a time ticket.)
6. Appoint one of your students as the accountant. That student needs to determine the cost to make the rings. Ask him or her to describe how to get the information to determine the cost. (Answer: Take materials used from the materials requisition and labor costs from the time tickets; these costs, along with overhead, are recorded on a job cost sheet.)

Ask the student how he or she could determine the costs spent on jobs that have been completed. (Answer: Add up the job cost sheets for all finished jobs. The job cost sheets for all finished jobs make up the finished goods ledger.)

Finally, ask the accountant how he or she could determine the costs spent on all jobs that are still being worked on. (Answer: Add up the job cost sheets for the jobs still in process. The job cost sheets for jobs in process make up the cost ledger.)

LECTURE AID — Allocation of Overhead

In addition to direct materials cost and direct labor cost, objective 2 covers the allocation of overhead costs in a job order setting. The following example may be helpful in explaining why overhead costs need to be allocated.

Assume that you are responsible for planning a banquet for your school's accounting club. The banquet will feature a dinner, followed by a speaker. The costs associated with the banquet are as follows:

Meals	\$10 per person
Beverages (coffee and tea)	\$1 per person
Use of banquet room	\$50
Speaker's fee	\$100

Assume that 50 students will attend the banquet. If you want to break even on this event, how much do you need to charge for a ticket? (Answer: \$14)

In this case, meals and beverages are costs that can be traced to each student attending the banquet. Fees paid for use of the room and to the speaker cannot be directly traced to each student. These costs must be allocated to each attendee in order to determine what it will cost each person to attend the banquet. The \$150 in costs allocated over 50 people equals \$3 per person.

DEMONSTRATION PROBLEM — Allocation of Overhead

The costs of manufacturing a product that cannot be traced to a particular job are called overhead. Overhead costs must be allocated to the products made to determine what each product costs.

Point out that, unlike the situation in the banquet example, overhead costs usually are not divided evenly over the number of units produced. Assume that a television manufacturer spent \$500,000 on overhead costs to make 50,000 televisions. At first glance, it might seem fair to allocate \$10 in overhead to each television. But what if some televisions were big-screen stereo sets and some were small, portable models? It isn't fair to charge each set with the same overhead if some models are more complicated to manufacture than others.

Assume that MTM manufacturing estimates it will spend \$1 million on overhead expenses. MTM is a highly automated manufacturing plant; therefore, the majority of its overhead expenses relate to machinery (depreciation, repairs and maintenance, electricity used). Machine hours used would be a reasonable way to allocate overhead costs to products because use of machinery causes (or drives) overhead expenses. MTM estimates that it will run its machines for 40,000 hours during the year.

The formula to calculate MTM's predetermined overhead rate is as follows:

$$\frac{\text{Estimated Total Factory Overhead Costs}}{\text{Estimated Activity Base (machine hours)}} = \frac{\$1,000,000}{40,000 \text{ hours}} = \$25/\text{hour}$$

In this case, \$25 in overhead is allocated each time a product accumulates one hour of machine time.

Ask your students to calculate the overhead that would be allocated to a product that uses 3.5 hours of machine time. (Answer: \$87.50) Remind students that overhead costs are added to the product's materials and labor costs.

Emphasize that the identification of the appropriate activity base or driver is essential to developing accurate product costs. If a highly automated manufacturer allocates overhead based on direct labor hours, the resulting product costs may be distorted. The activity base should be related to the incurrence of overhead costs.

In practice, more than one factory overhead rate may be used for applying overhead. Materials-related overhead (such as purchasing, materials receiving or inspection, and materials storage costs) could be allocated based on the direct materials cost of a product, with the remaining overhead allocated based on direct labor hours or machine hours. Using activity-based costing to allocate overhead is discussed and illustrated in Chapter 24.

DEMONSTRATION PROBLEM — Overapplied and Underapplied Overhead

Ask your students to calculate the amount of overhead allocated to the products of a company that has a predetermined overhead rate of \$10 per machine hour if machines were used for 10,000 hours. (Answer: \$100,000)

What if the company actually spent \$95,000 on overhead costs? The company has overapplied overhead of \$5,000. A company may have overapplied or underapplied overhead if:

1. Actual overhead costs do not equal the estimated costs used to compute the predetermined overhead rate.
2. The actual activity base (machine hours) does not equal the estimated activity base used to compute the predetermined overhead rate.

TM 17(2)-2 shows circumstances where over- and underapplied overhead occur and how they are treated in the accounting records.

GROUP LEARNING ACTIVITY — Journal Entries in a Job Order System

Exhibit 2 in the text summarizes the flow of costs in a job order cost system (costs move from materials inventory to work in process to finished goods to cost of goods sold). Exhibit 8 shows the entries needed to record manufacturing costs in T accounts. Ask your students to record the journal entries listed on TM 17(2)-3, using Exhibits 2 and 8 as a guide. The correct entries are displayed on TM 17(2)-4. You may want to have your students post these entries to T accounts and determine account balances.

Emphasize the following points as students record their entries:

1. Materials requisitions serve as the basis for transferring material costs from materials to work in process and factory overhead.
2. Actual overhead costs are debited to factory overhead. Applied overhead costs are credited to factory overhead.
3. Entries to work in process are supported by job cost sheets. At the end of the period, the sum of the totals from all job cost sheets that are still in process must equal the balance of work in process.
4. Product sales serve as the basis for transferring jobs from finished goods to cost of goods sold.

OBJECTIVE 3

Describe the use of job order cost information for decision making.

SUGGESTED APPROACH

The goal of this objective is to explore the ways in which job cost information is used in decision making. To put your students in the role of decision maker, use the following Group Learning Activity.

GROUP LEARNING ACTIVITY — Decision Making

Handout 17(2)-1 is a brief problem asking students to interpret two job cost sheets. Ask your students to work on this problem in groups. After providing sufficient time, ask some of the groups to report their responses. TM 17(2)-5 provides the solution.

Comparing the two job cost sheets shows that the improved price per pound of alloy does not offset the increased costs associated with higher materials usage rates and reduced casting and machining department efficiency. It is likely that the events are related. The lower alloy cost has probably resulted from the purchase of sub-quality raw materials. As a result, more alloy is required per casting on Job 210 than on prior jobs. In addition, the casting and machining departments are having greater difficulty with the castings, causing the efficiency of the departments to drop. Therefore, it appears that the new alloy vendor is causing the company to experience more scrapped castings, which increases the materials cost and conversion costs to produce product. Shipping costs are unaffected.

Job 210 also is allocated more overhead because it now consumes more labor hours. This allocation appears logical, since the job probably requires more overhead resources. The cost of activities such as scheduling, production control, and quality have probably increased because of the greater unreliability of the casting operations, caused by the lower quality alloy.

OBJECTIVE 4

Describe the flow of costs for a service business that uses a job order cost accounting system.

SUGGESTED APPROACH

Explain that cost accounting can be applied to any organization that needs to determine the cost of its product. For a service business, the product is the service provided. Cost accounting can be used by an advertising agency to determine the cost to produce an ad for a customer, by an accountant to determine the cost of preparing a tax return, or by a plumber to determine the cost to clean a drain.

Refer your students to Exhibit 11 in the text. While reviewing that diagram, stress the following points:

1. The costs incurred by a service organization are labor and overhead. Any supplies used are treated as an overhead expense.
2. A cost of services account is used to record the cost of completed jobs.

GROUP LEARNING ACTIVITY — Job Order Costing in a Service Business

TM 17(2)-6 presents information about a CPA firm that does audit and tax work. Divide your class into small groups and instruct students to determine the cost to prepare a tax return. The solution is shown on TM 17(2)-7.

Handout 17(2)-1

Decision Making Using Job Cost Data

Griffin Casting Company is a job shop that manufactures castings for a variety of purposes. The following two job cost sheets relate to two different orders for an identical casting used to house automobile generators. As can be seen from the two job cost sheets, the unit cost has increased between March and October. The purchasing manager has explained that the problem is not with the purchasing department. In October, purchasing was able to buy metal alloys from a new vendor at a price of \$12 per pound, a savings of \$3 per pound from the previous vendor used in March. The new vendor has not been quality certified.

Required: Interpret the job cost reports to determine what has caused the per unit cost increase.

Job 100	Date Completed: March 30	Item: 40 automobile generator housings		
Materials:	Quantity	Price	Amount	
Alloy (pounds)	60	\$15.00	\$900	
Fasteners	160	0.25	<u>40</u>	
Total materials			\$940	
Direct labor:	Hours	Rate	Amount	
Casting	20.00	\$14.00	\$280	
Machining	40.00	16.00	640	
Shipping	4.00	<u>10.00</u>	<u>40</u>	
Total direct labor	64.00		\$960	
Factory overhead (200% of direct labor dollars)	960	× 200%	\$1,920	
Total Cost			\$3,820	
Total Units			<u>÷ 40</u>	
Unit Cost			\$95.50	

Job 210	Date Completed: October 15	Item: 100 automobile generator housings		
Materials:	Quantity	Price	Amount	
Alloy (pounds)	200	\$12.00	\$2,400	
Fasteners	400	0.25	<u>100</u>	
Total materials			\$2,500	
Direct labor:	Hours	Rate	Amount	
Casting	60.00	\$14.00	\$ 840	
Machining	120.00	16.00	1,920	
Shipping	10.00	<u>10.00</u>	<u>100</u>	
Total direct labor	190.00		\$2,860	
Factory overhead (200% of direct labor dollars)	2,860	× 200%	\$5,720	
Total Cost			\$11,080	
Total Units			<u>÷ 100</u>	
Unit Cost			\$110.80	

HOMEWORK CHART WITH LEARNING OUTCOMES TAGGING

			DIFFICULTY	BUSPROG	ACBSP	ACBSP	IMA	BLOOM'S	TIME		
Problem	Learning Objective	Description		Primary	Primary	Secondary	Managerial Only			Spread-sheet	GL
DQ17-1	17-1		Easy	Analytic	Job Order Costing		Cost Management	Knowledge	5 min.		
DQ17-2	17-1		Easy	Analytic	Job Order Costing		Cost Management	Knowledge	5 min.		
DQ17-3	17-2		Easy	Analytic	Job Order Costing		Cost Management	Knowledge	5 min.		
DQ17-4	17-2		Easy	Analytic	Job Order Costing		Cost Management	Knowledge	5 min.		
DQ17-5	17-2		Easy	Analytic	Job Order Costing		Cost Management	Knowledge	5 min.		
DQ17-6	17-2		Easy	Analytic	Job Order Costing		Cost Management	Knowledge	5 min.		
DQ17-7	17-2		Easy	Analytic	Job Order Costing		Cost Management	Knowledge	5 min.		
DQ17-8	17-2		Easy	Analytic	Job Order Costing		Cost Management	Knowledge	5 min.		
DQ17-9	17-2		Easy	Analytic	Job Order Costing		Cost Management	Knowledge	5 min.		
DQ17-10	17-4		Easy	Analytic	Job Order Costing		Cost Management	Knowledge	5 min.		
PE17-1A	17-2	Issuance of materials	Easy	Analytic	Job Order Costing		Cost Management	Application	5 min.		
PE17-1B	17-2	Issuance of materials	Easy	Analytic	Job Order Costing		Cost Management	Application	5 min.		
PE17-2A	17-2	Direct labor costs	Easy	Analytic	Job Order Costing		Cost Management	Application	5 min.		
PE17-2B	17-2	Direct labor costs	Easy	Analytic	Job Order Costing		Cost Management	Application	5 min.		
PE17-3A	17-2	Factory overhead costs	Easy	Analytic	Job Order Costing		Cost Management	Application	5 min.		
PE17-3B	17-2	Factory overhead costs	Easy	Analytic	Job Order Costing		Cost Management	Application	5 min.		
PE17-4A	17-2	Applying factory overhead	Easy	Analytic	Job Order Costing		Cost Management	Application	10 min.		
PE17-4B	17-2	Applying factory overhead	Easy	Analytic	Job Order Costing		Cost Management	Application	10 min.		
PE17-5A	17-2	Job costs	Easy	Analytic	Job Order Costing		Cost Management	Application	10 min.		

			DIFFICULTY	BUSPROG	ACBSP	ACBSP	IMA	BLOOM'S	TIME		
Problem	Learning Objective	Description		Primary	Primary	Secondary	Managerial Only			Spread-sheet	GL
PE17-5B	17-2	Job costs	Easy	Analytic	Job Order Costing		Cost Management	Application	10 min.		
PE17-6A	17-2	Cost of goods sold	Easy	Analytic	Job Order Costing		Cost Management	Application	5 min.		
PE17-6B	17-2	Cost of goods sold	Easy	Analytic	Job Order Costing		Cost Management	Application	5 min.		
Ex17-1	17-2	Transactions in a job order cost system	Easy	Analytic	Job Order Costing		Cost Management	Knowledge	5 min.		
Ex17-2	17-2	Cost flow relationships	Easy	Analytic	Job Order Costing		Cost Management	Application	10 min.		
Ex17-3	17-2	Cost of materials issuances under the FIFO method	Moderate	Analytic	Job Order Costing		Cost Management	Application	30 min.	X	
Ex17-4	17-2	Entry for issuing materials	Easy	Analytic	Job Order Costing		Cost Management	Application	5 min.		
Ex17-5	17-2	Entries for materials	Moderate	Analytic	Job Order Costing		Cost Management	Application	30 min.		
Ex17-6	17-2	Entry for factory labor costs	Easy	Analytic	Job Order Costing		Cost Management	Application	5 min.		
Ex17-7	17-2	Entry for factory labor costs	Moderate	Analytic	Job Order Costing		Cost Management	Application	15 min.		
Ex17-8	17-2	Entries for direct labor and factory overhead	Easy	Analytic	Job Order Costing		Cost Management	Application	10 min.		
Ex17-9	17-2	Factory overhead rates, entries, and account balance	Moderate	Analytic	Job Order Costing		Cost Management	Application	30 min.		
Ex17-10	17-2	Predetermined factory overhead rate	Moderate	Analytic	Job Order Costing		Cost Management	Application	15 min.		
Ex17-11	17-2	Predetermined factory overhead rate	Moderate	Analytic	Job Order Costing		Cost Management	Application	15 min.		
Ex17-12	17-2	Entry for jobs completed; cost of unfinished jobs	Moderate	Analytic	Job Order Costing		Cost Management	Application	15 min.		
Ex17-13	17-2	Entries for factory costs and jobs completed	Moderate	Analytic	Job Order Costing		Cost Management	Application	30 min.		
Ex17-14	17-2	Financial statements of a manufacturing firm	Moderate	Analytic	Job Order Costing	Financial Statements	Cost Management	Application	30 min.	X	
Ex17-15	17-3	Decision making with job order costs	Moderate	Analytic	Job Order Costing		Cost Management	Application	1 hour		
Ex17-16	17-3	Decision making with job order costs	Moderate	Analytic	Job Order Costing		Cost Management	Application	30 min.		

			DIFFICULTY	BUSPROG	ACBSP	ACBSP	IMA	BLOOM'S	TIME		
Problem	Learning Objective	Description		Primary	Primary	Secondary	Managerial Only			Spread-sheet	GL
Ex17-17	17-4	Job order cost accounting entries for a service business	Moderate	Analytic	Job Order Costing		Cost Management	Application	1 hour		
Ex17-18	17-4	Job order cost accounting entries for a service business	Moderate	Analytic	Job Order Costing		Cost Management	Application	30 min.		
Pr17-1A	17-2	Entries for costs in a job order cost system	Moderate	Analytic	Job Order Costing		Cost Management	Application	45 min.		X
Pr17-2A	17-2	Entries and schedules for unfinished jobs and completed jobs	Challenging	Analytic	Job Order Costing		Cost Management	Application	1.5 hours	X	X
Pr17-3A	17-2, 17-3	Job order cost sheet	Challenging	Analytic	Job Order Costing		Cost Management	Application	1 hour	X	
Pr17-4A	17-2	Analyzing manufacturing cost accounts	Challenging	Analytic	Job Order Costing		Cost Management	Application	1.5 hours	X	
Pr17-5A	17-2	Flow of costs and income statement	Challenging	Analytic	Job Order Costing	Financial Statements	Cost Management	Application	1.5 hours	X	
Pr17-1B	17-2	Entries for costs in a job order cost system	Moderate	Analytic	Job Order Costing		Cost Management	Application	45 min.		X
Pr17-2B	17-2	Entries and schedules for unfinished jobs and completed jobs	Challenging	Analytic	Job Order Costing		Cost Management	Application	1.5 hours	X	X
Pr17-3B	17-2, 17-3	Job order cost sheet	Challenging	Analytic	Job Order Costing		Cost Management	Application	1 hour	X	
Pr17-4B	17-2	Analyzing manufacturing cost accounts	Challenging	Analytic	Job Order Costing		Cost Management	Application	1.5 hours	X	
Pr17-5B	17-2	Flow of costs and income statement	Challenging	Analytic	Job Order Costing	Financial Statements	Cost Management	Application	1.5 hours	X	
CP17-1	17-2	Managerial analysis	Easy	Analytic	Job Order Costing		Cost Management	Analysis	15 min.		
CP17-2	17-3	Job order decision making and rate deficiencies	Challenging	Analytic	Job Order Costing		Cost Management	Analysis	1 hour		
CP17-3	17-2	Factory overhead rate	Moderate	Analytic	Job Order Costing		Cost Management	Analysis	30 min.		
CP17-4	17-2	Recording manufacturing costs	Moderate	Analytic	Job Order Costing		Cost Management	Application	30 min.		
CP17-5	17-2	Predetermined overhead rates	Moderate	Analytic	Job Order Costing		Cost Management	Application	45 min.		