Chapter 2

Lecture Notes

Chapter theme: Managers need to assign costs to products to facilitate internal decision making and external financial reporting. This chapter illustrates an absorption costing approach to calculating product costs known as job-order costing.

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*Helpful Hint: Briefly review the concepts of fixed and variable manufacturing costs to help students grasp the meaning of absorption costing. Mention that total fixed costs are constant and therefore change on a per unit basis. Variable costs are proportional to the number of units produced and are constant on a per unit basis.*

1. Job-order costing: an overview
   1. Job-order costing systems are used when:
      1. Many different products are produced each period.

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* + 1. Products are manufactured to order.
    2. The unique nature of each order requires tracing or allocating costs to each job, and maintaining cost records for each job.
  1. Examples of companies that would use job-order costing include aircraft manufacturers, large-scale construction companies, and companies that produce movies.

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1. Job-order costing−an example
   1. Types of manufacturing costs that are assigned to products using a job-order costing system:
      1. Direct costs
         1. Direct materials − Traced directly to each job as the work is performed.

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* + - 1. Direct labor − Traced directly to each job as the work is performed.
    1. Indirect costs
       1. Manufacturing overhead (including indirect materials and indirect labor). These costs are allocated to jobs rather than directly traced to each job.

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* 1. The job cost sheet − The accounting department relies upon a job cost sheet for tracking the direct and indirect costs associated with a given job.
     1. An overview of a job cost sheet for a hypothetical company called PearCo:

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* + - 1. A job number uniquely identifies each job.
      2. Direct material, direct labor, and manufacturing overhead costs are accumulated for each job.
      3. The job cost sheet is a subsidiary ledger to the Work in Process account.
    1. Measuring direct materials cost
       1. Once a sales order has been received and a production order issued, the Production Department prepares a materials requisition form to specify the type, quantity, and total cost of materials (e.g., $116) to be drawn from the storeroom, and the job number (e.g., A-143) to which the cost of the materials is to be charged.

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* + - * 1. For an existing product, the production department can refer to a bill of materials to determine the type and quantity of each item of materials needed to complete a unit of product.
      1. The Accounting Department records the total direct material cost of $116 on the appropriate job cost sheet. Notice, the material requisition number (e.g., X7-6890) is included on the job cost sheet to provide easy access to the source document.

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* + 1. Measuring direct labor costs
       1. Workers use time tickets to record the amount of time that they spent on each job and the total cost assigned to each job.

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* + - 1. The Accounting Department records the labor costs from the time tickets of $120 on to the job cost sheet.

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* + 1. Computing predetermined overhead rates

*Learning Objective 1: Compute a predetermined overhead rate.*

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1. An allocation base, such as direct labor hours, direct labor dollars, or machine hours, is used to assign manufacturing overhead to products. Allocation bases are used because:
   * + - 1. It is impossible or difficult to trace these costs to particular jobs (i.e., manufacturing overhead is an indirect cost).

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* + - * 1. Manufacturing overhead consists of many different items ranging from the grease used in machines to the production manager’s salary.
        2. Many types of manufacturing overhead costs are fixed even though output may fluctuate during the year.

1. The predetermined overhead rate is calculated by dividing the estimated amount of manufacturing overhead for the coming period by the estimated quantity of the allocation base for the coming period. Ideally, the allocation base chosen should be the cost driver of overhead cost.

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

(1) Actual overhead costs for the period are not known until the end of the period, thus inhibiting the ability to estimate job costs during the period.

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(2) Actual overhead costs can fluctuate seasonally, thus misleading decision makers.

1. Predetermined overhead rates are calculated using a four-step process.
2. The first step is to estimate the total amount of the allocation base required for next period’s estimated level of production.
3. The second step is to estimate the total fixed manufacturing overhead cost for the coming period and the variable manufacturing overhead cost per unit of the allocation base.

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1. The third step is to use a cost formula to estimate the total manufacturing overhead cost for the coming period.
2. The fourth step is to compute the predetermined overhead rate.
   * 1. Applying manufacturing overhead

*Learning Objective 2: Apply overhead cost to jobs using a predetermined overhead rate.*

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1. Manufacturing overhead is applied to jobs using the predetermined overhead rate multiplied by the actual amount of the allocation base used completing the job (this is called a normal costing system). For example, assume PearCo:
2. Applies overhead to jobs based on direct labor hours.
3. Estimated that 160,000 direct labor hours would be required to support the planned production for the year.

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1. Estimated $200,000 of total fixed overhead cost and $2.75 of variable overhead per direct labor-hour.
2. Used a cost formula to estimate its total manufacturing overhead cost of $640,000.
3. Calculated its predetermined overhead rate of $4 per direct labor hour.

(1) The amount of overhead that would be applied to the job cost sheet that we have been working with related to Job A-143 is $32, calculated as follows:

(a) Eight direct labor hours were worked on Job A-143.

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(b) The predetermined overhead rate is $4 per direct labor hour.

(c) 8 direct labor hours × $4 per hour = $32.

*Learning Objective 3: Compute the total cost and unit product cost of a job using a plantwide predetermined overhead rate.*

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vi. Completing the job cost sheet

1. The total direct material, direct labor, and manufacturing overhead costs assigned to Job A-143 is $268.

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1. Since this job included two units, the average cost per unit is $134. The average unit cost should not be interpreted as the costs that would actually be incurred if another unit was produced.

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1. The fixed overhead would not change if another unit were produced, so the incremental cost of another unit is something less than $134.

*Quick Check − job cost* *accounting*

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1. Job-order costing—a managerial perspective
   1. Inaccurately assigning manufacturing costs to jobs adversely influences planning and decisions made by managers.
      1. Job-order costing systems can accurately trace *direct* materials and *direct* labor costs to jobs.

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* + 1. Job-order costing systems often fail to accurately allocate the manufacturing overhead costs used during the production process to their respective jobs.
  1. Choosing an allocation base
     1. Job-order costing systems often use allocation bases that do not reflect how jobs actually use overhead resources.
     2. The allocation base in the predetermined overhead rate must drive the overhead cost to improve job cost accuracy.
        1. A cost driver is a factor that causes overhead costs.
        2. 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.

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* + - * 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.

*Learning Objective 4: Compute the total cost and the unit product cost of a job using multiple predetermined overhead rates.*

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1. Job-order costing using multiple predetermined overhead rates
   1. A cost system with multiple predetermined overhead rates uses more than one overhead rate to apply overhead costs to jobs. For example, assume Dickson Company uses a job-order costing system and computes a predetermined overhead rate in each production department. The company uses cost-plus pricing to establish selling prices for all of its jobs.

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1. Information relating to its two processing departments is provided on this slide.
2. The company computes a selling price for Job 407 using a 5-step process:
3. Step 1: Calculate the estimated total manufacturing overhead cost for each department:

(1) Milling Department = $390,000 + ($2.00 per MH × 60,000 MHs) = $510,000.

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(2) Assembly Department = $500,000 + ($3.75 per DLH × 80,000 DLHs) = $800,000.

1. Step 2: Calculate the predetermined overhead rate in each department:

(1) Milling Department = $510,000 ÷ 60,000 MHs = $8.50 per MH.

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(2) Assembly Department = $800,000 ÷ 80,000 DLHs = $10.00 per DLH.

1. Step 3: Calculate the amount of overhead applied from both departments to a job:

(1) Milling Department = $8.50 per MH*×* 90 MHs = $765.

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(2) Assembly Department = $10.00 per DLH *×* 20 DLHs = $200.

1. Step 4: Calculate the total job cost for Job 407:

(1) Total job cost = Direct materials (= $800 + $370) + Direct labor (= $70 + $280) + Manufacturing overhead applied (= $765 + $200) = $2,485.

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1. Step 5: Assuming a markup percentage of 75% of total manufacturing cost, calculate the selling price for the job:

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(1) Total job cost of $2,485.00 + Markup of $1,863.75 (= $2,485 x 75%) = $4,348.75.

1. When a company instead creates overhead rates based on the activities that it performs, it is employing an approach called activity-based costing.

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1. Selected topics
2. An external reporting perspective
3. Job-order costing systems are often used to create financial statements for external parties.
4. Impact on the income statement when a company uses predetermined overhead rates:
5. The amount of overhead applied to all jobs during a period will differ from the actual amount of overhead costs incurred during the period.

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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.
3. The cost of goods sold reported on a company’s income statement must be adjusted to reflect underapplied or overapplied overhead.
4. The adjustment for underapplied overhead increases cost of goods sold and decreases net operating income.

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1. The adjustment for overapplied overhead decreases cost of goods sold and increases net operating income.
2. Job cost sheets: a subsidiary ledger
3. All of a company’s job cost sheets collectively form a subsidiary ledger.

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1. The job costs sheets provide an underlying set of financial records that explain what specific jobs comprise the amounts reported in:

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1. Work-in-Process and Finished Goods on the balance sheet.
2. Cost of Goods Sold on the income statement.

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

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1. For example, in a law firm, each client represents a “job.” Legal forms and similar inputs represent direct materials. The time expended by attorneys represents direct labor. The costs of secretaries, clerks, rent, depreciation, and so forth, represent the overhead.