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JOB-ORDER COSTING

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OUTLINE OF THE LECTURE

1. Job-order costing
2. Measuring individual costs
3. Allocation base
4. Nonmanufacturing costs
5. The concept of a clearing account

JOB-ORDER COSTING

- job-order costing is used in situations where many different products, each with individual and unique features, are produced each period
- job-order costing is also used extensively in service industries. For example, hospitals, law firms, movie studios, accounting firms, advertising agencies and repair shops all use a variation of job-order costing to accumulate costs

MEASURING DIRECT MATERIALS COST

- **A bill of materials** is a document that lists the type and quantity of each type of direct material needed to complete a unit of product.
- When an agreement has been reached with the customer concerning the quantities, prices, and shipment date for the order, a **production order** is issued.
- **The materials requisition form** is a document that specifies the type and quantity of materials to be drawn from the storeroom and identifies the job that will be charged for the cost of the materials.
 - the form is used to control the flow of materials into production and also for making entries in the accounting records

JOB COST SHEET

- records the materials, labour, and manufacturing overhead costs charged to that job
- after direct materials are issued, the cost of these materials are automatically recorded on the job cost sheet

MEASURING DIRECT LABOR COST

- direct labour consists of labour charges that are easily traced to a particular job
- labour charges that cannot be easily traced directly to any job are treated as part of manufacturing overhead. The latter category of labour costs is called indirect labour and includes tasks such as maintenance, supervision and clean up

Most companies rely on computerized systems to maintain employee time tickets. A completed time ticket is an hour-by-hour summary of the employee's activities throughout the day. One computerized approach to creating time tickets uses bar codes to capture data. Each employee and each job has a unique bar code.

COMPUTING PREDETERMINED OVERHEAD RATES (1)

- the product costs include manufacturing overhead as well as direct materials and direct labor
- therefore, manufacturing overhead also needs to be recorded on the job cost sheet

COMPUTING PREDETERMINED OVERHEAD RATES (2)

However, assigning manufacturing overhead to a specific job involves some difficulties:

- manufacturing overhead is an indirect cost. This means that it is either impossible or difficult to trace these costs to a particular product or job
- manufacturing overhead consists of many different types of costs ranging from the grease used in machines to the annual salary of the production manager
- because of the fixed costs in manufacturing overhead, total manufacturing overhead costs tend to remain relatively constant from one period to the next even though the number of units produced can fluctuate widely

ALLOCATION BASE (1)

- given these problems, allocation is used to assign overhead costs to products
- allocation is accomplished by selecting **an allocation base** that is common to all of the company's products and services
- **an allocation base** is a measure such as direct labor-hours or machine-hours that is used to assign overhead costs to products and services
- the most widely used allocation bases in manufacturing are direct labor-hours, direct labor cost, machine-hours and units of product

ALLOCATION BASE (2)

- manufacturing overhead is commonly assigned to products using a **predetermined overhead rate**
- the **predetermined overhead rate** is computed by dividing the total estimated manufacturing overhead cost for the period by the estimated total amount of the allocation base as follow:

$$\text{Predetermined overhead rate} = \frac{\textit{Estimated total manufacturing overhead cost}}{\textit{Estimated total amount of the allocation base}}$$

ALLOCATION BASE (3)

- the predetermined overhead rate is computed before the period begins using a four-step process:
 1. the first step is to estimate the total amount of the allocation base (the denominator) that will be required for next period s estimated level of production
 2. the second step is to estimate total fixed manufacturing overhead cost for the coming period and the variable manufacturing overhead cost per unit of the allocation base
 3. the third step is to use the cost formula shown below to estimate the total manufacturing overhead cost (the numerator) for the coming period

$$Y = a + bX$$

ALLOCATION BASE (4)

- $Y = a + bX$

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. the fourth step is to compute the predetermined overhead rate. The estimated amount of the allocation base is determined before estimating the total overhead cost includes variable overhead costs that depend on the amount of the allocation base

CHOICE OF AN ALLOCATION BASE FOR OVERHEAD COST

- ideally, the allocation base in the predetermined overhead rate should drive the overhead cost
- a cost driver is a factor, such as machine-hours, beds occupied, computer time, or flight-hours, that causes overhead costs
- if the base in the predetermined overhead rate does not drive overhead costs, product costs will be distorted
- managers in some companies use **activity-based costing** principles to redesign their cost accounting systems
- activity- based costing is designed to more accurately reflect the demands that products, customers and other cost objects make on overhead resources

JOB-ORDER COSTING - THE FLOW OF COSTS (1)

- product costs flow through inventories on the balance sheet and then on to cost of goods sold in the income statement
- More specifically, **Raw Materials** purchases are recorded in the **Raw Materials** inventory account. Raw materials include any materials that go into the final product.
- When raw materials are used in production, their costs are transferred to the **Work in Process** inventory account as direct materials.
- **Work in process** consists of units of product that are only partially complete and will require further work before they are ready for sale to the customer.
 - Direct labour costs are added directly to Work in Process - they do not flow through raw materials inventory

JOB-ORDER COSTING - THE FLOW OF COSTS (2)

- when goods are completed, their costs are transferred from work in process to **Finished Goods**
- **Finished goods** consist of completed units of product that have not yet been sold to customers
- the amount transferred from work in process to finished goods is referred to as the **cost of goods manufactured**
- **the cost of goods manufactured** includes the manufacturing costs associated with the goods that were finished during the period

JOB-ORDER COSTING - THE FLOW OF COSTS (3)

- as goods are sold, their costs are transferred from Finished Goods to Cost of Goods Sold.
 - at this point, the various costs required to make the product are finally recorded as an expense
 - until that point, these costs are in inventory accounts on the balance sheet
 - period costs (or selling and administrative expenses) do not flow through inventories on the balance sheet
 - they are recorded as expenses on the income statement in the period incurred

THE CONCEPT OF A CLEARING ACCOUNT (1)

- the manufacturing overhead account operates as a clearing account. As we have noted, actual factory overhead costs are debited to the account as they are incurred throughout the year
- when a job is completed (or at the end of an accounting period), overhead cost is applied to the job using the predetermined overhead rate, and Work in Process is debited and Manufacturing Overhead is credited
- the predetermined overhead rate is based entirely on estimates of what the level of activity and overhead costs are expected to be, and it is established before the year begins

THE CONCEPT OF A CLEARING ACCOUNT (2)

- actual overhead costs are not charged to jobs. Actual overhead costs do not appear on the job cost sheet nor do they appear in the Work in Process account. Only the applied overhead cost, based on the predetermined overhead rate, appears on the job cost sheet and in the Work in Process account

NONMANUFACTURING COSTS

- in addition to manufacturing costs, companies also incur selling and administrative cost
- these costs should be treated as period expenses and charged directly to the income statement
- nonmanufacturing costs should not go into the Manufacturing Overhead account

COST OF GOODS MANUFACTURED

- when a job has been completed, the finished output is transferred from the production departments to the finished goods warehouse
- by this time, the accounting department will have charged the job with direct materials and direct labor cost, and manufacturing overhead will have been applied using the predetermined overhead rate
- the costs of the completed job are transferred out of the Work in Process account and into the Finished Goods account
- the sum of all amounts transferred between these two accounts represents the cost of goods manufactured for the period

COST OF GOODS SOLD

- as finished goods are shipped to customers, their accumulated costs are transferred from the Finished Goods account to the Cost of Goods Sold account
- if an entire job is shipped at one time, then the entire cost appearing on the job cost sheet is transferred to the Cost of Goods Sold account

SCHEDULES OF COST OF GOODS MANUFACTURED AND COST OF GOODS SOLD (1)

- **the schedule of cost of goods manufactured** contains three elements of product cost - direct materials, direct labor and manufacturing overhead. It summarizes the portions of those costs that remain in ending Work in Process inventory and that are transferred out of Work in Process into Finished Goods
- **the schedule of cost of goods sold** also contains three elements of product costs - direct materials, direct labour and manufacturing overhead. It summarizes the portions of those costs that remain in ending Finished Goods inventory and that are transferred out of Finished Goods into Cost of Goods Sold

SCHEDULES OF COST OF GOODS MANUFACTURED AND COST OF GOODS SOLD (2)

- **Raw materials used in production** = beginning raw materials inventory + purchases of raw materials – ending raw materials inventory
- **Total manufacturing cost** = direct materials + direct labor + manufacturing overhead applied to work in process
- **Cost of goods manufactured** = total manufacturing costs + beginning work in process inventory – ending work in process inventory
- **Unadjusted cost of goods sold** = beginning finished goods inventory + cost of goods manufactured – ending finished goods inventory

UNDERAPPLIED AND OVERAPPLIED OVERHEAD

- because the predetermined overhead rate is established before the period begins and is based entirely on estimated data, the overhead cost applied to Work in Process will generally differ from the amount of overhead cost actually incurred
- the difference between the overhead cost applied to Work in Process and the actual overhead costs of a period is called either **underapplied** or **overapplied** overhead
- the method of applying overhead to jobs using a predetermined overhead rate assumes that actual overhead costs will be proportional to the actual amount of the allocation base incurred during the period
 - If, for example, the predetermined overhead rate is €6 per machine-hour, then it is assumed that actual overhead costs incurred will be €6 for every machine-hour that is actually worked.

DISPOSITION OF UNDERAPPLIED OR OVERAPPLIED OVERHEAD BALANCES

- There are just two ways of looking at the same thing. If there is a debit balance in the Manufacturing Overhead account of X dollars, then the overhead is underapplied by X dollars. On the other hand, if there is a credit balance in the Manufacturing Overhead account of Y dollars, then the overhead is overapplied by Y dollars.
- the underapplied or overapplied balance remaining in the Manufacturing Overhead account at the end of a period is treated in one of two ways:
 - closed out to Cost of Goods Sold
 - allocated among the Work in Process, Finished Goods, and Cost of Goods Sold accounts in proportion to the overhead applied during the current period in ending balances