

## TUTORIAL SESSION 1 – ACTIVITY-BASED COSTING

### EXERCISE 1

Worley Company buys surgical supplies from a variety of manufacturers and then resells and delivers these supplies to hundreds of hospitals. Worley sets its prices for all hospitals by marking up its cost of goods sold to those hospitals by 5%. For example, if a hospital buys supplies from Worley that cost Worley \$100 to buy from manufacturers, Worley would charge the hospital \$105 to purchase these supplies.

For years, Worley believed the 5% markup covered its selling and administrative expenses and provided a reasonable profit. However, in the face of declining profits, Worley decided to implement an activity-based costing system to improve its understanding of customer profitability. The company broke its selling and administrative expenses into five activities as shown:

| Activity Cost Pool (Activity Measure)                     | Total Cost   | Total Activity |            |
|-----------------------------------------------------------|--------------|----------------|------------|
| Customer deliveries (Number of deliveries)                | \$ 500,000   | 5,000          | deliveries |
| Manual order processing (Number of manual orders)         | 248,000      | 4,000          | orders     |
| Electronic order processing (Number of electronic orders) | 200,000      | 12,500         | orders     |
| Line item picking (Number of line items picked)           | 450,000      | 450,000        | line items |
| Other organization-sustaining costs (None)                | 602,000      |                |            |
| Total selling and administrative expenses                 | \$ 2,000,000 |                |            |

Worley gathered the data below for two of the many hospitals it serves—University and Memorial (each hospital purchased medical supplies that cost Worley \$30,000 to buy from manufacturers):

| Activity Measure            | Activity   |          |
|-----------------------------|------------|----------|
|                             | University | Memorial |
| Number of deliveries        | 10         | 25       |
| Number of manual orders     | 0          | 30       |
| Number of electronic orders | 15         | 0        |
| Number of line items picked | 120        | 250      |

#### Required:

1. Compute the total revenue Worley would receive from University and Memorial.
2. Compute the activity rate for each activity cost pool.
3. Compute the total activity costs assigned to University and Memorial.
4. Compute Worley's customer margin for University and Memorial. (Hint: Do not overlook the \$30,000 cost of goods sold that Worley incurred serving each hospital.)

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### EXERCISE 2:

Hi-Tek Manufacturing, Incorporated, makes two industrial component parts—B300 and T500. An absorption costing income statement for the most recent period is shown below:

| Hi-Tek Manufacturing, Incorporated  |              |
|-------------------------------------|--------------|
| Income Statement                    |              |
| Sales                               | \$ 2,100,000 |
| Cost of goods sold                  | 1,600,000    |
| Gross margin                        | 500,000      |
| Selling and administrative expenses | 550,000      |
| Net operating loss                  | \$ (50,000)  |

Hi-Tek produced and sold 70,000 units of B300 at a price of \$20 per unit and 17,500 units of T500 at a price of \$40 per unit. The company's traditional cost system allocates manufacturing overhead to products using a plantwide overhead rate and direct labor dollars as the allocation base. Additional information relating to the company's two product lines is shown below:

|                        | B300       | T500       | Total        |
|------------------------|------------|------------|--------------|
| Direct materials       | \$ 436,300 | \$ 251,700 | \$ 688,000   |
| Direct labor           | \$ 200,000 | \$ 104,000 | 304,000      |
| Manufacturing overhead |            |            | 608,000      |
| Cost of goods sold     |            |            | \$ 1,600,000 |

The company created an activity-based costing system to evaluate the profitability of its products. Hi-Tek's ABC implementation team concluded that \$50,000 and \$100,000 of the company's advertising expenses could be directly traced to B300 and T500, respectively. The remainder of the selling and administrative expenses was organization-sustaining in nature. The ABC team also distributed the company's manufacturing overhead to four activities as shown below:

| Activity Cost Pool (and Activity Measure) | Manufacturing Overhead | Activity |        |         |
|-------------------------------------------|------------------------|----------|--------|---------|
|                                           |                        | B300     | T500   | Total   |
| Machining (machine-hours)                 | \$ 213,500             | 90,000   | 62,500 | 152,500 |
| Setups (setup hours)                      | 157,500                | 75       | 300    | 375     |
| Product-sustaining (number of products)   | 120,000                | 1        | 1      | 2       |
| Other (organization-sustaining costs)     | 117,000                | NA       | NA     | NA      |
| Total manufacturing overhead cost         | \$ 608,000             |          |        |         |

### Required:

1. Compute the product margins for B300 and T500 under the company's traditional costing system.
2. Compute the product margins for B300 and T500 under the activity-based costing system.
3. Prepare a quantitative comparison of the traditional and activity-based cost assignments.

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### EXERCISE 3:

Fogerty Company makes two products—titanium Hubs and Sprockets. Data regarding the two products follow:

|                  | Direct Labor-Hours per Unit | Annual Production |       |
|------------------|-----------------------------|-------------------|-------|
| <b>Hubs</b>      | 0.80                        | 10,000            | units |
| <b>Sprockets</b> | 0.40                        | 40,000            | units |

Additional information about the company follows:

- Hubs require \$32 in direct materials per unit, and Sprockets require \$18.
- The direct labor wage rate is \$15 per hour.
- Hubs require special equipment and are more complex to manufacture than Sprockets.
- The ABC system has the following activity cost pools:

| Activity Cost Pool (Activity Measure)            | Estimated Overhead Cost | Activity |           |       |
|--------------------------------------------------|-------------------------|----------|-----------|-------|
|                                                  |                         | Hubs     | Sprockets | Total |
| <b>Machine setups (number of setups)</b>         | \$ 72,000               | 100      | 300       | 400   |
| <b>Special processing (machine-hours)</b>        | \$ 200,000              | 5,000    | 0         | 5,000 |
| <b>General factory (organization-sustaining)</b> | \$ 816,000              | NA       | NA        | NA    |

Required:

- Compute the activity rate for each activity cost pool.
- Determine the unit product cost of each product according to the ABC system.