

P7-42

- a.** Compute the current plantwide rate based on direct labor hours. Note: Because this is an analysis of past costs, actual overhead and direct labor hours are used instead of budgeted overhead and budgeted direct labor hours. It is important to understand if your analysis is for evaluation versus planning purposes.

Total overhead costs/Total direct labor hours

$$\$699,000 \div 27,500 = \$25.42 \text{ per direct labor hour}$$

- b.** Verify calculation of overhead cost per unit of \$12.71 for shafts and \$6.36 for gears.

Overhead cost for shafts:

$$\$25.42 \times 25,000 \text{ hours} = \$635,500 \div 50,000 \text{ units} = \$12.71 \text{ per unit}$$

Overhead cost for gears:

$$\$25.42 \times 2,500 \text{ hours} = \$63,550 \div 10,000 \text{ units} = \$6.36 \text{ per unit}$$

- c.** Use activity-based costing to calculate manufacturing overhead cost per unit for shafts and gears. Assume each of the cost pools determined by the controller is a separate activity.

First step is to compute the activity rates.

Setup activity cost based on number of production runs:

$$\$24,000 \div 30 \text{ runs} = \$800 \text{ per production run}$$

Machine activity cost based on number of machine hours:

$$\$175,000 \div 18,500 \text{ hours} = \$9.46 \text{ per machine hour}$$

Purchasing and receiving activity cost based on number of orders processed:

$$\$210,000 \div 140 = \$1,500 \text{ per order}$$

P7-42 (cont.)

Engineering activity cost based on number of engineering hours:

$$\$200,000 \div 10,000 \text{ hours} = \$20 \text{ per hour}$$

Materials handling activity cost based on number of material moves:

$$\$90,000 \div 90 = \$1,000 \text{ per move}$$

Next, compute overhead based on the activity rates calculated above.

<u>Activity costs of shafts and gears:</u>	<u>Shafts</u>	<u>Gears</u>
Setup (10 & 20 runs @ \$800)	\$ 8,000	\$ 16,000
Machine (12,500 & 6,000 hours @ \$9.46)	118,250	56,760
Purchasing (40 & 100 @ \$1,500)	60,000	150,000
Engineering (5,000 & 5,000 @ \$20)	100,000	100,000
Materials Handling (50 & 40 @ \$1,000)	<u>50,000</u>	<u>40,000</u>
Total ABC overhead cost	336,250	362,760
Number of units produced	<u>÷50,000</u>	<u>÷10,000</u>
ABC manufacturing overhead per unit	<u>\$6.725</u>	<u>\$36.276</u>

d. Comment on Sconti's current cost system and the reason why the company is facing fierce competition for shafts but little competition for gears.

Using a plant wide manufacturing overhead rate of \$25.42 per hour, Sconti assigned \$12.71 of overhead cost to each shaft and \$6.36 of overhead cost to each gear. By recognizing that shafts and gears make different demands on the activities of the manufacturing process, ABC produces an overhead cost of \$6.725 for shafts and \$36.276 for gears. This shows that Sconti is over-assigning costs to shafts by \$5.985 per unit (\$12.71 – \$6.725), and it is under-assigning costs to gears by \$29.92 per unit. These cost assignment errors clearly explain why the company is having difficulty competing in the shafts market (because its product is overcosted by \$5.985), and why it is cornering the market in the gears market (because its product is undercosted by \$29.92).