

17.58 (45 min) Sales variance analysis

a. Sales-price and revenue sales-volume variances:

(1) Sales-price variance:

$$\text{Sales - price variance} = \text{Sum of sales - price variances for each product}$$

$$\begin{aligned} \text{Sales - price variance for product i} &= \left(\begin{array}{c} \text{Actual} \\ \text{sales price} \\ \text{for product i} \end{array} - \begin{array}{c} \text{Budgeted} \\ \text{sales price} \\ \text{for product i} \end{array} \right) \times \begin{array}{c} \text{Actual} \\ \text{sales volume} \\ \text{for product i} \end{array} \\ &= \left(\begin{array}{c} \text{Actual} \\ \text{sales price} \\ \text{for product i} \end{array} \right) \left(\begin{array}{c} \text{Actual} \\ \text{sales volume} \\ \text{for product i} \end{array} \right) - \left(\begin{array}{c} \text{Budgeted} \\ \text{sales price} \\ \text{for product i} \end{array} \right) \left(\begin{array}{c} \text{Actual} \\ \text{sales volume} \\ \text{for product i} \end{array} \right) \end{aligned}$$

Using this formula, the firm's sales price variance is computed as follows:

$$\begin{aligned} \text{P sales price variance} &= \$2,245,000 - (\$275)(8,000) &= \$45,000 \text{ F} \\ \text{S sales price variance} &= \$2,135,000 - (\$65)(34,000) &= \underline{75,000 \text{ U}} \\ \text{Sales price variance} & &= \underline{\underline{\$30,000 \text{ U}}} \end{aligned}$$

(2) Revenue sales-volume variance:

$$\text{Revenue Sales - volume variance} = \text{Sum of revenue sales - volume variances for each product}$$

$$\text{Revenue sales - volume variance for product i} = \left(\begin{array}{c} \text{Actual unit} \\ \text{sales volume} \\ \text{for product i} \end{array} - \begin{array}{c} \text{Budgeted unit} \\ \text{sales volume} \\ \text{for product i} \end{array} \right) \times \begin{array}{c} \text{Budgeted} \\ \text{sales price} \\ \text{for product i} \end{array}$$

Applying the formula yields the following results:

$$\begin{aligned} \text{P revenue sales-volume variance} &= (8,000 - 8,500) \times \$275 &= \$137,500 \text{ U} \\ \text{S revenue sales-volume variance} &= (34,000 - 34,650) \times \$65 &= \underline{42,250 \text{ U}} \\ \text{Revenue sales-volume variance} & &= \underline{\underline{\$179,750 \text{ U}}} \end{aligned}$$

[EXCEL SOLUTIONS ARE FOUND IN EXCEL SOLUTIONS FILE](#)

b. Revenue sales-mix and revenue sales-quantity variances:

(1) Revenue sales-mix variance = Sum of revenue sales-mix variances for each product

$$\text{Revenue sales-mix variance for product i} = \text{Budgeted sales price for product i} \times \left(\text{Actual sales proportion for product i} - \text{Budgeted sales proportion for product i} \right) \times \text{Actual total unit sales volume for all products}$$

Using this formula, the revenue sales-mix variance is computed as follows:

$$\begin{aligned} \text{P revenue sales-mix variance} &= \$275 \times [(8,000/42,000) - (8,500/43,150)] \times 42,000 = \$75,203 \text{ U} \\ \text{S revenue sales-mix variance} &= \$65 \times [(34,000/42,000) - (34,650/43,150)] \times 42,000 = \underline{17,775 \text{ F}} \\ \text{Revenue sales-mix variance} &= \underline{\underline{\$57,428 \text{ U}}} \end{aligned}$$

(2) Revenue sales-quantity variance = Sum of revenue sales-quantity variances for each product

$$\text{Revenue sales-quantity variance for product i} = \text{Budgeted sales price for product i} \times \left(\text{Actual total unit sales volume for all products} - \text{Budgeted total unit sales volume for all products} \right) \times \text{Budgeted sales proportion for product i}$$

The formula yields the following calculation:

$$\begin{aligned} \text{P revenue sales-quantity variance} &= \$275 \times (42,000 - 43,150) \times (8,500/43,150) = \$62,297 \text{ U} \\ \text{S revenue sales-quantity variance} &= \$65 \times (42,000 - 43,150) \times (34,650/43,150) = \underline{60,025 \text{ U}} \\ \text{Revenue sales-quantity variance} &= \underline{\underline{\$122,322 \text{ U}}} \end{aligned}$$