### 14-30 Standard Labor Rate and Labor Efficiency Variance

<table>
<thead>
<tr>
<th>Actual Inputs</th>
<th>Actual Inputs</th>
<th>Flexible-Budget Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>at Actual Cost</td>
<td>at Standard Cost</td>
<td>(SQ) × (SP)</td>
</tr>
<tr>
<td>(AQ) × (AP)</td>
<td>(AQ) × (SP)</td>
<td>(SQ) × (SP)</td>
</tr>
<tr>
<td>10,800 hrs. × $28.50/hr.</td>
<td>10,800 hrs. × (SP)</td>
<td>11,000 hrs. × (SP)</td>
</tr>
<tr>
<td>= $307,800</td>
<td>= ?</td>
<td>= ?</td>
</tr>
<tr>
<td>$16,000F</td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>

**Labor Rate Variance**

**Labor Efficiency Variance**

1. Total actual direct labor hours worked 10,800
   
   Actual hourly rate × $28.50
   
   Total actual total direct labor cost $307,800
   
   Plus: Favorable direct labor rate variance + 16,000
   
   Total actual direct labor hours at standard hourly rate $323,800
   
   Total actual direct labor hours worked ÷ 10,800
   
   Standard direct labor rate per hour $29.98

2. Direct labor efficiency variance = actual hours at standard cost – standard labor cost for units produced = [(AQ) × (SP)] – [(SQ) × (SP)] =
   
   [10,800 hrs. × $29.98/hour] – [11,000 hrs. × $29.98/hr.] = $5,996F
   
   or, = (AQ – SQ) × SP
   
   = (10,800 – 11,000) hrs. × $29.98/hr. = $5,996F
14-39 Direct Materials Variances—Journal Entries

1. Determination of variances for March:

   Actual Purchases at Actual Cost (AQ) × (AP)
   Actual Purchases at Standard Cost (AQ) × (SP)

   \[(AQ) \times \$7.50/lb. \quad \text{=?} \quad (AQ) \times \$7.25/lb. \quad \text{=?}\]

   Purchase-Price Variance = ?

   Actual Usage at Standard Cost (AQ) × (SP)
   Flexible-Budget Amount (SQ) × (SP)

   \[2,300 \text{ lbs.} \times \$7.25/lb. \quad = \$16,675\]
   \[2,100 \text{ lbs.} \times \$7.25/lb. \quad = \$15,225\]

   Usage Variance = ?

   Pounds of direct materials purchased = pounds used – decrease in ending inventory = 2,300 – 100 = 2,200 lbs.

   a. Direct materials purchase-price variance:

   \[\frac{($7.50 - $7.25)}{\text{lb.}} \times 2,200 \text{ lbs.} = \$550U\]

   b. Direct materials usage variance:

   \[(2,300 - 2,100) \text{ lbs.} \times $7.25/\text{lb.} = \$1,450U\]

2. Journal entries:

<table>
<thead>
<tr>
<th>Account</th>
<th>Debit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials Inventory</td>
<td>15,950</td>
<td></td>
</tr>
<tr>
<td>Materials Purchase-Price Variance</td>
<td>550</td>
<td></td>
</tr>
<tr>
<td>Accounts Payable</td>
<td></td>
<td>16,500</td>
</tr>
</tbody>
</table>

   To record the cost of purchases during the month; standard cost per pound = $7.25; actual cost per pound = $7.50.
To record the standard direct materials cost for this period’s production.

### 14-43 Master Budget, Flexible Budget, and Profit-Variance Analysis; Spreadsheet Application

<table>
<thead>
<tr>
<th>Actual Results</th>
<th>Flexible-Budget Variances</th>
<th>Flexible-Budget Variance</th>
<th>Sales Volume Variance</th>
<th>Master (Static) Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit sales</td>
<td>4,000</td>
<td>0</td>
<td>4,000</td>
<td>100F 3,900</td>
</tr>
<tr>
<td>Sales</td>
<td>$390,000</td>
<td>$10,000U</td>
<td>$400,000</td>
<td>$10,000F $390,000</td>
</tr>
</tbody>
</table>

#### Variable Costs:
- **Manufacturing**
  - Actual: $241,000
  - Flexible: $200,000
  - Variance: $41,000U

- **Marketing**
  - Actual: $39,000
  - Flexible: $40,000
  - Variance: $1,000F

- **Total Variable Costs**
  - Actual: $280,000
  - Flexible: $240,000
  - Variance: $40,000U

- **CM**
  - Actual: $110,000
  - Flexible: $160,000
  - Variance: $50,000U

#### Fixed Costs:
- **Manufacturing**
  - Actual: $50,000
  - Flexible: $50,000
  - Variance: $0

- **Marketing**
  - Actual: $40,000
  - Flexible: $36,000
  - Variance: $4,000U

- **Total Fixed Costs**
  - Actual: $90,000
  - Flexible: $86,000
  - Variance: $4,000U

- **Operating Income**
  - Actual: $20,000
  - Flexible: $74,000
  - Variance: $54,000U

### Total Master (Static) Budget Variance
- $50,000U

### Flexible-Budget Variance
- $54,000U

### Sales Volume Variance
- $4,000F

#### 2. Profit-variance components:

- **a.** Total master (static) budget variance = actual operating income – master budget operating income = $20,000 – $70,000 = **$50,000U**

- **b.** Total flexible-budget variance = actual operating income – flexible-budget operating income = $20,000 – $74,000 = **$54,000U**

- **c.** Total variable cost flexible-budget variance = actual total variable costs – flexible-budget total variable costs = $280,000 – $240,000 = **$40,000U**
1. flexible-budget variance for variable manufacturing costs = actual variable manufacturing costs – flexible budget for variable manufacturing costs = $241,000 – $200,000 = **$41,000**U

2. flexible-budget variance for variable nonmanufacturing costs = actual variable nonmanufacturing costs – flexible-budget variable nonmanufacturing costs = $39,000 – $40,000 = **$1,000**F
d. total fixed cost flexible-budget variance = actual total fixed costs – flexible-budget total fixed costs = $90,000 – $86,000 = **$4,000**U

1. flexible-budget variance for fixed manufacturing costs = actual fixed manufacturing costs – flexible-budget for fixed manufacturing costs = $50,000 – $50,000 = **$0**

2. flexible-budget variance for fixed nonmanufacturing costs = actual fixed nonmanufacturing costs – flexible-budget for fixed nonmanufacturing costs = $40,000 – $36,000 = **$4,000**U

3. Interpretation of profit variances:

   a. total master (static) budget variance: this is the total operating-profit variance for the period, i.e., the difference between actual operating profit and operating profit as stated in the master (static) budget. Notice that this variance is a function of five factors: selling price per unit, sales mix, sales volume, variable cost per unit, and total fixed costs. We abstract here in Chapter 14 from the multi-product case and deal only with a single-output context. Thus, we should be able to decompose any profit variance into variances related to the other four factors, as explained below.

   b. total flexible-budget variance: this variance explains the portion of the total profit variance for the period related to a combination of three factors: selling price per unit, variable cost per unit, and total fixed costs. These variances, and the total flexible-budget variance by extension, are determined by holding constant sales volume. That is, actual operating results are compared to budgeted results flexed to the actual output level.

   c. flexible-budget variance for total variable cost: this variance represents one component of the total flexible-budget variance. That is, it represents the effect on operating profit of the variable cost per unit being different from planned. The variance can be broken be calculating a flexible-budget variance for each variable cost (e.g., by functional category).

   1. flexible-budget variance for total variable manufacturing costs: this variance represents the portion of the flexible-budget variance that is attributable to variable manufacturing cost per unit being different from budgeted amount. As
such, it can be further decomposed into a total variance for direct materials, a
total variance for direct labor, and a total variance for variable overhead (the
latter of which is covered in Chapter 15).

2. flexible-budget variance for total variable nonmanufacturing costs: this
variance represents the portion of the flexible-budget variance that is
attributable to nonmanufacturing cost per unit being different from budgeted
amount. As such, it can be further decomposed into a total variance for
each nonmanufacturing cost element (e.g., selling expenses).

d. flexible-budget variance for total fixed costs: this variance is also referred to
as a spending variance, since it represents the difference between actual fixed
costs and budgeted fixed costs. As such, the variance can be further broken
down into functional categories, as explained below.

1. flexible-budget variance for total fixed manufacturing costs: this is the
portion of the flexible-budget variance for total fixed costs that is attributable
to spending on fixed manufacturing costs being different from budgeted
spending. As such, this variance can be further broken down on a line-item
basis (property taxes, depreciation, supervisory salaries, etc.).

  2. flexible-budget variance for total fixed nonmanufacturing costs: this is
the portion of the flexible-budget variance for total fixed costs that is
attributable to spending on nonmanufacturing fixed costs being different from
budgeted spending. As such, this variance can be further broken down on a
line-item basis (i.e., sales salaries, depreciation, etc.).
Ortiz & Co.
Master (Static) Budget Variance
(Actual Operating Income – Master Budget Operating Income)

$50,000U

Total FB-Variance
$54,000U
($20,000 – $74,000)

Sales Volume Variance
$4,000F
($40/unit × 100 units)

SP Variance
$10,000U

Variable Cost Variances
$40,000U

Fixed Cost Variances
$4,000U

Manufacturing
$41,000U

Marketing
$1,000F

Manufacturing
$0

Marketing
$4,000U
14-49  Flexible Budget and Operating-Profit Variances

1.  

<table>
<thead>
<tr>
<th></th>
<th>Actual Results</th>
<th>Flexible Budget Variances</th>
<th>Flexible Volume Variance</th>
<th>Master Budget (Static)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units sold</td>
<td>90</td>
<td>-0-</td>
<td>90</td>
<td>10U</td>
</tr>
<tr>
<td>Revenues</td>
<td>$36,000</td>
<td>$4,500F</td>
<td>$31,500</td>
<td>$3,500U</td>
</tr>
<tr>
<td>Professional labor</td>
<td>$9,500</td>
<td>$1,400U</td>
<td>$8,100</td>
<td>$900F</td>
</tr>
<tr>
<td>Credit check</td>
<td>$14,850</td>
<td>$1,350U</td>
<td>$13,500</td>
<td>$1,500F</td>
</tr>
<tr>
<td>Contribution margin</td>
<td>$11,650</td>
<td>$1,750F</td>
<td>$9,900</td>
<td>$1,100U</td>
</tr>
<tr>
<td>Fixed costs</td>
<td>$3,600</td>
<td>$600U</td>
<td>$3,000</td>
<td>-0-</td>
</tr>
<tr>
<td>Operating income</td>
<td>$8,050</td>
<td>$1,150F</td>
<td>$6,900</td>
<td>$1,100U</td>
</tr>
</tbody>
</table>

Total Master (Static) Budget Variance  
$50F  
Flexible Budget Variance  
$1,150F  
Sales Volume Variance  
$1,100U

Detailed Calculations:

Master budget:
Number of apartments rented  
100
Revenue per apartment rented  
$700 ÷ 2 = $350
Total revenue  
$35,000
Less: Variable costs:
  Professional labor:
    (1.5 hr./application × $20/hr.) × 300 applicants = $9,000
  Credit check: $50/appl. × 300 applicants = $15,000
Contribution margin  
$11,000
Less: Other expenses (lease, secretarial help, utilities)  
$3,000
Operating income  
$8,000

Flexible Budget:
Total revenue  
90 rentals × $350/rental = $31,500
Less: Variable costs:
  Professional labor (1.5 × $20) × 270 applications = $8,100
  Credit check $50/applicant × 270 applications = $13,500
Contribution margin  
$9,900
Less: Other expenses  
$3,000
Operating income  
$6,900
Operating Income:

\[
\text{Total revenue} \quad 90 \text{ rentals} \times $800/\text{rental} \times 0.5 = \$36,000
\]

Less: Variable costs:

Professional labor $9,500
Credit checks $55/application \times 270 \text{ apps.} = 14,850

Contribution margin $11,650
Less: Other expenses 3,600
Operating income $8,050

2. Actual Labor Cost at Standard Price Based on Outputs

\[
\begin{align*}
\text{Actual Hrs. Worked} \times \text{Actual wage rate/hour} & = 400 \times \text{AP} = \$9,500 \\
\text{Actual Hrs. Worked} \times \text{Standard wage rate/hour} & = 400 \times \$20/\text{hr.} = \$8,000
\end{align*}
\]

\[
\begin{align*}
\text{Std. Hrs. Allowed} \times \text{Standard wage rate/hour} & = (270 \times 1.5\text{hrs.}) \times \$20/\text{hr.} = \$8,100
\end{align*}
\]

\[\text{Labor Rate Variance} \quad $1,500\text{U}\]

\[\text{Labor Efficiency Variance} \quad $100\text{F}\]

Total Flexible-Budget Variance for Professional Labor $1,400\text{U}

3. Among factors to be considered in evaluating the effectiveness of professional labor are:

- Number of units successfully rented
- Number of applicants
- Demand for apartments in the area
- Total number of apartments for rent in the area
- Quality (credit worthiness of applicant)