

Homework #4_Set #2: OH – Variance Analysis

- 1. How does the planning of fixed overhead costs differ from the planning of variable overhead costs?**

The planning of fixed overhead costs differs from the planning of variable overhead costs primarily in their behavior relative to production volume or activity levels. Fixed overhead costs, such as salaries of permanent staff or rent, remain constant regardless of production levels. Therefore, in planning, they are typically forecasted based on contract agreements, historical data, or other stable factors, without much variation from month to month unless a significant change in operations is expected. On the other hand, variable overhead costs, like utilities or indirect materials, fluctuate with production volume. As production increases, variable overhead costs rise proportionally, and vice versa. When planning for these costs, managers need to anticipate production levels and adjust budgets, accordingly, ensuring alignment with expected activity. Thus, the main distinction in planning lies in the predictability of fixed costs and the variability of variable costs based on production forecasts.

- 2. Assume variable manufacturing overhead is allocated using machine-hours. Give three possible reasons for a favorable variable overhead efficiency variance.**

If variable manufacturing overhead is allocated using machine-hours, a favorable variable overhead efficiency variance indicates that less machine time was used than anticipated for the actual production achieved. Three possible reasons for this favorable variance include:

- 1. Improved Machine Efficiency:** Machines could have been upgraded or maintained optimally, resulting in faster production times or fewer breakdowns, thus using fewer machine-hours than budgeted.
- 2. Better-skilled Operators:** Workers operating the machines might have received better training or gained experience, enabling them to use the machines more efficiently, leading to reduced machine-hour usage.
- 3. Streamlined Processes:** Production processes might have been improved, simplified, or automated in certain areas, reducing the dependency on machines and subsequently the number of machine-hours.

3. Describe the difference between a direct materials efficiency variance and a variable manufacturing overhead efficiency variance.

The difference between a direct materials efficiency variance and a variable manufacturing overhead efficiency variance primarily revolves around what is being measured and why:

Direct Materials Efficiency Variance: This measures the difference between the actual number of direct materials used in production and the amount that should have been used for the actual level of production, based on standard rates. It helps identify if more or fewer materials were utilized than anticipated. Causes can include wastage, quality of materials, or changes in the production process.

Variable Manufacturing Overhead Efficiency Variance: This pertains to the difference between the actual hours (or another activity base) used and the standard hours expected, multiplied by the variable overhead rate. While it can be influenced by factors like machinery efficiency or worker productivity, it doesn't directly measure material usage but rather how efficiently the variable overhead resources (often tied to time) were used in the production process.

4. Why is the flexible-budget variance the same amount as the spending variance for fixed manufacturing overhead?

The flexible-budget variance for fixed manufacturing overhead is the same as the spending variance because fixed manufacturing overhead costs do not vary with production levels within the relevant range. When we talk about a flexible budget for fixed overhead, we're essentially adjusting for different levels of production or activity. However, since fixed overhead remains constant regardless of these changes in activity, any variance from the budgeted amount is purely due to spending differences and not efficiency or production volume. Therefore, any deviation from the budgeted fixed overhead is solely attributed to the spending variance, making the two variances identical.

5. A company has the following data for manufacturing overhead costs during the month:

| | |
|---|----------|
| Static (or Master) budget variable manufacturing overhead costs | \$39,000 |
| Actual variable manufacturing overhead costs incurred | \$35,000 |
| Flexible budget variable manufacturing overhead costs | \$36,000 |
| “As If” column variable manufacturing overhead costs | \$31,500 |
| | |
| Actual fixed manufacturing overhead costs incurred | \$16,500 |
| Static/Master budget fixed manufacturing overhead costs | \$16,000 |

Required: Fill in the blanks below. (Don't forget the F for favorable or U for unfavorable).

| | Variable | Fixed |
|--------------------------------|----------|-------|
| Rate/Spending variance | _____ | _____ |
| Efficiency (quantity) variance | _____ | _____ |

| | | | | | |
|---------------------------------|-----------------|--------------|-----------------|----------------------|------------|
| Flexible budget variance | | | | | |
| Sales volume variance | | | | | |
| Variable Manufacturing | Actual | As-If | Flexible | Static Budget | U/F |
| | 35,000 | 31,500 | 36,000 | 39,000 | |
| Rate Variance | -3,500 | | | | U |
| Efficiency Variance | | 4,500 | | | F |
| Flexible Budget Variance | 1,000 | | | | F |
| Sales Volume Variance | | | 3,000 | | F |
| | | | | | |
| Fixed Manufacturing | Actual | As-If | Flexible | Static Budget | U/F |
| | 16,500 | NA | 16,000 | 16,000 | |
| Spending Variance | -500 | | | | U |
| Efficiency Variance | | NA | | | NA |
| Flexible Budget Variance | -500 | | | | U |
| Sales Volume Variance | | | 0 | | No change |
| | | | | | |
| | Variable | | Fixed | | |
| Rate/ Spending Variance | <u>-3,500</u> | <u>U</u> | <u>-500</u> | <u>U</u> | |
| Efficiency Variance | <u>4500</u> | <u>F</u> | <u>NA</u> | <u>NA</u> | |
| Flexible Budget Variance | <u>1000</u> | <u>F</u> | <u>-500</u> | <u>U</u> | |
| Sales Volume Variance | <u>3000</u> | <u>F</u> | <u>0</u> | <u>No Change</u> | |

| | | | | |
|--|----------------------------|---------------|----------------|-----------------|
| 6. A company is a manufacturer. The company has two direct-cost categories: direct materials and direct manufacturing labor. Variable manufacturing overhead is allocated to products on the basis of standard direct manufacturing labor-hours. | | | | |
| | Quantity | Actual | As - If | Flexible |
| | | 46,800 | 46,800 | 52000 |
| | Rate | 13.2 | 10 | 10 |
| | Total | 617760 | 468000 | 520000 |
| | Rate Variance | -149760 | | |
| | Efficiency Variance | | | |
| | Budget Variance | -97760 | 52000 | |
| | | | | U/F |
| | | | | U |
| | | | | F |
| | | | | U |

Following is some budget data for the company:

Direct manufacturing labor use 0.02 hours per unit of product

Variable manufacturing OH rate \$10 per direct manufacturing labor hour

The company provides the following additional data for the year ended on December 31:

| | |
|--|------------------|
| Planned (budgeted) output | 3,100,000 units. |
| Practical capacity | 3,100,000 units |
| Actual production | 2,600,000 units |
| Direct manufacturing labor | 46,800 hours |
| Actual variable manufacturing overhead | \$617,760 |

Required:

1. What is the denominator level used for allocating variable manufacturing overhead? (That is, for how many direct manufacturing labor-hours is the company budgeting?)
2. Calculate the Rate and Efficiency/Usage/Quantity variances of variable manufacturing overhead.
3. Discuss the efficiency variance you have calculated and give a possible explanation.

1. Denominator Level used for allocating variable manufacturing overhead:

Budgeted Direct Manufacturing Labor Hours = Planned (budgeted) output x Direct manufacturing labor use per unit.

= 3,100,000 units x 0.02 hours/unit

= 62,000 hours

2.

| | Actual | As - If | Flexible | |
|----------------------------|---------|---------|----------|------------|
| Quantity | 46,800 | 46,800 | 52000 | |
| Rate | 13.20 | 10 | 10 | |
| Total | 617760 | 468000 | 520000 | |
| | | | | U/F |
| Rate Variance | -149760 | | | U |
| Efficiency Variance | | 52000 | | F |
| Budget Variance | -97760 | | | U |

Flexible Quantity = Actual Production x Direct Manufacturing Labor Use
= 2,600,000 units x 0.02 hours/unit
= 52,000 hours

Actual Rate = Actual Variable Manufacturing Overhead / Direct Manufacturing Labor
= \$ 617,760 / 46,800
= \$ 13.20

3. The efficiency variance stands at a favorable \$52,000. This indicates that the actual labor hours used were fewer than what the flexible budget had projected. In simpler terms, the workforce was more productive in creating units than initially expected in the budget. Potential reasons for this could include:
1. Streamlined processes which boosted worker efficiency.
 2. Enhanced worker proficiency due to higher skills.
 3. More effective supervision leading to optimized labor.
 4. Superior quality materials that minimized waste and rework, enhancing overall efficiency.
 5. Well-maintained machinery that reduced wastage and rework, allowing workers to be more productive.
 6. The possibility that the initial budget set might have been too relaxed.

Conversely, the flexible-budget variance is an unfavorable \$97,760. This negative result arises because the positive impact of the efficiency variance wasn't enough to offset the significant unfavorable spending variance.