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Learning Material for VM New Challenges for Management Accounting.

Chapter 9: Cost Variances and Flexible Budgets.

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Chapter 9: Cost Variances and Flexible Budgets

Learning objectives

1. Explain static budgets and static-budget variances
2. Develop flexible budgets and compute flexible-budget variances and sales-volume variances
3. Compute price variances and efficiency variances for direct-cost categories
4. Plan for variable and fixed overhead costs and calculate budgeted variable and fixed overhead cost rates
5. Partition the variable overhead flexible-budget variance into variable overhead efficiency and spending variances
6. Compute the fixed overhead flexible-budget (or spending) variance and the fixed overhead production-volume variance
7. Understand how managers use variances



Key words

budgeted performance, effectiveness, efficiency, efficiency variance, favourable variance, fixed overhead flexible-budget variance, fixed overhead spending variance, flexible budget, flexible-budget variance, management by exception, operating-income volume variance, price variance, production-volume variance, sales-volume variance, selling-price variance, standard costing, static budget, static-budget variance, total-overhead variance, unfavourable variance, variable overhead efficiency variance, variable overhead flexible-budget variance, variable overhead spending variance, variance



Contents

| | | |
|-----|---|----|
| 9.1 | Static Budgets and Static-Budget Variances | 2 |
| 9.2 | Flexible Budgets | 2 |
| 9.3 | Flexible-Budget Variances | 3 |
| 9.4 | Use of Variances, Effectiveness, Efficiency | 7 |
| 9.5 | Summary of Variance Analysis | 8 |
| | Summary | 10 |
| | References | 10 |

9.1 Static Budgets and Static-Budget Variances



A **variance** is the difference between actual results and expected performance. The expected performance is also called budgeted performance, which is a point of reference for making comparisons.

Management by exception is the practice of focusing management attention on areas that are not operating as expected and devoting less time to areas operating as expected. Variances bring together the planning and control functions of management. They assist managers in implementing their strategies by enabling management by exception.

- If actual costs are much higher than originally budgeted, the variances will guide managers to seek explanations and to take early corrective action.
- Sometimes a large positive variance may occur, such as a significant decrease in manufacturing costs of a product. Managers will try to understand the reasons for this decrease, so these practices can be appropriately continued and transferred to other divisions within the organization.

The static budget, or master budget, is based on the level of output planned at the start of the budget period. **The master budget is called a static budget because the budget for the period is developed around a single (static) planned output level.**

The static-budget variance is the difference between the actual result and the corresponding budgeted amount in the static budget.

- A **favorable variance** results when actual revenues exceed budgeted amounts or when actual costs are less than budgeted costs.
- An **unfavorable variance** results when actual revenues are less than budgeted amounts or when actual costs exceed budgeted costs.

9.2 Flexible Budgets

A **flexible budget** calculates budgeted revenues and budgeted costs based on the actual output in the budget period. The flexible budget is prepared at the end of a period, after managers note the actual output.

The only **difference between the static budget and the flexible budget** is that the static budget is prepared for the planned output, whereas the flexible budget is based on the actual output.

Companies develop their flexible budgets in three steps:

Step 1: Identify the actual quantity of output.

Step 2: Calculate the flexible budget for revenues based on budgeted selling price and actual quantity of output.

Step 3: Calculate the flexible budget for costs based on budgeted variable cost per output unit, actual quantity of output, and budgeted fixed costs.

9.3 Flexible-Budget Variances

The **sales-volume variance** is the difference between a flexible-budget amount and the corresponding static-budget amount. This is because it arises solely from the difference between the actual quantity sold and the quantity of products expected to be sold in the static budget.

$$\begin{aligned} & \text{Sales-volume variance for operating income} \\ &= (\text{Actual units sold} - \text{Static budget units sold}) \\ & \times \text{Budgeted contribution margin per unit} \end{aligned}$$

The **flexible-budget variance** is the difference between an actual result and the corresponding flexible budget amount. The flexible-budget variance for revenues is called the selling-price variance because it arises solely from the difference between the actual selling price and the budgeted selling price:

$$\begin{aligned} & \text{Selling-price variance} \\ &= (\text{Actual selling-price} - \text{Budgeted selling-price}) \times \text{Actual units sold} \end{aligned}$$

To gain further insight into why a **flexible-budget variance** arose, managers find it useful to subdivide the flexible-budget variance for direct-cost inputs into two more detailed variances:

1. A **price variance** that reflects the difference between an actual input price and a budgeted input price.
2. An **efficiency variance** that reflects the difference between an actual input quantity and a budgeted input quantity.

The information available from these variances helps managers to better understand past performance and take corrective actions to implement more effective future strategies. Managers generally have more control over efficiency variances than price variances because the quantity of inputs used is primarily affected by factors inside the company (such as the efficiency with which operations are performed), whereas changes in the price of materials or in wage rates may be largely dictated by market forces outside the company.

To calculate price and efficiency variances, companies need to obtain budgeted input prices and budgeted input quantities. Managers have **three main sources** for this information:

1. Actual input **data from past periods**: Most companies have past data on actual input prices and actual input quantities. These historical data could be analyzed for trends or patterns to obtain estimates of budgeted prices and quantities.

Advantages:

- They represent quantities and prices that are real, rather than hypothetical.
- They can serve as benchmarks for continuous improvement.
- Past data are typically available at low cost.

Disadvantages:

- Past data can include inefficiencies such as wastage of direct materials.
- They also do not incorporate any changes expected for the budget period.

2. **Data from other companies** that have similar processes: Another possibility is to use information from peer companies or companies that have similar processes as a *benchmark*.

Advantages:

- The budget numbers represent competitive benchmarks from other companies.

Disadvantages:

- Input-price and input-quantity data from other companies are often not available or may not be comparable to a particular company's situation.

3. **Standards developed by a company**: A **standard** is a carefully determined price, cost, or quantity that is used as a benchmark for judging performance. Standards are usually expressed on a per-unit basis.

Advantages:

- Standard times aim to exclude past inefficiencies.
- They take into account changes expected to occur in the budget period.

Disadvantages:

- Because they are not based on achieved benchmarks, standards might be infeasible and lead to unhappiness among workers.

The term "standard" refers to many different things:

- A **standard input** is a carefully determined quantity of input.

- A **standard price** is a carefully determined price that a company expects to pay for a unit of input.
- A **standard cost** is a carefully determined cost of a unit of output.

$$\begin{aligned} & \text{Standard cost per output unit for each variable direct-cost input} \\ &= \text{Standard input allowed for one output unit} \\ &\times \text{Standard price per input unit} \end{aligned}$$

Firms calculate **price variances** to estimate the impact on profits of actual input prices for labor or materials being different than expected. This allows senior management to evaluate the performance of purchasing managers (for materials) or personnel managers (for labor) with regard to the prices paid for inputs.

- A price variance is sometimes called a **rate variance**, especially when referring to a price variance for direct manufacturing labor.

$$\begin{aligned} & \text{Price Variance} \\ &= (\text{Actual price of input} - \text{Budgeted price of input}) \\ &\times \text{Actual quantity of input} \end{aligned}$$

Firms calculate **efficiency variances** to estimate the impact on profits of actual input usage for labor or materials being different than expected. This enables managers to evaluate the operational performance of the firm in terms of the efficiency with which inputs are used, and to take corrective steps by adjusting production processes or upgrading the skill level or training of the workforce.

- An efficiency variance is sometimes called a **usage variance**.

$$\begin{aligned} & \text{Efficiency Variance} \\ &= (\text{Actual quantity of input used} \\ &- \text{Budgeted quantity of input allowed for actual output}) \\ &\times \text{Budgeted price of input} \end{aligned}$$

The **variable overhead flexible-budget variance** measures the difference between actual variable overhead costs incurred and the flexible-budget overhead amounts.

$$\begin{aligned} & \text{Variable overhead flexible-budget variance} \\ &= \text{Actual costs incurred} - \text{Flexible-budget amount} \end{aligned}$$

This variance reveals how much variable overhead costs differed from the flexible budget amount. However, it does little to explain why this difference occurred. To learn why the variance arose, it needs to be divided into two components – **variable overhead efficiency variance** and the **variable overhead spending variance**.

Managers use the **variable overhead efficiency variance** to understand the impact on income of the efficiency with which the cost driver for variable overhead is consumed. The measure captures the actual use of the cost driver relative to the amount budgeted to be used for the actual output level.

Variable overhead efficiency variance

$$\begin{aligned} &= (\text{Actual quantity of variable overhead cost-allocation base used for actual output} \\ &- \text{Budgeted quantity of variable overhead cost-allocation base allowed for actual output}) \\ &\times \text{Budgeted variable overhead cost per unit of cost-allocation base} \end{aligned}$$

Managers use the **variable overhead spending variance** to understand the effect on income of differences between the budgeted variable overhead rate and the actual variable overhead cost per unit of the cost driver. The variance captures both the unexpected changes in price as well as the efficiency of use of variable overhead items such as energy and indirect materials.

Variable overhead spending variance

$$\begin{aligned} &= (\text{Actual variable overhead cost per unit of cost-allocation base} \\ &- \text{Budgeted variable overhead cost per unit of cost-allocation base}) \\ &\times \text{Actual quantity of variable overhead cost-allocation base used} \end{aligned}$$

The **fixed overhead flexible-budget variance** is the difference between actual fixed overhead costs and fixed overhead costs in the flexible budget.

Fixed overhead flexible-budget variance

$$= \text{Actual costs incurred} - \text{Flexible-budget amount}$$

Because there is no fixed overhead efficiency variance, the **fixed overhead spending variance** and the fixed overhead flexible-budget variance are the same.

The fixed overhead spending variance informs managers of the difference between actual spending on fixed overhead and the planned amount of spending in the master budget. This highlights to managers the sources of unexpected changes in resources expended to acquire capacity.

The **production-volume variance** (also known as the **denominator-level variance**) arises only for fixed costs. This variance is the difference between budgeted fixed overhead and fixed overhead allocated based on the number of units actually produced.

Production-volume variance

$$\begin{aligned} &= \text{Budgeted fixed overhead} \\ &- \text{Fixed overhead allocated for actual output units produced} \end{aligned}$$

The production-volume variance is an indicator of the use of capacity. If the company exceeds planned capacity, the variance is favourable, as fixed overhead is divided among a greater number of units. If the company falls short of planned capacity, the variance is unfavourable, as there would be an unused capacity.

Another way to view the production-volume variance is that a favourable variance indicates that overhead is over-allocated; if unfavourable, overhead is under-allocated.

The calculation of variances for variable overhead and fixed overhead differ:

- **Variable manufacturing overhead** has no **production-volume variance**.
- **Fixed manufacturing overhead** has no **efficiency variance**.

An integrated variance analysis involves the presentation of all of the overhead variances together. Although this presents the same information that calculation of the individual variances gives, this does so in a unified presentation that also indicates that the fixed overhead efficiency and variable overhead production volume variance never exist.

The sales-volume variance has two components:

- The **operating income volume variance** is measured as operating income (based on actual units sold) minus operating income per the static budget. If actual units sold are greater than static budget units sold, this variance will be favourable.
- The **production-volume variance** is the difference between budgeted fixed overhead costs and allocated fixed overhead costs.

9.4 Use of Variances, Effectiveness, Efficiency

Managers use variances to evaluate performance after decisions are implemented, to trigger organization learning, and to make continuous improvements.

Managers need to recognize that variances can have multiple causes. They must not interpret variances in isolation of one another. The causes of variances in one part of the value chain can be the result of decisions made in another part of the value chain.

Realizing that a standard is not a single measure but rather a range of possible acceptable input quantities, costs, output quantities, or prices, managers should expect small variances to arise. Frequently, managers investigate variances based on subjective judgments or rules of thumb.

Managers often use variance analysis when evaluating the performance of their subordinates. Two attributes of performance are commonly evaluated:

- **Effectiveness:** the degree to which a predetermined objective or target is met.
- **Efficiency:** the relative amount of inputs used to achieve a given output level.

Managers must be sure they understand the causes of a variance before using it for performance evaluation. A favourable variance could highlight an individual aspect of a performance. If any single performance measure receives excessive emphasis, managers might tend to make decisions that will cause the particular performance measure to look good. However, such actions may conflict with the company's overall goals.

The goal of variance analysis is for managers to understand why variances arise, to learn, and to improve future performance.

Managers need to strike a delicate balance between the two uses of variances: performance evaluation and organization learning. Variance analysis is helpful for performance evaluation, but an overemphasis on performance evaluation and meeting individual variance targets can undermine learning and continuous improvement.

- Achieving the standard becomes an end in and of itself. As a result, managers will seek targets that are easy to attain rather than targets that are challenging and that require creativity and resourcefulness.
- An overemphasis on performance evaluation may also cause managers to take actions to achieve the budget and avoid an unfavourable variance, even if such actions could hurt the company in the long run.

Managers can also use variance analysis to create a virtuous cycle of continuous improvement. This can be done by repeatedly identifying causes of variances, initiating corrective actions, and evaluating results of actions.

Companies use a combination of financial and nonfinancial performance measures for planning and control. They are also used to evaluate the performance of managers. Nonfinancial measures provide feedback on individual aspects of a manager's performance, whereas financial measures evaluate the overall effect of and the tradeoffs among different nonfinancial performance measures.

Nonmanufacturing and service sector companies can benefit from the use of variance analysis. Managers can also use variance analysis to examine the overhead costs of the nonmanufacturing areas of the company and to make decisions about (1) pricing, (2) managing costs, and (3) product mix.

Modern information technology promotes the increased use of standard-costing systems for product costing and control.

- **Total quality management systems** help companies in both the manufacturing and service industries to control costs.
- **Computer-integrated manufacturing (CIM)** systems help companies use flexible budgeting and standard costing to manage activities such as materials handling and setups.
- **Enterprise resource planning (ERP)** systems have made it easy for companies to keep track of standard, average, and actual costs for inventory items and to make real-time assessments of variances.

9.5 Summary of Variance Analysis

The figure 9.1 formally disaggregates the static-budget variance of into its components. The variances at each higher level provide disaggregated and more detailed information for evaluating performance.

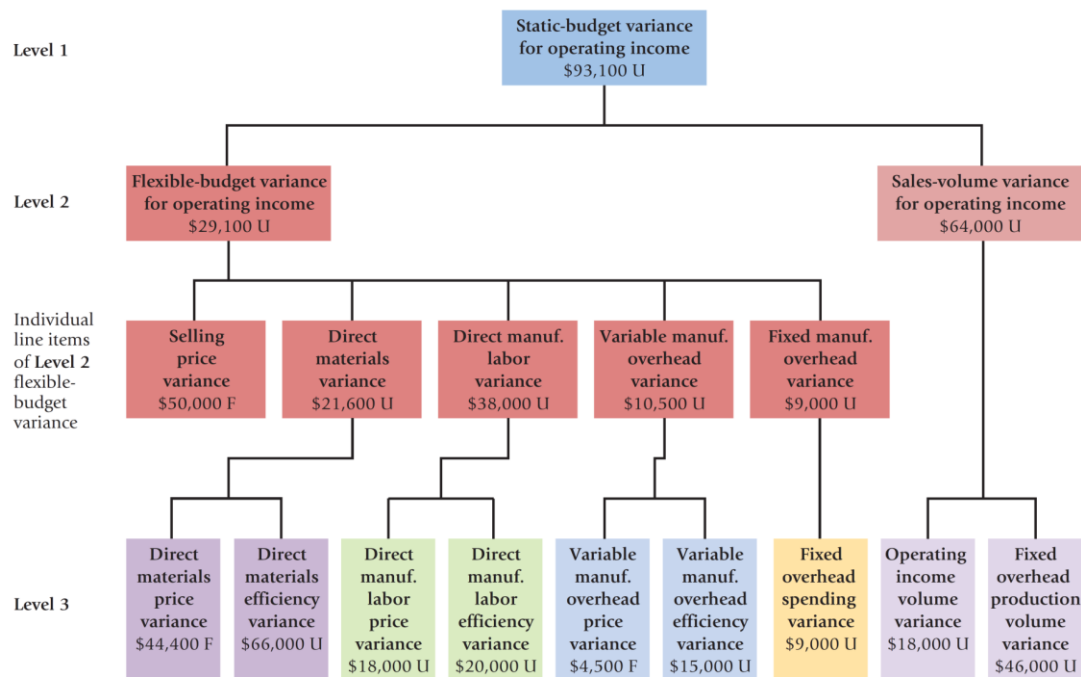


Figure 9.1 Summary of Variance Analysis

Source: DATAR, S. M., RAJAN, M. V. Managerial Accounting, Making Decisions and Motivating Performance

This figure can be understood by linking the accounting and performance evaluation functions of standard costing.

- Identifying a static-budget variance as the difference between the static budget operating income and the actual operating income.
- Subdividing the static-budget variance into a flexible-budget variance and a sales-volume variance.
- Presenting more detailed variances that subdivide, whenever possible, individual flexible-budget variances for selling price, direct materials, direct manufacturing labor, and variable overhead.
- For fixed overhead, the flexible-budget variance would be the same as the spending variance.

The sales-volume variance has two components:

- The operating income volume variance is measured as operating income (based on actual units sold) minus operating income per the static budget. If actual units sold are greater than static budget units sold, this variance will be favorable.
- The production-volume variance is the difference between budgeted fixed overhead costs and allocated fixed overhead costs.

Summary



Variiances provide managers with a framework for correctly assessing current performance and help them take corrective actions to ensure that decisions are implemented correctly. They also enable managers to generate more informed predictions about the future.

Cost variances are most informative when calculated relative to the flexible budget, which adjusts the master budget for the actual level of output during the period.

For variable cost categories, flexible budget variances are typically partitioned into two parts: (1) the portion caused by unexpected shifts in input prices and (2) the part that results from unexpected changes in the efficiency with which inputs are processed.

In a standard-costing system, managers apply costs to output produced by multiplying the standard prices or overhead rates by the standard quantities of inputs or drivers allowed for actual outputs produced. This simplifies the accounting and also enables managers to evaluate performance and take corrective action when these standards are subsequently compared to the actual costs incurred.

The difference between the costs applied in a standard-costing system and the actual costs incurred by the firm equals the **flexible budget variance**. For fixed overhead alone, the difference also includes the production-volume variance, which alerts managers to changes in capacity utilization relative to the level anticipated at the start of the period. • Managers use standards to identify deviations from desired outcomes. They set standards based on engineering studies, continuous improvement goals, or by benchmarking against peer or “best practice” organizations.

Firms often supplement variance information with nonfinancial performance measures that provide more timely feedback on individual aspects of a manager’s and/or employee’s performance, thus enabling faster learning and the ability to take corrective action sooner.

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