8.5: Describe How Companies Use Variance Analysis

Companies use variance analysis in different ways. The starting point is the determination of standards against which to compare actual results. Many companies produce variance reports, and the management responsible for the variances must explain any variances outside of a certain range. Some companies only require that unfavorable variances be explained, while many companies require both favorable and unfavorable variances to be explained.

Requiring managers to determine what caused unfavorable variances forces them to identify potential problem areas or consider if the variance was a one-time occurrence. Requiring managers to explain favorable variances allows them to assess whether the favorable variance is sustainable. Knowing what caused the favorable variance allows management to plan for it in the future, depending on whether it was a one-time variance or it will be ongoing.

Another possibility is that management may have built the favorable variance into the standards. Management may overestimate the material price, labor rate, material quantity, or labor hours per unit, for example. This method of overestimation, sometimes called budget slack, is built into the standards so management can still look good even if costs are higher than planned. In either case, managers potentially can help other managers and the company overall by noticing particular problem areas or by sharing knowledge that can improve variances.

Often, management will manage “to the variances,” meaning they will make decisions that may not be advantageous to the company’s best interests over the long run, in order to meet the variance report threshold limits. This can occur when the standards are improperly established, causing significant differences between actual and standard numbers.

ETHICAL CONSIDERATIONS: Ethical Long-Term Decisions in Variance Analysis

The proper use of variance analysis is a significant tool for an organization to reach its long-term goals. When its accounting system recognizes a variance, an organization needs to understand the significant influence of accounting not only in recording its financial results, but also in how reacting to that variance can shape management’s behavior.
Many managers use variance analysis only to determine a short-term reaction, and do not analyze why the variance occurred from a long-term perspective. A more long-term analysis of variances allows an approach that “is responsibility accounting in which authority and accountability for tasks is delegated downward to those managers with the most influence and control over them.”

Managers sometimes focus only on making numbers for the current period. For example, a manager might decide to make a manufacturing division’s results look profitable in the short term at the expense of reaching the organization’s long-term goals. A recognizable cost variance could be an increase in repair costs as a percentage of sales on an increasing basis. This variance could indicate that equipment is not operating efficiently and is increasing overall cost. However, the expense of implementing new, more efficient equipment might be higher than repairing the current equipment. In the short term, it might be more economical to repair the outdated equipment, but in the long term, purchasing more efficient equipment would help the organization reach its goal of eco-friendly manufacturing. If the system use for controlling costs is not aligned to reinforce management of the organization with a long-term perspective, “the manager has no organizational incentive to be concerned with important issues unrelated to anything but the immediate costs” related to the variance. A manager needs to be cognizant of his or her organization’s goals when making decisions based on variance analysis.

Management can use standard costs to prepare the budget for the upcoming period, using the past information to possibly make changes to production elements. Standard costs are a measurement tool and can thus be used to evaluate performance. As you’ve learned, management may manage “to the variances” and can manipulate results to meet expectations. To reduce this possibility, performance should be measured on multiple outcomes, not simply on standard cost variances.

As shown in Table 1, standard costs have pros and cons to consider when using them in the decision-making and evaluation processes.

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Useful when developing a future budget</td>
<td>Might ignore customer and employee satisfaction rates</td>
</tr>
<tr>
<td>Can be used as a benchmark for performance and quality expectations</td>
<td>Information could be historical data and not useful in real-time decision-making needs</td>
</tr>
<tr>
<td>Can individually identify areas of success and areas for improvement</td>
<td>The system to manage and develop standard costs requires a lot of resources, which could be costly and time consuming</td>
</tr>
</tbody>
</table>

Standard costing provides many benefits and challenges, and a thorough analysis of each variance and the possible unfavorable or favorable outcomes is required to set future expectations and adjust current production goals.

The following is a summary of all direct materials variances (Figure 1), direct labor variances (Figure 2), and overhead variances (Figure 3) presented as both formulas and tree diagrams. Note that for some of the formulas, there are two presentations of the same formula, for example, there are two presentations of the direct materials price variance. While both arrive at the same answer, students usually prefer one
formula structure over the other.

Figure \(\PageIndex{1}\): Direct Materials Variances. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

Figure \(\PageIndex{2}\): Direct Labor Variances. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)
Example \(\PageIndex{1}\): Barley, Inc. Production

Barley, Inc., produces a product and has the following as standard costs per unit for materials and labor:

\[
\begin{align*}
\text{Materials} & : 4 \text{ pounds @ $15 per pound} \\
\text{Labor} & : 2 \text{ hours @ $20 per hour}
\end{align*}
\]

Figure \(\PageIndex{4}\): Barley, Inc. standard costs per unit for materials and labor

For the month of October, the following information was gathered related to production:
Beginning inventory  0
Units completed  10,000
Budgeted output units  12,000
Materials used (50,000 pounds)  $800,000
Labor (25,000 hours)  $450,000

Figure \(\PageIndex{5}\): Barley, Inc. information was gathered related to production.

Compute:

- a. The materials price and quantity variances
- b. The labor rate and efficiency variances

Provide possible explanations for each variance.

**Solution**

a. Materials price variance:

$$\text{\$50,000 unfavorable} = (16* - 15) \times 50,000 \text{ lb}$$

$$*(\frac{800,000}{50,000})$$

An unfavorable materials price variance occurred because the actual cost of materials was greater than the expected or standard cost. This could occur if a higher-quality material was purchased or the suppliers raised their prices.

b. Materials quantity variance:

$$\text{\$150,000 unfavorable} = (50,000 \text{ lb} - 40,000*) \times 15 \text{ lb}$$

$$*(4 \text{ lb} \times 10,000 \text{ units})$$

An unfavorable materials quantity variance occurred because the pounds of materials used were greater than the pounds expected to be used. This could occur if there were inefficiencies in production or the quality of the materials was such that more needed to be used to meet safety or other standards.
b. Labor rate variance:

\[
\$50,000 \text{ favorable } = \left(\$18^{*} \text{ per hour } - \$20 \text{ per hour}\right) \times 25,000 \text{ hours }
\]

\[
(*) \$450,000/25,000)
\]

A favorable labor rate variance occurred because the rate paid per hour was less than the rate expected to be paid (standard) per hour. This could occur because the company was able to hire workers at a lower rate, because of negotiated union contracts, or because of a poor labor rate estimate used in creating the standard.

Labor quantity variance:

\[
\$100,000 \text{ unfavorable } = (25,000 \text{ hours } - 20,000 \text{ hours }) \times \$20 \text{ per hour}
\]

\[
(\star) 2 \text{ hours } \times 10,000 \text{ units }
\]

An unfavorable labor quantity variance occurred because the actual hours worked to make the \(10,000\) units were greater than the expected hours to make that many units. This could occur because of inefficiencies of the workers, defects and errors that caused additional time reworking items, or the use of new workers who were less efficient.

Labor inputs:
THINK IT THROUGH: Explaining Differences in Expected and Actual Operational Outcomes

The manager of a plant has called operations, purchasing, and personnel into her office to discuss the results of the last month. She notes that there was more than normal scrap, and employees worked more hours than expected. She is looking for an explanation for these results. What system might she have used to determine these material and labor issues? Why might these variances have occurred? What should she do about it for future periods?

LINK TO LEARNING: Standard Costing Advantages Explained

See this article on the four major advantages of standard costing to learn more.

Footnotes


Contributors

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