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## Course Learning Outcomes for Unit VII

Upon completion of this unit, students should be able to:

2. Apply accounting concepts to the creation of accounting information and reports.
  - 2.6 Create variance reports to make business decisions.
  - 2.7 Use variance reports to make business decisions.
3. Analyze accounting information used to make strategic business decisions.
  - 3.8 Analyze cost variances to make business decisions.
6. Apply ethical behavior to accounting-related situations.
  - 6.2 Discuss ethical considerations related to variance reporting.

## Required Unit Resources

**Chapter 11: Standard Costs and Variance Analysis, pp. 11-1 – 11-19**

## Unit Lesson

### Introduction

Welcome to Unit VII. We will be discussing how standard costs are set and how these costs are compared to actual costs in the variance analysis process. We will also examine how variance analysis is used to control costs. Finally, we will discuss responsibility accounting as it relates to cost controls.

### Standard Costs

*Standard costs* refers to the cost that management believes a product or service should cost to produce an item or provide a service based on regular working conditions; meaning, this allows for common occurrences in business such as minor material delays, regularly scheduled machine maintenance, and employee breaks. On the other hand, *ideal costs* are the costs associated with producing a product or service based on perfect working conditions such as no material delays, no machine malfunctions, and no employee breaks. Therefore, to ensure accurate cost reporting, companies use standard costs since they know perfect working conditions do not always happen within a company.

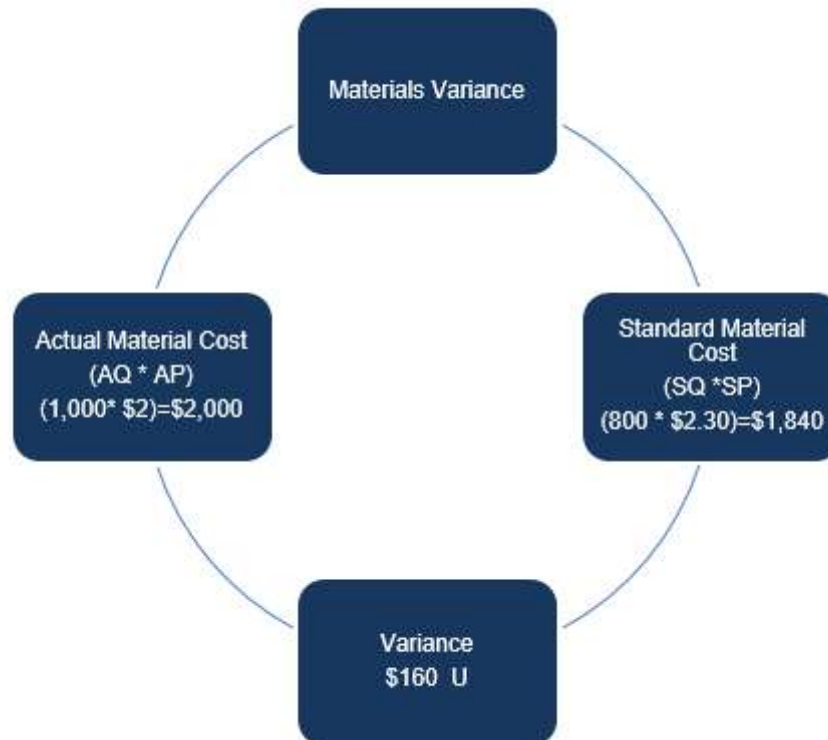
Standard costs are set for material, labor, and overhead. How the standard cost is set is based on the type of costs. For example, standard material costs may be set by engineering specifications, detailed recipes, or even by the supplier of the raw material (Jiambolva, 2020). Labor costs are often determined by past experience or by time and motion studies. *Time and motion studies* are where an expert in the field comes into the company and observes how long it takes to do a particular job based on the working conditions. For example, the expert may say it should take an employee one hour to assemble a computer keyboard.

### Variance Analysis

Now that we have established the concept of standard costs or what it should take to produce a product or service, we are going to compare those costs to the actual cost it takes to produce a product or service. Going back to our product costs, we are going to look at variances for direct material, direct labor, and overhead.

### Direct Materials

*Direct material variance* has two distinct parts: material price and material quantity variance. The reason we break down the overall direct material variance is so you can tell if you are spending too much money on materials in terms of paying too much for the materials or using too many units of the material. The basic formula for a direct material variance is actual material cost, which is (actual quantity \* actual price) or commonly written (AQ \* AP) less standard material cost which is (standard quantity \* standard price) or commonly written (SQ \* SP). Looking at this in numbers, let's say the actual quantity is 1,000 pounds at an actual price of \$2 for a total of \$2,000. However, the standard quantity or the amount of material it should take is 800 pounds with a standard price of \$2.30 for a total of \$1,840. This would leave us with an overall variance of \$160 that is unfavorable since the actual costs are above the standard. Unfortunately, this variance in total does not give us enough information to see what is causing the unfavorable material variance. Therefore, we are going to look into this further.



*Material price variance* looks to see what part of the overall variance is related to the price of the materials purchased. This is calculated by taking the actual price, less the standard price, times the actual quantity, typically written as (AP-SP)\*AQ. Going back to our example, the actual price is \$2 and the standard price is \$2.30 for a difference of \$.30, then multiply by the actual quantity of 1,000 pounds. This gives us a favorable variance of \$300 since we were able to purchase the material at a lower price.



*Material quantity variance* looks to see what part of the overall variance is related to the quantity of material used. This is calculated by taking the actual quantity, less standard quantity, times the standard quantity, typically written as  $(AQ-SQ)*SP$ . Going back to our example, the actual quantity is 1,000 pounds and the standard quantity is 800 pounds for a difference of 200 pounds, then multiply by the standard price of \$2.30. This gives us an unfavorable variance of \$460 because we needed to use more material than the standard quantity.



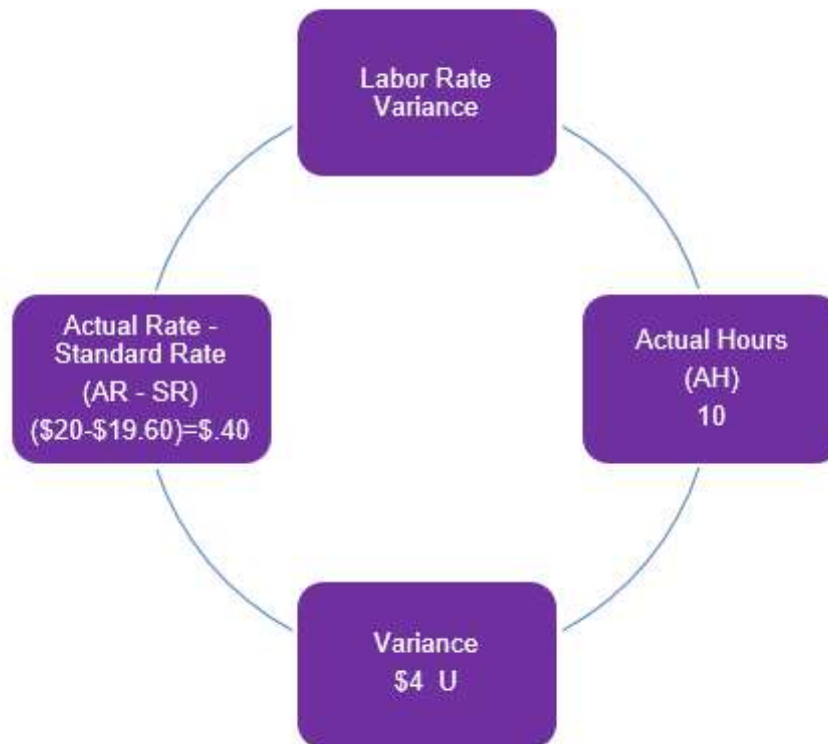
Now with this additional information a manager can break down the overall materials variance and see that more material was being used than the standard. As managers look at the variance in this example, they not only have to look at what is unfavorable but what is favorable. For example, we are using more material to make the products, but could that be a result of the lower priced material. In other words, maybe the lower priced material is not to the same quality, so more pounds are needed to make the products due to defective materials. This is just one of the questions that needs to be looked into in this example.

### Labor

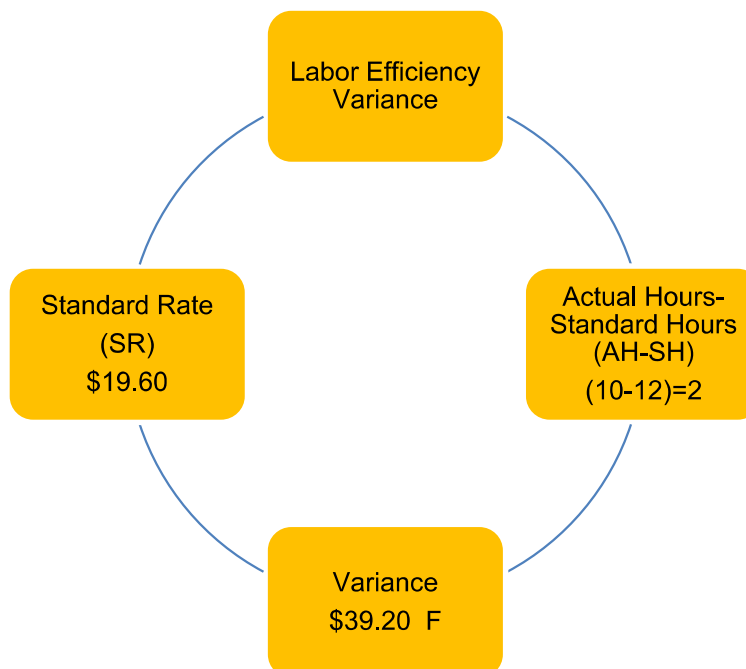
The same way we looked at materials, we will look at labor variances. *Direct labor variance* has two distinct parts: labor rate and labor efficiency variance. The reason we break down the overall direct labor variance is so you can tell if you are paying employees too much money for the job or if too many hours are being used to produce the product or service. The basic formula for a direct labor variance is actual labor cost, which is (actual hours \* actual rate), or commonly written (AH \*AR) less standard labor cost, which is (standard hours \* standard rate), or commonly written (SH \*SR). Looking at this in numbers, let's say the actual hours to make the product is 10, and the actual rate of pay is \$20 for a total of \$200. However, the standard hours this should take is 12, and the pay rate is \$19.60, for a total of \$235.20. This would leave us with an overall variance of \$35.20 that is favorable since the actual costs are lower than the standard cost. Unfortunately, this variance in total does not give us enough information to see what is causing the labor variance. Therefore, we are going to look into this further.



*Labor rate variance* looks to see what part of the overall variance is related to the rate employees are being paid. This is calculated by taking the actual rate less standard rate times the actual hours, typically written as  $(AR - SR) \times AH$ . Going back to our example, the actual rate is \$20 and the standard rate is \$19.60 for a difference of \$0.40 then multiply by the actual hours of 10. This gives us an unfavorable variance of \$4 since we had to pay our employees over the standard rate.



*Labor efficiency variance* looks to see how many hours it takes to produce the product or service. This is calculated by taking the actual hours, less standard hours times the standard rate, typically written as  $(AH - SH) \times SR$ . Going back to our example, the actual hours are 10 and the standard hours are 12 for a difference of 2 hours multiplied by the standard rate of \$19.60. This gives us a favorable variance of \$39.20 because we used fewer hours than the standard.



Now with this additional information, a manager can break down the overall labor variance and see that, while we are paying a little more for the employees, they are producing the product or service in less time. However, managers still need to look at all aspects of variance analysis before making any changes. For example, if they pay the employees less, will this effect labor efficiency?

### Overhead

The overhead variance is a little different from the material and labor variances. Usually, this variance is looked at in detail by line item for controllable overhead costs. As you can see below, we still look at actual versus budget and calculate a variance. Then we determine if the variance is favorable or unfavorable for each line item (Jiambalvo, 2020).

|                                 | ACTUAL<br>OVERHEAD | BUDGETED<br>OVERHEAD | VARIANCE         |             |
|---------------------------------|--------------------|----------------------|------------------|-------------|
| <b>FIXED OVERHEAD COSTS:</b>    |                    |                      |                  |             |
| Rent                            | \$20,050           | \$20,000             | \$50             | unfavorable |
| Depr on Equipment               | \$9,869            | \$10,000             | \$(131)          | favorable   |
| Management Salaries             | \$352,000          | \$350,000            | \$2,000          | unfavorable |
| Total Fixed Costs               | \$381,919          | \$380,000            | \$1,919          |             |
| <b>VARIABLE OVERHEAD COSTS:</b> |                    |                      | \$-              | favorable   |
| Utilities                       | \$498,900          | \$500,000            | \$(1,100)        |             |
| Indirect Materials              | \$126,000          | \$125,000            | \$1,000          | unfavorable |
| Equipment Maintenance           | \$55,000           | \$60,000             | \$(5,000)        | favorable   |
| Total Variable Costs            | \$679,900          | \$685,000            | \$(5,100)        |             |
| <b>TOTAL</b>                    | <b>\$1,061,819</b> | <b>\$1,065,000</b>   | <b>\$(3,181)</b> |             |

Variance calculation and shown as favorable or unfavorable

### Responsibility Accounting

Once all of these variance reports are prepared, managers look at these variances to determine what causes the variance so the costs can be controlled and so that managers can plan for the future. In other words, if the purchasing manager sees that the materials variance is very high after the last shipment of raw materials that was purchased at a huge discount, this may indicate that the quality of the material is not that good and the manager needs to plan to look for a different vendor. Based on this example, the responsibility of trying to purchase quality material is that of the purchasing manager. In other words, purchasing quality material would not be the responsibility of the human resources manager since that manager does not purchase material.

### Conclusion

In this unit, we have looked at preparing variance reports for direct materials, director labor, and overhead. In addition to looking at the main variance calculations, we also broke down the materials and labor variances into multiple parts such as materials price variance and materials quantity variance. In addition, labor variances include labor rate variance and labor efficiency variance. Finally, we looked at the overhead variance, which is broken down by line item. Finally, we talked about clearly identifying who, within the organization, has responsibility to look into variances that have been identified.

## Reference

Jiambalvo, J. (2020). *Managerial accounting* (7th ed.). Wiley.  
<https://bookshelf.vitalsource.com/#/books/9781119577706>

## Suggested Unit Resources

*View the following video by accessing the Unit VII Additional Unit Resources folder in the unit.*

The video *Starbucks* will discuss how standard costs are used for planning and control.

You can access a transcript for this video by hovering over the PDF button at the bottom of the video and then clicking on the word "Transcript." Alternatively, you can click on the "cc" button at the bottom of the video to turn on closed captions.

## Learning Activities (Nongraded)

Nongraded Learning Activities are provided to aid students in their course of study. You do not have to submit them. If you have questions, contact your instructor for further guidance and information.

After watching the video in the Suggested Unit Resources, you may want to answer the four Unit VII Questions found in the Additional Unit Resources folder to reinforce the material presented in this unit. Note that the "View the Video" links referenced in each question are the same the video linked in Suggested Unit Resources.