

by ID 20,000 (ID 210,000 - ID 190,000). The standard fixed overhead is more than the actual fixed overhead by ID 5,000 (ID 105,000 - ID 100,000). Then the total difference is ID 25,000 (U) (ID 20,000 + ID 5,000).

Volume variance

The volume variance is the difference between the flexible budget allowance for standard hours and the total standard overhead allocated. It measures the difference between the budgeted fixed overhead and the fixed overhead applied to work in process. The formula for the volume variance is as below.

Volume variance	=	Flexible budget allowance for standard hours	-	Standard overhead costs allocated for actual production
--------------------	---	--	---	---

For Alhylal Company, This variance is computed as under:

Volume variance

$$\begin{aligned}
 &= [\text{Budgeted fixed OH} + (\text{Standard hours} \times \text{VOHR})] - [\text{Standard hours} \times \text{SOHR}] \\
 &= \text{ID } 290,000 - \text{ID } 285,000 \\
 &= \text{ID } 5,000 \text{ (U)}
 \end{aligned}$$

The budget for the December anticipated that the fixed overhead cost of ID 100,000 would be spread over 2,000 direct labor hours and would be used to produce 1,000 units of product. Because only 950 units were produced, only ID 95,000 of fixed cost (1,900 standard DLHs × ID 50 fixed cost per hour) was allocated to actual production. The result was an unfavorable variance of ID 5,000. This means that the unfavorable volume variance arise because the standard fixed overhead rate of ID 50 included in the total standard overhead rate of ID 150 was based on the assumption that 2,000 hours would be worked during the month, while only the 1,900 hours allowed for the 950 units produced were actually charged to production. There is an underallocated.

Checking:

$$\begin{aligned}
 \text{Total overhead variance} &= \text{Controllable variance} + \text{Volume variance} \\
 \text{ID } 30,000 \text{ (U)} &= \text{ID } 25,000 \text{ (U)} + \text{ID } 5,000 \text{ (U)}
 \end{aligned}$$

Three – variance method

The 3-variance method also illustrates that the total overhead variance is sub- divided into three variances: spending, efficiency, and volume variances. In other words, the controllable variance of the two- variance method breaks down into spending and efficiency variances. The volume variance of the three- variance method is the same that is of two- variance method.

Spending variance

The spending variance is the difference between the flexible budget allowance for actual hours and the actual overhead incurred. This variance compares the budgeted amount allowed for actual output achieved. The formula for the spending variance is as follows:

Spending variance	=	Flexible budget allowance for actual hours	-	Actual overhead costs incurred
----------------------	---	--	---	-----------------------------------

If the actual overhead is more than the flexible budget allowance for actual hours, the variance is unfavorable, and if the actual overhead is less than the flexible budget allowance for actual hours, the variance is favorable. For Alhylal Company, the spending variance is:

Spending variance

$$= [\text{Budgeted fixed overhead} + (\text{Actual hours} \times \text{St. VOHR})] - \text{Actual overhead}$$

$$= [\text{ID } 100,000 + (2,050 \text{ DLH} \times \text{ID } 100 \text{ per hr}) - \text{ID } 315,000]$$

$$= [\text{ID } 100,000 + \text{ID } 205,000] - \text{ID } 315,000$$

$$= \text{ID } 305,000 - \text{ID } 315,000$$

$$= \text{ID } 10,000 \text{ (U)}$$

The ID 10,000 (U) favorable spending variance for Alhylal Company could have arisen because the purchase amount of energy, indirect materials, or indirect labor was more than the budgeted amount. This variance could also have arisen because the actual usage of overhead items was more than the budgeted usage assumed in setting ID 100 standard VOH rate per direct labor hour.

Efficiency variance

The efficiency variance is the difference between the flexible budget allowance for actual hours and the flexible budget allowance for standard hours. In other words, this variance compares the budgeted cost for the actual hours worked with the budgeted amount for the standard hours allowed for the actual production. It shows the effect on fixed and variable overhead costs when the actual hours worked are either more or less than standard hours allowed for the actual production achieved. Unfavorable variances results when the flexible budget allowance for actual hours is more than the flexible budget allowance for standard hours. Favorable variance indicates the flexible budget for actual hours is less than the flexible budget for standard hours. The formula for the efficiency variance is:

Efficiency variance	=	Flexible budget allowance for actual hours	-	Flexible budget allowance for standard hours
------------------------	---	--	---	--

For Alhylal Company, the efficiency variance is computed as follows:

- 1 – Flexible budget allowance for actual hours =
 [Budgeted fixed OH + (Actual hours × standard VOHR)]
 = [ID 100,000 + (2,050 DLH × ID 100 per hour)] = ID 305,000
- 2 – Flexible budgeted for standard hours =
 [Budgeted fixed OH + (Standard hours allowed × Standard VOHR)]
 = [ID 100,000 + (1,900 DLH × ID 100 per hour)] = ID 290,000
- 3 – Efficiency variance = ID 305,000 – ID 290,000
 = ID 15,000 (U)

Alhylal Company's unfavorable efficiency variance of ID 15,000 means than the actual direct labor hours (the cost allocation base) was higher than the standard direct labor hours allowed to produce 950 units.

Volume variance

This variance is similar to the volume variance under the two- variance method. Recall that the volume variance is the difference between the flexible budget allowance for standard hours and standard overhead allo-

cated and using the same formula for the volume variance under the two-variance method that is as follows:

Volume variance	=	Flexible budget allowance for standard hours	-	Standard overhead costs allocated for actual production
-----------------	---	--	---	---

For Alhylal Company, This variance is computed as under:

Volume variance

$$= [\text{Budgeted fixed OH} + (\text{Standard hours} \times \text{VOHR})] - [\text{Standard hours} \times \text{SOHR}]$$

$$= \text{ID } 290,000 - \text{ID } 285,000$$

$$= \text{ID } 5,000 \text{ (U)}$$

Checking:

Total OH variance =

$$\text{Spending variance} + \text{Efficiency variance} + \text{Volume variance}$$

$$\text{D } 30,000 \text{ (U)} = \text{ID } 10,000 \text{ (U)} + \text{ID } 15,000 \text{ (U)} + \text{ID } 5,000 \text{ (U)}$$

Or Controllable variance = Spending variance + Efficiency variance

$$\text{ID } 25,000 \text{ (U)} = \text{ID } 10,000 \text{ (U)} + \text{ID } 15,000 \text{ (U)}$$

Four – variance method

The four-variance method recognizes two variable overhead variances and two fixed overhead variances.

Variable overhead variances

The total variable overhead cost variance is the difference between actual variable overhead costs and the standard variable overhead costs that are allocated to actual units produced using the standard variable rate. This variance is computed as follows:

$$\text{Total VOH variance} = \text{Standard VOH} - \text{Actual VOH}$$

$$= (1,900 \text{ DLH} \times \text{ID } 100 \text{ per hour}) - \text{ID } 210,000$$

$$= \text{ID } 190,000 - \text{ID } 210,000$$

$$= \text{ID } 20,000 \text{ (U)}$$

The total variable overhead variance is subdivided into the variable spending variance and the variable efficiency variance.

Variable spending variance

The variable overhead spending variance is computed by multiplying the actual hours worked by the difference between actual variable overhead costs and the standard variable overhead rate. The formula for the variable spending variance is as under:

$$\begin{aligned} \text{Variable spending variance} &= \text{Actual VOH} - (\text{Actual hours} \times \text{St. VOHR}) \\ &= \text{Actual VOH} - (\text{Actual hours} \times \text{St. VOHR}) \end{aligned}$$

For Alhylal Company, it is computed as follows:

$$\begin{aligned} \text{Variable spending variance} &= \text{ID } 210,000 - (2,050 \text{ DLH} \times \text{ID } 100 \text{ per hour}) \\ &= \text{ID } 210,000 - \text{ID } 205,000 \\ &= \text{ID } 5,000 \text{ (U)} \end{aligned}$$

Variable efficiency variance

The variable efficiency variance is the difference between budgeted variable overhead for actual hours and allocated variable overhead. In other words, it is the difference between the standard direct labor hours allowed for actual production and the actual hours worked multiplied by the standard variable overhead rate per hour. This variance measures the change in variable overhead consumption that occurs because of efficient or inefficient use of direct labor. If the actual hours are greater than standard hours, the variance is unfavorable, and vice versa. The variable efficiency variance is computed using the two following formulas:

$$\text{Variable efficiency variance} = \left[\begin{array}{l} \text{Standard} \\ \text{hours} \\ \text{allowed for} \\ \text{actual} \\ \text{output} \end{array} \times \text{Standard VHR} \right] - \left[\begin{array}{l} \text{Actual} \\ \text{hours} \\ \text{worked} \end{array} \times \text{Standard VHR} \right]$$

Or, the variable efficiency variance can be also computed as follows

$$\text{Variable efficiency variance} = (\text{Standard hours} - \text{Actual hours}) \times \text{St. VOHR}$$

For Alhylal Company, the variable efficiency variance is:

1 - Variable efficiency variance

$$\begin{aligned} &= (1,900 \text{ DLH} \times \text{ID } 100 \text{ per hr.}) - (2,050 \text{ DLH} \times \text{ID } 100 \text{ per hr.}) \\ &= \text{ID } 190,000 - \text{ID } 205,000 \\ &= \text{ID } 15,000 \text{ (U)} \end{aligned}$$

$$\begin{aligned} 2 - \text{Variable efficiency variance} &= (1,900 \text{ hours} - 2,050 \text{ hours}) \times \text{ID } 100/\text{hr} \\ &= \text{ID } 15,000 \text{ (U)} \end{aligned}$$

The ID 15,000 unfavorable variable efficiency variance means that the actual direct labor hours of 2,050 exceed the standard direct labor hours of 1,900 by 150 hours, the amount of variance is ID 15,000 (150 hours \times ID 100 per hour).

Checking:

Total VOH variance = Variable spending variance + Variable efficiency variance

$$\text{ID } 20,000 \text{ (U)} = \text{ID } 5,000 \text{ (U)} + \text{ID } 15,000 \text{ (U)}$$

Fixed overhead variances

The total fixed overhead cost variance is the difference between actual fixed overhead costs and the standard fixed overhead costs that are allocated to actual production using the standard fixed overhead rate. It is computed as follows:

$$\begin{aligned} \text{Total FOH variance} &= \text{Standard FOH} - \text{Actual FOH} \\ &= (1,900 \text{ DLH} \times \text{ID } 50 \text{ per hour}) - \text{ID } 105,000 \\ &= \text{ID } 95,000 - \text{ID } 105,000 \\ &= \text{ID } 10,000 \text{ (U)} \end{aligned}$$

The total fixed overhead variance is subdivided into the fixed spending variance and the fixed volume variance.

Fixed spending variance

The fixed overhead spending variance is defined as the difference between the actual fixed overhead and the budgeted fixed overhead. The spending variance is favorable, when actual fixed overhead items are less than was budgeted, and vice versa. The formula for computing the fixed overhead variance follows.

$$\text{Fixed spending variance} = \text{Budgeted fixed OH} - \text{Actual fixed OH}$$

This variance for Alhyal Company is calculated as follows:

$$\begin{aligned} \text{Fixed spending variance} &= \text{ID } 100,000 - \text{ID } 105,000 \\ &= \text{ID } 5,000 \text{ (U)} \end{aligned}$$

Fixed volume variance

The fixed overhead volume variance is the difference between budgeted fixed overhead costs and the overhead costs that are allocated to actual production using the standard fixed overhead rate. It is caused solely by producing at a level that differs from the level that was used to compute the standard fixed overhead rate. The formula for computing the fixed volume variance is as follows:

$$\begin{aligned} \text{Fixed volume variance} &= \text{Budgeted fixed overhead} - \text{Standard fixed overhead allocated} \\ &= \left[\text{Budgeted hours} \times \text{Standard FOH rate} \right] - \left[\text{Standard hours} \times \text{Standard FOH rate} \right] \\ \text{Or} &= \left[\text{Budgeted hours} - \text{Standard hours} \right] \times \text{Standard FOH rate} \end{aligned}$$

For Alhylal Company, it is computed as follows:

$$\begin{aligned} \text{1-Volume variance} &= (2,000 \text{ DLH} \times \text{ID } 50) - (1,900 \text{ DLH} \times \text{ID } 50) \\ &= \text{ID } 100,000 - \text{ID } 95,000 \\ &= \text{ID } 5,000 \text{ (U)} \end{aligned}$$

$$\begin{aligned} \text{2-Volume variance} &= (2,000 \text{ DLH} - 1,900 \text{ DLH}) \times \text{ID } 50 \text{ per hour} \\ &= \text{ID } 5,000 \text{ (U)} \end{aligned}$$

The fixed volume variance is ID 5,000 (U) because the fixed overhead volume variance measures the use of existing facilities and capacity, a volume variance will occur if more or less than normal capacity is used. At Alhyla Company, 2,000 direct labor hours are considered normal use of capacity. Because fixed overhead costs are allocated on the basis of standard hours allowed, Alhylal Company's overhead was allocated on the basis of 1,900 hours, even though the fixed overhead rate was computed using 2,000 hours. Thus, more fixed costs would be applied to products than were budgeted.

Chapter 4 – Flexible budget and Overhead costs variances

» When capacity exceeds the expected amount, the result is a favorable overhead volume variance because fixed overhead was overallocated.

» When a company operates at a level below the normal capacity in units, the result is an unfavorable volume variance. Not all of the fixed overhead costs will be allocated to units produced. In other words, fixed overhead is underallocated, and the cost of product does not include the full budgeted cost of fixed overhead.

Notice that the volume variance of two-variance method is same that it is under the three- variance, and under the four- variance methods.

Checking:

Total fixed variance = Fixed spending variance + Volume variance

$$\text{ID } 10,000 \text{ (U)} = \text{ID } 5,000 \text{ (U)} + \text{ID } 5,000 \text{ (U)}$$

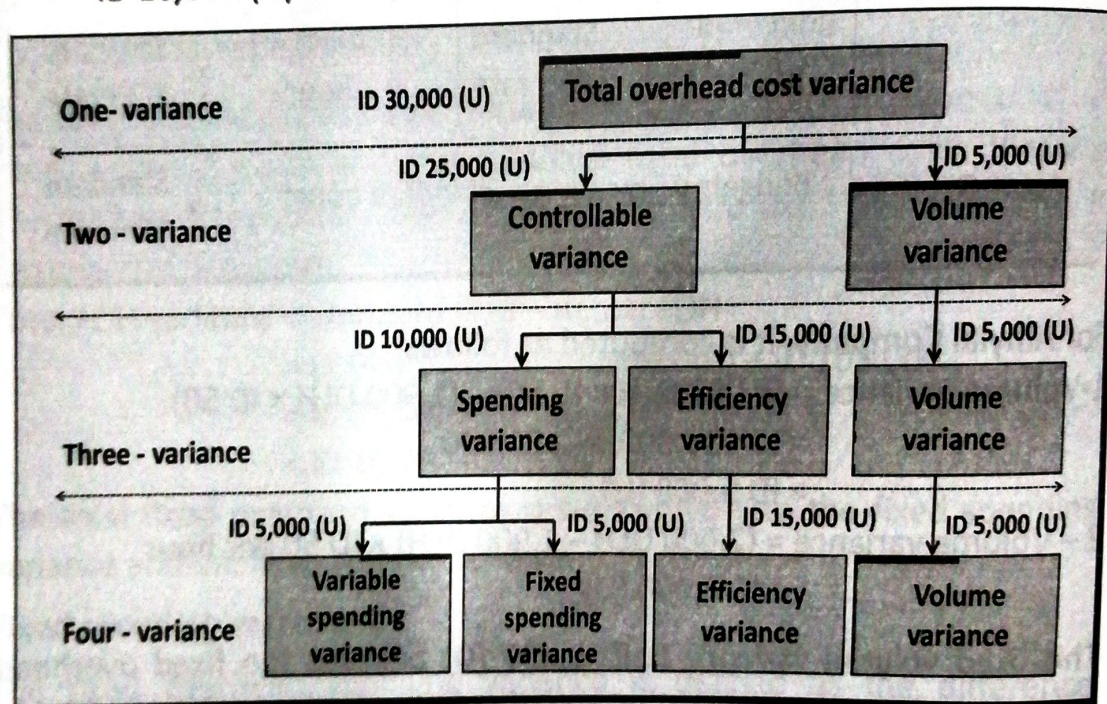


Exhibit 4 -5: Overhead variance methods of analysis

Summary of variable and fixed overhead variances

If our calculations of variable and fixed overhead variances are correct, the net of these variances should equal the total overhead cost variance. Checking the computations, we find that the variable and fixed overhead variances do equal the total overhead cost variance:

- Variable overhead spending variance ID 5,000 (U)
- Variable overhead efficiency variance ID 15,000 (U)
- Fixed overhead budget variance 5,000 (U)
- Fixed overhead volume variance 5,000 (U)
- Total overhead cost variance ID 30,000 (U)

Exhibit 4-5 shows the analysis of overhead variances. The total overhead costs variance means also the amount of overallocated or undeallocated overhead.

Summary

The following items relate to the learning objectives listed at the beginning of the chapter.

- 1 – Explain the difference between static and flexible budgets:
 - ❖ A static budget is based on a single, predicted level of activity; it represents an effective planning tool; and it cannot be used for controlling and evaluation performance in all situations of activity.
 - ❖ A flexible budget allows for many possible activity levels; it is prepared for a relevant range; its preparation depends on the cost behavior patterns; it consist the normal capacity of activity.
- 2 – Explain the preparing a flexible budget of overhead costs: To prepare a flexible budget, it should:
 - ❖ Compute the variable overhead per unit through dividing the total variable by normal capacity.
 - ❖ Total fixed overhead remains constant at any activity level within a relevant range
 - ❖ Compute the overhead for any activity level within a relevant range using the flexible budget formula: $Y = a + b x$
- 3 – Use the flexible budget for overhead costs control purposes:
 - ❖ The flexible budget formula allows determining the budgeted overhead cost for any level of output at the end of period.
 - ❖ Flexible budgets allow comparing budgeted and actual costs at the same level of output.
- 4 – Compute the budgeted overhead costs rates:

Chapter 4 – Flexible budget and Overhead costs variances

- ❖ Total standard overhead rate is found by dividing total budgeted overhead by normal capacity.
- ❖ Standard variable overhead rate is found by dividing total budgeted variable overhead by normal capacity.
- ❖ Standard fixed overhead rate is found by dividing total budgeted fixed overhead by normal capacity.

5 – Compute and analyze the overhead costs variances:

- ❖ Total overhead variance is equal to standard overhead allocated minus actual overhead incurred.
- ❖ Two-variance method subdivides total overhead variance into controllable and volume variances component.
- ❖ Three-variance method breaks down total overhead variance into spending, efficiency, and volume variances component.
- ❖ Four-variance method divides total overhead variance into two sets variance; variable overhead variances set (variable spending and variable efficiency variances); and fixed overhead variances set (fixed spending, and fixed volume variances).

Problem for self – study

Aynor Company manufactures plastic bag. The standard variable costs for one bag (a unit) are as follows:

Direct materials (3 sq. meters × ID 12.50 per sq. meter)	ID 37.50
Direct labor (1.2 hours × ID 9.00 per hour)	ID 10.80
Variable overhead (1.2 hours × ID 5.00 per direct labor hour)	<u>ID 6.00</u>
Standard variable cost per unit	<u>ID 54.30</u>

The company's budget was based on its normal capacity of 15,000 direct labor hours. Its budgeted fixed overhead costs for the year were ID 54,000. During the year, the company produced 12,200 bags, and it used 37,500 square meters of direct materials at actual price of ID 12.40 per square meter. The actual direct labor rate was ID 9.20 per hour, and 15,250 actual direct labor hours were worked. The company actual variable overhead costs for the year were ID 73,200, and its fixed overhead costs were ID 55,000.

Required:

- 1 – Compute total direct material, material price, and material quantity variances.

Chapter 5

The Accounting Procedure under Standard Costing

Learning objectives

After studying this chapter, you should be able to:

- 1 – Record journal entries for standard and variances direct materials.
- 2 – Record journal entries for standard and variances direct labor.
- 3 – Record journal entries for standard and variance overhead costs.
- 4 – Post the amounts of journal entries to T-accounts.
- 5 – Disposition of costs variances at the end of the year.
- 6 – Prepare an income statement under standard costing.

The preceding chapters have shown that standard costing is used to cost control. The availability of standard data is required to variances analysis. But companies use standard costing system for control they use also this system for product costing. Most standard cost systems also record these costs and variances in accounts. This chapter will focus on the methods of incorporating standard costs in the cost accounting records and preparing income statements using absorption and variable costing.

Cost accounting procedure

Cost accounting procedure means that the cost elements (standard direct materials, direct labor, and overhead costs) should be recorded in journal entry and transferred to respective ledger accounts and preparing income statements. Standard costs should be considered as costs which pass through the accumulation procedure into financial statements. The accounting procedure is similar to that of the actual costing system: recording journal entries, prepare T- accounts, and prepare income statements. The only difference being that there is an additional variances account. This variances account should be appeared on the journal entry, ledger accounts, and income statements.

In Exhibit 5 -1, the accounting procedure under standard costing consist the following procedures:

- 1 – Recording the journal entries for cost elements.
- 2 – Transferring the amounts recorded in journal entry to ledger accounts.
- 3 – Preparing the income statements.

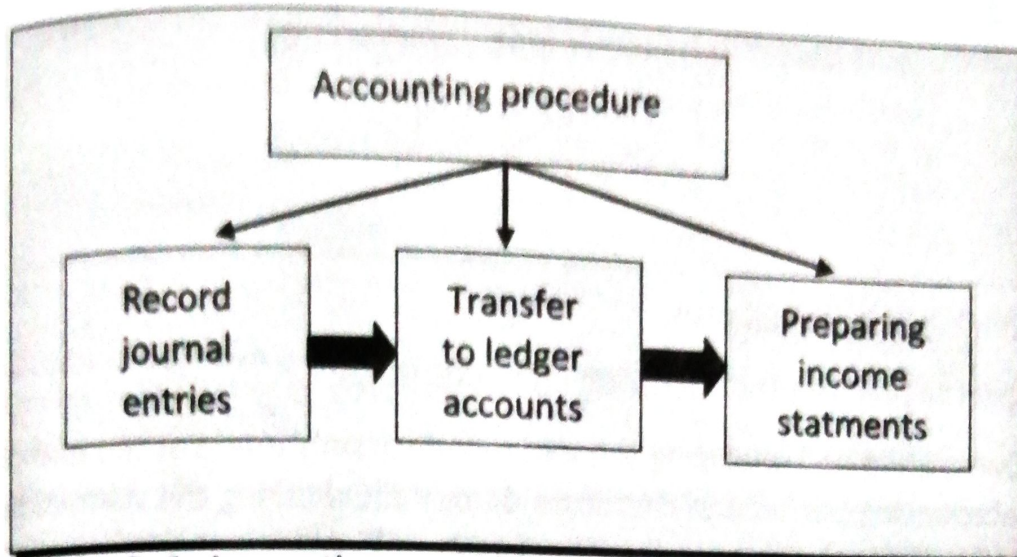


Exhibit 5 -1: Accounting procedure under standard costing

Standard cost accounting procedures

There are two methods or plans may be employed in standard costing to record the cost transactions: the partial plan and the single plan.

Partial plan

Under this method the work-in-process account is charged at the actual cost of direct materials, direct labor, and overhead. The work-in process is credited with the standard cost of finished product and transferred to finished goods inventory account. The ending balance of work-in-process is also shown at standard cost. The balance after making the credit entries represents the variance from standard for the accounting period. The favorable cost variances appear on the debit side of work-in process account, and the unfavorable cost variances appear on credit side of work-in process account.

According to this plan, the variances are computed after the end of the accounting period. Partial plan is simple and easy to understand because variances are computed after the end of accounting period but may

present difficulties if the company makes a variety of products as shown in Exhibit 5-2.

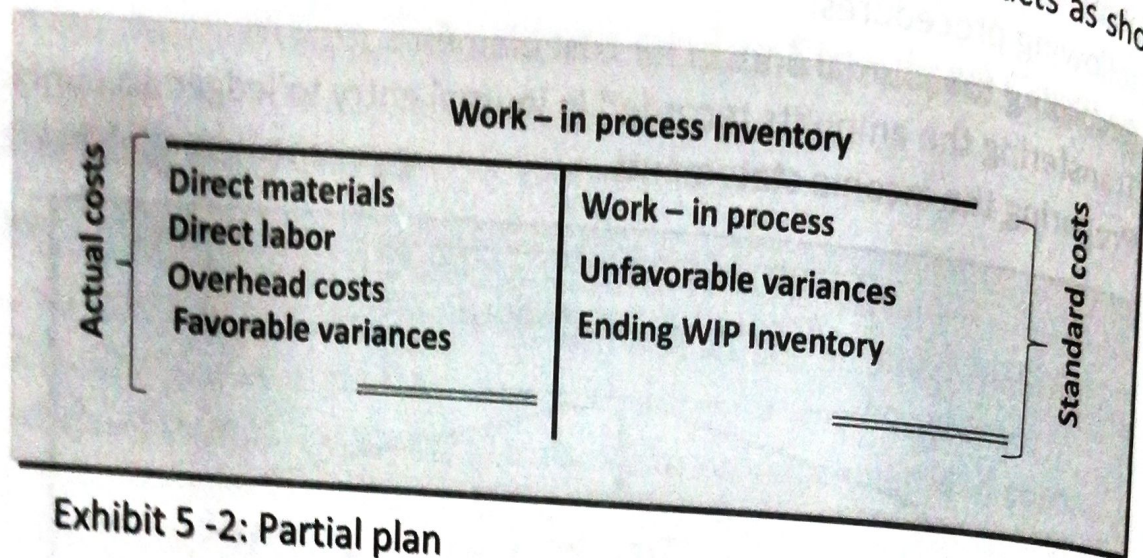


Exhibit 5 -2: Partial plan

The partial plan has the following characteristics:

- 1 – Computing and analyzing the variances are only made at the end of the accounting period and therefore do not allow taking the corrective action in day to day, where the direct material variances are computed at the point of purchase or at point usage. The direct labor variances are computed at point of payment.
- 2 – It is simple and needs less account tasks because the standard costs are only used for valued the inventory and the cost of goods sold, as well as the all the variances are only computed at the end of accounting period.
- 3 – The responsibility for the variances can only be fixed after the end of the accounting period. Therefore the variances cannot be used for control and performance evaluation.
- 4 – The price variance is calculated for the materials quantity used for the actual output.
- 5 – The direct material inventory is valuated at actual cost.
- 6 – All cost variances are closed in the work-in process account shown in Exhibit 5 – 3.
- 7 – This method is appropriate when a simple variance analysis is sufficient at the end of the accounting period.
- 8 – The study of the causes of variances is done after only at the end of the accounting period.

9 – The standard cost levels can be tested only at the end of the accounting period, when the standard costs are compared with the actual costs.

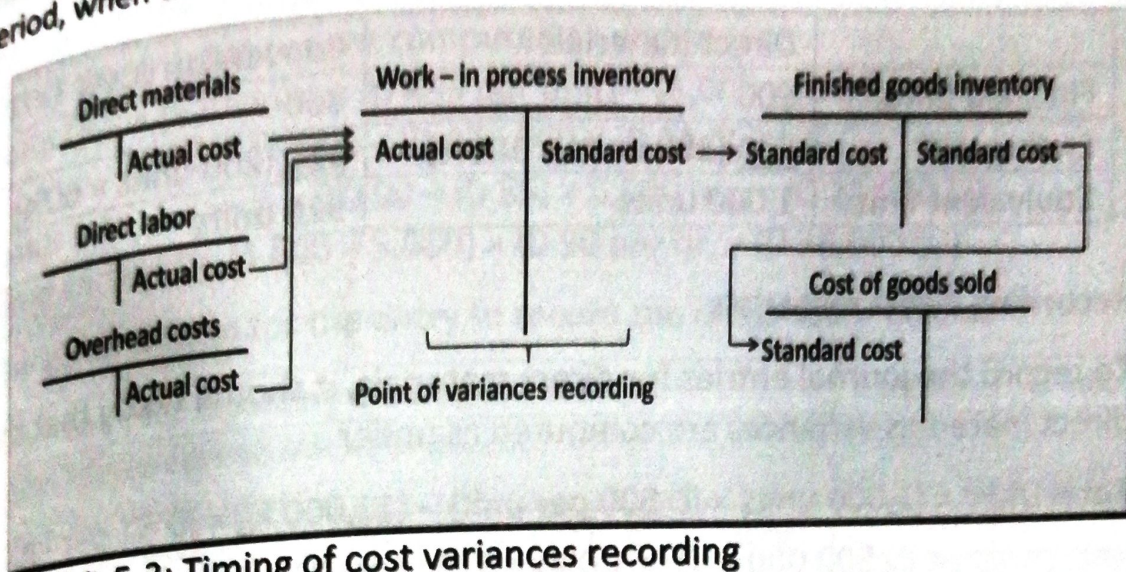


Exhibit 5-3: Timing of cost variances recording

To illustrate the partial plan, assume that Alseef Company uses the standard costing system. The standard cost per unit for July 2017 as follows:

Standard cost per unit	
Direct material (10 kg × ID 50 per kg)	ID 500
Direct labor (5 hours × ID 90 per DLH)	ID 450
Overhead costs (100% of direct labor, 40% VOH and 60% FOH)	<u>ID 450</u>
Total standard cost per unit	<u>ID 1,400</u>

The company expected the budgeted overhead for the normal capacity of 5,500 hours would be ID 495,000.

Costs and production figures for the month of July 2017 are as follows:

Materials quantity used 11,000 kg at a standard price of ID 51 per kg.
Direct labor hours worked 5,000 hours at a standard rate of ID 85 per hour.

Overhead cost of ID 444,000, from it the fixed overhead is ID 165,600.

Work-in process-ending of 200 units completed at 100% as to direct materials, and 60% as to conversion costs.

Finished units of 800 units, and units sold of 600 units.

To compute the cost variances, the equivalent production for July should be computed as follows:

	Direct materials	Conversion costs
Finished units	800	800
Ending WIP	<u>200</u> (200 units × 100%)	<u>120</u> (200 units × 60%)
Equivalent units	1,000 units	920 units

Recording direct materials

To record the journal entries for direct materials, it should firstly that the direct materials variances are computed as under

$$\begin{aligned} \text{Total DMV} &= (1,000 \text{ units} \times \text{ID } 500 \text{ per unit}) - (11,000 \text{ kg} \times \text{ID } 51 \text{ per kg}) \\ &= \text{ID } 500,000 - \text{ID } 561,000 = \text{ID } 61,000 \text{ (U)} \end{aligned}$$

$$\text{Price variance} = (\text{ID } 50 \text{ per kg} - \text{ID } 51 \text{ per kg}) \times 11,000 \text{ kg} = \text{ID } 11,000 \text{ (U)}$$

$$\text{Quantity variance} = (10,000 \text{ kg} - 11,000 \text{ kg}) \times \text{ID } 50 \text{ per kg} = \text{ID } 50,000 \text{ (U)}$$

The general form for the entry to record the purchase and issuance of direct materials below:

1 – Entry for recording the purchase of materials	Debit	Credit
By, Material inventory control (AP × AQ purchased)	XXX	
To, Accounts payable		XXX
2 – Entry for recording the issuance of materials		
By, Work- in process inventory control (AP × AQ used)	XXX	
To, Materials inventory control (AP × AQ issued)		XXX

For Alseef Company, the entries to record the direct material at actual costs for July 2017 are:

1 – Purchase direct materials entry:

By, Material inventory control (ID 51 × 11,000 kg)	714,000	
To, Accounts payable		714,000

2 – Issue direct material to production:

By, Work- in process inventory control (ID 51 × 11,000)	714,000	
To, Materials inventory control (ID 51 × 11,000)		714,000

Recording direct labor

To record the journal entries for direct labor, it should firstly that the direct labor variances are computed as under

$$\text{Total DLV} = (920 \text{ units} \times \text{ID } 459 \text{ per unit}) - (5,000 \times \text{ID } 85 \text{ per hr.})$$

$$= \text{ID } 414,000 - \text{ID } 425,000 = \text{ID } 11,000 \text{ (U)}$$

$$\text{Labor rate variance} = (\text{ID } 90 - \text{ID } 85) \times 5,000 \text{ hrs.} = \text{ID } 25,000 \text{ (F)}$$

$$\text{Time variance} = (4,600 - 5,000) \times \text{ID } 90 \text{ per hr.} = \text{ID } 36,000 \text{ (U)}$$

The general form for the entry to record the direct labor below:

	Debit	Credit
1 – Entry for recording the wages liability		
By, Wages control (AR × AH worked)	XXX	
To, Wages payable		XXX
2 – Entry for recording the assignment of direct labor		
By, Work- in process inventory control (AR × AH)	XXX	
To, Wages control (AR × AH)		XXX

For Alseef Company, the entries to record the direct labor for r July 2017 are:

1 – Wages liability entry:

By, Wages control (ID 85 per hr. × 5,000 hrs)	425,000	
To, wages payable		425,000

2 – Payment wages entry:

By, Wages payable	425,000	
To, Cash		425,000

3 – Assigning direct labor entry:

By, Work-in process inventory control (85 × 5,000)	425,000	
To, Wages control (85 × 5,000)		425,000

Recording overhead costs

To record the journal entries for overhead costs, it should firstly that the overhead variances are computed as under:

$$\text{Total standard OH rate} = \text{ID } 450 \div 5 \text{ hrs} = \text{ID } 90 \text{ per DLH}$$

$$\text{Standard VOH rate} = \text{ID } 90 \times 60\% = \text{ID } 54 \text{ per DLH}$$

$$\text{Standard FOH rate} = \text{ID } 90 \times 40\% = \text{ID } 36 \text{ per DLH}$$

Or, we can compute the standard overhead rates as follows:

Budgeted VOH = ID 495,000 × 60% = ID 297,000

Budgeted FOH = ID 495,000 × 40% = ID 198,000

Total standard OH rate = ID 495,000 ÷ 5,500 hours = ID 90 per DLH

Standard VOH rate = ID 297,000 ÷ 5,500 hours = ID 54 per DLH

Standard FOH rate = ID 198,000 ÷ 5,500 hours = ID 36 per DLH

Total OHV = (920 units × ID 450 per unit) = ID 414,000

= ID 414,000 – ID 444,000 = ID 30,000 (U)

Controllable variance = [ID 198,000 + (4,600 hrs × ID 54)] – ID 444,000

= ID 446,400 – ID 444,000 = ID 2,400 (F)

Volume variance = ID 446,400 – ID 414,000 = ID 32,400 (U)

The general form of this entry follows:

	Debit	Credit
1 – Entry for recording the actual overhead		
By, Manufacturing overhead control (at actual cost)	XXX	
To, Various accounts		XXX
2 – Entry for recording the assignment of overhead		
By, Work- in process inventory control (at actual cost)	XXX	
To, Manufacturing overhead control (at actual cost)		XXX

For Alseef Company, the entries to record the overhead at actual costs for July 2017 are:

1 – Actual overhead costs entry:

By, Overhead costs control (at actual cost)	444,000	
To, Various accounts		444,000

2 – Entry to assign actual overhead to production:

By, Work- in process control (at actual cost)	444,000	
To, Overhead costs control (at actual cost)		444,000

Recording all variances accounts

The cost variances will be carried to the respective accounts pending analyzing before being finally disposed off. The general journal entries for transferring the variances to their respective accounts are as under:

Chapter 10 Accounting procedure under standard costing

Entry to record all cost variances

	Debit	Credit
By, Sundries (unfavorable variances)		
A/c		
A/c	XXX	
To, Sundries (favorable variances)	XXX	
A/c		
A/c		XXX
		XXX

For Aseef Company, the entry to record the cost variances is:

By, Sundries		
Material price variance (U)		
Material quantity variance (U)	11,000	
Labor time variance (U)	50,000	
Overhead volume variance (U)	36,000	
To, Sundries	32,400	
Work-in process control		102,000
Labor rate variance (F)		25,000
Overhead controllable (F)		2,400

Recording Finished Goods

The Work- in Process Inventory Control account is always debited with the standard cost determined for the period's finished production. The finished units are transferred from Work-In Process inventory Control to the Finished Goods Inventory Control. The cost of these finished units is computed as under:

$$\begin{aligned} \text{Finished goods} &= \text{Finished units} \times \text{Standard cost per unit} \\ &= 800 \text{ units} \times \text{ID } 1,400 = \text{ID } 1,120,000 \end{aligned}$$

When the 900 units are completed, the following entry is made to transfer the costs out of work-in-process inventory and into finished goods inventory. The general form for the entry to record the finished goods is as follows:

By, Finished goods inventory (at standard cost)	XXX	
To, Work-in process control (at standard cost)		XXX

For Aseef Company, the cost of finished units transferred is ID 1,120,000 that it is recorded by the following entry:

By, Finished goods inventory (at standard cost)	1,120,000	
To, Work-in process control (at standard cost)		1,120,000

Note that the standard cost per unit was established at ID 1,400 which includes: standard direct material of ID 500, standard direct labor of ID 450, and standard overhead of ID 450. Total production of 900 units x standard cost of 1,400 per unit equals ID 1,260,000.

Recording Cost of Goods Sold

The cost of goods sold equals the number of units sold multiplying by the standard cost per unit as follows:

$$\begin{aligned} \text{Cost of units sold} &= \text{Units sold} \times \text{standard cost per unit} \\ &= 600 \text{ units} \times \text{ID } 1,400 = \text{ID } 840,000 \end{aligned}$$

The general form for the entry to record the direct labor below:

By, Cost of goods sold (at standard cost)	XXX	
To, Finished inventory control (at standard cost)		XXX

For Alseef Company, The following is a journal entry to record the cost of goods sold for July 2017:

By, Cost of goods sold (at standard cost)	840,000	
To, Finished inventory control (at standard cost)		840,000

Note that the entry shown previously uses standard costs, which means cost of goods sold is stated at standard cost until the next entry is made.

Notice that the following explanations about the numbered journal entries can be presented.

- 1 – The debit to Material Inventory Control is for the actual price of the actual quantity of direct materials purchased. The credit to Accounts Payable is for the actual price of the actual quantity of direct materials purchased. It is assumed that all direct materials purchased were used in production during the month.
- 2 – The debit to Work- in Process Inventory Control is for the actual price of the actual quantity of direct material, whereas the credit to Material Inventory control is for the actual price of the actual quantity of direct material used in production.
- 3 – The debit to Work- in Process Inventory Control is for the actual direct labor hours multiplied by the actual direct labor rate. The Wages

control credit is for the actual hours of direct labor multiplied by the actual labor rate.

4 – During the period, actual costs incurred for the various variable and fixed overhead components are debited to the Manufacturing Overhead Control. These costs are caused by a variety of transactions including indirect material, indirect labor, depreciation, and utility costs etc.

5 – The debit to Work- in Process Inventory Control is for the actual overhead costs. The Manufacturing Overhead Control credit is for the actual overhead costs.

6 – The debit to Finished Goods Inventory Control is for the standard cost per unit (direct material, direct labor, and overhead) multiplied by the number of units produced. The Work-in Process Inventory Control credit is for the standard cost per unit multiplied by the number of units produced.

7 – The debit to Cost of Goods Sold is for the standard cost per unit multiplied by the number of units sold. The Finished Goods Inventory Control credit is for the standard cost per unit multiplied by the number of units sold.

8 – The debit to unfavorable variances accounts is for the increasing of the actual costs to the standard costs. The credit to favorable variances accounts is for the decreasing of the actual costs to the standard costs.

9 - In recording variances, unfavorable variances are always debits, and favorable variances are always credits.

General cost ledger under standard costing

The costs are first incurred when raw materials are purchased. The flow of costs then moves to work-in-process inventory, where labor, and overhead costs are added to the cost of the raw materials. Once the production process is complete, the costs move to the finished goods inventory, where the goods are stored prior to sale. When the goods are eventually sold, the costs move to the cost of goods sold, and the move the income statements as shown in Exhibit 5 -4.

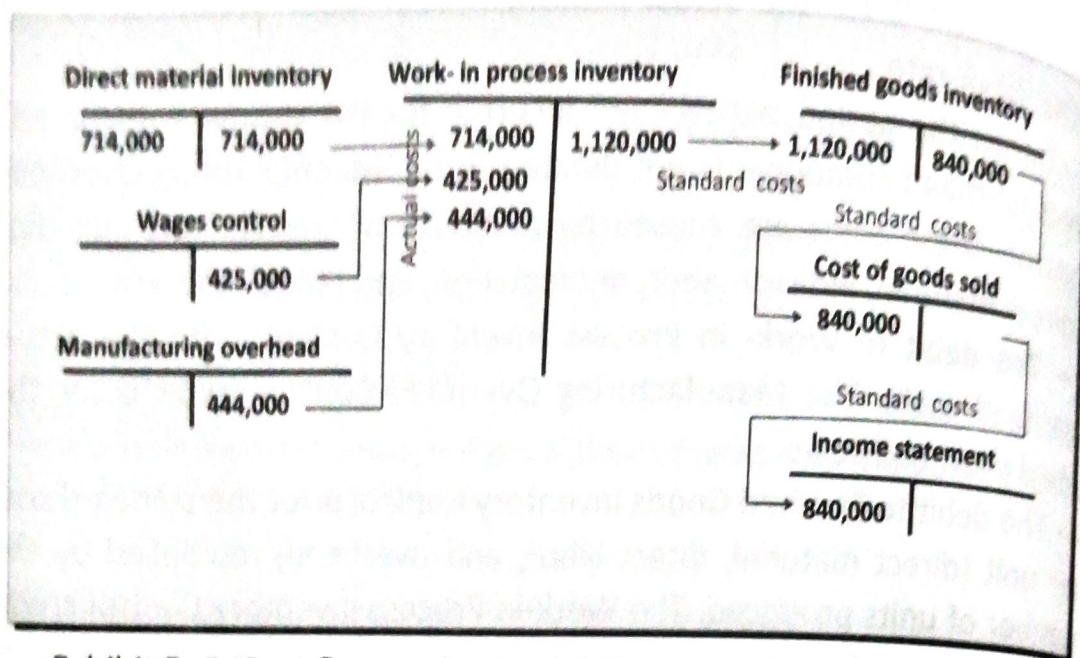


Exhibit 5 -4: Cost flow under partial plan

Cost control T- accounts

There are at least six cost control that should be opened in the cost ledger, these are: material control account, wages payable control account, manufacturing overhead control, work-in process inventory control, finished goods inventory, cost of goods sold, marketing and administrative costs account.

Work-in process inventory control

Particulars	Debit	Particulars	Credit
To, Material inventory	561,000	By, Finished goods	1,120,000
Wages control	425,000	Price variance	11,000
Overhead control	444,000	Quantity variance	50,000
Labor rate variance	25,000	Time variance	36,000
Controllable variance	2,400	Volume variance	32,400
		Ending balance	208,000
	1,457,400		1,457,400
Beginning balance	208,000		

1 – Materials inventory control account: It deals with transactions of materials. All receipts are debited and issues are credited, the balance shows the stock of materials. Recall that the both debit and credit side of this account has an actual cost. For Alseef Company, the materials

purchased are ID 561,000 and the materials issued are ID 561,000. In this case, the account does not contain any variance.

Materials inventory control

Particulars	Debit	Particulars	Credit
To, Accounts payable	561,000	By, Work-in process	561,000

2 – Wages control account: It records labor transactions. The account is debited with the wages payable and is credited by the transfer of direct labor to work-in process. For Alseef Company, the wages payable of ID 425,000 is recorded in the debit side, and the labor cost assigned to work-in process of ID 425,000 is recorded in credit side. Recall that under partial plan, the debit side and credit side of the account are valued at actual cost.

Wages control

Particulars	Debit	Particulars	Credit
To, Wages payable	425,000	By, Work-in process	425,000

3 – Manufacturing overhead control account: It deals with manufacturing overhead costs. It is debited by the amount of actual indirect material, indirect labor, and other items of overhead. This account is credited by the amount allocated to work-in process. Recall that under partial plan, the both debit and credit side has amount valued at actual costs. For Alseef Company, the actual overhead is ID 444,000, and the actual overhead assigned to work-in process is ID 444,000.

Manufacturing overhead control

Particulars	Debit	Particulars	Credit
To, Various accounts	444,000	By, Work-in process	444,000

4 – Finished goods inventory control account: this account is debited with the cost of finished goods transferred from the work-in process control account. The goods sold are credited from Finished Goods control account to Cost of goods sold account. Recall that the both debit and credit side of this account has the standard costs. For Alseef Company, the standard costs of finished units are ID 1,120,000 recorded in the debit side, and the standard costs of finished units sold are ID 840,000 recorded in the credit side.

Finished goods inventory control

Particulars	Debit	Particulars	Credit
To, Work-in process	1,120,000	By, Cost of goods sold	840,000
		Ending balance	280,000

5 – Cost of goods sold account: This account is debited with the cost of goods sold and is closed by transfer to income statements. Recall the both debit and credit side has the standard cost. For Alseef Company, the cost of units sold is ID 840,000, and the amount transferred to income statement is ID 840,000.

Cost of goods sold control

Particulars	Debit	Particulars	Credit
To, Finished goods inventory	840,000	By, Profit and Loss	840,000

Single plan

The single plan system envisages the posting of all items in the debit side of the work-in-process control account at the standard cost leaving the credit side to represent the standard cost of finished production and work-in-process. This system enables the ascertainment of variances as and when the transaction is posted to work-in-process account. In other words, the analysis of variances is done from the original documents like invoices, labor sheets, etc., and this method of analysis is known as analysis at source.

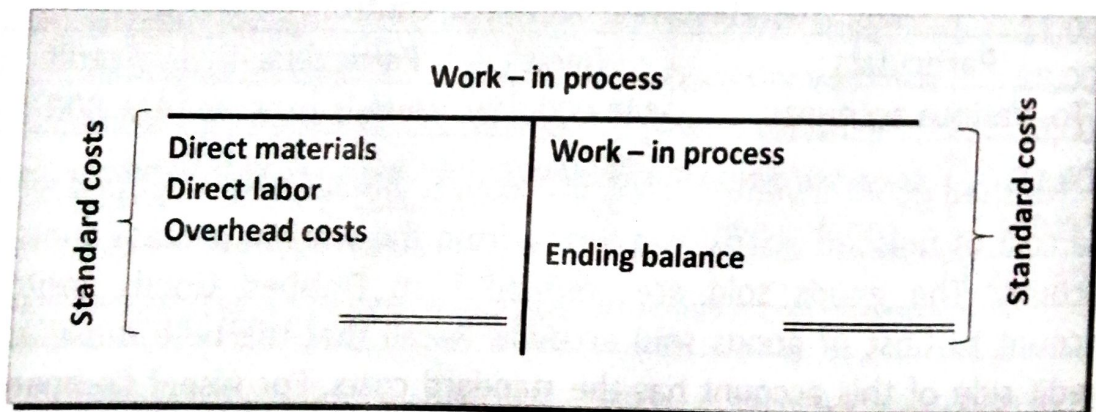


Exhibit 5 -5: Single plan under standard costing

Since, the single plan system contemplates the analysis of variances at source, the installation of this system requires more planning so that effective documentation at each stage is introduced for proper recording

and analysis of variance. Unlike the partial plan, the single plan supposes the recording the transactions in both debit and credit side at the standard cost. In other words, the work-in process account is debited at standard costs only. Exhibit 5-5 shows the logic of the single plan. Note that the single plan differs from the partial plan in timing of the computing the cost variances. Under the partial plan, the variances are computed at the end of accounting period. While, under the single plan, the variances are computed at source, whether at purchase point or usage point.

Features of single plan

We summarize some features of single plan.

- 1 – The variances are computed at point of transaction: purchase material, payment of wages, etc., and it should be timely.
- 2 – It allows determining the responsibility for the unfavorable variances when the transaction has occurred. This allows that the operational control occurs during production as shown in Exhibit 5-6.
- 3 – The material purchase price variance will be computed on the material quantity purchased.

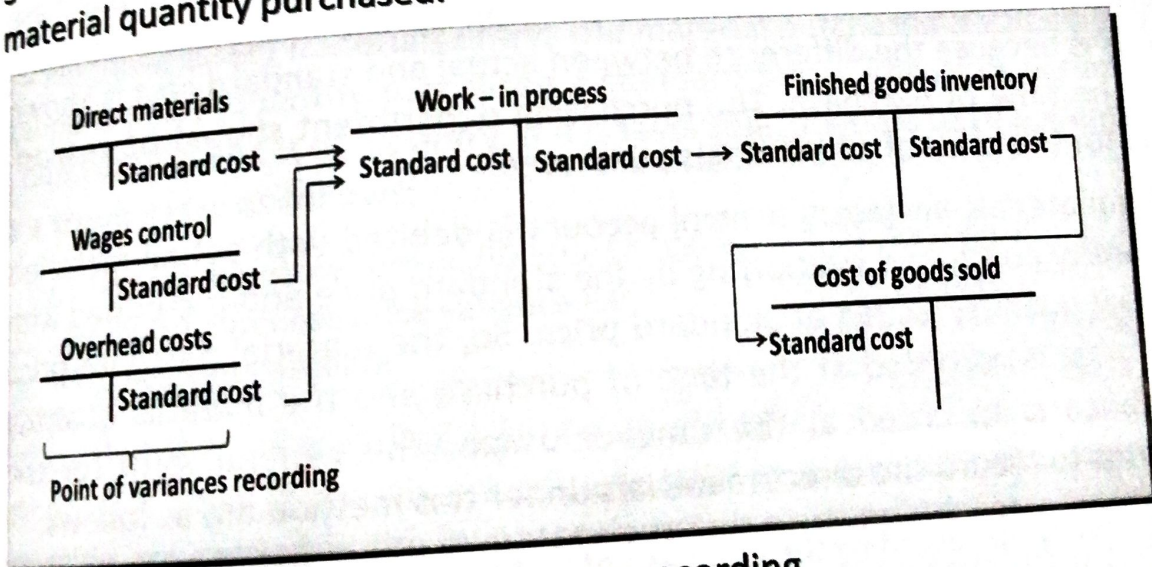


Exhibit 5 -6: Timing of cost variances recording

- 4 – The materials inventory is carried out at the standard costs.
- 5 – The account of each cost element (material, wages, and overhead) contains its respective variances.
- 6 – This method is preferred when frequent detailed analysis of variance is desired.

7 – The installation of the single plan requires more planning so that effective documents at each stage is introduced for proper recording and analysis of variance.

Note that work-in process and finished goods are valued at standard cost under both the methods.

Journal entries

The following illustration will focus on the record journal entries related to direct material, direct labor, and overhead.

Recording direct materials

There are two alternative methods of recording materials cost: Method of recording material price variance at the time of purchase, and method of recording material price variance at the time of usage.

1 – Recording material price at the point of material purchase: Some companies recognize materials price variances at the time materials are purchased. This material price variance is called material purchase price variance. This variance represents the deviation of the actual purchase price from the standard purchase price on all the materials purchased. This is because the difference between actual and standard cost is known at the time of purchase. The purchasing department should be responsible for the price of all materials purchased.

The materials inventory control account is debited with actual materials quantity purchased multiplying by the standard price and is credited with actual quantity issued at standard price. So, the material purchase price variance is recorded at the time of purchase and the material quantity variance is recorded at the time of usage. The general form for the entries to record the direct materials under this method are as follows:

1 – Entry for recording the purchase of materials	Debit	Credit
By, Material inventory control (SP × AQ purchased)	XXX	
Material purchase price variance (U)	XX	
To, Accounts payable		XXX
Or, Material purchase price variance (F)		XX

2 – Entry for recording the issuance of materials		
By, Work- in process inventory control (SP × SQ)		
Material quantity variance (U)	XXX	
To, Materials inventory control (SP × AQ issued)	XX	
Or, Material quantity variance (F)		XXX
		XX
3 – Entry for adjusting the purchase price variance		
By, material purchase price variance (F)		
To, Material used price variance (U)	XX	
Or if the material purchase price variance is (U):		XX
By, material used price variance		
To, Material purchase price variance (U)	XX	
		XX

To illustrate recording direct material, assume that the materials quantity purchased is 14,000 kg at an actual price of ID 51 for Alseef Company, the entry to record the materials at standard cost and the materials purchase price variance at the time of purchase for July 2017 would be:

$$\begin{aligned} \text{Material purchase price variance} &= (\text{SP} - \text{AP}) \times \text{AQ purchased} \\ &= (\text{ID } 50 - \text{ID } 51) \times 14,000 \text{ kg} \\ &= \text{ID } 14,000 \text{ (U)} \end{aligned}$$

1 – Purchase direct materials entry: The material purchased is valued at a standard price (quantity purchased × standard price). The price variance is unfavorable and is debit entry. If it is favorable, it would have appeared as a credit entry as follows:

By, Material inventory control (ID 50 × 14,000 kg)	700,000	
Material purchase price variance (U)	14,000	
To, Accounts payable		714,000

Notice that the price variance is recognized when purchases are made, rather than when materials are actually used in production and that the materials are carried in the inventory account at standard cost. As direct materials are later drawn from inventory and used in production.

2 – Issue direct material to production: The material inventory control account is credited by the cost of material issued which equals the actual quantity issued multiplying by the standard price.

Chapter 5 – The accounting procedure under standard costing

The quantity variance is unfavorable and is debit entry. If it is favorable, it would have appeared as a credit entry as follows:

By, Work- in process inventory control (ID 50 × 10,000)	500,000	
Material quantity variance (U)	50,000	
To, Materials inventory control (ID 50 × 11,000)		550,000

3 – Entry for adjusting the purchase price variance

By, material used price variance	11,000	
To, Material purchase price variance (U)		11,000

Note that the material purchase price variance should be adjusted with the material used price variance of ID 11,000 (U), the balance of ID 3,000 is related to ending stock at material inventory control account which equals the difference between the quantity purchased of 14,000 kg and the quantity issued of 11,000 kg. This adjustment can be shown by the T-accounts as shown in Exhibit 5 -7:

Purchase price variance			Material Used price variance	
14,000	11,000	→	11,000	
	Bal. 3,000			

Exhibit 5-7: Adjusting the material purchase price variance

2 – Recording material price at the point of usage: The materials inventory control account is debited for the actual cost of materials purchased (quantity purchase × actual price) and it is credited for the actual cost of material issued to the work-in process inventory control account. The both quantity and price variances are recorded at the point of usage. The general form for the journal entries are:

1 – Entry for recording the purchase of materials	Debit	Credit
By, Material inventory control (AP × AQ purchased)	XXX	
To, Accounts payable		XXX

2 – Entry for recording the issuance of materials		
By, Work- in process inventory control (SP × SQ)	XXX	
Material quantity variance (U)	XX	
Material price variance (U)	XX	
To, Materials inventory control (AP × AQ issued)		XXX
Or, Material quantity variance (F)		XX
Material price variance		XX

For Alseef Company, we find that the actual costs of material purchased are ID 714,000 (14,000 kg × ID 51 per kg). The standard cost of material issued is ID 500,000 (10,000 kg × ID 50 per kg). The material price variance is ID 11,000 (U) and quantity variance is ID 50,000 (U). Thus, the journal entries are as follows:

1 – Purchase direct materials entry:

By, Material inventory control (ID 51 × 14,000 kg)	714,000	
To, Accounts payable		714,000

2 – Issue direct material to production:

By, Work- in process inventory control (ID 50 × 10,000)	500,000	
Material quantity variance (U)	50,000	
Material price variance (U)	11,000	
To, Materials inventory control (ID 51 × 11,000)		561,000

Notice that both the price variance and the quantity variance above are unfavorable and are debit entries. If either of these variances had been favorable, it would have appeared as a credit entry.

Recording direct labor

Unlike the materials variances, the entry to record both types of labor variances is made simultaneously. The direct labor costs enter into the Work in Process account at standard, both in terms of the rate and in terms of the hours allowed for the actual production of the period. Note that the unfavorable labor time and labor rate variances are a debit entry, if they are favorable are a credit entry. The general form for the entry to record the direct labor below:

	Debit	Credit
1 – Entry for recording the wages liability		
By, Wages control (AR × AH worked)	XXX	
To, Wages payable		XXX
2 – paying the wages payable		
By, Wages payable	XXX	
To, Cash		XXX
3 – Entry for recording the assignment of direct labor		
By, Work- in process inventory control (SR × SH)	XXX	
Labor time variance (U)	XX	
Labor rate variance (U)	XX	
To, Wages control (AR × AH)		XXX
Labor time variance (F)		XX
Labor rate variance (F)		XX

For Alseef Company, the entries to record the direct labor for July 2017 are:

1 –Wages liability entry:

By, Wages control (ID 85 per hr. × 5,000 hrs)	425,000	
To, wages payable		425,000

2 – Payment wages entry:

By, Wages payable	425,000	
To, Cash		425,000

3 – Assigning direct labor entry: Recall the direct labor costs enter into the Work in Process account at standard, both in terms of the rate and in terms of the hours allowed for the actual production of the period. From the data provided by Alseef Company, the standard hours allowed are 4,600 hours (920 units produced × 5 hr per unit = 4,600 hrs).

By, Work-in process inventory control (90 × 4,600)	414,000	
Labor time variance (U)	36,000	
To, Wages control (85 × 5,000)		414,000
Labor rate variance (F)		25,000

Note that the unfavorable labor time variance is a debit entry whereas the favorable labor rate variance is a credit entry.

Recording overhead costs

Two accounts should be opened for overhead costs. Allocated overhead costs are accumulated in the standard overhead allocated account, and actual overhead costs are accumulated in the overhead costs control account. Thus, recording overhead costs requires three separate journal entries. First, as products are made during the period, standard overhead is allocated to Work in Process Inventory Control using the standard overhead rate and the standard quantity of the application base allowed. Work-in Process Inventory control account is debited for the standard overhead allocated and standard overhead allocated account is credit for the corresponding amount. The second journal entry to record overhead is for the actual overhead incurred. The final journal entry is made at the end of the period, to record the overhead variances (2 variances, or 3 variances, or 4 variances) and close over- or underapplied overhead. The general form for the entries to record the overhead costs below:

1 – Entry for recording the allocation of overhead		
By, Work- in process inventory control (SOHR × SH)	XXX	
To, Standard overhead allocated (at standard cost)		XXX
2 – Entry for recording the actual overhead		
By, Overhead costs control (at actual cost)	Debit	Credit
To, Various accounts	XXX	XXX
3 – Entry for recording the overhead variances		
By, Standard overhead allocated (SOHR × SH)	XXX	
Controllable variance (U)	XX	
Volume variance (U)	XX	
To, Manufacturing overhead control (at actual cost)		XXX
Or, Controllable variance (F)		XX
Volume variance (F)		XX

For Alseef Company, the entries to record the overhead costs for July 2017 are:

1 – Entry to assign standard overhead allocated to production:

By, Work- in process control (ID 90 × 4,600 hrs)	414,000	
To, Standard overhead allocated (at standard cost)		414,000

2 - Actual overhead costs entry:

By, Overhead costs control (at actual cost)	444,000	
To, Various accounts		444,000

3 - Entry for recording the overhead variances: Standard overhead allocated account is debited and overhead costs control account is credited. The unfavorable variances are a debit entry; while the favorable variances are a credit entry. The entry is:

By, standard overhead allocated	414,000	
Volume variance (U)	32,400	
To, Overhead costs control (at actual cost)		444,000
Controllable variance (F)		2,400

Note that the unfavorable volume variance is a debit entry whereas the favorable controllable variance is a credit entry.

Recording Finished Goods

Once units are complete, their cost must be transferred from Work in Process Inventory to Finished Goods Inventory, this transfer is recorded at the standard cost of the completed units. The general form for the entry to record the finished goods is same that is used under the partial plan. For Alseef Company, the cost of finished units transferred is ID 1,120,000 that it is recorded by the following entry:

By, Finished goods inventory (at standard cost)	1,120,000	
To, Work-in process control (at standard cost)		1,120,000

Note that the standard cost per unit was established at ID 1,400 which includes: standard direct material of ID 500, standard direct labor of ID 450, and standard overhead of ID 450. Total production of 900 units x standard cost of 1,400 per unit equals ID 1,260,000.

Recording Cost of Goods Sold

When units are sold, their cost must be transferred from Finished Goods Inventory to Cost of Goods Sold. For Alseef Company, The journal entry to record the cost of goods sold for July 2017 is:

By, Cost of goods sold (at standard cost)	840,000	
To, Finished inventory control (at standard cost)		840,000

The general form for the entry to record the cost of goods sold is same that is used under the partial plan.

Preparing T-accounts

After recording the journal entries for all cost elements under the single plan, the amounts are posted to the respective T- accounts in the cost ledger. For Alseef Company, the T-accounts are:

Materials inventory control

Particulars	Debit	Particulars	Credit
To, Accounts payable	700,000	By, Work-in process	550,000
		Ending balance	150,000

Materials purchase price variance

Particulars	Debit	Particulars	Credit
To, Accounts payable	14,000	By, Usage price variance	11,000
		Ending balance	3,000

Materials quantity variance

Particulars	Debit	Particulars	Credit
To, Material inventory	50,000		

Materials usage price variance

Particulars	Debit	Particulars	Credit
To, purchase price variance	14,000		

Wages control

Particulars	Debit	Particulars	Credit
To, Wages payable	425,000	By, Work-in process	425,000

Labor rate variance

Particulars	Debit	Particulars	Credit
		By, Sundries	25,000

Labor time variance

Particulars	Debit	Particulars	Credit
To, Sundries	36,000		

Standard overhead allocated

Particulars	Debit	Particulars	Credit
To, Sundries	414,000	By, Work-in process	414,000

Manufacturing overhead control

Particulars	Debit	Particulars	Credit
To, Sundries	444,000	By, Sundries	444,000

Controllable variance

Particulars	Debit	Particulars	Credit
		By, Sundries	2,400

Volume variance

Particulars	Debit	Particulars	Credit
To, Sundries	32,400		

Work- in process inventory control

Particulars	Debit	Particulars	Credit
To, Material inventory	500,000	By, Finished goods	1,120,000
Wages control	414,000	Ending balance	208,400
Standard overhead	414,000		
	1,328,000		1,328,000
Beginning balance	208,000		

Finished goods inventory control

Particulars	Debit	Particulars	Credit
To, Work-in process	1,120,000	By, Cost of goods sold	840,000
		Ending balance	280,000

Cost of Goods sold control

Particulars	Debit	Particulars	Credit
To, Finished goods inventory	840,000	By, Profit and Loss	840,000

Disposition of variances accounts

Variances are temporary accounts, like revenue and expense accounts, and they are closed out at the end of each accounting period. In other words, the adjusting entries must be made to eliminate standard cost variances. The entries depend on whether the variances are, in total,

immaterial or material for the impact on the financial statements. Therefore, two disposition approaches of variance accounts will be illustrated in this paragraph: Write-off to cost of goods sold approach and variance proration approach.

Write-off to cost of goods sold approach

Under this approach, the variance accounts for direct material, direct labor, and overhead are directly closed to cost of goods sold. This approach is used when the variance are immaterial. It is based on the fact that these variances result from unfavorable or favorable inefficiencies during the period and should therefore be charged to the current period. The journal entry required to close out the July variances incurred in the production of Alseef Company is as follows:

Detail	Debit	Credit
By, Sundries:		
Cost of goods sold	102,000	
Labor rate variance (F)	25,000	
Controllable variance (F)	2,400	
To, Sundries:		
Material (used) price variance (U)		11,000
Material quantity variance (U)		50,000
Labor time variance (U)		36,000
Volume variance (U)		32,400

Note that all unfavorable variances have debit balances and favorable variances have credit balances. Unfavorable variances represent excess production costs; favorable variances represent savings in production costs. Unfavorable variances increase cost of goods sold and they have a negative impact on operating income. Favorable variances decrease cost of goods sold and they have a positive effect on operating income.

Variance proration approach

In this approach, the variance accounts are prorated among the production accounts: work-in process inventory, finished goods inventory, and cost of goods sold. The proration is made on the basis of the ending balance in each of these accounts. But for the materials price variance, it

is prorated among materials inventory, work in process, finished goods, and cost of goods sold. The remaining material, labor, and overhead variances are prorated among work in process, finished goods, and cost of goods sold.

For Alseef Company, the ending balance in work-in process is ID 208,000, in finished goods is ID 280,000, and in cost of goods sold is ID 840,000. The total of these balances is ID 1,382,000. Thus, each variance account is distributed based on the proportions of each account balance to the total, as shown below:

1 - Prorate material purchase price variance ID 14,000 (U) to:

$$\text{Material inventory} = \text{M. purchase price variance} - \text{M. used price variance} \\ = \text{ID } 14,000 \text{ (U)} - \text{ID } 11,000 \text{ (U)} = \text{ID } 3,000 \text{ (U)}$$

2 – Prorate material (used) price variance ID 11,000 (U) to:

$$\text{Work-in process inventory} = \text{ID } 11,000 \times (\text{ID } 208,000 \div \text{ID } 1,382,000) = \text{ID } 1,723$$

$$\text{Finished goods inventory} = \text{ID } 11,000 \times (\text{ID } 280,000 \div \text{ID } 1,328,000) = \text{ID } 2,319$$

$$\text{Cost of goods sold} = \text{ID } 11,000 \times (\text{ID } 840,000 \div \text{ID } 1,328,000) = \text{ID } 6,958$$

3 – Prorate material quantity variance ID 50,000 (U) to:

$$\text{Work-in process inventory} = \text{ID } 50,000 \times (\text{ID } 208,000 \div \text{ID } 1,382,000) = \text{ID } 7,831$$

$$\text{Finished goods inventory} = \text{ID } 50,000 \times (\text{ID } 280,000 \div \text{ID } 1,328,000) = \text{ID } 10,542$$

$$\text{Cost of goods sold} = \text{ID } 50,000 \times (\text{ID } 840,000 \div \text{ID } 1,328,000) = \text{ID } 31,627$$

4 – Prorate total labor variance (U) to:

$$\text{Work-in process inventory} = \text{ID } 11,000 \times (\text{ID } 208,000 \div \text{ID } 1,382,000) = \text{ID } 1,723$$

$$\text{Finished goods inventory} = \text{ID } 11,000 \times (\text{ID } 280,000 \div \text{ID } 1,328,000) = \text{ID } 2,319$$

$$\text{Cost of goods sold} = \text{ID } 11,000 \times (\text{ID } 840,000 \div \text{ID } 1,328,000) = \text{ID } 6,958$$

5 – Prorate to overhead variance 30,000 (U) to:

$$\text{Work-in process inventory} = \text{ID } 30,000 \times (\text{ID } 208,000 \div \text{ID } 1,382,000) = \text{ID } 4,699$$

$$\text{Finished goods inventory} = \text{ID } 30,000 \times (\text{ID } 280,000 \div \text{ID } 1,328,000) = \text{ID } 6,325$$

$$\text{Cost of goods sold} = \text{ID } 30,000 \times (\text{ID } 840,000 \div \text{ID } 1,328,000) = \text{ID } 18,976$$

Summary of variances proration:

	Material inventory	WIP	FG inventory	Cost of goods sold
M. purchase PV	3,000 (U)	1,723 (U)	2,319 (U)	6,958 (U)
M QV		7,831 (U)	10,542 (U)	31,627 (U)
Labor variance		1,723 (U)	2,319 (U)	6,958 (U)
Overhead variance		4,699 (U)	6,325 (U)	18,976 (U)
Total amounts assigned	<u>3,000 (U)</u>	<u>15,976 (U)</u>	<u>21,505 (U)</u>	<u>64,519 (U)</u>

The total amounts assigned to the affected amounts are shown in the following entry:

Detail	Debit	Credit
By, Sundries:		
Work-in process inventory	15,976	
Finished goods inventory	21,505	
Cost of goods sold	64,519	
Material inventory	3,000	
Labor rate variance (F)	25,000	
Controllable variance (F)	2,400	
To, Sundries:		
Material purchase price variance (U)		14,000
Material quantity variance (U)		50,000
Labor time variance (U)		36,000
Volume variance (U)		32,400
To dispose of the cost variances at year-end		

Cost statements

A cost statement is a report on which is accumulated all of the cost associated with a product. In other words, it is a statement, which shows various components of total cost of a product. It classifies and analyses the components of cost of a product. It is also called a cost sheet. It is prepared on the basis of actual cost or standard cost. The purpose of the cost statement is to help management analyze their cost production and use this information to effectively plan their future manufacturing so as to minimize costs and maximize profits.

The cost statements consist:

- 1 – The production cost statement: Lists all the costs, take into account work in process, and calculate cost of producing the finished goods.
- 2 – The trading statement: The trading account in a statement form:

$$\text{Revenue} - \text{Cost of Sales} = \text{Gross Profit}$$

These two cost statements are also known as profit statement or income statement.

There are two main types of cost statement: absorption cost statement and variable cost statement.

Absorption costing: Absorption costing is a method of inventory costing in which all variable manufacturing costs and all fixed manufacturing costs are included as inventoriable costs or product costs. That is, inventory "absorbs" all manufacturing costs. The cost of a product is determined, after considering both fixed and variable costs. The variable costs, such as direct materials, direct labor, etc. are, directly, charged to the products. The fixed costs are apportioned on a suitable basis over different products, manufactured during a period. In simple words, under absorption costing, all costs, both variable and fixed, are treated as product costs.

Exhibit 5-8 shows the product costs include all manufacturing costs:

- Direct materials.
- Direct labor.
- Variable manufacturing overhead.
- Fixed manufacturing overhead.

Under absorption costing, the following costs are treated as period costs and are excluded from product costs:

- Variable selling and administrative costs.
- Fixed selling and administrative costs

Variable costing: Variable costing is a method of inventory costing in which all variable manufacturing costs (direct and indirect) are included as inventoriable costs or product costs. All fixed manufacturing costs are excluded from inventoriable costs and are treated as costs of the period in which they are incurred. Under variable costing, the direct materials, direct labor, and the variable portion of manufacturing overhead are treated as product costs. The fixed manufacturing cost is treated as a period cost and, like marketing and administrative costs, it is charged off in its entirety against revenue each period.

Note that variable costing is a less-than-perfect term to describe this inventory-costing method, because only variable manufacturing costs are inventoried; variable nonmanufacturing costs are still treated as period costs and are expensed.

Chapter 5 – The accounting procedure under standard costing

Under both variable costing and absorption costing, all variable manufacturing costs are product costs and all nonmanufacturing costs (such as marketing and administrative costs), are period costs and charged to Profit and Loss account.

Under this method, the product costs include only the variable manufacturing costs:

Direct materials.

Direct labor (unless fixed).

Variable manufacturing overhead.

Under variable costing, the following costs are treated as period costs and are excluded from product costs:

Fixed manufacturing overhead.

Variable marketing and administrative costs.

Fixed marketing and administrative costs.

Under both variable costing and absorption costing, all variable manufacturing costs are product costs and all nonmanufacturing costs such as marketing and administrative costs, are treated as period costs and are recorded as expenses when incurred.

Cost classifications	Absorption costing	Variable costing
Product costs	Direct materials Direct labor Variable overhead Fixed overhead	Direct materials Direct labor Variable overhead
Period costs	Marketing costs Administrative costs	Fixed overhead Marketing costs Administrative costs

Exhibit 5-8: Classifying costs into product costs and period costs

From all the above, we find that the main difference between absorption costing and variable costing is the accounting for fixed manufacturing costs. Under variable costing only variable manufacturing costs are included as inventoriable costs. Under absorption costing both variable and fixed manufacturing costs are included as inventoriable costs. Fixed marketing and administrative costs are not accounted for differently.

under variable costing and absorption costing and treated as period costs as shown in Exhibit 5 -9.

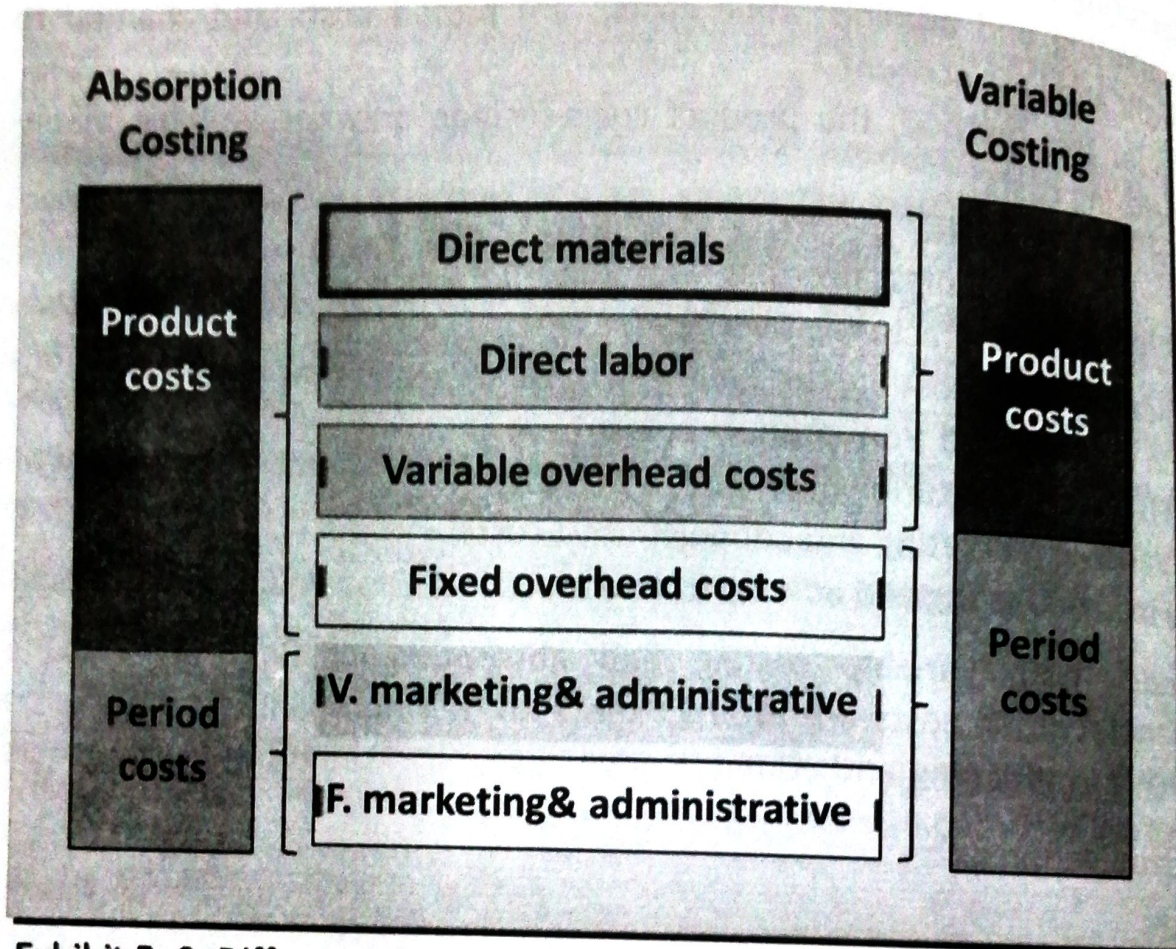


Exhibit 5 -9: Difference between absorption and variable costing

Notice that the General Accepted Accounting General principles (GAAP), Financial Accounting Standards Board (FASB), and Internal Revenue Service (IRS) requires to companies to use the absorption costing to external reporting and variable costing to internal reporting.

Relation between production, sales and profit

The relation between production, sales and profit can be expressed in three alternatives as follows:

Alternative 1 – Production equals sales: This means that does not exist ending inventory and no beginning inventory. The operating income under absorption is equal the operating income under variable costing.

Alternative 2 – Production exceeds sales: when the units produced exceed unit sales and hence inventories increase, net operating income is higher under absorption costing than under variable costing. This occurs because some of the fixed manufacturing overhead of the period is deferred in inventories under absorption costing.

Alternative 3 – Production less than sales: when units produced are less than unit sales and hence inventories decrease, net operating income is lower under absorption costing than under variable costing. This occurs because some of the fixed manufacturing overhead of previous periods is released from inventories under absorption costing.

Exhibit 5 -10 illustrates these three alternatives of the relation between production, sales, and operating income.

Relation between production and sales	Effect on inventory	Relation between absorption and variable income
Production = Sales	No inventory	Absorption = Variable
Production > Sales	Ending inventory	Absorption > Variable*
Production < Sales	Beginning inventory	Absorption < variable**
*By the amount of fixed overhead deferred in ending inventory.		
**By the amount of fixed overhead released from beginning inventory.		

Exhibit 5 -10: Effect of production and sales on operating income

To illustrate how to prepare the cost statement under absorption and variable costing, we return to our Alseef Company example, we assume that the selling price is ID 1950 per unit, variable marketing cost is ID 20 per unit, fixed cost are ID 28,000 for the year, administrative costs are ID 100,000.

Using all above data we can prepare the cost statements under both absorption costing and variable costing. We should remember that the company uses the standard costing taking in consideration the disposition variances methods.