UNIT-10

Variance Analysis

Learning Outcomes

By the end of this unit the learner will be able to:

- ✓ Describe the ways in which the management can monitor and guide the operations of a business to meet the desired goals, particularly in respect of costs and sales.
- ✓ Identify the factors responsible for deviation of actual performance from the standard performance and in taking such remedial measures as may be necessary.

Unit 10

Variance Analysis

We have already established in the previous units, that the main objective of any firm is to make a profit and maximise wealth. In order to achieve this objective and grow a firm must have clear- cut strategies regarding the two elements that have a direct impact on profit, i.e., the cost and sales. The firm must strive to minimise the costs and maximise sales to reach an optimum level of profit and maximise the firm's wealth in the long run.

Variance analysis is an important tool for exercising Budgetary Control as it aids the management in the following functions:

- Making comparisons of the firm's actual performance with its budgeted performance;
- Planning activities to execute in the future;
- Identifying the correct variances to use in order to get the required information;

Meaning of Variance

Variance measures the difference between the budgeted level of activity and the actual level of activity of a firm. As mentioned earlier, profitability is linked with cost and sales therefore, variances can be categorised into:

1. Cost Variance
2. Sales Variance

Cost Variance refers to the difference between **standard cost**, or what should have been the cost, and the **actual cost** that the firm has incurred. If the actual cost is less than the standard cost, then, the variance is said to be favorable. On the other hand, if actual cost is more than standard cost, then the variance is adverse or unfavorable.

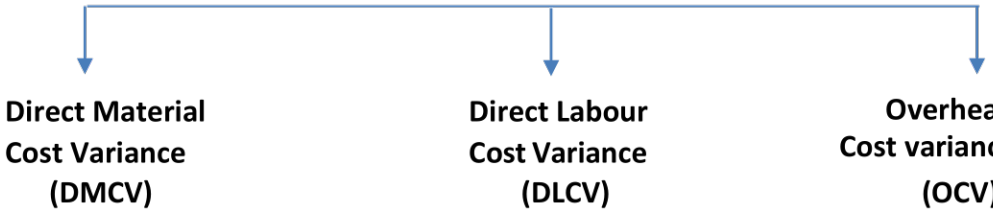
Similarly, sales variance measures the difference between **budgeted sales,** or what should have been the level of sales, and the **actual sales** that the firm has managed to achieve. If actual sales exceed budgeted sales, then, the firm has a favourable variance, but if the budgeted sales are more than actual sales then the firm ends up with an adverse or unfavourable variance.

Cost and sales variances are explained in greater detail below:

Cost Variances

Cost Variances are further categorised as shown in the figure below:

Cost Variances



The direct expense is only a very insignificant portion of the total costs of production, therefore, a separate variance is not calculated for them. If, however, a firm decides to compute this variancethen it is calculated the same way as the variable overhead variance because direct expenses are usually categorised as a variable expense.

The table below provides a list of abbreviations that we are going to be using in this unit for yourease.

Abbreviations for Different Variances

DMCV	Direct Material Cost Variance
DMPV	Direct Material Price Variance
DLCV	Direct Labour Cost Variance
DLRV	Direct Labour Rate Variance
DLEV	Direct Labour Efficiency Variance
OCV	Overhead Cost Variance
VOCV	Variable Overhead Cost Variance
FOCV	Fixed Overhead Cost Variance
FOEXPV	Fixed Overhead Expenditure Variance
FOVV	Fixed Overhead Volume Variance
SVV	Sales Value Variance
SPV	Sales Price Variance
SVOLV	Sales Volume Variance

Table. 10.1

Direct Material Variances

There are three types of Direct Material Variances. The first one is Direct Material Cost Variance (DMCV), which measures the difference between the standard cost of direct material for a given level of output and the actual cost of direct material used. The standard cost is calculated by taking a product of

standard price and standard quantity for actual output and the actual cost is aproduct of actual price and actual quantity.

Formula for Computation:

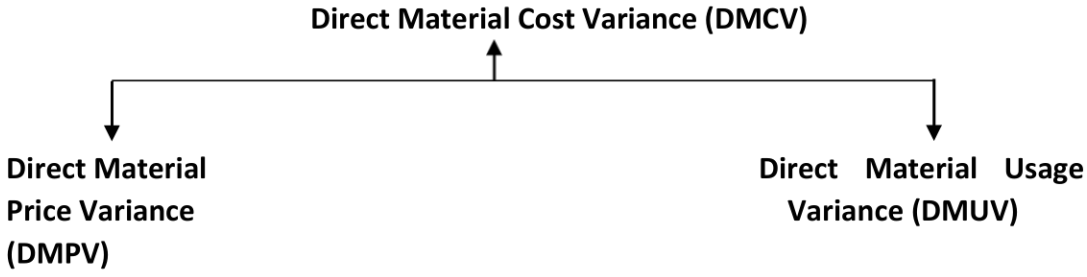
DMCV = Total Standard Cost for actual output – Total Actual Cost
(Standard Price x Std. Qty. for Actual Output) - (Actual Price x Actual Quantity)

If the actual cost is calculated to be more than standard cost then it is an adverse/unfavourable variance.

Standard output	800 units	
Actual output	1,000 units	
Std. qty. per unit	1 kg	
Total actual qty. used	1,200kg.	
Std. rate per unit	£4 per kg	
Actual rate per unit	£5 per kg.	
DMCV	=	Standard Cost for actual output - Actual Cost
	=	(1,000 x 1 x 4)-(1,200 x 5)
	=	£4,000 - £6,000
	=	£ 2,000 (Adverse)

If standard output, which is different from standard quantity, is different from the actual output (as shown above), then, the actual output is taken into consideration while calculating variance. The standard output is considered irrelevant in this case.

The Material Cost Variance is further divided into the Material Price Variance and Material Usage Variance because the variance in material's cost can occur either due to a change inprice or a change in quantity or both.



Direct Material Price Variance

DMPV measures the difference between the standard price and the actual price paid for directmaterials.

Formula for Computation

$$\text{Direct Material Price Variance (DMPV)} = \text{Actual Quantity} \times \left[\text{Standard Price} - \text{Actual Price}\right]$$

If the actual price exceeds standard price then we have an adverse variance. If standard price is more than actual price then the result is favorable.

We take the previous example and calculate theDMPV. DMPV = 1,200 x (4 - 5) = £1,200 (Adverse)

The following reasons may result in price variance:

i) The market price fluctuation owing to bullish or bearish market trends or to anagreement with various suppliers or to governmental intervention
ii) Buying efficiency or inefficiency
iii) Fluctuating cost of transportation or carriage of goods.
iv) Uneven or lax purchase policy such as the following:
   a) Purchase of non-standard (superior or inferior) material;
   b) Purchase might have been made in a bulk or in very small quantities; and
   c) Cheap materials might have been used.
v) Making emergency purchases and paying prevalent prices for immediate delivery
vi) Fraudulent purchases and loss of discounts.
vii) Using incorrect standards.

Management through proper planning can control some of the factors mentioned above, however,others are out of the management's control. In case of controllable factors, the purchase department can be directly held accountable for adverse variances.

Direct Material Usage or Quantity Variance

DMUV measures the difference between standard quantity specified for a given level of output and the actual quantity of direct material used.

Formula for Computation

Direct Material Usage Variance (DMUV)	=	Standard Rate	×	[(Standard Quantity for a tual output) – (Actual Quanti y)]

If actual quantity exceeds standard quantity then we have an adverse variance and viceversa. The usage variance can be calculated using the figures from our example.

DMUV = 4 X (1,000-1,200)
= £800 (Adverse)

Material cost variance is a sum of material price and material quantity variance.

Thus, DMCV = DMPV + DMUV
= £1200 (A) +£800
= (A)
£2,000 (A)

The following can be reasons leading to direct material usage variance:

i) Increased consumption of raw materials due to inefficient and unskilled workers;
ii) Wastage of material due to lack of proper upkeep of machinery, plant, and equipment, and the resulting breakdown of the production process;
iii) Disregard for standard methods of processing and product design;
iv) Wastages resulting from the incorrect processing of materials;
v) Inter-transfer of materials from one job to another or the non-recording of returned materials to stock;
vi) Careless handling and processing of material due to the lack of inspection and supervision;
vii) Frequent rejection of materials due to strict supervision and inspection;
viii) When specified material is substituted with the cheaper unspecified material, resulting in a positive price variance;
ix) Setting a non-uniform and incorrect standards; and
x) An adverse usage variance resulting from wastage, scrap, spoilage, and leakage, etc.

Computation of Various Direct Material Variances

Illustration 1

We will calculate the

(i) Material Cost Variance,
(ii) Material Usage Variance
(iii) Material Price Variance from the following figures:

Quantity of material purchased	
Value of material purchased	
Standard quantity of materials per unitof finished product	
Standard rate of material	
Opening stock of material	
Closing stock of material	
Finished products during the period	
Standard Quantity of materials required	1,000 x 2 = 2,000 kg.
Actual Qty. of Material used	= Material purchased + Opening Stock - Closing

	Stock
	= 4,000+1,000-2,000 = 3,000 kg.
Standard Price	= £ 2 per unit.
Actual Price 4,000 units	=£10,000 = £2.50 per unit.

i) DMCV = Total Standard Cost – Total Actual Cost

[Standard price X Standard qty.] – [Actual price X Actual qty.]

= (2 X 2000) - (2 X 1000 – 2.50 X 2000)

= £4,000-£7,000=£3,000 (Adverse)

*Presuming FIFO Method

ii) DMUV = Standard Price x (Standard Quantity - Actual Quantity)

= £ 2 x (2,000 - 3,000)

= £ 2 x (-1,000) = £ 2,000 (Adverse)

iii) DMPV = Actual Quantity x (Standard Price - Actual Price)

= 1,000 x (2 - 2) + 2,000 x (2 - 2.50) = £ 1,000 (Adverse)

It will be observed that the total of the Materials Usage and Material Price Variance is equal to the Material Cost Variance.

Direct Labour Variances

Labor cost variances can arise owing to two factors:

(1) difference in actual rate and standard rate of hiring labor,
(2) difference in the actual time taken by workers to perform a task and the standard time prescribed for performing the task or operation.

Calculation of labor variances is similar to that of material variance as it uses the same techniques. Labor variance formulae can be derived by substituting 'quantity' in Direct Material Variance with 'time.'

The Direct Labor Cost Variance is the difference between the actual wages paid for a certain level of activity and the standard direct wages specified for the same activity. The formula is given below:

$$\text{Direct Labour Cost Variance} = \text{Standard Cost for Actual output} - \text{Actual Cost}$$

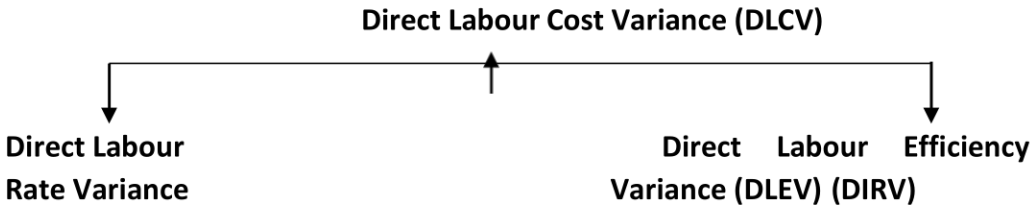
$$\text{DLCV} = \left[\text{Standard Rate} \times \text{Std. Time for actual output}\right] \text{ OR } - \left[\text{Actual Rate} \times \text{Actual Time}\right]$$

Illustration 2

Standard output	200 units
Standard time per unit	2 hours
Standard rate per hour	£3
Actual output	160 units
Total actual time taken	300 hours
Actual rate per hour	£3.50
DLCV = £3 x 160 x 2 - £3.50 x 300 = £960 - 1,050 = £90 (Adverse)	

The Direct Labor Cost Variance can be divided into two parts based on difference in wages and time. These are:

(i) Rate Variance and
(ii) Time/Efficiency Variance.



Direct Labour (Wages) Rate Variance

It measures the difference between the actual rate paid to labor and the standard rateof pay. Direct Labor Rate Variance (DLRV) = Actual time x (Standard Rate - Actual Rate)

An unfavourable variance means that the actual rate paid is higher than the standard rate.Similarly, a favourable variance means that the actual rate is less than standard rate.
We can calculate the Direct Labor Rate Variance with the help of the figures illustrated above:

DLRV = 300 hrs x (£3 - £3.50)
= £150 (Adverse)

Direct Labor Rate Variance arises due to the following factors:

i) Employment of highly efficient and skilled labour, resulting in higher wage rates;
ii) Shortage of labour resulting in higher wage rates;
iii) Excess availability of labour resulting in lower wage rates;
iv) Employing unskilled labour and paying lower wage rates;
v) Paying higher wages due to overtime or extra shifts;
vi) Giving our higher piece rates as an incentive for workers to produce better quality work;
vii) Changes in wage schemes, i.e., from time wages to piece-rate system increase ordecreases in bonuses and allowances, etc.;
viii) Labour Unions cause changes in wage rates; and
ix) Higher wage rates due to seasonal factors and emergencies.

Direct Labor Efficiency (Time) Variance

This variance occurs because of the difference between the standard labor hours specified toachieve a certain level of activity and the actual hours worked.

Direct Labor Efficiency Variance is computed using the following formula:

Labor Efficiency = (Standard Rates x Standard time) - Actualtime Variance(for actual output)

We can use the figures shown in Illustration 2.

Labour Efficiency Variance= £3 x (320 hrs -300 hrs). = £60 (Favorable)

It is observed that the work that was specified to be completed in 160 hours, it actually took 150 hours to be completed. This indicates the efficiency of labor and therefore, the Labour Efficiency Variance is favorable.
The Labor Cost Variance is a sum of the Labour Rate and Labour Efficiency Variances.

Verification

DLCV = Labor Rate Variance + Labor Efficiency Variance
= £ 150 (A) + 60 (F)
= £ 90 (Adverse)

The following is a list of factors causing Labor Efficiency Variance:

i) Faulty materials;
ii) Defects in or the breakdown of plant or machinery;
iii) Power failure;
iv) An efficient labour force due to the incentives that they are offered;
v) Waste of time, due to the delay in receipt of raw materials or poor management instructions;
vi) Changes in methods of production;
vii) Inefficient labour force due to lack of supervisions and control by managers and lazy workers;
viii) Excessive inspection and control;
ix) Non-conducive working environment;
x) An unskilled, untrained, and inexperienced work force; and
xi) An increased labour turnover and frequent transfers of workers from one department to another.

Computation of Labor Variances

Illustration 3

Calculate Direct Labour Variances from the data below:

Direct Labour Rate	£1 per hour
Hours set per unit	10 hours
Actual data are given below:	
Units produced	500
Hours worked	6,000
Actual Direct Labour Cost	4,800

Standard Time = 10 hours x 500 units = 5,000 hours
Standard Cost = Standard Rate x Standard Time
= £1 x 5,000 hours = £5,000

i) Direct Labour Variance (DLCV) = Standard Cost - Actual Cost
= £5,000 - £4,800 = £200 (F)

ii) Direct Labour = Actual Time X (Standard Rate -Actual Rate)Rate Variance (DLRC)

Actual rate = Actual Cost/Actual hours worked

= 48000/6000 = 8p per hour

Hence, Labour Rate Variance = 6,000 hours x (£1.80 p.)
= £1,200 (F)

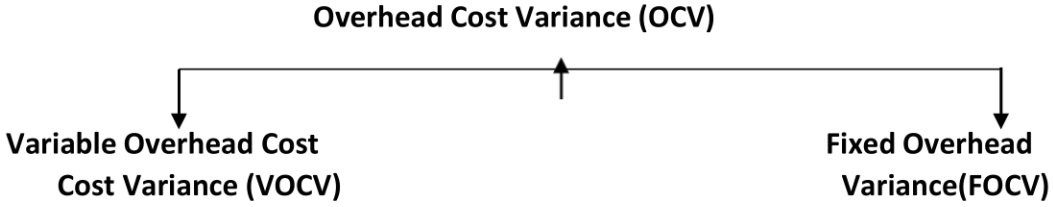
iii) Direct Labour Efficiency = Standard Rate x (Standard Time –Actual Time) Variance (DLEV).
= £1 x (5,000 - 6,000 hours)
= 1,000 (Adverse)

Verification

DLCV = DLRV + DLEV
= £1,200 (F) + £1,000 (A)
= £200 (Favourable)

Overhead Variances

Overhead Variances are expenses related to factory, office, selling, and distribution, etc. They include indirect material, indirect labour, and indirect expenses.
For the purpose of calculating variances, overheads can be divided into two categories as shownbelow:



Overhead Cost Variance (OCV)

It measures the difference between standard overheads specified for actual output, also called recovered overheads and actual overheads incurred. It is a sum of fixed and variable OverheadVariances.
Overhead Cost variance = Recovered Overheads - Actual Overheads

Variable Overheads Cost Variance (VOCV)

It measures the difference between standard variable overheads specified for actual output or arecovered Variable Overhead and the actual variable overheads incurred.

VOCV = Recovered Variable Overheads - Actual Variable Overheads.

The following are some of the factors causing this variance:

1. Advance payment of expenses;
2. Payment of past outstanding expenses in the current period;
3. Unforeseen expenses such as repair of machinery;
4. Expenses arising from spoilage or defective work by labour; and
5. Excessive overtime expenses

Fixed Overhead Cost Variance (FOCV)

This variance calculates the difference between standard fixed overheads specified for actual output or recovered Fixed Overheads, and the actual fixed overheads incurred.

FOCV = Recovered Fixed Overheads - Actual Fixed Overheads

These are some of the factors causing fixed Overhead Cost Variance:

(i) The firm may have incurred a different fixed overhead cost than the one specifies in thebudget for the same level of production.

(ii) The firm may have incurred the same amount of Fixed Overheads as the one specified in the budget, but for a different level of production than the one specified inthe budget.

Computation of Overhead

Variances Illustration 4

Budgeted Output	10,000 units
Budgeted Overheads	£10,000
Fixed	£10,000
Variable	6,000
Actual Overheads	4,000
Fixed	12,000
Variable	6,000
Actual output	8,000 units

We can calculate overhead variances based on the illustration above. We need to make the following basic calculations first:
Standard/Budgeted Overhead = Budgeted Overheads Rate per Unit Budged Output

£10,000 = £1
=10,000
Standard/Budgeted Fixed = Budgeted Fixed Overheads Overhead Rate per Unit BudgedOutput
= £6,000 =
£6
0 10,000
Standard/Budgeted Variable = Budgeted Variable Overheads Overhead Rate per unit Budged Output
= £ 4,000 =
£0.40 10,000

Various Overhead Variances can now be calculated

OCV	Recovered Overheads - Actual Overheads
	£1 x 8,000 -12,000 = 4,000 (Adverse)
VOCV	Recovered Variable Overheads -Actual Variable Overheads
	8,000 x £0.40 - £6,000
	3,200 - 6,000
	2,800 (Adverse)
FOCV	Recovered Fixed Overheads Actual Fixed Overheads
	8,000 x £0.60 - £6,000
	£4,800 - £6,000 = £1,200 (Adverse)

Verification

OVC = VOCV + FOCV
4,000 (A) = 2,800 (A) + 1,200 (A)

Fixed Overhead Expenditure or Budget or Controllable Variance (FOEXPV)

This measures the difference between Budgeted Fixed Overheads and the Actual Fixed Overheads incurred.

FOEXPV = Budgeted Fixed Overheads-Actual Fixed Overheads
Fixed Overhead Volume Variance (FOVV)

This variance is caused by a difference between standard output and the actual output produced by the firm, which results in under or over recovery of Fixed Overheads. Therefore, it measures the difference between the overheads absorbed on actual output, or recovered overheads, and the overheads absorbed on budgeted output, or budgeted overheads.

FOVV = Recovered Fixed Overheads - Budgeted Fixed

Overheads. Illustration 5

We will calculate the Fixed Overhead Expenditure Variance and Fixed Overhead Volume Variance on the basis of data given in Illustration. 3.
FOEXPV = Budgeted Fixed Overheads -Actual Fixed Overheads
= £6,000 - £6,000 = Nil

FOVV = Recovered Fixed Overheads - Budgeted Fixed Overheads
= £4,800 - £6,000 = £1,200 (Adverse)

Verification

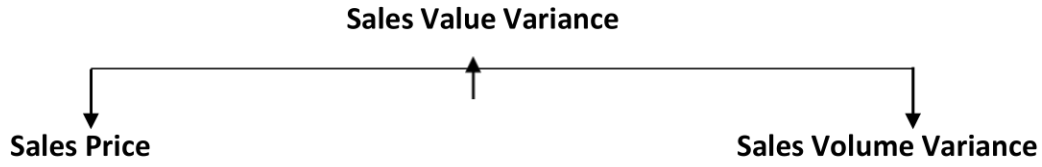
FOCV = FOEXPV + FOVV
1,200 (A) = Nil +1,200 (A)

Sales Variances

There are two factors that affect sales: the selling price and the volume of sales. When the selling price goes up, the actual sales volume is usually lower than the standard, resulting in a favourable variance with respect to price and an unfavorable one with respect to quantity.

Differences in standard and actual figures are usually as a result of changing market trends. It is important to remember that a higher price is viewed as favorable variance and a lower volume ofsales is viewed as unfavourable variance.

This variance can be a result of both controllable and non-controllable factors. As a principle, thequantity and price of sales is determined by market demand and supply. Non-controllable factorsinclude changes in market conditions and demand by customers whereas factors that can be controlled by management include unreasonably high sales prices. It management should monitor controllable factors closely to avoid adverse variances.



Sales Value Variance

It calculates the difference between Budgeted and Actual sales.

Sales Value Variance = Budgeted Sales - Actual Sales

If actual sales exceed the budgeted sales, then, we have a favourable variance and if the budgeted sales are more than actual sales, then, the variance is unfavourable. Sales value is affected by the price and the volume of sales.

Sales Price Variance

It calculates the difference between actual and standard selling price for the actual quantity sold. This variance is calculated in the same way as the Material Price Variance.

Actual Quantity sold X (Standard Price - Actual Price)

OR

Price Variance = Standard Sales - Actual Sales

Sales Volume Variance

It calculates the difference between budgeted quantity of sales and actual quantity at the standard price. Its formula is similar to the one used to calculate Material Usage Variance.

Standard Price X (Budgeted Quantity - Actual Quantity)

OR

Volume Variance = Budgeted Sales -Standard Sales

We have a favourable variance if standard sales exceed budgeted sales and vice versa. The total sales value variance is a sun of sales price and volume variances.

Computation of Sales Variances

Illustration 6

The data below represents the budgeted and actual sales of a firm that manufactures and markets a certain product.

Budgeted sales 10,000 units at £ 6 per unit
Actual sales 5,000 units at £ 4 per unit.
8,000 units at £ 5 per unit

Let us calculate:

a) Sales Price Variance,
b) Sales Volume Variance, and
c) Sales Value Variance

a) Sales Price Variance	Standard Sales - Actual Sales
Standard Sales	Standard price x Actual Quantity
	£ 6 x 13,000
	£ 78,000
Actual Sales	Actual price x Actual quantity
	£ 4 x 5,000 + £ 5 x 8,000
	£ 20,000 + £40,000
	£ 60,000
Sales Price Variance	£ 78,000 - £ 60,000
	£ 18,000 (Favourable)
Sales value variance	Budgeted Sales * - Actual Sales
	£ 60,000 - £60,000
	Nil

Verification

Sales Value Variance	=	Sales Price Variance + Sales Volume
	=	Variance 18,000 (A) + 18,000 (F)
	=	Nil

***Budgeted Sales = Budgeted Price x Budgeted Quantity**

Control of Variances

The management or cost accountant is expected to prepare reports based on the calculation of variances. These reports are meant indicate the individuals or departments who are responsible for variances. The management is able to monitor controllable factors and hold the people/ departments accountable for adverse variances. The accountant must ensure that the reports clearly indicate the action that needs to taken. However, as mentioned earlier, there are certain factors that are beyond the control of management such as market changes.

The table below indicates the departments that can be held accountable for controllable variances.

Variance	Department to be held responsible
-	-
Materials	
Price	Purchasing Department
Quantity or Grade	Stores, Purchase or Process Department as thecase may be.
Waste, Scrap or spoilage	Production Department (For lack of proper supervision)

Wages	
Rate	Personnel Department Production Department
Time	Production Department
Overheads	
Volume	Sales Department
Efficiency	Production Department
Expenditure:	
Higher rates for indirect workers	Personnel Department
Higher prices of indirect material	Purchasing Department
Higher consumption of indirect materials	Production Department
Excessive expenditure in factory	Production Department
Excessive expenditure for selling and distribution	Selling Department
Sales	
Price and Volume	Selling Department

Table. 10.2

Conducting the variance analysis and preparing reports do not minimise the costs and achieve other objectives of the firm. Timely and correct managerial responses, based on the variance analysis is imperative in order to address adverse variances, control costs and reduce inefficiencies. However, the variance analysis does indicate the direction in which management should make a decision. The objectives of standard costing can only be achieved with the right combination of variance analysis and managerial action.

Variance Reporting

The variance report contains results of the variance analysis and the departments responsiblefor causing variances. The information about profit earned by the firm is represented in the Profit and Loss account, which is prepared on the basis of historical cost. The format for the Trading Profit and Loss Account is given below:

Trading and Profit and Loss Account

For the Year ending

To Direct Materials	...	By Sales	....
" Variable Expenses ...			
" Fixed Expenses ...			
" Net Profit ...			

When standard costing is being practiced, the information about standard figures, actual figures, and their variances along with the causes are recorded in a statement for the management to take timely action and monitor costs. This statement reconciles the budgeted/standard profit with actual profit earned by the firm.

The profit statement must contain notes regarding the causes of variances and submitted to the management. More emphasis should be laid on adverse variances, the causes of their occurrence and the factors responsible for them. The statement also contains comments regarding the firm's overall performance.

Illustration 7

A statement reconciling budgeted and actual profit is prepared with the help of the following data:

	Budgeted /Standards
Units	
Net price per unit	
Material per unit	
Rate of material per Kg.	
Labour hours per unit	
Rate per labour hour	
Variable overhead per labour hour	
Fixed overhead per unit	
Direct Material Price	= Actual qty. x (Std. price - Actual price)
Variance (DMPV)	= 14,000 x (£2.00 - £2.25)
	= £3,500 (Adverse)

Direct Material Usage	Std. price x (Std. Qty. for)
Variance (DMUV)	Actual output – Actual Qty.)
Std. Qty. For actual output	= 3,500 x 4kg – 14,000 Kgs.
Usage Variance	£2 x (14,000 – 14,000) = Nil
Direct Material Cost Variance (DMCV)	= Standard cost – Actual cost
	£2 x 14,000 - £2.25 x 14,000
	= 28,000 – 31,500
	= £3,500 (Adverse)
Direct Labour Rate Variance (DLRV)	Actual time x (Std. Rate – Actual Rate)
	= 15,750 Hours x (0.50 - 0.60)
	= £1,575 (Adverse)
Actual time	= Actual hours per unit x Actual output
	= 4.50 x 3,500 = 15,750 hours.
Direct Labour Efficiency Variance (DLEV)	= Std. rate x (Std. time – Actual time)
	= £0.50 x (19,250 – 15,750)

	= £1,750 (Favorable)
Std. Time of actual output	= Std. Hours per unit x Actual output
	= 5.50 x 3,500 = 19,250 Hours
Direct Labour Cost Variance (DLCV)	= Standard Cost – Actual Cost
	= (0.50 x 19,250) – (0.60 x 15,750)
	= 9,625 – 9,450
	= £174 (Favorable)
Variable Overhead Cost Variance (VOCV)	= Recovered Variable Overhead – Actual
	Variable Overheads
	= 15,400 – 15,750
	= £350 (Adverse)
Recovered Variable Overheads	= Standard rate per Hours x Standard hours for actual output
	= 0.80 x 19,250
	= £15,400
Actual Variable Overheads	= 1x 15,750 =15,750
Fixed Overhead Expenditure Variance(FOEXPV)	= Budgeted Fixed Overheads – Actual Fixed Overheads
	= 4,000 – 4,200
	= £200 (adverse)
Budgeted Fixed Overheads	= Std. fixed overheads per unit x Budgeted Output
	= 1x 4,000
	= £4,000
Actual Fixed Overheads	= Actual rate per unit x Actual Output
	= 1.20 x 3,500
	= £4,200
Fixed Overhead Volume Variance (FOVV)	=Recovered Fixed Overheads – Budgeted Fixed overheads
	= 3,500 – 4,000
	= £500 (adverse)
Recovered Fixed Overhead	= Std. rate per unit x Actual output
	= 1 x 3,500
	= £ 3,500
Fixed Overhead Cost Variance (FOCV)	=Recovered Fixed Overheads – Actual Fixed overheads
	= 3,500 – 4,200
	= £700 (adverse)
Sales Price Variance (SPV)	= Act. Qyt. Sold x (Std. price – Actual Price)

	= 3,500 x (20 -21)
	= £3,500 (favorable)
Sales Volume Variance (SVOLV)	= Std. price x (Budg. Qty. – Actual Qty.)
	= 20 x (4,000 – 3,500)
	= £ 10,000 (adverse)
	= Budgeted Sales – Actual Sales
	= 20 x 4,000 – 21 x 3,500
	= 80,000 – 73,500
	= £6,500 (adverse)

Variance in Reference to Profits

Standard cost per unit	= 8 + 2.75 + 4.40 + 1
	= £16.15
Standard Profit per unit	= Std. selling price per unit – Std. cost per unit
	= 20.00 – 16.15 = 3.85
Actual cost per unit	= 9+ 2.70 + 4.50 + 1.20
	= £17.40
	= Actual selling price per unit – Actual cost per unit
	= 21.00 – 17.40 = £3.60 per unit
Budget Profit	= Budgeted quantity of Sales x Standard profit per unit
	= 4,000 x 3.85 = 15,400
	= Actual quantity of sales x Actual profit per unit
	= 3,500 x 3.60 = £12,600
Value Variance	= Budgeted profit – Actual profit
	= 15,400 – 12,600
	= £2,800 (adverse)
Price Variance	= Actual qty. sold x (Std. profit per unit – Actual profit per unit)
	= 3,500 x (3.85 – 3.60)
	= £875 (adverse)

Volume Variance	= Standard profit per unit x (Standard Quantity – Actual Qty.)
	= 3.85 x (4,000 – 3,500)
	= £1,925 (adverse)

Profit and Loss Statement

For the year ending on .....

Budgeted Sales (4,00	£ 20)	£ 80,000	
Less: Budgeted cost of sales (4,000 × 16.15)		£ 64,600	
Budgeted profit		£ 15,400	
Cost Variance:			
DMCV			
DMPV	3,500(A)		
DMUV	Nil	3,500 (A)	
DLCV			
DLRV	1,575 (A)		
DLEV	1,750 (F)	175 (F)	
OCV			
FOCV	700 (A)		
VOCV	350 (A)	1,050 (A)	
Sales Variances:			
Sales Price Variance		3,500 (F)	
Profit variance due to variance in sales volume		1,925 (A)	2,800 (A)
Actual Profit			12,600

Further Reading:

- ✓ ***Belverd Needles, Marian Powers, Susan Crosson, (2011), Principles of Accounting***
- ✓ ***Analysis of Variance (ANOVA), 2e by Dawn Iacobucci \| Sep 1, 2020***