

Management Accounting

Topic: Standard Costing and Variance Analysis

Course: B.Com, Sec A

Semester: VI

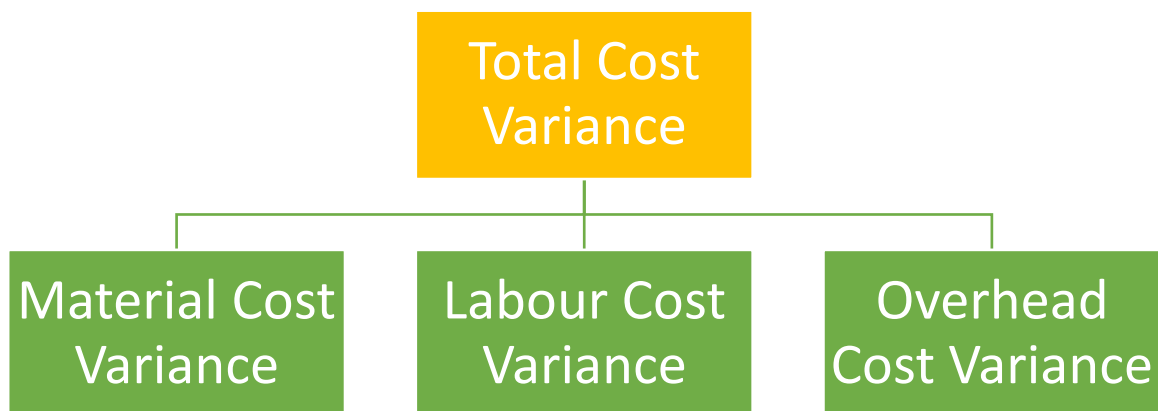
Ms. Nidhi Bansal

Standard Costing and Variance Analysis

Standard Cost

Standard costs are the predetermined costs which should actually be incurred under normal circumstances. But the actual cost incurred may be same or different from the standard. To exercise control, actual cost is compared with the standard cost and the deviations are found. These deviations can be favorable or unfavorable. The favorable deviation means actual cost incurred is less than the standard and vice-versa. The deviations whether positive or negative needs to be studied. These deviations are studied for each of the three elements of costs separately, i.e. separately for material, labour and overheads.

The following diagram reflects bifurcation of total cost variances



Material Variances

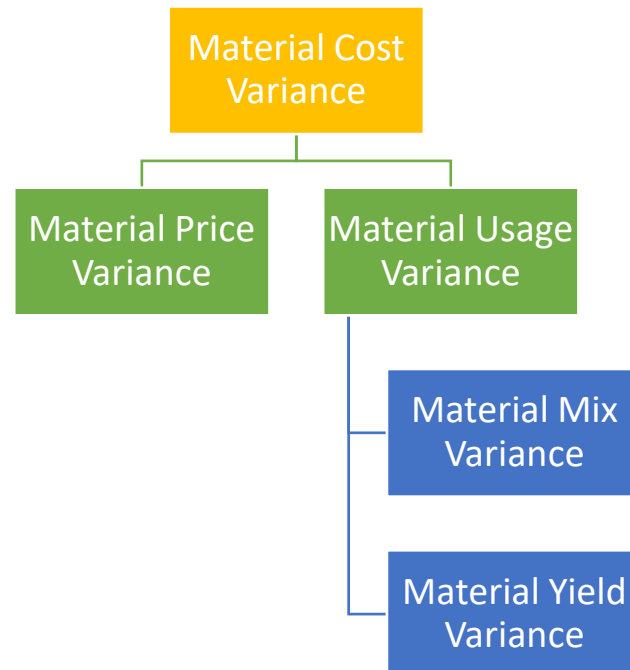
Material Variances reflect the deviation of actual cost incurred on material from the standards. These deviation in material cost could because of changes in material price, quantity used, change in mix of various materials used or output achieved.

There are five material Variances:

- 1. Material Cost Variance(MCV)**

2. **Material Price Variance (MPV)**
3. **Material Usage (or Quantity) Variance (MUV)**
4. **Material Mix Variance (MMV)**
5. **Material Yield Variance (MYV)**

These variances can be diagrammatically represented as:



Now the formulas for each of the material variances are discussed:

Material Cost Variance(MCV) = Standard Cost of actual Output-Actual Cost

Standard cost of actual Output= Standard quantity for actual Output * standard Price

Actual Cost= actual quantity * Actual Price

Material Price Variance (MPV)= (Standard Price-Actual Price) * actual Quantity

MPV= (SP-AP) *AQ

Material Usage Variance(MUV)= (Standard Quantity for Actual Output-Actual Quantity)* Standard Price

MUV = (SQ-AQ) *SP

Material Mix Variance(MMV)= (Revised Standard Quantity – Actual Quantity)* Standard Price

RSQ= $\frac{\text{Standard Quantity of one material}}{\text{Total of Standard Quantities of all Materials}}$ * Total of actual Quantities of all Material

Material Yield Variance(MYV)= (Actual Yield- Standard Yield) * std material cost per unit of output

Standard Yield= $\frac{\text{Actual usage of materials}}{\text{Standard usage per unit of output}}$

Question 1 :The standard mix to produce one unit of product is as follows:

Material A	60 units @ ₹ 15 per unit
Material B	80 units @ ₹ 20 per unit
Material C	100 units @ ₹ 25 per unit

During the month of July , 10 units were actually produced and consumption was as follows:

Material A	640 units @ ₹ 17.50 per unit
Material B	950 units @ ₹ 18.00 per unit
Material C	870 units @ ₹ 27.50 per unit

Calculate material variances

Answer Key:

First of all prepare a table and put all the available figures in requisite columns:

	Standard for 10 units			Actual for 10 units		
	Qty	Rate	Amount	Qty	Rate	Amount
Material A	600 (60*10)	15	9000	640	17.50	11200
Material B	800 (80*10)	20	16000	950	18.00	17100
Material C	1000 (100*10)	25	25000	870	27.50	23925
Total	2400		50000	2460		52225

Fist material variance is Material Cost Variance

As discussed earlier the formula is :

Material Cost Variance(MCV) = Standard Cost of actual Output-Actual Cost

Standard cost of actual Output= Standard quantity for actual Output * standard Price

Actual Cost= actual quantity * Actual Price

Since in this case, standard and actual output is same , 10 units total standard cost is taken as standard cost of actual output i.e. 50,000

Total Actual Cost = 52,225

$$\text{MCV} = 50000 - 52,225 = 2,225(\text{A})$$

2,225(A) is read as adverse

Since, the answer is negative, we use the (A) to indicate material cost variance is negative, i.e. actual cost incurred on material is more than the standard set.

Material Price Variance (MPV) = (Standard Price - Actual Price) * actual Quantity

MPV = (SP - AP) * AQ

$$\text{Material A} = (15 - 17.50) * 640 = 1600(\text{A})$$

$$\text{Material B} = (20 - 18.00) * 950 = 1900(\text{F})$$

$$\text{Material C} = (25 - 27.50) * 870 = 2175(\text{A})$$

1,875(A)

We have just entered values for standard price, actual price and actual quantity. All these figures are given to us for all three material. We have calculated material price variance for each of the materials separately and then found the total which is 1875(A), implying MPV is also unfavorable.

Also observe for material B, MPV is positive, so we have referred to as by the use of symbol (F), which is read as favorable.

Material Usage (or Quantity) Variance

Material Usage Variance (MUV) = (Standard Quantity for Actual Output - Actual Quantity) * Standard Price

MUV = (SQ - AQ) * SP

$$\text{Material A} = (600 - 640) * 15 = 600(\text{A})$$

$$\text{Material B} = (800 - 950) * 20 = 3000(\text{A})$$

$$\text{Material C} = (1000 - 870) * 25 = 3250(\text{F})$$

350(A)

MUV is 350(A)

Now this is rule to check our answer

MCV = MPV + MUV

Material cost variance has to be equal to the total of Material Price variance and Material Usage Variance

$$2,225(A) = 1875(A) + 350(A)$$

Left hand side is equal to right hand side, so we can proceed.

Material Mix Variance

Material Mix Variance(MMV)= (Revised Standard Quantity – Actual Quantity)* Standard Price

$$RSQ = \frac{\text{Standard Quantity of one material}}{\text{Total of Standard Quantities of all Materials}} * \text{Total of actual Quantities of all Material}$$

Revised Standard Quantity(RSV)

$$\text{Material A} = \frac{2460}{2400} * 600 = 615 \text{ units}$$

$$\text{Material B} = \frac{2460}{2400} * 800 = 820 \text{ units}$$

$$\text{Material C} = \frac{2460}{2400} * 1000 = 1025 \text{ units}$$

Material Mix Variance = (RSQ- AQ) * SP

$$\text{Material A} = (615 - 640) * 15 = 375(A)$$

$$\text{Material B} = (820 - 950) * 20 = 2600(A)$$

$$\text{Material C} = (1025 - 870) * 25 = 3875(F)$$

$$\underline{\underline{900(F)}}$$

Material Yield Variance

MYV = (AY-SY) * std material cost per unit of output

$$\text{Standard Yield} = \frac{\text{Actual usage of materials}}{\text{Standard usage per unit of output}}$$

$$= \frac{2460}{240} = 10.25 \text{ units}$$

Standard material cost per unit of output = 50,000/10 = 5,000

MYV = (AY-SY) * std material cost per unit of output

$$= (10 - 10.25) * 5000 = 1250(A)$$

Please Check

$$\text{MUV} = \text{MMV} + \text{MYV}$$

$$350(A) = 900(F) + 1250(A)$$

Left hand side equals right side.