

Unit:6 STANDARD COSTING AND VARIANCE ANALYSIS

Standard Cost:

Standard cost is the predetermined cost based on technical estimate for materials, labour, & overhead for a selected period of time & for a prescribed set of working conditions.

Standard costing:

The preparation of standard costs & applying them to measure the variations from actual costs & analysing the causes of variations with a view to maintain maximum efficiency in production.

Variance Analysis:

It refers to the process of ascertaining the differences between a standard cost specify & Actual cost incurred in the production of goods & services.

It includes:

- Material Variance Analysis
- Labour Variance Analysis.
- Overhead Variance Analysis.

1. From the following information calculate.

Material cost variance separately for P & Q

Material	Standard Quantity	Standard price	Actual Quantity	Actual Price
P	20	2	25	2.5
Q	30	3	35	2.75

$$\Rightarrow MCV [\text{Material cost Variance}] = \text{Standard Cost} - \text{Actual Cost}$$

$$\therefore \text{Standard Cost} = \text{Standard Quantity} \times \text{Standard Price}$$

$$\text{Actual Cost} = \text{Actual Quantity} \times \text{Actual Price}$$

$$MCV = (SQ \times SP) - (AQ \times AP)$$

$$\text{Material P} = (20 \times 2) - (25 \times 2.5)$$

$$= 40 - 62.50$$

$$= \underline{\underline{£ 22.50}} \text{ (Adverse)}$$

$$\text{Material Q} = (30 \times 3) - (35 \times 2.75)$$

$$= 90 - 96.25$$

$$= \underline{\underline{£ 6.25}} \text{ (Adverse)}$$

2. A product Z requires 25 units of standard materials at the rate of £5 per unit. The actual consumption of material for the manufacturing of product Z came to 20 units of material at the rate of £4 per unit. Calculate Material price Variance.

$$\Rightarrow MPV = \text{Actual Quantity} \times (\text{standard price} - \text{Actual price})$$

$$= AQ \times (SP - AP)$$

$$Z = 20 (5 - 4) = \underline{\underline{₹ 20 \text{ (Favourable)}}}$$

3. The standard quantity & standard price of raw material required for one unit of product Z are given as follows.

	<u>Quantity</u>	<u>standard price</u>
Material 'A'	2 Kgs	₹ 2 per unit
Material 'B'	6 Kgs	₹ 4 per unit

The actual production & relevant data are as follows: output 500 units of product Z.

	<u>Quantity</u>	<u>Total cost</u>
Material 'A'	1,200 Kgs	₹ 3,400
Material 'B'	1,600 Kgs	₹ 3,900

Calculate Material usage Variance.

$$\Rightarrow MUV = \text{standard price} \times (\text{standard quantity} - \text{Actual quantity})$$

standard quantity for A = 500 units $\times$ 2 = 1,000 units

standard quantity for B = 500 units $\times$ 6 = 3,000 units

$$MUV = SP \times (SQ - AQ)$$

$$A = 2 (1000 - 1,200) = \underline{\underline{₹ 400 \text{ (Adverse)}}}$$

$$B = 4 (3,000 - 1,600) = \underline{\underline{₹ 5,600 \text{ (Favourable)}}}$$

4. The standard material & standard cost per kg of material required for the production of 1 unit of product R is as follows.

Material 10 Kgs

standard price - £ 4 per Kg.

The actual production & related material data are as follows:

500 units of product R

Material used 3,000 Kgs.

price of material £ 5 per Kg.

calculate: MCV, MUV, MPV.

$$\Rightarrow a) MCV = (SQ \times SP) - (AQ \times AP)$$

$$\therefore SQ = 10 \text{ Kgs} \times 500 \text{ units} = 5000 \text{ units.}$$

$$\begin{aligned}\therefore MCV &= (5,000 \times 4) - (3,000 \times 5) \\ &= 20,000 - 15,000 \\ &= \underline{\underline{£ 5,000 \text{ (favourable)}}}\end{aligned}$$

$$\begin{aligned}b) MUV &= SP(SQ - AQ) \\ &= 4(5,000 - 3,000) \\ &= 4(2,000) \\ &= \underline{\underline{£ 8,000 \text{ (favourable)}}}\end{aligned}$$

$$\begin{aligned}c) MPV &= AQ \times (SP - AP) \\ &= 3,000 \times (4 - 5) \\ &= \underline{\underline{£ 3,000 \text{ (Adverse)}}}\end{aligned}$$

5. The standard material required for producing 200 units is 250 Kgs. standard price is 60 paise per Kg. 2,50,000 units were produced during the period. Actual materials purchased were 3,20,000 Kgs at a cost of Rs 1,95,200. From these details calculate MCV, MPV & MUV.

⇒

$$SP = 0.60$$

$$SQ = \text{For output of 200 units} = ?$$

$$= \frac{2,50,000 \times 250}{200} = 3,12,500$$

$$AP = \frac{1,92,500}{3,20,000} = 0.61$$

$$AQ = 3,20,000 \text{ purchased.}$$

$$\begin{aligned} a) \quad MCV &= (SQ \times SP) - (AQ \times AP) \\ &= (3,12,500 \times 0.60) - (3,20,000 \times 0.61) \\ &= 1,87,500 - 1,95,200 \\ MCV &= \underline{\underline{-7700 (A)}} \end{aligned}$$

$$\begin{aligned} b) \quad MPV &= (SP - AP) AQ \\ &= (0.60 - 0.61) 3,20,000 \\ MPV &= \underline{\underline{-3200 (A)}} \end{aligned}$$

$$\begin{aligned} c) \quad MUV &= (SQ - AQ) SP \\ &= (3,12,500 - 3,20,000) 0.60 \\ MCV &= \underline{\underline{-4500 (A)}} \end{aligned}$$

6. From the data given below calculate:

a. MCV

b. MPV

c. MQV

Products	SQ in units	SP	AQ in units	AP
A	2,100	4.00	2,200	4.50
B	3,000	6.50	2,800	7.00
C	4,200	7.00	4,000	7.50

$$\Rightarrow a) MCV = (SQ \times SP) - (AQ \times AP)$$

$$A = (2,100 \times 4) - (2,200 \times 4.50) \\ = \underline{\underline{-1500 (A)}}$$

$$B = (3,000 \times 6.50) - (2,800 \times 7.00) \\ = \underline{\underline{-100 (A)}}$$

$$C = (4,200 \times 7) - (4,000 \times 7.50) \\ = -600 (A)$$

$$\text{Total MCV} = \underline{\underline{-2,200 (A)}}$$

$$b) MPV = (SP - AP) AQ$$

$$A = (4.00 - 4.50) 2,200 \\ = \underline{\underline{-1100 (A)}}$$

$$B = (6.50 - 7.00) 2,800 \\ = -1400 (A)$$

$$C = (7.00 - 7.50) 4,000 \\ = -2,000 (A)$$

$$\text{Total MPV} = -4,500 (A),,$$

$$C] \text{ MUV} = (SQ - AQ) SP$$

$$A = (2,100 - 2,200) 4$$

$$= \underline{\underline{-400 (A)}}$$

$$B = (3,000 - 2,800) 6.50$$

$$= \underline{\underline{1,300 [F]}}$$

$$D = (4,200 - 4,000) 7$$

$$= \underline{\underline{1,400 [F]}}$$

$$\text{Total MUV} = \underline{\underline{2,300 (F)}}$$

7. From the following information compute:

a) MCV

b) MPV

c) MUV

Standard quantity of materials per unit 4 Kgs

Standard price per Kg of Materials Rs 50.

Actual production 1,000 units

Materials actually used 4,300 Kgs

Actual purchase price of material per kg Rs 55

$$\Rightarrow SQ = 1,000 \text{ units} \times Rs 4 \text{ per kg} = 4,000 \text{ Kgs}$$

$$SR = Rs 50$$

$$AQ = 4,300 \text{ Kgs}$$

$$AR = Rs 55$$

$$\begin{aligned}
 \text{a] MCV} &= \text{Standard cost} - \text{Actual cost} \\
 &= (SQ \times SR) - (AQ \times AR) \\
 &= (4,000 \times 50) - (4,300 \times 55) \\
 &= 2,00,000 - 2,36,500 \\
 &= \underline{\underline{2,36,500 (A)}}
 \end{aligned}$$

$$\begin{aligned}
 \text{b] MPV} &= AQ \times (SR - AR) \\
 &= 4,300 \times (50 - 55) \\
 &= \underline{\underline{2,21,500 (A)}}
 \end{aligned}$$

$$\begin{aligned}
 \text{c] MUV} &= SR \times (SQ - AQ) \\
 &= 50 \times (4,000 - 4,300) \\
 &= \underline{\underline{2,15,000 (A)}}
 \end{aligned}$$

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