

Chapter -8

Standard costing & Variance Analysis

Concepts

- Standard refers to benchmark or predetermined. Hence standard in relation to costs refers to benchmark or predetermined costs of production. Standard costs are determined on the basis of budgeted costs. As for example, budgeted Direct material cost, Direct Labor costs, & Overheads costs. Determination of standard costs is known as Standard Costing.
- Variance refers to the difference between Standard & Actual. So variance related to Cost of Production is the difference between Standard costs & Actual costs. Whenever, actual cost are higher than the standard costs; the variance is called Unfavorable (U). On the other hand, if actual costs are lower than the standard costs; the variance is called as favorable (F).

Purpose of Standard Costing & Variance Analysis

The main purpose of Standard Costing & Variance Analysis is to control costs of production of the various elements of cost i.e. Direct material cost (DMC), direct labor cost (DLC) and overhead costs (O/H C). The control process involves comparison of actual costs with standard costs. After comparison, if variance is U, then necessary corrective action needs to be undertaken.

Types of Variance:

Based on three elements of costs, the cost variances are classified into three types.

- **Material Variance:** They are known as Material Cost variance (MCV). MCV is the difference between standard cost of the materials that should have been incurred and the cost of materials that has been actually incurred.

It is divided into 2 sub variances.

- **Material price variance (MPV)** = It is difference between price to be paid for materials and actual price,
- **Material Usage Variance (MUV)** = It is difference of actual usage of materials and the standard usage
- **Labor Variance:** They are known as Labor Cost variance (LCV). LCV is the difference between standard labor cost and actual labor cost.

It is divided into 2 sub variances.

- **Labor Rate Variance (LRV)** = It is difference between standard wages rate and actual wages rate,
- **Labor Efficiency / Usage Variances (LEV / LUV)** = It is difference actual efficiency of labor and the standard efficiency of labor.

i. **Overhear Variance:**

- They are known as Overhead Cost variance (OHCV). OHCV is the difference between standard overhead cost and actual overhead cost. It is two types i.e Variable Overhead Variance & Fixed Variance.

Determination of Variances (Formulas Used)

- Material Cost Variance (MCV) = Total Standard Costs (TSC) - Total actual costs (TAC)
- Material Price Variance (MPV) = (Standard Price - Actual Price) Actual Quantity
- Material Usage Variances (MUV) = (Standard Quantity - Actual Quantity) Standard Price
- Labor Cost Variance (LCV) = Total Standard Costs (TSC) - Total Actual Costs (TAC)
- Labor Rate Variance (LRV) = (Standard Rate - Actual Rate) Actual Hour
- Labor Usage / Efficiency Variance (LUV/LEU) = (Standard Hour - Actual Hour) Standard Rate.

Problem:

A firm makes a product with the following standards

Particulars	Taka
Direct Materials (2kg @ Tk 2 per kg)	4.00
Direct Labor (2 hr @ 2.50per hr)	5.00
Variable overheads (Tk 2 per DL hr)	4.00
Total	13.00

In May 1990 the production manager receives a very favorable report from the purchase dept. The firm bought direct materials for Tk 1.50 per kg. In June the materials purchased were used with the following results:

Budgeted production	8000 units
Actual production	7200units
Direct labor (16200 hrs)	Tk 40000
Variable Overhead	Tk 33000
Materials used	1 15840 kg

Required:

- A. Determine the relevance Materials and labor Variance.
- B. Prepare the Variance report showing the probable reasons for the Variance.

Solution

Computation of relevant variances:

Direct Material variance: (5000 (F))

- 1. Material Price Variance = (Standard Rate - Actual Rate) × Actual Quantity

$$\text{Labor Efficiency Usage Var.} = (\text{TK}2 - \text{TK}1.50) \times 15840$$

$$= \text{TK}7920 (\text{ F })$$

- 2. Material Usage Variance = (Standard Quantity - Actual Quantity) × Standard Rate

$$\text{Standard Hour} = (= [(7200 \times 2\text{kg}) - 15840] \times \text{TK}2$$

$$\text{Labor cost Variance} = \text{TK}2880 (\text{ U })$$

$$= (14400 \times 2.50) - \text{TK}60000$$

- 3. Material Cost Variance = [Total Standard Material Cost - Total Actual Material cost]

$$= (14400 \times 2) - (15840 \times 1.50)$$

$$= \text{TK } 28800 - \text{TK } 23760 = \text{TK } 5040 (\text{ F })$$

Computation of relevance variable:

Direct Material variance:

Confirmation:

Direct Material Cost Variance = Direct Material

Price Variance + Direct Material Usage Variance

Solution

Computation of relevance variable:

Direct Labor Variance:

D.L Rate Variance = (Standard wage rate - Actual wage rate) × Actual hour

$$= (\text{TK}2.50 - \text{TK}2.469) \times 16200$$

$$= \text{TK}500 (\text{F})$$

Actual wage rate = tk 40000/16200=2.469 tk

Labor Efficiency Usage Variance=(Standard hour - Actual Hour) × Standard wage rate

$$= (14400 - 16200) \times 2.50$$

$$= \text{TK}4500 (\text{U})$$

Standard Hour = (7200units × 2hrs) = 14400hrs

Labor cost Variance = (Total Standard labor Cost - Total Actual labor Cost)

$$= (14400 \times 2.50) - \text{TK}40000$$

$$= \text{TK}4000 (\text{U})$$

Types of Variances	Nature of Variance	Main Reason	Responsibility
Material cost variance	F	Lower Actual Material Price	Purchase Manager
Material Price variance	F	Lower Actual Material Price	Purchase Manager
Material usage variance	U	High Material use	Production Manager
Labor cost variance	U	High actual use	Production Manager
Labor Rate variance	F	Lower labor/ wage rate	Production Manager
Labor Efficiency Variance	U	Higher actual hours	Production Manager

Solution

Computation of Relevance Variable:

Direct Labor Variance:

Confirmation:

Labor cost Variance = Direct Labor Rate Variance + Labor Efficiency usage Variance

Exercise: 1

1. Number of helmets

35000

Standard kilograms of plastic per helmet

x 0.6

Total standard kilograms allowed ...

21000

Standard cost per kilograms

x RM8

Total standard cost

RM168000

Actual cost incurred (given)

RM171000

Total standard cost (above)

168000

Total material variance – unfavorable

RM 3000

2. Material price variance = AQ (AP - SP) = 22500kgs. (RM7.60 per kg – RM8.00 per kg) = RM9000 F

RM9000
RM171000/22500kgs = RM7.60per kg

Material quantity variance = SP (AQ – SQ)

RM8 per kg. (22500kgs – 21000 kgs) = RM 12000 U

Exercise-2

Material price variance = AQ (AP - SP)

20000lbs. (\$2.35per lb - \$2.50 per lb) = \$3000 F

Material quantity variance = SP (AQ – SQ)

\$2.50per lb (20000lbs – 18400 lbs) = \$4000U

Exercise-3

Labor rate variance = AH (AR - SR)

750hrs (\$13.90per hour - \$12.00per hour) = \$1425 U

10425/750hrs = \$13.90 per hour

Labor efficiency variance = SR (AH-SH)

\$1200per hour (750 hrs - 800 hrs) = \$600F

Exercise-4

Number of units manufactured 20000

Standard labor time per unit x 0.3

Total standard hours of labor time allowed 6000

Standard direct labor rate per hour x \$12

Total standard direct labor cost \$72000

18 minutes /60 minutes per hour = 0.3 hours

Actual direct labor cost \$73600

Standard direct labor cost 72000

Total variance – unfavorable \$ 1600

Actual hours of input Actual hours of input Standard hours allowed
at the Actual Rate at the standard rate for output at the standard rate

(AH x AR)

(AH x SR)

(SH x SR)

\$73600

5750 hrs x 1200 per

6000hrs x \$12000

hr = \$69000

per hr = \$72000

Exercise-5

Variable overhead spending variance = AH (AR - SR)

5750 hrs (\$3.80 per hr - \$4.00 per hr) = \$ 1150 F

\$21850/5750 hrs = \$3.80 per hr

Variable overhead efficiency variance = (AR -SR)

\$4.00 per hr (5750 hrs - 6000 hrs) = \$ 1000 F

01. Exercise

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Total standard kilograms allowed ...

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Standard cost per kilograms

x RM8

Total standard cost

RM168000

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22500kgs. (RM7.60 per kg - RM8.00 per kg) = RM9000 F

RM171000/22500kgs

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Material quantity variance = SP (AQ - SQ)

RM8 per kg. (22500kgs - 21000 kgs) = RM 12000 U

02. Exercise;

Material price variance = AQ (AP - SP)

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03. Exercise;

Labor rate variance = AH (AR - SR)

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04. Exercise;

Number of unites manufacturer 20000

Standard labor time per unit x 0.3

Total standard hours of labor time allowed 6000

Standard direct labor rate per hour x \$12

Total standard direct labor cost \$72000

18 minutes /60 minutes per hour = 0.3 hours

Actual direct labor cost	\$73600
Standard direct labor cost	<u>72000</u>
Total variance – unfavorable	<u>\$ 1600</u>

2.

Actual hours of input at the Actual Rate	Actual hours of input at the standard rate	Standard hours allowed for output at the standard rate
(AH x AR)	(AH x SR)	(SH x SR)
\$73600	5750 hrs x 1200 per hr = \$690000	6000hrs x \$12000 per hr = \$720000

05. Exercise:

Variable overhead spending variance = AH (AR – SR)

5750 hrs (\$3.80 per hr - \$4.00 per hr) = \$ 1150 F

\$21850/5750 hrs = \$3.80 per hr

Variable overhead efficiency variance = (AR – SR)

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