Management Accountancy

Unit 12

Standard Costing – Direct Labour Variances

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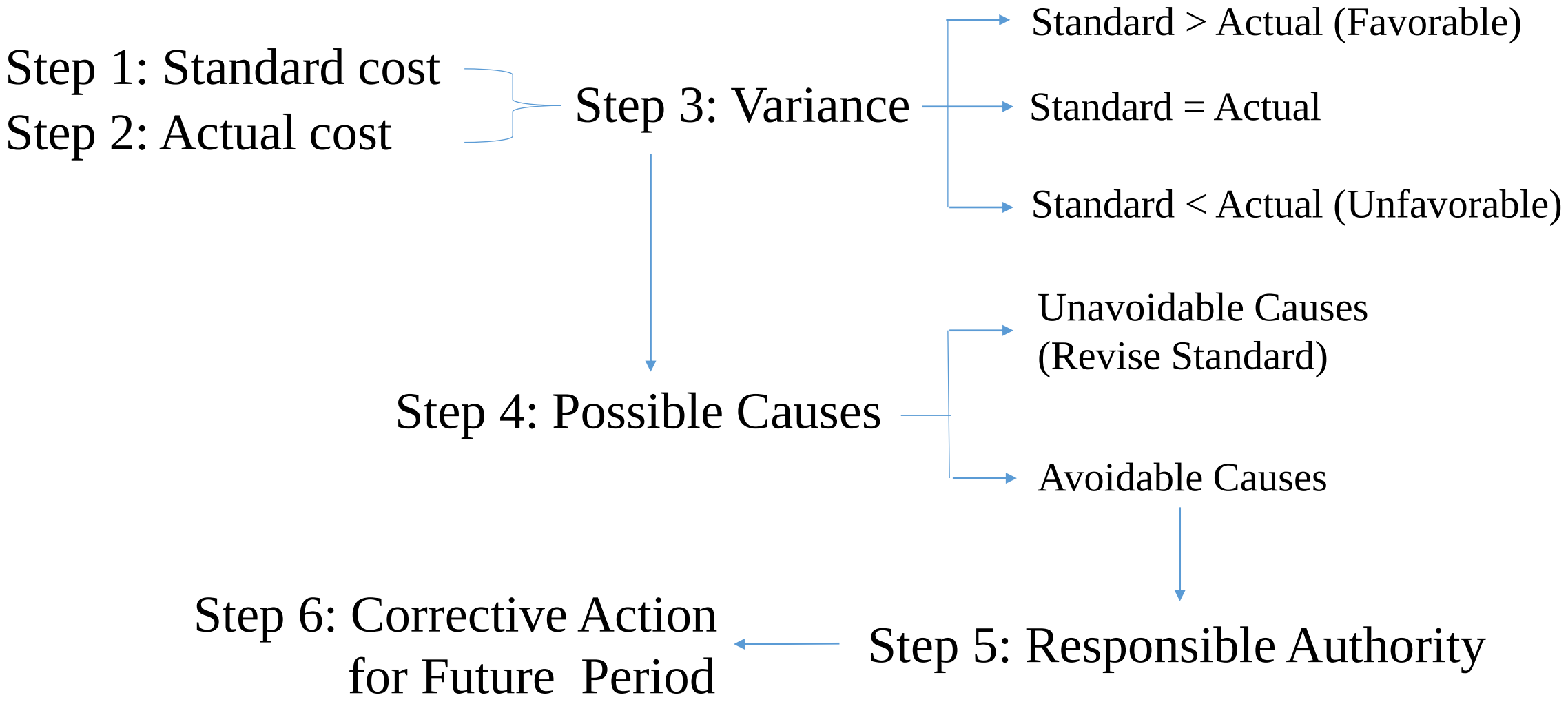
Contents

Learning Objectives

- Compute and interpretate Direct Labour Variances

Modality of Standard Costing



(Source: Author)

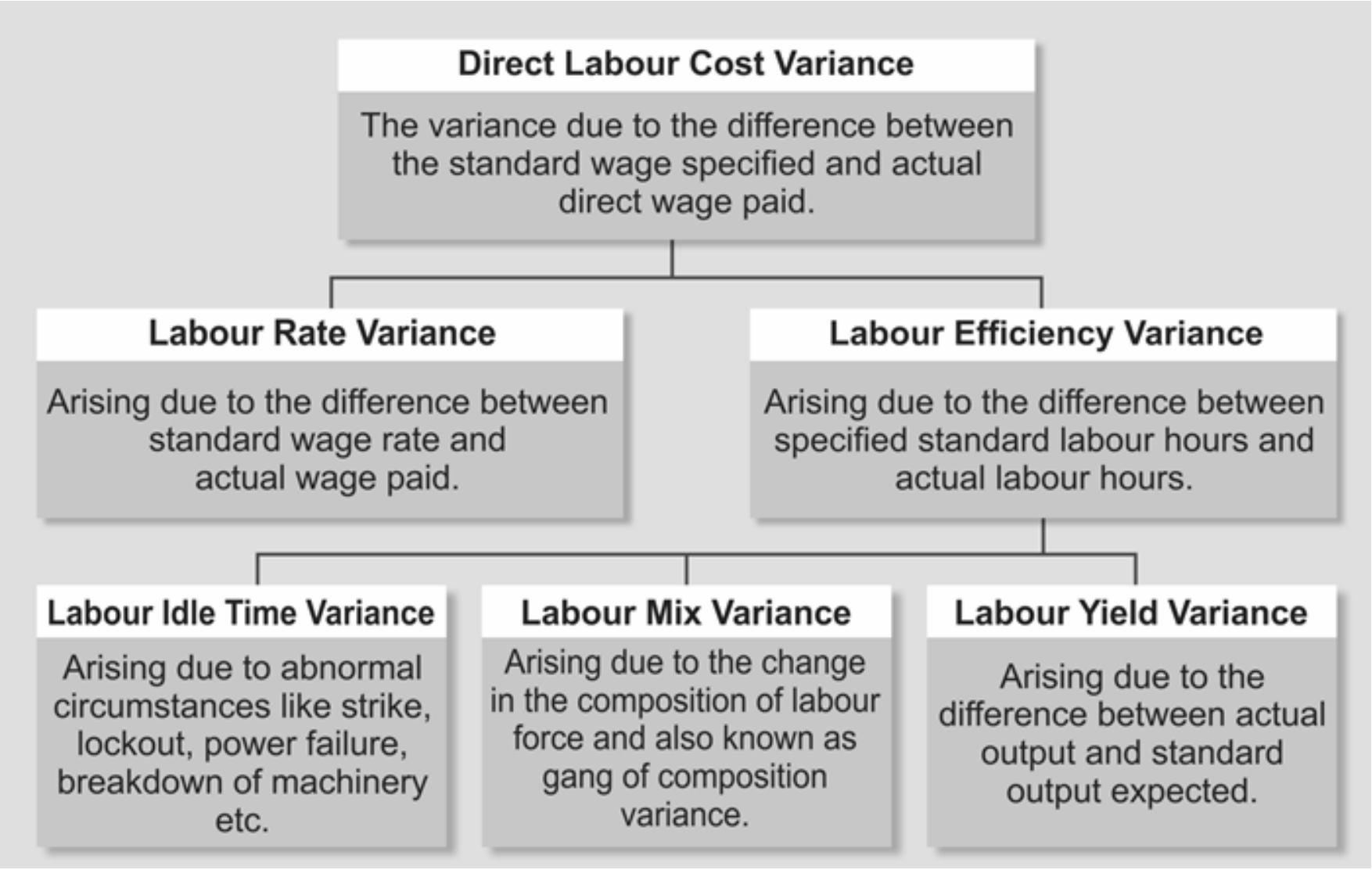
Variance Analysis

- Direct Material Variances
- **Direct Labour Variances**
- Overhead Variances

Direct Labour Variances

- Standard Wage Rate per Period (Hour, Day, Week, Month), SR
- Actual Wage Rate per Period (Hour, Day, Week, Month), AR
- Total Allowed Standard Time, ST
- Total Actual Time Taken, AT
- Standard Output
- Actual Output

Direct Labour Variances



(Source: Dangol & Dangol, 2019)

Direct Labour Cost Variance

- Labour Cost Variance = Standard Labour Cost – Actual Labour Cost
  = (Standard Hours × Standard Rate per Hour) –
  (Actual Hours × Actual Rate per Hour)

Direct Labour Rate Variance

- Labour Rate Variance = Actual Hours (Standard Rate per Hour – Actual Rate per Hour)

- Possible causes
  - Change in market forces
  - Change in basic wage structure or change in piece-work rate
  - Workers grades and rates of pay different from those specified
  - Guaranteed wages
  - Overtime amount paid
  - Inaccurate standards

Direct Labour Efficiency Variance

- Labour Efficiency Variance = Standard Rate per Hour (Standard Hours Allowed/Produced – Actual Hours Worked)

- Possible causes
  - Lack of proper supervision or inefficient/untrained workers
  - Poor working conditions
  - Delays due to waiting for materials, tools, instructions
  - Machines breakdown, defective machines, tools
  - Material quality
  - Change in production design, schedule, quality
  - Newly appointed works
  - Incorrect standards

Direct Labour Idle Time Variance

- Actual hours worked = Actual hours paid
- Actual hours paid > Actual hours worked
- Idle Time = Difference between actual hours worked and paid (Actual hours paid > Actual hours worked)

- <u>Idle Time</u>
  - Normal idle time (Tea break) – unavoidable
  - Abnormal idle time – shortage of material, electricity break down, machine break down – Avoidable

Direct Labour Idle Time Variance

- Labour Idle Time Variance = Standard Labour Hour Rate
  × (Actual Hours Worked – Actual Hour Paid)

  or,
- Labour Idle Time Variance = Standard Labour Hour Rate
  × Idle Time Hours

- Always shown as unfavorable (UF) or adverse (A)

Direct Labour Yield Variance or Direct Labour Sub-Efficiency Variance

- Labour Yield Variance = Standard Rate per Unit of Yield (Actual Yield – Standard Yield)

or,

- Labour Yield Variance = Standard Rate of Standard Mix (Standard Hours – Actual Hours Worked)

Direct Labour Mix Variance

- Labour Mix Variance = Total Actual Hours Paid (Standard Rate of Standard Mix – Standard Rate of Actual Mix)

- Labour Mix Variance = Total Actual Hours Worked (Standard Rate of Standard Mix – Standard Rate of Actual Mix)

Illustration 1

The following information of production is available of ABC Company

Standard	Actual
For 1 unit of output, required 5 Direct Labour Hours Wage Rate = Rs 100 per Hour	Output = 1,000 Units Direct Labour Hours worked and paid = 6,000 Hours Wage Rate = Rs. 80 per Hour

Required: Material variances

SOLUTION

Working Note: Standard Hours (SH) for actual output

For 1 unit of output, required 5 Direct Labour Hours

For 1,000 units of outputs, required 5 X 1000 = 5,000 Direct Labour Hours

Direct Labour Cost Variance = Standard Labour Cost – Actual Labour Cost

= (Standard Hours × Standard Rate per Hour) – (Actual Hours × Actual Rate per Hour)

= (5,000 Hours × Rs. 100) – (6,000 Hours × Rs. 80)

= 500,000 – 480,000

= Rs. 20,000 (Favorable)

Direct Labour Rate Variance = Actual Hours (Standard Rate per Hour − Actual Rate per Hour)

= 6,000 Hours (Rs. 100 − Rs. 80)

= Rs. 120,000 (Favorable)

Direct Labour Efficiency Variance = Standard Rate per Hour (Standard Quantity − Actual Quantity)

= Rs. 100 (5,000 Hours − 6,000 Hours)

= Rs. 100,000 (Unfavorable)

Verification:

Direct Labour Cost Variance = Direct Labour Efficiency Variance + Direct Labour Rate Variance

20,000 (Favorable) = 100,000 (Unfavorable) + 120,000 (Favorable)

Alternative Method: Tabulation

	Hours	Rate per Hour	Result
Row A	SH (W/N)	SR	
Row B	AH	SR	
Row C	AH	AR	

Alternative Method: Tabulation

	Hours	Rate per Hour	Result
Row A	5,000 SH (W/N)	100 SR	500,000
Row B	6,000 AH	100 SR	600,000
Row C	6,000 AH	80 AR	480,000

Calculation of variances

Direct Labour Efficiency Variance = Row A – Row B = 500,000 – 600,000 = 100,000 (Unfavorable)

Direct Labour Rate Variance = Row B – Row C = 600,000 – 480,000 = 120,000 (Favorable)

Direct Labour Cost Variance = Row A – Row C = 500,000 – 480,000 = 20,000 (Favorable)

Verification:

Direct Labour Cost Variance = Direct Labour Efficiency Variance + Direct Labour Rate Variance

20,000 (Favorable) = 100,000 (Unfavorable) + 120,000 (Favorable)

Illustration 2

The standard regarding the labour cost the actual have been presented below:

Type of Labour	Standard			Actual		
	Nos.	Rate	Cost	Nos.	Rate	Cost
Skilled	2	Rs.5	Rs.10	2	Rs.5	Rs.10
Semi-skilled	3	Rs.3	Rs.9	4	Rs.2.75	Rs.11
Unskilled	5	Rs.1	Rs.5	4	Rs.1.5	Rs. 6
Total	10		Rs.24	10		Rs.27
Standard Output per Gang Hour 10 units Actual Output 430 units Weekly Working Hours 40						

Required: Labour Efficiency Sub (Yield), Mix, Total Efficiency, Rate and Cost Variance

Basic Calculations:

1. Statement showing standard and actual labour costs for actual output and standard cost of actual hours worked and paid:

Grade	Standard Cost (Standard Hours × Standard Rate			Actual Cost (Actual Hours × Actual Rate)			Standard Cost of Actual Hours Worked and Paid (Actual Hours × Standard Rate)		
	Hours	Rate	Rs.	Hours	Rate	Rs.	Hours	Rate	Rs.
Skilled	86	5	430	80	5	400	80	5	400
Semi-skilled	129	3	387	160	2.75	440	160	3	480
Unskilled	215	1	215	160	1.50	240	160	1	160
Total	430		1,032	400		1,080	400		1,040

2. Standard Hours:

$$\text{Standard Hours for Skilled Labour} \quad \frac{2 \times 430}{10} = 86 \text{ hours}$$

$$\text{Standard Hours for Semi-skilled Labour} \quad \frac{3 \times 430}{10} = 129 \text{ hours}$$

$$\text{Standard Hours for Unskilled Labour} \quad \frac{5 \times 430}{10} = 215 \text{ hours}$$

Alternative Method, Standard Hours:

For 10 units of output 1 gang hour required

For 430 units of output 43 gang hour required

Now,

Standard Hours for Skilled Labour = 43 hours × 2 workers = 86 hours

Standard Hours for Semi-skilled Labour = 43 hours × 3 workers = 129 hours

Standard Hours for Unskilled Labour = 43 hours × 5 workers = 215 hours

3. Actual Hours Paid:

Actual Hours Paid for Skilled Labour = 40 hours × 2 workers = 80 hours

Actual Hours Paid for Semi-skilled = 40 hours × 4 workers = 160 hours

Actual Hours Paid for Unskilled = 40 hours × 4 workers = 160 hours

Variances:

(i) Labour Cost Variance

= Standard Labour Cost – Actual Labour Cost

= Rs. 1,032 – Rs. 1,080

= Rs. 48 (UF)

(ii) Labour Rate Variance = Actual Hours Paid (Standard Rate per Hour – Actual Rate per Hour)

Skilled Labour $80 \times (5 - 5)$	= Rs. 0
Semi-skilled Labour $160 \times (3 - 2.75)$	= Rs. 40 (F)
Unskilled Labour $160 \times (1 - 1.50)$	= Rs. 80 (UF)
	Rs. 40 (UF)

or, Labour Rate Variance = Standard Cost of Actual Paid – Actual Cost

= Rs. 1,040 – 1,080

= Rs. 40 (UF)

(iii) Labour Efficiency Variance = Standard Rate per Hour (Standard Hours Produced – Actual Hours Worked)

Skilled Labour $5 \times (86 - 80)$	= Rs. 30 (F)
Semi-skilled Labour $3 \times (129 - 160)$	= Rs. 93 (UF)
Unskilled Labour $1 \times (215 - 160)$	= Rs. 55 (F)
	Rs. 8 (UF)

or, Labour Efficiency Variance = (Standard Cost – Standard Cost of Actual Hours Paid)

= Rs. 1,032 – Rs. 1,040

= Rs. 8 (UF)

(iv) Labour Mix/Gang Variance

= Total Actual Hours Paid (Standard Rate of Standard Mix – Standard Rate of Actual Mix)

$= 400 \times \left(\frac{1,032}{430} - \frac{1,040}{400}\right)$ = Rs. 80 (UF)

(v) Labour Yield Variance

= Standard Rate of Standard Mix (Standard Hours – Actual Hours Worked)

$= \frac{1,032}{430} \times (430 - 400)$

= Rs. 72 (F)

Verification:

Labour Efficiency Variance = Labour Yield Variance + Labour Mix/Gang Variance

8 (UF) = 72 (F) + 80 (UF)

Labour Cost Variance= Labour Efficiency Variance + Labour Rate Variance

48 (UF) = 8 (UF) + 40 (UF)

Alternative Method: Tabulation

	Gang Hours	Mix	Price	Result
Row A	SH (W/N 4)	SM (W/N 1)	SR	
Row B	AH	SM (W/N 1)	SR	
Row C	AH	AM (W/N 3)	SR	
Row D	AH	AM (W/N 2)	AR	

Alternative Method: Tabulation

	Gang Hours	Mix	Rate	Result
Row A	43 SH (W/N 4)	SM (W/N 1)	24 SR	1,032
Row B	40 AH	SM (W/N 1)	24 SR	960
Row C	40 AH	AM (W/N 3)	26 SR	1,040
Row D	40 AH	AM (W/N 2)	27 AR	1,080

Working note 1: Standard Mix with Standard Rate

Skilled:	2 X Rs. 5	= Rs. 10
Semi-Skilled:	3 X Rs. 3	= Rs. 9
Unskilled:	5 X Rs. 1	= Rs. 5
Total	10	= Rs. 24

Working note 2: Actual Mix with Actual Rate

Skilled:	2 X Rs. 5	= Rs. 10
Semi-Skilled:	4 X Rs. 2,75	= Rs. 11
Unskilled:	4 X Rs. 1.5	= Rs. 6
Total	10	= Rs. 27

Working note 3: Actual Mix with Standard Rate

Skilled:	2 X Rs. 5	= Rs. 10
Semi-Skilled:	4 X Rs. 3	= Rs. 12
Unskilled:	4 X Rs. 1	= Rs. 4
Total	10	= Rs. 26

Working note 4: Standard Gang Hours for actual outputs

For 10 units of outputs, required 1 Gang Hours

For 430 units of outputs, required 1/10 X 430 = 43 Gang Hours

Alternative Method: Tabulation

	Gang Hours	Mix	Price	Result
Row A	43 SH (W/N 4)	SM (W/N 1)	24 SR	1,032
Row B	40 AH	SM (W/N 1)	24 SR	960
Row C	40 AH	AM (W/N 3)	26 SR	1,040
Row D	40 AH	AM (W/N 2)	27 AR	1,080

Variances

Labour Yield Variance = Row A- Row B = 1,032 – 960 = 72 (Favorable)
Labour Mix Variance = Row B- Row C = 960 – 1,040 = 80 (Unfavorable)
Labour Efficiency Variance = Row A -Row C = 1,032 – 1,040 = 8 (unfavorable)
Labour Rate Variance = Row C – Row D = 1,040 – 1,080 = 40 (Unfavorable)
Labour Cost Variance = Row A- Row D = 1,032 – 1,080 = 48 (unfavorable)

Verification

Labour Efficiency Variance = Labour Yield Variance + Labour Mix Variance

Rs. 8 (UF) = Rs. 80 (UF) + Rs. 72 (F)

Labour Cost Variance= Labour Efficiency Variance + Labour Rate Variance

Rs. 48 (UF) = Rs. 8 (UF) + 40 (UF)

Illustration 3

Using the following information, calculate labour variances:

Gross Direct Wages = Rs. 3,000

Standard Hours Produced = 1,600

Standard Rate per Hour = Rs. 1.50

Actual hours paid 1,500, out of which hours not worked (abnormal idle time) are 50.

SOLUTION

Direct Labour Cost Variance = Standard Labour Cost – Actual Labour Cost

= (Standard Hours × Standard Rate per Hour) – (Actual Hours × Actual Rate per Hour)

= (1,600 Hours × Rs. 1.50) – Rs. 3,000

= 2,400 – 3,000

= Rs. 600 (Unfavorable)

Direct Labour Rate Variance = Actual Hours (Standard Rate per Hour – Actual Rate per Hour)

= (Actual Hours × Standard Rate per Hour) – Actual Labour Cost

= (1,500 Hours × Rs. 1.50) – Rs. 3,000

= Rs. 750 (Unfavorable)

Direct Labour Efficiency Variance = Standard Rate per Hour (Standard Labour Hours – Actual Labour Hours)

= Rs. 1.50 (1,600 Hours – 1,450 Hours)

= Rs. 225 (Unfavorable)

Labour Idle Time Variance = Standard Labour Hour Rate (Actual Hours Worked – Actual Hour Paid)

Labour Idle Time Variance = Standard Labour Hour Rate × Idle Time Hours

= Rs. 1.50 Hours × 50 Hours

= Rs. 75 (Unfavorable)

Verification:

Labour Cost Variance = Labour Efficiency Variance + Labour Idel Variance + Labour Rate Variance

600 (Unfavorable) = 225 (Favorable) + 75 (Unfavorable) + 750 (Unfavorable)

Alternative Method: Tabulation

	Hours	Rate per Hour	Result
Row A	1.600 SH	1.50 SR	2,400
Row B	1,450 AH Worked	1.50 SR	2,175
Row C	1,500 AH Paid	1.50 SR	2,250
Row D	1,500 AH Paid	AR	3,000

Calculation of variances

Direct Labour Efficiency Variance = Row A – Row B = 2,400 – 2,175 = 225 (Favorable)

Direct Labour Idle Time Variance = Row B – Row C = 2,175 – 2,250 = 75 (Unfavorable)

Direct Labour Rate Variance = Row C – Row D = 2,250 – 3,000 = 750 (Unfavorable)

Direct Labour Cost Variance = Row A – Row D = 2,400 – 3,000 = 600 (Favorable)

Verification:

Labour Cost Variance = Labour Efficiency Variance + Labour Idle Variance + Labour Rate Variance

600 (Unfavorable) = 225 (Favorable) + 75 (Unfavorable) + 750 (Unfavorable)

Illustration 4

Direct labour standard and other details are provided below:

Standard				Actual			
Labourer	**Nos.**	**Rate (Rs.)**	**Cost (Rs.)**	**Labourer**	**Nos.**	**Rate (Rs.)**	**Cost (Rs.)**
Skilled	10	4	40	Skilled	10	4.25	42.50
Semi-skilled	20	2	40	Semi-skilled	25	1.80	45.00
Unskilled	30	1	30	Unskilled	25	1.20	30.00
Total	60		110	Total	60		117.50
Standard Output per labour hour 0.5 units				Actual Output 1,260 units			
40 hours in a week are paid				1 DLH was lost for non availability of material			

Required: Direct Labour Efficiency-sub (Yield), Mix, Idle Time, Rate and Cost Variance.

SOLUTION:

Basic Calculations:

1. Standard Hours Produced:

   For 0.50 unit of output 1 hour required

   For 1,260 units of output 2,520 hours required

   For 1,260 units of output $42 \left(= \frac{2{,}520 \text{ hours}}{60 \text{ workers}} \right)$ gang hours required

   Now,

   Standard Hours for Skilled Labour = 42 hours × 10 workers = 420 hours

   Standard Hours for Semi-skilled Labour = 42 hours × 20 workers = 840 hours

   Standard Hours for Unskilled Labour = 42 hours × 30 workers = 1,260 hours

2. Actual Hours Paid:

   Actual Hours Paid for Skilled Labour = 40 hours × 10 workers = 400 hours

   Actual Hours Paid for Semi-skilled Labour = 40 hours × 25 workers = 1,000 hours

   Actual Hours Paid for Unskilled Labour = 40 hours × 25 workers = 1,000 hours

3. Actual Hours Worked:

   Actual Hours Worked for Skilled Labour = (40 hours − 1 hours) × 10 workers = 390 hours

   Actual Hours Worked for Semi-skilled Labour = (40 hours − 1 hours) × 25 workers = 975 hours

   Actual Hours Worked for Unskilled Labour = (40 hours − 1 hours) × 25 workers = 975 hours

SOLUTION:

Basic Calculations:

4. Statement showing standard and actual labour costs for actual outputs and standard cost of actual hours paid and actual hours worked:

Laborer	Standard Cost (Standard Hours × Standard Rate)			Actual Cost (Actual Hours × Actual Rate)			Standard Cost of Actual Hours Paid (Actual Hours Paid × Standard Hourly Rate)			Standard Cost of Actual Hours Worked (Actual Hours Worked × Standard Hourly Rate)		
	Hours	Rate	Rs.	Hours	Rate	Rs.	Hours	Rate	Rs.	Hours	Rate	Rs.
Skilled	420	4	1,680	400	4.25	1,700	400	4	1,600	390	4	1,560
Semi-skilled	840	2	1,680	1,000	1.80	1,800	1,000	2	2,000	975	2	1,950
Unskilled	1260	1	1,260	1,000	1.20	1,200	1,000	1	1,000	975	1	975
Total	2,520		4,620	2,400		4,700	2,400		4,600	2,340		4,485

Variances:

(i) Labour Yield Variance

= Standard Rate of Standard Mix (Standard Hours – Actual Hours Worked)

$$= \frac{\text{Rs. } 4{,}620}{2{,}520} \times (2{,}520 - 2{,}340)$$

= Rs. 330 (F)

(ii) Labour Mix Variance

= Total Actual Hours Paid (Standard Rate of Standard Mix – Standard Rate of Actual Mix)

$$= 2{,}400 \times \left(\frac{4{,}620}{2{,}520} - \frac{4{,}600}{2{,}400}\right)$$

= Rs. 200 (UF)

(iii) Labour Idle Time Variance

= Standard Rate of Standard Mix (Actual Hours Worked – Actual Hours Paid)

$$= \frac{4{,}620}{2{,}520} \times (2{,}340 - 2{,}400)$$

= Rs. 110 (UF)

(iv) Labour Rate Variance

= Actual Hours Paid (Standard Rate per Hour − Actual Rate per Hour)

= Skilled Labour 400 × (4 − 4.25) = Rs. 100 (UF)

Semi-skilled Labour 1,000 × (2 − 1.80) = Rs. 200 (F)

Unskilled Labour 1,000 × (1 − 1.20) = Rs. 200 (UF)

Rs. 100 (UF)

or, Labour Rate Variance = Standard Cost of Actual Paid − Actual Cost

= Rs. 4,600 − 4,700

= Rs. 100 (UF)

(v) Labour Cost Variance = Standard Labour Cost − Actual Labour Cost

= Rs. 4,620 − Rs. 4,700

= Rs. 80 (UF)

Alternative Method: Tabulation

	Gang Hours	Mix	Rate	Result
Row A	SH	SM	SR	
Row B	AH Worked	SM	SR	
Row C	AH Paid	SM	SR	
Row D	AH Paid	AM	SR	
Row E	AH Paid	AM	AR	

Illustration 4

Direct labour standard and other details are provided below:

Standard				Actual			
Labourer	**Nos.**	**Rate (Rs.)**	**Cost (Rs.)**	**Labourer**	**Nos.**	**Rate (Rs.)**	**Cost (Rs.)**
Skilled	10	4	40	Skilled	10	4.25	42.50
Semi-skilled	20	2	40	Semi-skilled	25	1.80	45.00
Unskilled	30	1	30	Unskilled	25	1.20	30.00
Total	60		110	Total	60		117.50
Standard Output per labour hour 0.5 units				Actual Output 1,260 units			
40 hours in a week are paid				1 DLH was lost for non availability of material			

Required: Direct Labour Efficiency-sub (Yield), Mix, Idle Time, Rate and Cost Variance.

Alternative Method: Tabulation

	Gang Hours	Mix	Rate	Result
Row A	42 SH (W/N 2)	SM	110 SR	4,620
Row B	39 AH Worked	SM	110 SR	4,290
Row C	40 AH Paid	SM	110 SR	4,400
Row D	40 AH Paid	AM (W/N 1)	115 SR	4,600
Row E	40 AH Paid	AM	117.50 AR	4,700

Working note 1: Actual Mix with Standard Rate

Skilled: 10 X Rs. 4 = Rs. 40
Semi-Skilled: 25 X Rs. 2 = Rs. 50
Unskilled: 25 X Rs. 1 = Rs. 25
Total 60 = Rs. 115

Working note 2: Standard Gang Hours for actual outputs

For 30 units (= 60 workers X 0.50 per labour) of outputs, required 1 Gang Hours
For 1,260 units of outputs, required 1/30 X 1,260 = 42 Gang Hours

Alternative Method: Tabulation

	Gang Hours	Mix	Rate	Result
Row A	42 SH (W/N 2)	SM	110 SR	4,620
Row B	39 AH Worked	SM	110 SR	4,290
Row C	40 AH Paid	SM	110 SR	4,400
Row D	40 AH Paid	AM (W/N 1)	115 SR	4,600
Row E	40 AH Paid	AM	117.50 AR	4,700

Variances

Labour Yield Variance = Row A- Row B = 4,620 – 4,290 = 330 (Favorable)
Labour Idle Time Variance = Row B – Row C = 4,290 – 4,400 = 110 (Unfavorable)
Labour Mix Variance = Row C- Row D = 4,400 – 4,600 = 200 (Unfavorable)
Labour Efficiency Variance = Row A -Row D = 4,620 – 4,600 = 20 (Favorable)
Labour Rate Variance = Row D – Row E = 4,600 – 4,700 = 100 (Unfavorable)
Labour Cost Variance = Row A- Row E = 4,620 – 4,700 = 80 (Unfavorable)

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Thank You