Management Accountancy

Unit 12
Standard Costing – Direct Labour Variances

Structure

- Direct Labour Variances

After the completion of this unit, you should be able to:

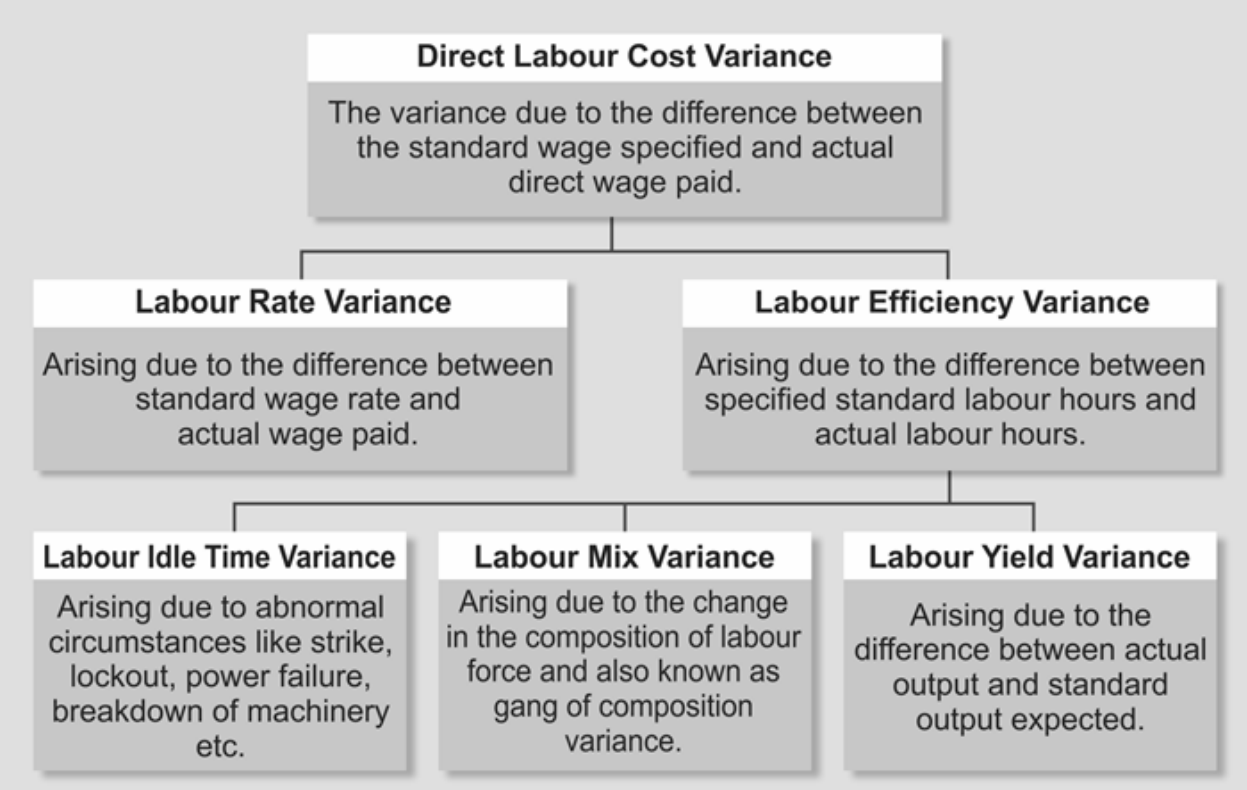
- Compute and interpretate Direct Labour Variances

12.1 Direct Labour Variance

The computation of labour variances is quite similar to material variances. Before ascertaining the direct labour variances, the following items must be found out:

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

12.2 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)

If actual cost exceeds the standard cost, variance represents as unfavourable (UF) or adverse (A) and if actual cost is less than the standard cost, variance represents as favourable (F).

Direct Labour Rate Variance

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

If actual wage rate exceeds the standard wage rate, variance represents as unfavourable (UF) or adverse (A) and if actual wage rate is less than the standard wage rate, variance will be known as favourable (F).

The possible causes for labour rate variances are:

(i) Change in basic wage structure or change in piece-work rate.
(ii) Employment of workers of grades and rates of pay different from those specified, due to shortage of labour of the proper category, or through mistake, or due to retention of surplus labour.
(iii) Payment of guaranteed wages to workers who are unable to earn their normal wages if such guaranteed wages form part of direct labour cost.
(iv) Overtime amount paid to for urgent completion of job.
(v) Higher or lower rates paid to casual and temporary workers employed to meet seasonal demands, or urgent or special work.
(vi) Employment of more efficient and skilled labour demanding higher rates of wages.

Direct Labour Efficiency Variance

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

If the standard hours exceed the actual hours worked the variance is known as favourable (F) and when the standard hours less than the actual hours worked the variance is known as unfavourable (UF) or adverse (A).

The possible causes for labour efficiency variances are:

(i) Lack of proper supervision or inefficient/untrained workers.
(ii) Poor working conditions.
(iii) Delays due to waiting for materials, tools, instructions etc.
(iv) Machines breakdown, defective machines, tools, and other equipments.
(v) Inferior/poor quality materials
(vi) Change in production schedule, design, quality etc.
(vii) Increase in labour turnover
(viii) Influences of labours unions.
(ix) Incorrect standards.

Direct Labour Idel Time Variance

It arises due to the difference between the actual labour hours worked and the actual labour hours paid.

Reasons for Idle Time

As to reasons, idle time can be classified into normal idle time and abnormal idle time. Normal idle time is the time, which cannot be avoided or reduced in the normal course of business.

The main reasons for the occurrence of normal idle time are as follows:

1. Time taken by workers to travel the distance between the main gate of factory and the place of their work.
2. Time lost between the finish of one job and starting of next job.
3. Time spent to overcome fatigue.
4. Time spent to meet their personal needs like taking lunch, tea, etc.

The main reasons for the occurrence of abnormal idle time are:

1. Due to machine break downs, power failure, non-availability of raw materials, tools or waiting for jobs due to defective planning.
2. Due to conscious management policy decision to stop work for some time.
3. In the case of seasonal goods producing units, it may not be possible for them to produce evenly throughout the year. Such a factor too results in the generation of abnormal idle time.

Labour idle time variance is computed by multiplying the difference between hours worked and paid by the standard labour hour rate as follows

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

Labour idle time is caused due to abnormal circumstances and it always affects profits adversely. This variance is always shown as unfavourable (UF) or adverse (A).

Direct Labour Yield Variance or 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 Hours – Actual Hours)

= 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)

The same problem can be solved by using tabulation method as under:

	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

SOLUTION:

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:

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

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

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

Alternative Method,

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 × (5 – 5) = Rs. 0

Semi-skilled Labour 160 × (3 – 2.75) = Rs. 40 (F)

Unskilled Labour 160 × (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 × (86 – 80) = Rs. 30 (F)

Semi-skilled Labour 3 × (129 – 160) = Rs. 93 (UF)

Unskilled Labour 1 × (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	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

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)

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

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)

The same problem can be solved by using tabulation method as under:

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. 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

2. 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

3. 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

4. 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

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	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

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)

References

Anthony, R.N., Hawkins, D.F. & Merchant, K.A. (2012). *Accounting: Text and cases*. The McGraw-Hill Companies

Atkinson, A. A., Kaplan, R. S., Matsumura, E. M., Young, S. M., & Kumar, G. A. (2104). *Management accounting: Information for decision-making and strategy execution*. Pea$on Education

Colin, D. (1995). *Management and cost accounting*. ELBS, London

Dangol, R. M. & Dangol, J. (2019). *Management accountancy*. Taleju Prakashan, Kathmandu

Hilton. R. W. & Platt, D. E. (2014). *Managerial accounting: Creating value in a global business environment*. McGraw-Hill Education

Horngren, C. T., Datar, G. F., Rajan, M. V., & Lttner, C. (2011). *Cost accounting: A managerial emphasis.* Pea$on Education

Horngren, C. T., Sundem, G. L., & Stratton, W. O. (1999). *Introduction to management accounting.* Prentice Hall India