Chapter 17 Standard costing, flexible budgeting and variance analysis

Questions

1. Priory Pegamoid Limited produces a range of parts for industrial weaving machines. The budget sales and prime costs for April 20X1 for component L63A are as follows:

	£
Sales: 600 units × £25 per unit	15 000
Costs	
Direct materials: 600 units × (1kg × £6)	3 600
Direct labour: 600 units × (1.2 hours × £8)	5 760
Prime cost	9 360

   You are required to flex the budget for a sales and production level of 575 units.

2. Quayle Products plc manufactures waste disposal units. Its sales and costs budget for November 20X2 is as follows:

	£
Sales: 3000 units × £72	216 000
Costs	
Direct materials (metal) 3000 × (1kg × £14)	(42 000)
Direct materials (plastic) 3000 × (£0.5kg × £7)	(10 500)
Direct labour: 3000 × (0.75 hours × £8)	(18 000)
Production overhead	(86 500)
	59 000
Other overheads	(31 000)
Net profit	28 000

   The company does not absorb production overheads using an overhead absorption rate. It may be assumed that all of its overheads are fixed in nature. The company's actual results for the month are as follows:

	£
Sales: 2950 units × £73	215 350

Costs	
Direct materials (metal) 2950 × (0.9kg × £13.80)	(36 639)
Direct materials (plastic) 2950 × (£0.5kg × £7.20)	(10 620)
Direct labour: 2950 × (0.7 hours × £8.20)	(16 933)
Production overhead	(84 250)
	66 908
Other overheads	(32 250)
Net profit	34 658

You are required to:

(a) calculate:
  (i) sales profit volume variance
  (ii) sales price variance
  (iii) materials price variance (for both metal and plastic)
  (iv) materials quantity variance (for both metal and plastic)
  (v) direct labour rate variance
  (vi) direct labour efficiency variance
  (vii) overheads variances

(b) prepare a standard cost operating statement

(c) suggest reasons for any price variances you have calculated.

3. Robertson Rix Limited is a manufacturing company. In January 20X6 it budgeted for 1500 units of production, each of which uses 2.25 hours of machine time. Production overhead absorption rates had been budgeted as follows for the financial year:

Variable production overhead	£6 per machine hour
Fixed production overhead	£7.80 per machine hour

The actual level of production in the month was 1520 units. The actual expenditure on variable production overhead in the month was £21 360. The actual expenditure on fixed production overhead in the month was £26 201.

You are required to calculate:

(a) the variable production overhead variance

(b) the fixed production overhead variance

4. Selly Watkins plc makes bathroom fittings. The directors have monthly board meetings at which, amongst other things, they discuss the most recent standard cost operating statement. The statement for April 20X3 reads as follows:

	Total
	£
Original budgeted net profit	216 760
Sales profit volume variance	5 866
Flexed budget net profit	222 616

Other variances	*Favourable*	*(Adverse)*	
	£	*£*	
Sales price variance		(2 689)	
Direct materials price variance	8 760		
Direct materials quantity variance		(9 989)	
Direct labour rate variance	—	—	
Direct labour efficiency variance	660		
Variable overhead variance		(8 828)	
Fixed overhead variance		(9 771)	
Total	9 420	(31 277)	(21 857)
Actual net profit			200 769

The directors are concerned that the net adverse variance for the month is more than 10% of the original budgeted net profit. They call in the management accountant for some explanations. He comes up with the following points:

1. The sales team decided to raise prices in the middle of April and we haven't yet adjusted the standard prices to reflect this increase.

2. We obtained a really good quantity discount on materials from a new supplier.
3. The materials quantity variance is due to the fact that the materials we've bought in recently have been of higher quality than we originally anticipated.
4. The labour efficiency variance probably arises because the new production line staff we took on in April are really very efficient workers.
5. The overhead variances are unfortunate, but the problem really is that we underestimated the level of both fixed and variable overheads when we were setting the original budget.

Three of these explanations are quite plausible; two are not.

Required: identify which explanations for the variances that have occurred in April 20X3 are plausible and which are implausible.

Answers

1. Priory Pegamoid Limited: flexed budget for 575 units

	£
Sales: 575 units × £25 per unit	14 375
Costs	
Direct materials: 575 units × (1kg × £6)	3 450
Direct labour: 575 units × (1.2 hours × £8)	5 520
Prime cost	8 970

2. Quayle Products plc

Flexed budget for 2950 units

	£
Sales: 2950 units × £72	212 400
Costs	
Direct materials (metal) 2950 × (1kg × £14)	(41 300)
Direct materials (plastic) 2950 × (£0.5kg × £7)	(10 325)
Direct labour: 2950 × (0.75 hours × £8)	(17 700)
Production overhead	(86 500)
	56 575
Other overheads	(31 000)
Net profit	25 575

Setting the original budget, flexed budget and actual results side by side:

	Original budget	Flexed budget	Actual
	£	£	£
Sales	216 000	212 400	215 350
Costs			
Direct material – metal	(42 000)	(41 300)	(36 639)
Direct material – plastic	(10 500)	(10 325)	(10 620)

Direct labour	(18 000)	(17 700)	(16 933)
Production overhead	(86 500)	(86 500)	(84 250)
	59 000	56 575	66 908
Other overheads	(31 000)	(31 000)	(32 250)
	28 000	25 575	34 658

(i) Sales profit volume variance

	£
Flexed budget net profit	25 575
Original budget net profit	28 000
	2 425 (A)

(ii) Sales price variance

Actual volume of sales at actual selling price:

2950 × £73 = 215 350

Actual volume of sales at standard selling price:

2950 × £72 = 212 400

2 950 (F)

(iii) Materials price variances

(a) Metals £

Actual volume of material at actual price:

2950 × 0.9kg × £13.80 = 36 639

Actual volume of material at standard price:

2950 × 0.9kg × £14 = 37 170

531 (F)

(b) Plastics £

Actual volume of material at actual price:

2950 × 0.5kg × £7.20 = 10 620

Actual volume of material at standard price:

2950 × 0.5kg × £7 = 10 325

295 (A)

(iv) Material quantity variances

(a) Metals £

Actual volume of material at standard price:

2950 × 0.9kg × £14 = 37 170

Standard volume of material at standard price:

2950 × 1kg × £14 = 41 300

4 130 (F)

(b) Plastics

There is no quantity variance because actual and standard usage are the same.

(v) Labour rate variance

£

Actual hours at actual wage rate:

2950 × 0.7hours × £8.20 = 16 933

Actual hours at standard wage rate:

2950 × 0.7hours × £8.00 = 16 520

413 (A)

(vi) Labour efficiency variance

£

Actual hours at standard wage rate:

2950 × 0.7hours × £8 = 16 520

Standard hours at standard wage rate:

2950 × 0.75hours × £8 = 17 700

1 180 (F)

(vii) Overheads variances

Production overhead variance	£
Budget production overhead	86 500
Actual production overhead	84 250
	2 250 (F)

Other overheads variance	£

Budget other overheads	31 000
Actual other overheads	32 250
	1 250 (A)

(b) Quayle Products plc: Standard cost operating statement November 20X2

			Total
			£
Original budgeted net profit			28 000
Sales profit volume variance			(2 425)
Flexed budget net profit			25 575
Other variances	*Favourable*	*(Adverse)*	
	£	£	
Sales price variance	2 950		
Direct materials price variance – metals	531		
Direct materials price variance – plastics		(295)	
Direct materials quantity variance	4 130		
Direct labour rate variance		(413)	
Direct labour efficiency variance	1 180		
Production overhead variance	2 250		
Other overhead variance		(1 250)	
Total	11 041	(1 958)	9 083
Actual net profit			34 658

(c) Reasons for price variances

There are four price variances: sales price variance, two materials price variances and labour rate variance. Taking each in turn:

Sales price variance: in this case the variance is favourable, because the price charged was higher than budget (£73 rather than £72). This increase is clearly not very large. It may have become possible to increase the price if competitors were seen to be increasing their prices. Or, possibly a major competitor has left the market allowing Quayle to increase its price.

Materials price variances: the positive price variance (for metal) may have arisen because a bulk purchase at a lower price became available, or possibly because a price negotiation was more successful than expected. The negative price variance could have arisen because a slightly better quality material was purchased.

Labour rate variance: the actual wage rate was higher than budget. This may be because wage negotiations turned out to be less favourable for the employer than originally anticipated.

In each case the variation from standard cost may simply be because the original estimates of standard costs were inaccurate.

2. Robertson Rix Limited

Flex the budget for overheads:

	Original budget	Flexed budget	Actual
	£	£	£
Variable production overheads:			
1500 × 2.25 × £6	20 250		
1520 × 2.25 × £6		20 520	
Actual – given in question			21 360
Fixed production overheads			
1500 × 2.25 × £7.80	26 325		
1520 × 2.25 × £7.80		26 676	
Actual – given in question			26 201

(a) variable production overhead variance

Actual variable production overhead	21 360
Flexed budget variable production overhead	20 520
	840 (A)

(b) fixed production overhead variance

Actual fixed production overhead	26 201
Flexed budget fixed production overhead	26 676
	475 (F)

4. Selly Watkins plc

   1. An adverse sales price variance indicates that selling prices actually charged were less than budgeted. The explanation is therefore implausible.
   2. A better than expected quantity discount on materials purchases would give rise to a favourable variance. The explanation is therefore plausible.
   3. Higher quality materials would be expected to give rise to a favourable quantity variance. The explanation is implausible.
   4. The labour efficiency variance is positive and could well have arisen because the production workers are more efficient than expected. The explanation is plausible.
   5. This explanation is plausible.