

Chapter 7:
FLEXIBLE BUDGETS
& VARIANCE ANALYSIS

Learning Objective 1: Distinguish a static budget . . . the master budget based on output planned at start of period from a flexible budget. . . the budget that is adjusted (flexed) to recognize the actual output level

Level 1 Analysis

	Actual Results (1)	Static-Budget Variances (2) = (1) – (3)	Static Budget (3)
Units sold	<u>10,000</u>	<u>2,000 U</u>	<u>12,000</u>
Revenues	<u>\$ 1,250,000</u>	<u>\$190,000 U</u>	<u>\$1,440,000</u>
Variable costs			
Direct materials	621,600	98,400 F	720,000
Direct manufacturing labor	198,000	6,000 U	192,000
Variable manufacturing overhead	<u>130,500</u>	<u>13,500 F</u>	<u>144,000</u>
Total variable costs	<u>950,100</u>	<u>105,900 F</u>	<u>1,056,000</u>
Contribution margin	299,900 ^b	84,100 U	384,000 ^c
Fixed costs	<u>285,000</u>	<u>9,000 U</u>	<u>276,000</u>
Operating income	<u>\$ 14,900</u>	<u>\$ 93,100 U</u>	<u>\$ 108,000</u>
		\$ 93,100 U	
		Static-budget variance	

^aF = favorable effect on operating income; U = unfavorable effect on operating income.

^bContribution margin percentage = $\$299,900 \div \$1,250,000 = 24.0\%$.

^cContribution margin percentage = $\$384,000 \div \$1,440,000 = 26.7\%$.

Learning Objective 1: Distinguish a static budget . . . the master budget based on output planned at start of period from a flexible budget. . . the budget that is adjusted (flexed) to recognize the actual output level

True or False: Information regarding the causes of variances is provided when the master budget is compared with actual results.

True or False: A favorable variance results when budgeted revenues exceed actual revenues.

True or False: Management by exception is the practice of concentrating on areas not operating as anticipated (such as a cost overrun) and placing less attention on areas operating as anticipated.

True or False: The essence of variance analysis is to capture a departure from what was expected.

True or False: A favorable variance should be ignored by management.

Flexible budgets

- a. accommodate changes in the inflation rate.
- b. accommodate changes in activity levels.
- c. are used to evaluate capacity utilization.
- d. are static budgets that have been revised for changes in price(s).

True or False: Information regarding the causes of variances is provided when the master budget is compared with actual results.

Answer: False. Little information regarding the causes of variances is provided when the master budget is compared with actual results because you are comparing a budget for one level of activity with actual costs for a different level of activity.

True or False: A favorable variance results when budgeted revenues exceed actual revenues.

Answer: False. An unfavorable variance results when budgeted revenues exceed actual revenues.

True or False: Management by exception is the practice of concentrating on areas not operating as anticipated (such as a cost overrun) and placing less attention on areas operating as anticipated.

Answer: True.

True or False: The essence of variance analysis is to capture a departure from what was expected.

Answer: True.

True or False: A favorable variance should be ignored by management.

Answer: False. Favorable variance investigation may lead to improved production methods, other discoveries for future opportunities, or not be good news at all and adversely affect other variances.

Flexible budgets

- a. accommodate changes in the inflation rate.
- b. accommodate changes in activity levels.**
- c. are used to evaluate capacity utilization.
- d. are static budgets that have been revised for changes in price(s).

Learning Objective 2: Develop a flexible budget. . . proportionately increase variable costs; keep fixed costs the same and compute flexible-budget variances . . .

flexible-budget variance → the difference between an actual result and a flexible-budget amount...

sales-volume variances → each sales-volume variance is the difference between a flexible-budget amount and a static-budget amount

[EXERCISE] Bartholomew Corporation's master budget calls for the production of 6,000 units of product monthly. The master budget includes indirect labor of \$396,000 annually; Bartholomew considers indirect labor to be a variable cost. During the month of September, 5,600 units of product were produced, and indirect labor costs of \$30,970 were incurred.

Required: Calculate the flexible budget variance for indirect labor.

[SOLUTION]	Actual DL	\$30,970
	Flexible budget $5,600 \times \$5.50$	<u>30,800</u>
	Flexible budget variance	170 U

Learning Objective 2: Develop a flexible budget. . . proportionately increase variable costs; keep fixed costs the same and compute flexible-budget variances . . .

flexible-budget variance → the difference between an actual result and a flexible-budget amount...

sales-volume variances → each sales-volume variance is the difference between a flexible-budget amount and a static-budget amount

[EXERCISE] The following information is available for the Gabriel Products Company for the month of July:

	<u>Static Budget</u>	<u>Actual</u>
Units	5,000	5,100
Sales revenue	\$60,000	\$58,650
Variable manufacturing costs	\$15,000	\$16,320
Fixed manufacturing costs	\$18,000	\$17,000
Variable marketing and admin. expense	\$10,000	\$10,500
Fixed marketing and admin. expense	\$12,000	\$11,000

Required: Calculate the total sales-volume variance for the month of July.

[SOLUTION]

$$5,100 - 5,000 = 100 \text{ units} \times \$7^* = \$700\text{F}$$

$$\text{Unit CM} = (60,000 - 15,000 - 10,000) / 5,000 = \$7$$

Flexible-Budget-Based Variance Analysis

Level 2 Analysis

	Actual Results (1)	Flexible-Budget Variances (2) = (1) – (3)	Flexible Budget (3)	Sales-Volume Variances (4) = (3) – (5)	Static Budget (5)
Units sold	10,000	0	10,000	2,000 U	12,000
Revenues	\$1,250,000	\$50,000 F	\$1,200,000	\$240,000 U	\$1,440,000
Variable costs					
Direct materials	621,600	21,600 U	600,000	120,000 F	720,000
Direct manufacturing labor	198,000	38,000 U	160,000	32,000 F	192,000
Variable manufacturing overhead	130,500	10,500 U	120,000	24,000 F	144,000
Total variable costs	950,100	70,100 U	880,000	176,000 F	1,056,000
Contribution margin	299,900	20,100 U	320,000	64,000 U	384,000
Fixed manufacturing costs	285,000	9,000 U	276,000	0	276,000
Operating income	\$ 14,900	\$29,100 U	\$ 44,000	\$ 64,000 U	\$ 108,000
Level 2		\$29,100 U		\$ 64,000 U	
		Flexible-budget variance		Sales-volume variance	
Level 1		\$93,100 U			
		Static-budget variance			

^aF = favorable effect on operating income; U = unfavorable effect on operating income.

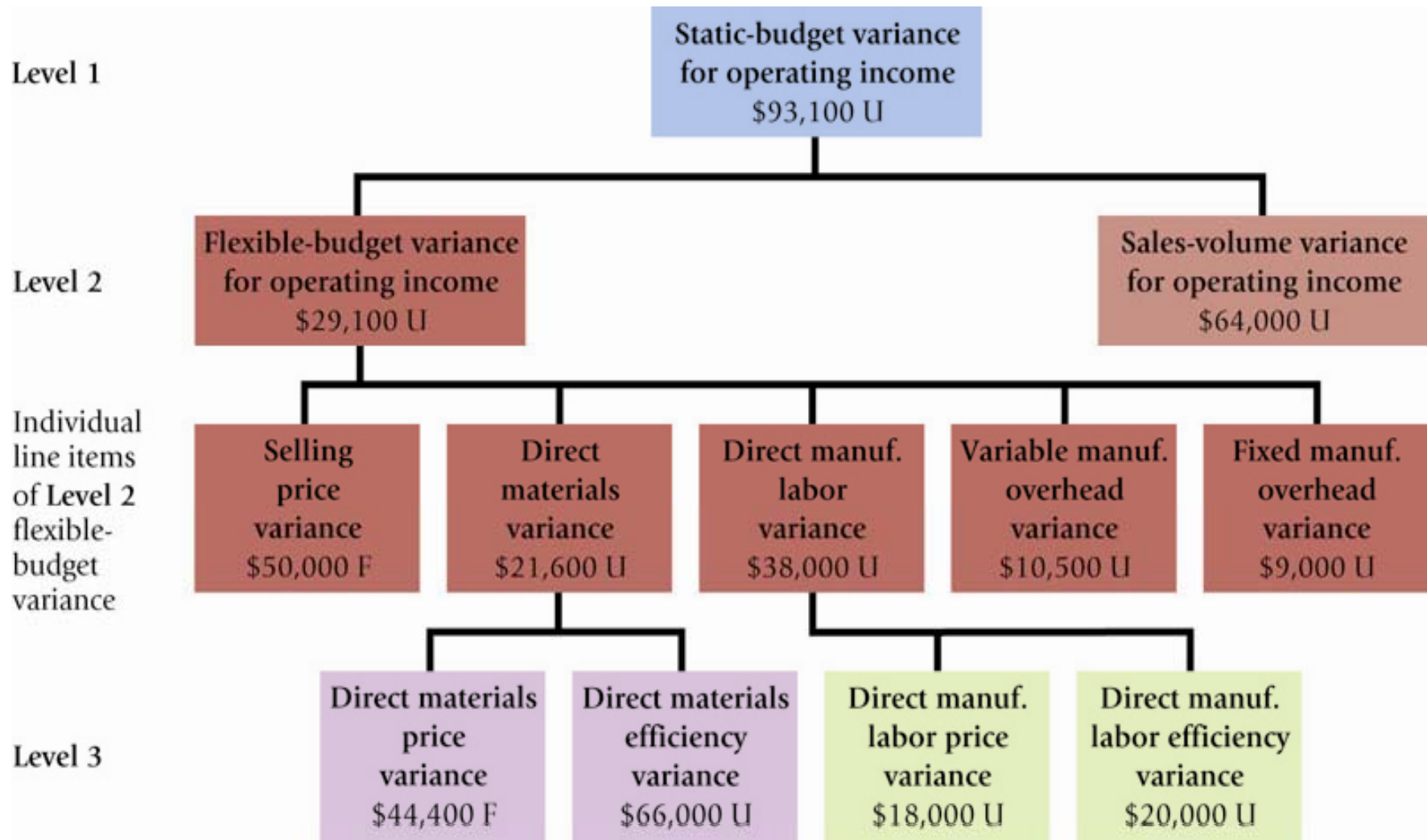
Columnar Presentation of Variance Analysis (Direct Costs)

Level 3 Analysis

	Actual Costs Incurred (Actual Input Quantity × Actual Price) (1)	Actual Input Quantity × Budgeted Price (2)	Flexible Budget (Budgeted Input Quantity Allowed for Actual Output × Budgeted Price) (3)
Direct Materials	(22,200 sq. yds. × \$28/sq. yd.) \$621,600	(22,200 sq. yds. × \$30/sq. yd.) \$666,000	(10,000 units × 2 sq. yds./unit × \$30/sq. yd.) \$600,000
Level 3		\$44,400 F Price variance	\$66,000 U Efficiency variance
Level 2		\$21,600 U Flexible-budget variance	
Direct Manufacturing Labor	9,000 hours × \$22/hr. \$198,000	9,000 hours × \$20/hr. \$180,000	10,000 units × 0.8 hr./unit × \$20/hr. \$160,000
Level 3		\$18,000 U Price variance	\$20,000 U Efficiency variance
Level 2		\$38,000 U Flexible-budget variance	

^aF = favorable effect on operating income; U = unfavorable effect on operating income.

Summary of Levels 1, 2, and 3 Variance Analysis



Learning Objective 3: Explain why standard costs are often used in variance analysis. . . standard costs exclude past inefficiencies and take into account future changes

- A standard is a carefully determined, price, cost, or quantity that is used as a benchmark for judging performance. It is usually expressed on a per-unit basis.
- A standard input is a quantity of input such as 2 pounds of raw material for each completed unit.
- A standard price is the price a company expects to pay for a unit of input, such as \$10 per direct labor hour.
- A standard cost is the cost the company expects a unit of finished product to cost the company.
- A standard can be thought of as a budget for one unit of product.
- Standards, as used in variance analysis, have two advantages:
 - They seek to exclude past inefficiencies
 - They take into account changes expected to occur in the budget period.
- Standards also simplify product costing, enabling the company to cost a product immediately upon its completion.

Learning Objective 3: Explain why standard costs are often used in variance analysis. . . standard costs exclude past inefficiencies and take into account future changes

[EXERCISE]

Strauss Table Company manufactures tables for schools. The 20x4 operating budget is based on sales of 20,000 units at \$100 per table. Operating income is anticipated to be \$120,000. Budgeted variable costs are \$64 per unit, while fixed costs total \$600,000.

Actual income for 20x4 was a surprising \$354,000 on actual sales of 21,000 units at \$104 each. Actual variable costs were \$60 per unit and fixed costs totaled \$570,000.

Required:
Prepare a variance analysis report with both flexible-budget and sales-volume variances.

**Strauss Table Company
Variance Analysis**

	<u>Actual Results</u>	<u>Flexible Variances</u>	<u>Flexible Budget</u>	<u>Sales-Volume Variances</u>	<u>Static Budget</u>
Units sold	<u>21,000</u>		<u>21,000</u>		<u>20,000</u>
Sales					
Var. costs					
CM					
Fixed costs					
Profit					

[SOLUTION]

Strauss Table Company Variance Analysis

	<u>Actual Results</u>	<u>Flexible Variances</u>	<u>Flexible Budget</u>	<u>Sales-Volume Variances</u>	<u>Static Budget</u>
Units sold	<u>21,000</u>		<u>21,000</u>		<u>20,000</u>
Sales	\$2,184,000	\$84,000 F	\$2,100,000	\$100,000 F	\$2,000,000
Var. costs	<u>1,260,000</u>	<u>84,000 F</u>	<u>1,344,000</u>	<u>64,000 U</u>	<u>1,280,000</u>
CM	\$924,000	\$168,000 F	\$756,000	\$36,000 F	\$720,000
Fixed costs	<u>570,000</u>	<u>30,000 F</u>	<u>600,000</u>	<u>0</u>	<u>600,000</u>
Profit	<u>\$354,000</u>	<u>\$198,000 F</u>	<u>\$156,000</u>	<u>\$36,000 F</u>	<u>\$120,000</u>

Total flexible-budget variance = \$198,000 favorable.

Total sales-volume variance = \$36,000 favorable.

Learning Objective 4: Compute price variances. . . each price variance is the difference between an actual input price and a budgeted input price and efficiency variances. . . each efficiency variance is the difference between an actual input quantity and a budgeted input quantity for actual output for direct-cost categories

[EXERCISE]

Information on Pruitt Company's direct-material costs for the month of July was as follows:

Actual quantity purchased	30,000 units
Actual unit purchase price	\$2.75
Materials purchase-price variance	
—unfavorable (based on purchases)	\$1,500
Standard quantity allowed for actual production	24,000 units
Actual quantity used	22,000 units

Requirement: Calculate the direct-materials efficiency variance for July.

[SOLUTION]

Actual price $30,000 \times 2.75$	82,500
Minus unfavorable price variance	<u>1,500</u>
Materials at standard	81,000

$81,000/30,000 = \$2.70$ standard price per unit

Actual quantity	22,000 units
Standard quantity	<u>24,000 units</u>
Efficiency variance	$2,000 \times 1.70 = \$5,400$ F

Learning Objective 4: Compute price variances. . . each price variance is the difference between an actual input price and a budgeted input price and efficiency variances. . . each efficiency variance is the difference between an actual input quantity and a budgeted input quantity for actual output for direct-cost categories

[EXERCISE]

Information for Garner Company's direct-labor costs for the month of September was as follows:

Actual direct-labor hours	34,500 hours
Standard direct-labor hours	35,000 hours
Total direct-labor payroll	\$241,500
Direct-labor efficiency variance—favorable	\$ 3,200

Calculate Garner's direct-labor price (or rate) variance.

[SOLUTION]

Actual direct labor cost	\$241,500
Standard $34,500 \times 6.40$	<u>\$220,800</u>
Price variance	20,700 U

$$\text{Standard rate} = 3,200 / (35,000 - 34,500) = \$6.40$$

Learning Objective 5: Understand how managers use variances. . . managers use variances to improve future performance

Performance evaluation using variance analysis should guard against

- a. emphasis on a single performance measure.
- b. emphasis on total company objectives.
- c. basing effect of a manager's action on total costs of the company as a whole.
- d. highlighting individual aspects of performance.

Learning Objective 6: Perform variance analysis in ABC systems. . . by comparing budgeted costs and actual costs of activities

The basic principles and concepts of variance analysis can be applied to activity-based costing

- a. by application as to the levels of cost hierarchy.
- b. through careful classification of costs as direct and indirect as applied to the product or job.
- c. with use of standard costing systems only.
- d. only through those activities related to individual units of product or service.

Learning Objective 7: Describe benchmarking and explain its role in cost management. . . benchmarking compares actual performance against the best levels of performance

Benchmarking is

- a. relatively easy to do with the amount of available financial information about companies.
- b. best done with the best in their field regardless of type of company.
- c. simply reporting the magnitude of differences in costs or revenues across companies.
- d. making comparisons to direct attention to why differences in costs exist across companies.

The following is United Airline's benchmark cost comparison with its 8 competitors. Calculations are based on available seat miles (ASM).

	A	B	C	D	E	F	G
1		Operating Cost	Operating Revenue	Operating Income	Fuel Cost	Labor Cost	Total ASMs
2		per ASM	per ASM	per ASM	per ASM	per ASM	(Millions)
3	Airline	(1)	(2)	(3) = (2) - (1)	(4)	(5)	(6)
4							
5	United Airlines	\$0.1320	\$0.1352	\$0.0031	\$0.0337	\$0.0298	143,095
6	<u>Airlines used as benchmarks:</u>						
7	JetBlue Airways	\$0.0782	\$0.0826	\$0.0044	\$0.0263	\$0.0193	28,594
8	Southwest Airlines	\$0.0880	\$0.0981	\$0.0101	\$0.0231	\$0.0329	92,663
9	Continental Airlines	\$0.1141	\$0.1184	\$0.0042	\$0.0274	\$0.0259	110,918
10	Delta Airlines	\$0.1156	\$0.1160	\$0.0004	\$0.0292	\$0.0279	147,995
11	Alaska Airlines	\$0.1198	\$0.1157	-\$0.0041	\$0.0325	\$0.0319	23,278
12	American Airlines	\$1.1246	\$0.1293	\$0.0047	\$0.0332	\$0.0356	174,000
13	Northwest Airlines	\$0.1380	\$0.1466	\$0.0086	\$0.0395	\$0.0310	85,738
14	U.S. Airways/American West	\$0.1429	\$0.1501	\$0.0072	\$0.0327	\$0.0271	76,983
15	Average of airlines						
16	used as benchmarks	\$0.1151	\$0.1196	\$0.0044	\$0.0305	\$0.0290	92,521
17							
18							
19	Source: Individual companies' 10-K reports for the year ending December 31,2006						