Managerial Accounting

Eighth Edition

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Chapter 10

Budgetary Control and Responsibility Accounting

Chapter Outline

Learning Objectives

LO 1 Describe budgetary control and static budget reports.

LO 2 Prepare flexible budget reports.

LO 3 Apply responsibility accounting to cost and profit centers.

LO 4 Evaluate performance in investment centers.

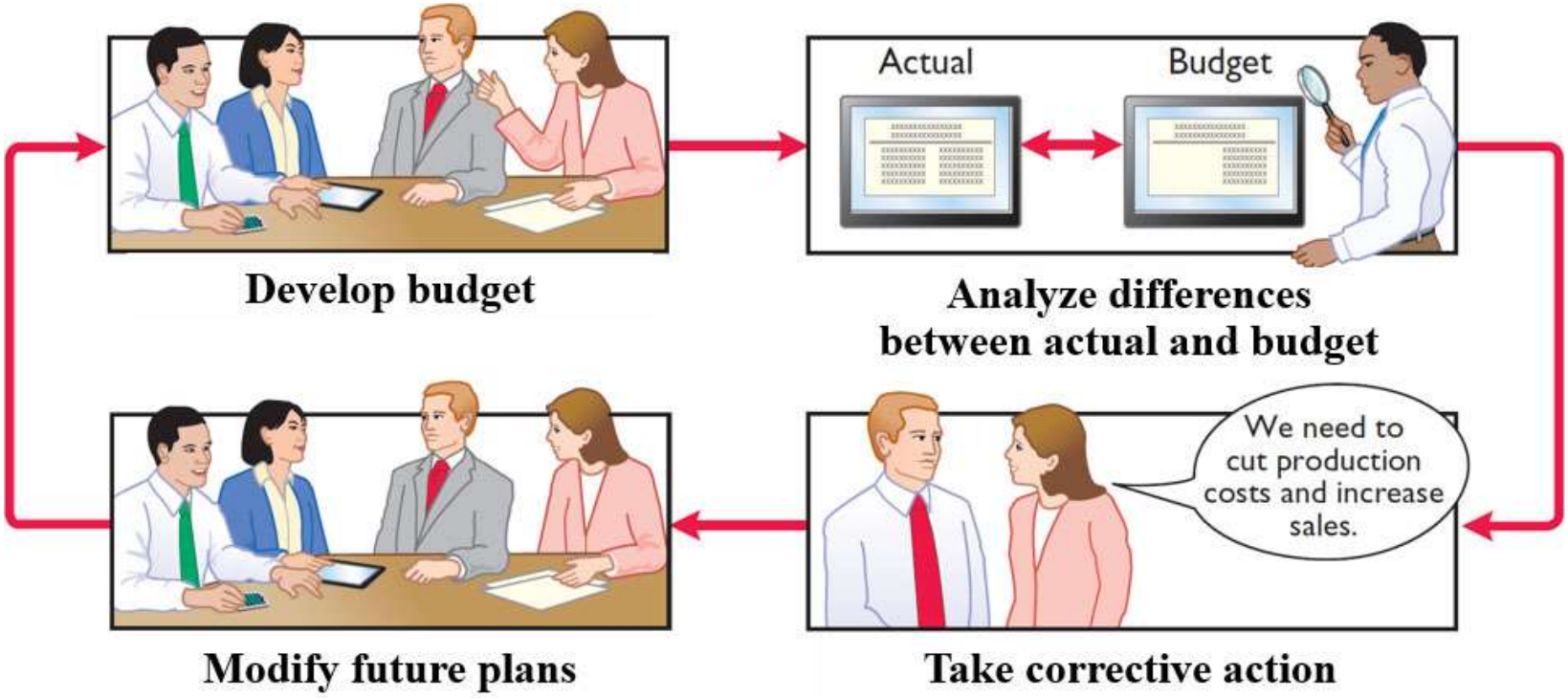
LEARNING OBJECTIVE 1

Describe budgetary control and static budget reports.

Use of budgets in controlling operations is known as **budgetary control**.

- Budget reports compare actual results with planned objectives
- Provides management with feedback on operations
- Budget reports prepared as frequently as needed
- Management analyzes differences between actual and planned results and determines causes

Budgetary Control Activities



Budgetary Control

Works best when a company has a formalized reporting system which:

1. Identifies the **name** of the budget report
2. States the **frequency** of the report
3. Specifies the **purpose** of the report
4. Indicates the primary **recipient(s)** of the report

Budgetary Control

Budgetary control reporting system

Name of Report	Frequency	Purpose	Primary Recipient(s)
Sales	Weekly	Determine whether sales goals are met	Top management and sales manager
Labor	Weekly	Control direct and indirect labor costs	Vice president of production and production department managers
Scrap	Daily	Determine efficient use of materials	Production manager
Departmental overhead costs	Weekly	Control overhead costs	Department manager
Selling expenses	Monthly	Control selling expenses	Sales manager
Income statement	Monthly and quarterly	Determine whether income goals are met	Top management

Budgetary Control
Question

Budgetary control involves all but one of the following:

a. Modifying future plans

b. Analyzing differences

c. Using static budgets

d. Determining differences between actual and planned results

Budgetary Control
Answer

Budgetary control involves all but one of the following:

a. Modifying future plans

b. Analyzing differences

c. Answer: Using static budgets

d. Determining differences between actual and planned results

Static Budget Reports

A **Static budget** is a projection of budget data at one level of activity

- When used in budgetary control, each budget included in the master budget is considered to be static
- Ignores data for different levels of activity
- Compares actual results with budget data at the activity level used in the master budget

Static Budget Reports
Budget and actual sales data

Illustration: Budget and actual sales data for the Rightride product in the first and second quarters of 2020 are as follows.

Sales	First Quarter	Second Quarter	Total
Budgeted	$180,000	$210,000	$390,000
Actual	179,000	199,500	378,500
Difference	$ 1,000	$ 10,500	$ 11,500

Static Budget Reports
First quarter

Sales	First Quarter	Second Quarter	Total
Budgeted	$180,000	$210,000	$390,000
Actual	179,000	199,500	378,500
Difference	$ 1,000	$ 10,500	$ 11,500

Sales Budget Report
For the Quarter Ended March 31, 2020

Product Line	Budget	Actual	Difference Favorable F Unfavorable U
Rightride	$180,000	$179,000	**$1,000 U**

Static Budget Reports
Second quarter

Sales	First Quarter	Second Quarter	Total
Budgeted	$180,000	$210,000	$390,000
Actual	179,000	199,500	378,500
Difference	$ 1,000	$ 10,500	$ 11,500

Sales Budget Report
For the Quarter Ended June 30, 2020

	Second Quarter			Year-to-Date		
			Difference			Difference
			Favorable F			Favorable F
Product Line	Budget	Actual	Unfavorable U	Budget	Actual	Unfavorable U
Rightride	$210,000	$199,500	**$10,500 U**	$390,000	$378,500	**$11,500 U**

Static Budget Reports
Uses and Limitations

- **Appropriate** for evaluating a **manager's effectiveness** in controlling costs when:
  - Actual level of activity closely **approximates master budget** activity level, and/or
  - Behavior of **costs is fixed** in response to changes in activity
- **Appropriate** for fixed costs
- **Not appropriate** for variable costs

Static Budget Reports

Question

A static budget is useful in controlling costs when cost behavior is:

a. Mixed

b. Fixed

c. Variable

d. Linear

Static Budget Reports
Answer

A static budget is useful in controlling costs when cost behavior is:

a. Mixed

b. Answer: Fixed

c. Variable

d. Linear

DO IT! 1: Static Budget Reports
Problem data

Lawler Company expects to produce 5,000 units of product CV93 during the current month. Budgeted variable manufacturing costs per unit are direct materials $6, direct labor $15, and overhead $24. Monthly budgeted fixed manufacturing overhead costs are $10,000 for depreciation and $5,000 for supervision. In the current month, Lawler actually produced 5,500 units and incurred the following costs: direct materials $33,900, direct labor $74,200, variable overhead $120,500, depreciation $10,000, and supervision $5,000.

Prepare a static budget report.

DO IT! 1: Static Budget Reports
Solution

	Budget	Actual	Difference Favorable - F Unfavorable - U	
Production in units	5,000	5,500		
Variable costs				
Direct materials ($6)	$ 30,000	$ 33,900	$ 3,900	U
Direct labor ($15)	75,000	74,200	800	F
Overhead ($24)	120,000	120,500	500	U
Total variable costs	225,000	228,600	3,600	U
Fixed costs				
Depreciation	10,000	10,000	0	
Supervision	5,000	5,000	0	
Total fixed costs	15,000	15,000	0	
Total costs	$240,000	$243,600	$ 3,600	U

LEARNING OBJECTIVE 2

Prepare flexible budget reports.

Flexible budget projects budget data for various levels of activity.

- Essentially a **series of static budgets** at different activity levels
- Budgetary process **more useful if it is adaptable** to changes in operating conditions
- Can be **prepared for each type of budget** in the master budget

Why Flexible Budgets?

Static overhead budget

Illustration: Barton Robotics static overhead budget.

Manufacturing Overhead Budget (Static)
Assembly Department
For the Year Ended December 31, 2020

Budgeted production in units (robotic controls)	10,000
Budgeted costs	
Indirect materials	$ 250,000
Indirect labor	260,000
Utilities	190,000
Depreciation	280,000
Property taxes	70,000
Supervision	50,000
	$1,100,000

Why Flexible Budgets?
Overhead static budget report

Overhead Static Budget report assuming 12,000 units were actually produced, rather than 10,000 units.

	Budget	Actual	Difference Favorable - F Unfavorable - U	
Production in units	10,000	12,000		
Costs				
Indirect materials	$ 250,000	$ 295,000	**$ 45,000**	**U**
Indirect labor	260,000	312,000	**52,000**	**U**
Utilities	190,000	225,000	**35,000**	**U**
Depreciation	280,000	280,000	**0**	
Property taxes	70,000	70,000	**0**	
Supervision	50,000	50,000	**0**	
	$1,100,000	$1,232,000	**$132,000**	**U**

Why Flexible Budgets?
Comparison

- Over budget in three of six overhead costs
  - Unfavorable difference of $132,000 – 12% over budget
- Budget data for 10,000 units, **not relevant**
  - Meaningless to compare actual variable costs for 12,000 units with budgeted variable costs for 10,000 units
  - Variable costs increase with production

Why Flexible Budgets?

Budgeted variable costs, 12,000 units

Analyzing budget data for costs at 10,000 units, you arrive at the following per unit results.

Item	Total Cost	Per Unit
Indirect materials	$250,000	$25
Indirect labor	260,000	26
Utilities	190,000	19
	$700,000	$70

Item	Computation	Total
Indirect materials	$25 × 12,000	$300,000
Indirect labor	26 × 12,000	312,000
Utilities	19 × 12,000	228,000
		$840,000

Why Flexible Budgets?
Overhead flexible budget report

	Budget	Actual	Difference Favorable - F Unfavorable - U	
Production in units	12,000	12,000		
Variable costs				
Indirect materials ($25)	$ 300,000	$ 295,000	**$ 5,000**	**F**
Indirect labor ($26)	312,000	312,000	**0**	
Utilities ($19)	228,000	225,000	**3,000**	**F**
Total variable costs	840,000	832,000	**8,000**	**F**
Fixed costs				
Depreciation	280,000	280,000	**0**	
Property taxes	70,000	70,000	**0**	
Supervision	70,000	50,000	**0**	
Total fixed costs	400,000	400,000	**0**	
Total costs	$1,240,000	$1,232,000	**$ 8,000**	**F**

Developing the Flexible Budget

1. Identify activity index and relevant range of activity
2. Identify variable costs, and determine budgeted variable cost per unit of activity for each cost
3. Identify fixed costs, and determine budgeted amount for each cost
4. Prepare budget for selected increments of activity within relevant range

Flexible Budget—A Case Study
Master budget data

Fox Company's management uses a **flexible budget for monthly comparisons** of actual and budgeted manufacturing overhead costs of the Finishing Department. The master budget for the year ending December 31, 2020, shows expected **annual** operating capacity of 120,000 direct labor hours and the overhead costs.

Variable Costs	
Indirect materials	$180,000
Indirect labor	240,000
Utilities	60,000
Total	$480,000

Fixed Costs	
Depreciation	$180,000
Supervision	120,000
Property taxes	60,000
Total	$360,000

Flexible Budget—A Case Study
Step 1

Four steps for developing the flexible budget.

1. Identify activity index and relevant range of activity.
   - Activity index is direct labor hours
   - Relevant range is 8,000 – 12,000 direct labor hours per month

Flexible Budget—A Case Study
Step 2

Four steps for developing the flexible budget.

2. Identify variable costs and determine budgeted variable cost per unit of activity for each cost.

Variable Costs	Computation	Variable Cost per Direct Labor Hour
Indirect materials	$180,000 ÷ 120,000	**$1.50**
Indirect labor	$240,000 ÷ 120,000	**2.00**
Utilities	$ 60,000 ÷ 120,000	**0.50**
Total		**$4.00**

Flexible Budget—A Case Study
Steps 3 and 4

Four steps for developing the flexible budget.

3. Identify fixed costs and determine budgeted amount for each cost.
   - Three fixed costs per month:
     - Depreciation $15,000
     - Supervision $10,000
     - Property taxes $5,000
4. Prepare budget for selected increments of activity within the relevant range.
   - Prepared in increments of 1,000 direct labor hours

Flexible Budget—A Case Study

Monthly overhead flexible budget

Monthly Manufacturing Overhead Flexible Budget
Finishing Department
For the Months During the Year 2020

Activity level					
Direct labor hours	8,000	9,000	10,000	11,000	12,000
Variable costs					
Indirect materials ($1.50)	$12,000	$13,500	$15,000	$16,500	$18,000
Indirect labor ($2.00)	16,000	18,000	20,000	22,000	24,000
Utilities ($0.50)	4,000	4,500	5,000	5,500	6,000
Total variable costs	32,000	36,000	40,000	44,000	48,000
Fixed costs					
Depreciation	15,000	15,000	15,000	15,000	15,000
Supervision	10,000	10,000	10,000	10,000	10,000
Property taxes	5,000	5,000	5,000	5,000	5,000
Total fixed costs	30,000	30,000	30,000	30,000	30,000
Total costs	$62,000	$66,000	$70,000	$74,000	$78,000

Flexible Budget—A Case Study
Cost equation for total budgeted costs

Fox uses the formula below to determine total budgeted costs at any level of activity.

Fixed Cost	+	Variable Costs*	=	**Total Budgeted Costs**

*Total variable cost per unit of activity × Activity level.

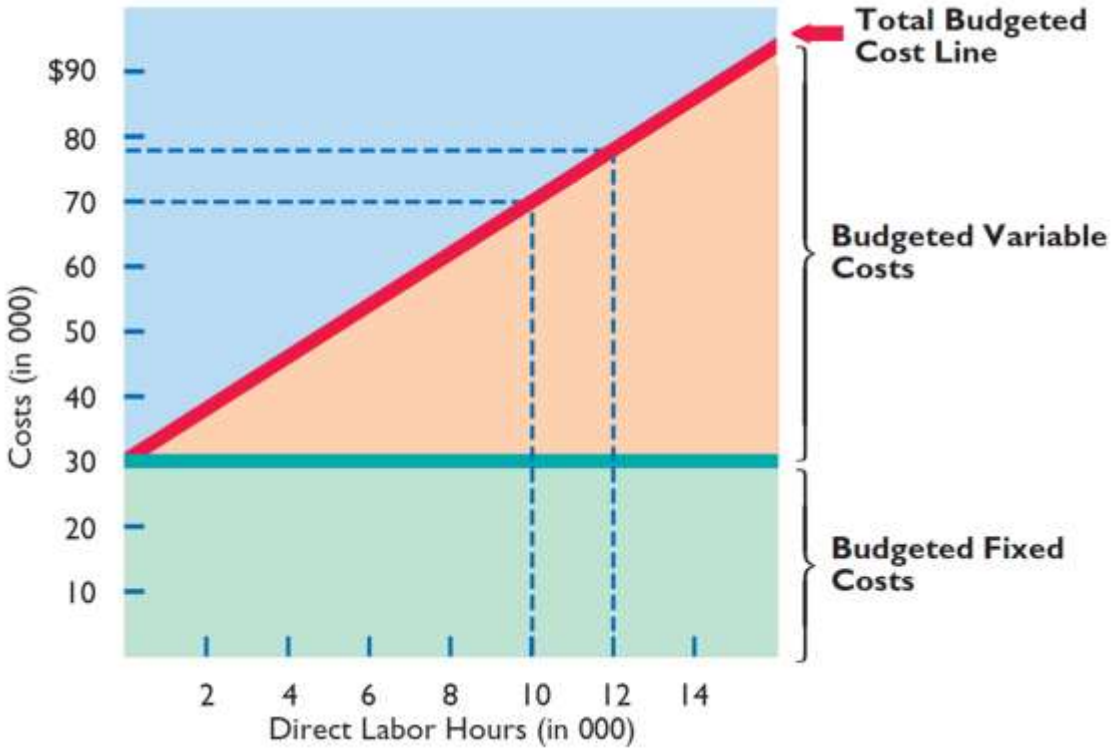
Determine total budgeted costs for Fox Company with fixed costs of $30,000 and total variable cost $4 per direct labor hour:

- 9,000 direct labor hours: $30,000 + ($4 × 9,000) = $66,000
- 8,622 direct labor hours: $30,000 + ($4 × 8,622) = $64,488

Flexible Budget—A Case Study
Graphic flexible budget data

Illustration 10.15

Graphic flexible budget data highlighting 10,000 and 12,000 activity levels



Flexible Budget Reports

- **Widely used** in production and service departments
- A type of **internal report**
- **Consists of two sections:**
  - **Production data** for a selected activity index, such as direct labor hours
  - **Cost data** for variable and fixed costs
- Widely used in production and service departments to **evaluate a manager's performance**

Flexible Budget Reports
Overhead flexible budget report

Manufacturing Overhead Flexible Budget Report
Finishing Department
For the Month Ended January 31, 2020

	Budget at	Actual cost	Difference Favorable – F Unfavorable – U	
Direct labor hours (DLH)	9,000 DLH	9,000 DLH		
Variable costs				
Indirect materials ($1.50)	$13,500	$14,000	$ 500	U
Indirect labor ($2.00)	18,000	17,000	1,000	F
Utilities ($0.50)	4,500	4,600	100	U
Total variable costs	36,000	35,600	400	F
Fixed costs				
Depreciation	15,000	15,000	0	
Supervision	10,000	10,000	0	
Property taxes	5,000	5,000	0	
Total fixed costs	30,000	30,000	0	
Total costs	$66,000	$65,600	$ 400	F

Flexible Budgets
Question

At 9,000 direct labor hours, the flexible budget for indirect materials is $27,000. If $28,000 of indirect materials costs are incurred at 9,200 direct labor hours, the flexible budget report should show the following difference for indirect materials:

a. $1,000 unfavorable

b. $1,000 favorable

c. $400 favorable

d. $400 unfavorable

Flexible Budgets
Answer

At 9,000 direct labor hours, the flexible budget for indirect materials is $27,000. If $28,000 of indirect materials costs are incurred at 9,200 direct labor hours, the flexible budget report should show the following difference for indirect materials:

a. $1,000 unfavorable

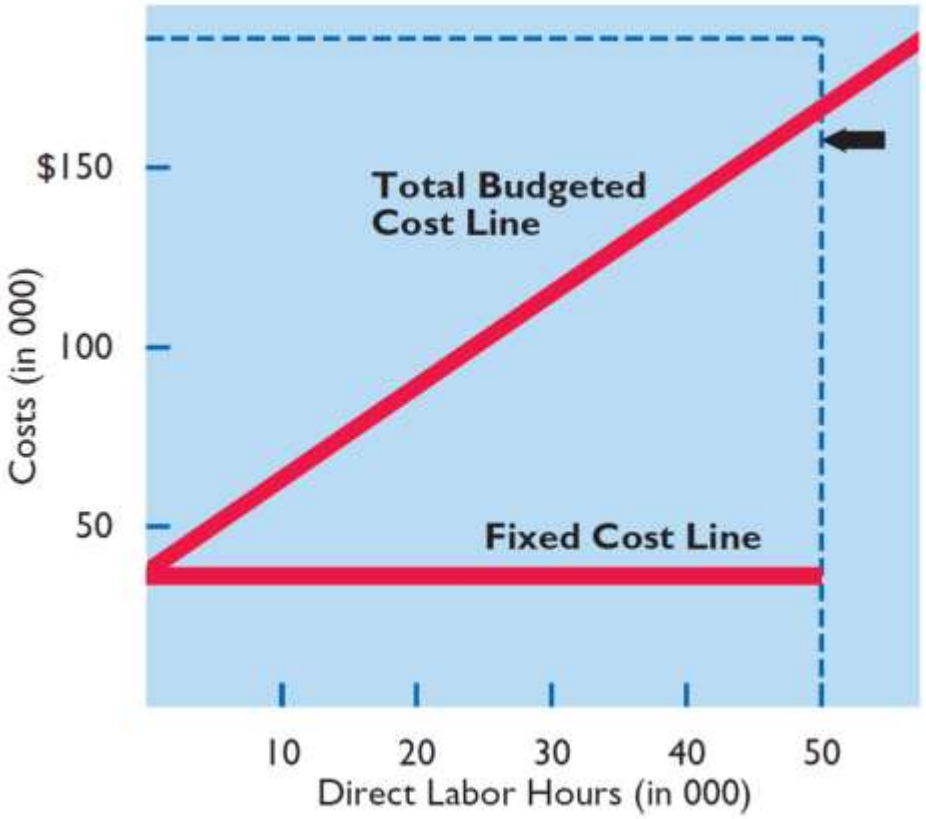
b. $1,000 favorable

c. $400 favorable

d. Answer: $400 unfavorable

DO IT! 2: Flexible Budgets

In Strassel Company's flexible budget graph, the fixed cost line and the total budgeted cost line intersect the vertical axis at $36,000. The total budgeted cost line is $186,000 at an activity level of 50,000 direct labor hours. Compute total budgeted costs at 30,000 direct labor hours.



DO IT! 2: Flexible Budgets
Solution

Compute total budgeted costs at 30,000 direct labor hours.

Variable costs:	
Total budgeted cost line	$186,000
Fixed costs	− 36,000
Variable costs at 50,000 hours	150,000
Activity level at intersect (hours)	÷ 50,000
Variable costs per direct labor hour	$3
Direct labor hours	× 30,000
Total variable costs	90,000
Total fixed costs	+ 36,000
Total budgeted costs	**$126,000**

LEARNING OBJECTIVE 3

Apply responsibility accounting to cost and profit centers.

Accumulating and reporting costs (and revenues) on basis of the manager who makes decisions about the items.

Conditions:

1. Costs and revenues can be directly associated with specific level of management responsibility
2. Costs and revenues can be controlled by employees at level of responsibility with which they are associated
3. Budget data can be developed for evaluating the manager's effectiveness in controlling costs and revenues

Responsibility Accounting

Illustration 10.17

Responsibility for controllable costs at varying levels of management

Responsibility Accounting
Terms

- Responsibility center - any individual who has control and is accountable for activities
- May extend to any level of management
- Especially valuable in a **decentralized** company
  - Control of operations delegated to many managers throughout the organization
  - **Segment** – area of responsibility for which reports are prepared

Responsibility Accounting
Two differences from budgeting for costs/revenues

1. Distinguishes between controllable and noncontrollable items
2. Emphasizes or includes only items controllable by the individual manager in performance reports

- Applies to both profit and not-for-profit entities
  - Profit entities: maximize net income
  - Not-for-profit: minimize cost of providing services

Controllable versus Noncontrollable Costs

A cost over which a manager has control is called a **controllable cost**.

1. All costs are controllable by top management
2. Fewer costs are controllable as one moves down to each lower level of managerial responsibility

Costs incurred indirectly and allocated to a responsibility level are **noncontrollable costs**.

Principles of Performance Evaluation

- Management function that compares actual results with budget goals
- Includes both behavioral and reporting principles

Principles of Performance Evaluation
Management by Exception

Management by exception means that top management's review of a budget report is focused primarily on differences between actual results and planned objectives.

- **Materiality -** Without quantitative guidelines, management would have to investigate every budget difference regardless of the amount
- **Controllability of the Item -** Exception guidelines are more restrictive for controllable items than for items the manager cannot control

Behavioral Principles

1. Managers of responsibility centers should have direct input into the process of establishing budget goals
2. Evaluation of performance should be based entirely on matters that are controllable by the manager being evaluated
3. Top management should support evaluation process
4. Evaluation process must allow managers to respond to their evaluations
5. Evaluation should identify both good and poor performance

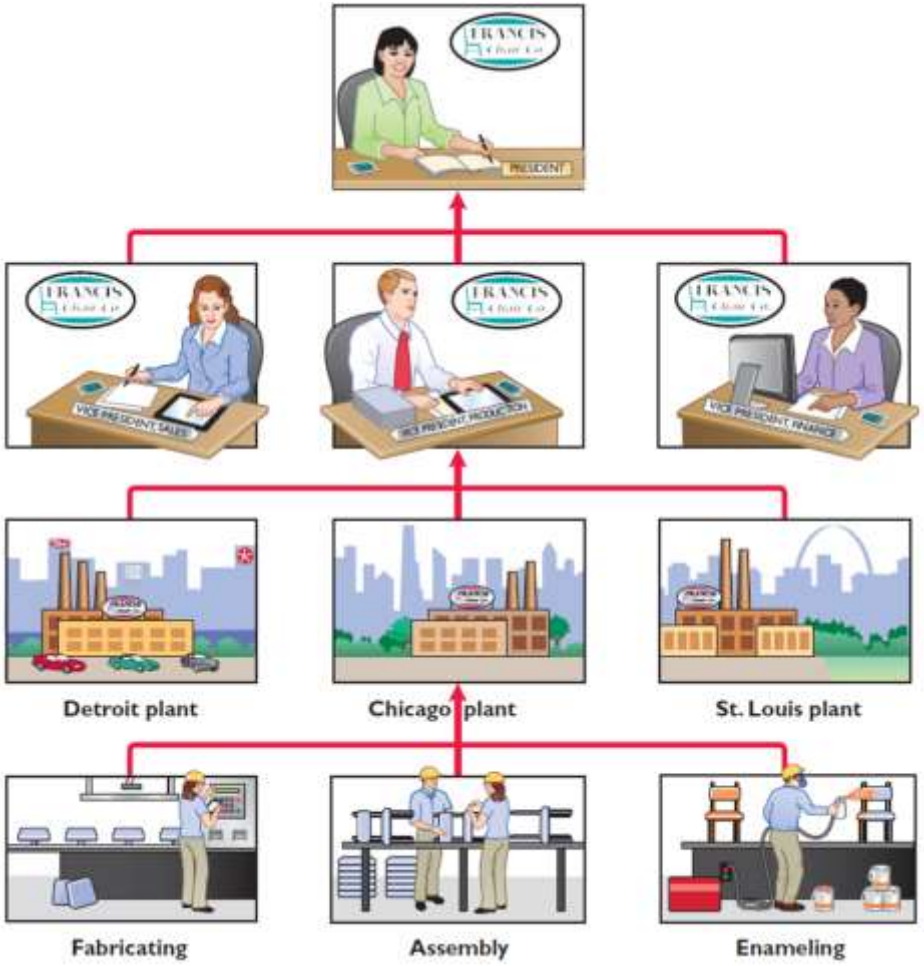
Reporting Principles

1. Contain only data that are controllable by manager of responsibility center
2. Provide accurate and reliable budget data to measure performance
3. Highlight significant differences between actual results and budget goals
4. Be tailor-made for intended evaluation by ensuring only controllable costs are included
5. Be prepared at reasonable time intervals

Responsibility Reporting System

- Preparation of a report for each level of responsibility in company's organization chart
- Begins with lowest level of responsibility and moves upward to higher levels
- Permits management by exception at each level of responsibility
- Each higher level can obtain detailed report for each lower level

Responsibility Reporting System
Partial organization chart



Report A

President sees summary data of vice presidents.

Report B

Vice president sees summary of controllable costs in his/her functional area.

Report C

Plant manager sees summary of controllable costs for each department in the plant.

Report D

Department manager sees controllable costs of his/her department.

Responsibility Reporting System
Reports A and B

Report A

To President

Controllable Costs:	Budget	Actual	January Favorable - F Unfavorable - U	
President	$ 150,000	$ 151,500	$ 1,500	U
Vice Presidents:				
Sales	185,000	187,000	2,000	U
Production	**1,179,000**	**1,186,300**	**7,300**	**U**
Finance	100,000	101,000	1,000	U
Total	$1,614,000	$1,625,800	$11,800	U

Report B

To Vice President Production

Controllable Costs:	Budget	Actual	January Favorable - F Unfavorable - U	
VP Production	$ 125,000	$ 126,000	$ 1,000	U
Assembly Plants:				
Detroit	420,000	418,000	2,000	F
Chicago	**304,000**	**309,300**	**5,300**	**U**
St. Louis	330,000	333,000	3,000	U
Total	**$1,179,000**	**$1,186,300**	**$ 7,300**	**U**

Responsibility Reporting System
Reports B and C

Report B

To Vice President Production			January Favorable - F	
Controllable Costs:	Budget	Actual	Unfavorable - U	
VP Production	$ 125,000	$ 126,000	$ 1,000	U
Assembly Plants:				
Detroit	420,000	418,000	2,000	F
Chicago	**304,000**	**309,300**	**5,300**	**U**
St. Louis	330,000	333,000	3,000	U
Total	**$1,179,000**	**$1,186,300**	**$ 7,300**	**U**

Report C

To Plant Manager-Chicago			January Favorable - F	
Controllable Costs:	Budget	Actual	Unfavorable - U	
Chicago Plant	$ 110,000	$ 113,000	$ 3,000	U
Departments:				
Fabricating	**84,000**	**85,300**	**1,300**	**U**
Enameling	62,000	64,000	2,000	U
Assembly	48,000	47,000	1,000	F
Total	**$304,000**	**$309,300**	**$ 5,300**	**U**

Responsibility Reporting System
Reports C and D

Report C

To Plant Manager-Chicago

Controllable Costs:	Budget	Actual	January Favorable - F Unfavorable - U	
Chicago Plant	$ 110,000	$ 113,000	$ 3,000	U
Departments:				
Fabricating	**84,000**	**85,300**	**1,300**	**U**
Enameling	62,000	64,000	2,000	U
Assembly	48,000	47,000	1,000	F
Total	**$304,000**	**$309,300**	**$ 5,300**	**U**

Report D

To Fabricating Dept. Manager

Controllable Costs:	Budget	Actual	January Favorable - F Unfavorable - U	
Direct Materials	$ 20,000	$ 20,500	$ 500	U
Direct Labor	40,000	41,000	1,000	U
Overhead	24,000	23,800	200	F
Total	**$84,000**	**$85,300**	**$ 1,300**	**U**

Responsibility Reporting System

Summary

- Permits comparative evaluations
- Plant manager can rank each department manager's effectiveness in controlling manufacturing costs
- Comparative rankings provide incentive for a manager to control costs

Types of Responsibility Centers
Three Basic Types — Cost Center

- **Cost center**
  - Incurs costs, does not generate revenues
  - Managers have authority to incur costs
  - Managers evaluated on ability to control costs
  - Usually a production or service department
- **Profit center**
- **Investment center**

Types of Responsibility Centers
Three Basic Types — Profit Center

- **Cost center**
- **Profit center**
  - Incurs costs and generates revenues
  - Managers judged on profitability of center
  - Examples include individual departments of a retail store or branch bank offices
- **Investment center**

Types of Responsibility Centers
Three Basic Types — Investment Center

- **Investment center**
  - Incurs costs, generates revenues, and has investment funds available for use
  - Manager evaluated on profitability and rate of return earned on funds
  - Often a subsidiary company or a product line
  - Manager able to control or significantly influence investment decisions

Types of Responsibility Centers
Illustration 10.20

Cost Center

Expenses

Profit Center

Expenses and Revenues

Investment Center

Expenses and Revenues and Return on Investment

Types of Responsibility Centers
Responsibility Accounting Question

Under responsibility accounting, the evaluation of a manager's performance is based on matters that the manager:

a. Directly controls

b. Directly and indirectly controls

c. Indirectly controls

d. Has shared responsibility for with another manager

Types of Responsibility Centers
Responsibility Accounting Answer

Under responsibility accounting, the evaluation of a manager's performance is based on matters that the manager:

a. Answer: Directly controls

b. Directly and indirectly controls

c. Indirectly controls

d. Has shared responsibility for with another manager

Types of Responsibility Centers
Responsibility Accounting for Cost Centers

- Based on manager's ability to meet budgeted goals for controllable costs
- Results in responsibility reports which compare actual controllable costs with flexible budget
  - Include only controllable costs in reports
  - No distinction between variable and fixed costs

Types of Responsibility Centers
Responsibility report for a cost center

Illustration: The report shown is adapted from the flexible budget report for Fox Company in Illustration 10.16.

Finishing Department
Responsibility Report
For the Month Ended January 31, 2020

Controllable Costs	Budget	Actual	Difference Favorable - F Unfavorable - U	
Indirect materials	$13,500	$14,000	$ 500	U
Indirect labor	18,000	17,000	1,000	F
Utilities	4,500	4,600	100	U
Supervision	4,000	4,000	0	
Total	$40,000	$39,600	$ 400	F

Types of Responsibility Centers
Assumptions

- Finishing Department manager is able to control all manufacturing overhead costs except depreciation, property taxes, and his own monthly salary of $6,000
- Remaining $4,000 ($10,000 − $6,000) of supervision costs are assumed to apply to other supervisory personnel within the Finishing Department, whose salaries are controllable by the manager

Types of Responsibility Centers
Responsibility Accounting for Profit Centers

- Based on detailed information about both controllable revenues and controllable costs
- Manager controls operating revenues earned, such as sales
- Manager controls all variable costs incurred by center because they vary with sales

Responsibility Acc. for Profit Centers
Direct fixed costs

- Relate specifically to one responsibility center
- Incurred for sole benefit of the center
- Called traceable costs since they can be traced directly to one center
- Most direct fixed costs are controllable by profit center manager

Responsibility Acc. for Profit Centers
Indirect fixed costs

- Pertain to company's overall operating activities
- Incurred for benefit of more than one profit center
- Called common costs since they apply to more than one center
- Most are not controllable by profit center manager

Responsibility Acc. for Profit Centers
Responsibility report

- Budgeted and actual controllable revenues and costs
- Uses cost-volume-profit income statement format:
  - Deduct controllable fixed costs from contribution margin
  - **Controllable margin** - excess of contribution margin over controllable fixed costs
  - Noncontrollable fixed costs are not reported

Responsibility Acc. for Profit Centers

Responsibility report for profit center

Mantle Company
Responsibility Report for Marine Division
For the Year Ended December 31, 2020

	Budget	Actual	Difference Favorable - F Unfavorable - U	
Sales	$1,200,000	$1,150,000	$50,000	U
Variable costs				
Cost of goods sold	500,000	490,000	10,000	F
Selling and administrative	160,000	156,000	4,000	F
Total	660,000	646,000	14,000	F
Contribution margin	540,000	504,000	36,000	U
Controllable fixed costs				
Cost of goods sold	100,000	100,000	0	
Selling and administrative	80,000	80,000	0	
Total	180,000	180,000	0	
Controllable margin	**$ 360,000**	**$ 324,000**	**$36,000**	**U**

Report does not show noncontrollable fixed costs of $60,000. These costs would be included in a report on the profitability of the profit center.

Types of Responsibility Centers
Responsibility Report Question

In a responsibility report for a profit center, controllable fixed costs are deducted from contribution margin to show:

a. Profit center margin

b. Controllable margin

c. Net income

d. Income from operations

Types of Responsibility Centers
Responsibility Report Answer

In a responsibility report for a profit center, controllable fixed costs are deducted from contribution margin to show:

a. Profit center margin

b. Answer: Controllable margin

c. Net income

d. Income from operations

DO IT! 3: Profit Center Respon. Report

Midwest Division operates as a profit center. It reports the following for the year:

	Budget	Actual
Sales	$1,500,000	$1,700,000
Variable costs	700,000	800,000
Controllable fixed costs	400,000	400,000
Noncontrollable fixed costs	200,000	200,000

Prepare a responsibility report for the Midwest Division for December 31, 2020.

DO IT! 3: Profit Center Respon. Report
Solution

Prepare a responsibility report for the Midwest Division for December 31, 2020.

	Budget	Actual	Difference Favorable - F Unfavorable - U	
Sales	$1,500,000	$1,700,000	$200,000	F
Variable costs	700,000	800,000	100,000	U
Contribution margin	800,000	900,000	100,000	F
Controllable fixed costs	400,000	400,000	0	
Controllable margin	**$ 400,000**	**$ 500,000**	**$100,000**	**F**

LEARNING OBJECTIVE 4

Evaluate performance in investment centers.

Return on investment (ROI) is the primary basis for evaluating the performance of a manager of an investment center.

- Shows effectiveness of manager in using assets at his/her disposal
- Factors in ROI formula are controllable by manager

Return on Investment (ROI)

Controllable Margin	÷	Average Operating Assets	=	Return on Investment (ROI)
$1,000,000	÷	$5,000,000	=	20%

- Operating assets include current assets and plant assets used in operations by center and controlled by manager
- Base average operating assets on beginning and ending cost or book values of assets

Responsibility Report

- Scope of manager's responsibility affects content
- Investment center is an independent entity for operating purposes
- All fixed costs are controllable by center manager
- Shows budgeted and actual ROI below controllable margin

Responsibility Report

Responsibility report for investment center

Responsibility Report for Marine Division
For the Year Ended December 31, 2020

	Budget	Actual	Difference Favorable - F Unfavorable - U	
Sales	$1,200,000	$1,150,000	$50,000	U
Variable costs				
Cost of goods sold	500,000	490,000	10,000	F
Selling and administrative	160,000	156,000	4,000	F
Total	660,000	646,000	14,000	F
Contribution margin	540,000	504,000	36,000	U
Controllable fixed costs				
Cost of goods sold	100,000	100,000	0	
Selling and administrative	80,000	80,000	0	
Other fixed costs	**60,000**	**60,000**	**0**	
Total	240,000	240,000	0	
Controllable margin	**$300,000**	**$264,000**	**36,000**	**U**
Return on investment	**15.0%**	**13.2%**	**1.8%**	
	↑	↑	↑	
Controllable margin	$300,000	$264,000	$36,000	
Average operating assets	$2,000,000	$2,000,000	$2,000,000	

Judgmental Factors in ROI

1. **Valuation of operating assets**
   - Acquisition cost, book value, appraised value, or fair value
   - Each provides a reliable basis for evaluating performance
2. **Margin (income) measure**
   - Controllable margin, income from operations, or net income
   - Only controllable margin is a valid basis for evaluating performance of manager

Improving ROI

Improve ROI by increasing controllable margin, and/or reducing average operating assets.

Sales	$2,000,000
Variable costs	1,100,000
Contribution margin	900,000
Controllable fixed costs	300,000
Controllable margin (a)	$ 600,000
Average operating assets (b)	$5,000,000
Return on investment (a) ÷ (b)	**12%**

Increasing Controllable Margin
Improve ROI by increasing sales

Improve ROI by increasing sales **or** by reducing variable and controllable fixed costs.

1. **Increase sales by 10%.**
   - Sales increase $200,000 and contribution margin increases $90,000 ($200,000 × .45)
   - Controllable margin increases to $690,000 ($600,000 + $90,000)

$$\text{ROI} = \frac{\text{Controllable margin}}{\text{Average Operating assets}} = \frac{\$690,000}{\$5,000,000} = \mathbf{13.8\%}$$

Increasing Controllable Margin
Improve ROI by reducing variable/fixed costs

Improve ROI by increasing sales **or** by reducing variable and controllable fixed costs.

2. **Decrease variable and fixed costs 10%.**
   - Total costs decrease $140,000 [($1,100,000 + $300,000) × 10%]
   - Controllable margin becomes $740,000.

$$\text{ROI} = \frac{\text{Controllable margin}}{\text{Average Operating assets}} = \frac{\$740,000}{\$5,000,000} = \mathbf{14.8\%}$$

Reducing Average Operating Assets

- Assume that average operating assets are reduced 10% or $500,000 ($5,000,000 × .10)
- Average operating assets become $4,500,000
- Controllable margin remains unchanged at $600,000

$$\text{ROI} = \frac{\text{Controllable margin}}{\text{Average Operating assets}} = \frac{\$600,000}{\$4,500,000} = \mathbf{13.3\%}$$

Improving ROI
Question

In the formula for return on investment (ROI), the factors for controllable margin and operating assets are, respectively:

a. Controllable margin percentage and total operating assets

b. Controllable margin dollars and average operating assets

c. Controllable margin dollars and total assets

d. Controllable margin percentage and average operating assets

Improving ROI
Answer

In the formula for return on investment (ROI), the factors for controllable margin and operating assets are, respectively:

a. Controllable margin percentage and total operating assets

b. Answer: Controllable margin dollars and average operating assets

c. Controllable margin dollars and total assets

d. Controllable margin percentage and average operating assets

DO IT! 4: Performance Evaluation

The service division of Metro Industries reported the following results for 2020.

Sales	$400,000
Variable costs	320,000
Controllable fixed costs	40,800
Average operating assets	280,000

Management is considering the following independent courses of action in 2021 in order to maximize the return on investment.

1. Reduce average operating assets by $80,000, with no change in controllable margin.
2. Increase sales $80,000, with no change in the contribution margin percentage.

DO IT! 4: Performance Evaluation
Computation of controllable margin and ROI

The service division reported the following results for 2020.

Sales	$400,000
Variable costs	320,000
Controllable fixed costs	40,800
Average operating assets	280,000

a. Compute controllable margin and return on investment for 2020.

Sales	$400,000
Variable costs	320,000
Contribution margin	80,000
Controllable fixed costs	40,800
Controllable margin (a)	**$39,200**
Average operating assets (b)	$280,000
Return on investment (a) ÷ (b)	**14%**

DO IT! 4: Performance Evaluation
Computation of expected ROI for alternative 1

The service division reported the following results for 2020.

Sales	$400,000
Variable costs	320,000
Controllable fixed costs	40,800
Average operating assets	280,000

b. Compute expected return on investment for alternative 1.

$$\frac{\$39,200}{\$280,000 - \$80,000} = 19.6\%$$

DO IT! 4: Performance Evaluation
Computation of expected ROI for alternative 2

The service division reported the following results for 2020.

Sales	$400,000
Variable costs	320,000
Controllable fixed costs	40,800
Average operating assets	280,000

b. Compute controllable margin and expected return on investment for alternative 2.

Sales ($400,000 + $80,000)	$480,000
Variable costs ($320,000/$400,000 × $480,000)	384,000
Contribution margin	96,000
Controllable fixed costs	40,800
Controllable margin (a)	**$55,200**
Average operating assets (b)	$280,000
Return on investment (a) ÷ (b)	**19.7%**

Appendix 10A ROI versus Residual Income

Controllable Margin	÷	Average Operating Assets	=	Return on Investment (ROI)
$1,000,000	÷	$5,000,000	=	**20%**

Illustration: Electronics Division of Pujols Company has an ROI of 20%. Pujols is considering producing a new product, a GPS device (Tracker) for its boats. Operating assets will increase $2,000,000. Tracker is expected to generate an additional $260,000 of controllable margin.

Appendix 10A ROI versus Residual Income
ROI comparison

How Tracker will effect ROI.

	Without Tracker	Tracker	With Tracker
Contribution margin (a)	$1,000,000	$260,000	$1,260,000
Average operating assets (b)	$5,000,000	$2,000,000	$7,000,000
Return on investment [(a) ÷ (b)]	**20%**	**13%**	**18%**

The problem with ROI analysis is that it ignores minimum rate of return on a operating assets.

Assuming a minimum rate of return of 10%, it **should invest** in Tracker because its ROI of 13% is greater than 10%.

Residual Income Compared to ROI

To evaluate performance using the minimum rate of return, companies use the residual income approach.

Controllable Margin	–	Minimum Rate of Return × Average Operating Assets	=	Residual Income
$260,000	–	10% × $2,000,000	=	**$60,000**

	Without Tracker	Tracker	With Tracker
Contribution margin (a)	$1,000,000	$260,000	$1,260,000
Average operating assets × 10% (b)	500,000	200,000	700,000
Residual income [(a) − (b)]	$ 500,000	$ 60,000	**$ 560,000**

Residual Income Weakness

To evaluate performance using the minimum rate of return, companies use the residual income approach.

	Tracker	SeaDog
Contribution margin (a)	$260,000	$460,000
Average operating assets × 10% (b)	200,000	400,000
Residual income [(a) − (b)]	**$ 60,000**	**$ 60,000**

If these two investments were evaluated using residual income, they would be considered equal.

This ignores the fact that SeaDog required twice as many operating assets to achieve the same level of residual income.

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