

Chapter 19—Performance Measurement, Balanced Scorecards, and Performance Rewards

LEARNING OBJECTIVES

LO 1	Why is a mission statement important to an organization?
LO 2	What roles do performance measures serve in organizations?
LO 3	What guidelines or criteria apply to the design of performance measures?
LO 4	What are the common short-term financial performance measures, and how are they calculated and used?
LO 5	Why should company management focus on long-run performance?
LO 6	What factors should managers consider when selecting nonfinancial performance measures?
LO 7	Why is it necessary to use multiple measures of performance?
LO 8	How can a balanced scorecard be used to measure performance?
LO 9	What difficulties are encountered in trying to measure performance for multinational firms?
LO 10	What is compensation strategy, and what factors must be considered in designing the compensation plan?

QUESTION GRID

	Difficulty Level			Learning Objectives									
	Easy	Mod	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
1	x			x									
2	x			x									
3	x			x									
4	x				x								
5	x				x								
6	x				x								
7		x			x								
8		x				x							
9	x					x							
10		x					x						
11		x					x						
12		x					x						
13		x					x						
14		x					x						
15		x					x						
16		x					x						
17		x					x						
18		x					x						
19	x							x					
20		x						x					
21	x								x				
22	x								x				
23	x								x				
24		x								x			
25		x								x			
26	x										x		
27	x											x	
28		x											x
29		x											x
30	x												x
31	x												x

Completion

	Difficulty Level			Learning Objectives									
	Easy	Mod	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
1	x			x									
2		x			x								
3		x			x								
4	x						x						
5	x						x						
6	x						x						
7		x					x						
8	x						x						
9		x					x						
10	x							x					
11	x							x					
12		x								x			
13		x								x			
14		x					x						
15		x								x			

Multiple Choice

	Difficulty Level			Learning Objectives									
	Easy	Mod	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
1	x						x						
2	x						x						
3	x						x						
4	x					x				x			
5	x						x						
6	x						x						
7		x					x						
8	x						x						
9	x						x						
10	x						x						
11	x						x						
12	x						x						
13	x						x						
14		x					x						
15		x					x						
16	x						x						
17	x						x						
18		x					x						
19	x						x						
20	x						x						
21	x						x						
22	x						x						
23	x						x						
24	x						x						
25	x						x						
26		x					x						
27	x						x						
28	x						x						
29	x						x						
30	x						x						
31	x						x						
32	x						x						
33	x						x						
34		x					x						
35	x						x						
36	x						x						
37	x						x						
38	x						x						
39	x						x						

	Difficulty Level			Learning Objectives									
	Easy	Mod	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
40		x					x						
41		x					x						
42		x					x						
43	X						x						
44		x					x						
45		x					x						
46		x					x						
47		x					x						
48		x					x						
49			x				x						
50		x					x						
51		x					x						
52		x					x						
53		x					x						
54		x					x						
55	X								x				
56	X								x				
57	X								x				
58	X								x				
59	X								x				
60	X								x				
61	X								x				
62	X							x					
63	X					x							
64	X									x			
65	X									x			
66	X									x			
67	X									x			
68	X									x			
69	X									x			
70	X									x			
71	X									x			
72	X									x			
73	X									x			
74		x										x	
75	X									x			
76	X									x			
77	X									x			
78	X									x			
79		x								x			
80		x								x			
81	X										x		
82		x									x		
83	X										x		
84		x									x		
85		x									x		
86	X										x		
87	X										x		
88	X										x		
89	X										x		
90		x											x
91	X												x
92	X												x
93	X												x
94	X												x
95	X												x
96	X												x
97	X												x
98	X												x
99	X												x

	Difficulty Level			Learning Objectives									
	Easy	Mod	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
100	X												x
101	X												x
102		x											x
103	X												x
104		x											x
105	X												x
106	X												x
107	X												x
108		x											x
109		x											x
110	X			x									
111	X			x									

Short Answer

	Difficulty Level			Learning Objectives									
	Easy	Mod	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
1		x					x						
2		x					x						
3		x						x					
4		x						x					
5		x					x						
6		x					x						
7		x					x						
8		x					x						
9		x					x						
10		x											x
11		x											x
12		x											x
13		x											x
14		x				x							
15		x							x				

Problem

	Difficulty Level			Learning Objectives									
	Easy	Mod	Difficult	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
1	X						x						
2		x					x						
3		x					x						
4		x					x						
5		x					x						
6		x					x						
7		x					x						
8			x				x						
9		x								x			

TRUE/FALSE

1. An organization's values statement identifies fundamental beliefs about what is important to the organization.

ANS: T DIF: Easy OBJ: 19-1

2. An organization typically develops a values statement before developing a mission statement.

ANS: F DIF: Easy OBJ: 19-1

3. The objectives identified in an organization's values statement must be objective in nature.

ANS: F DIF: Easy OBJ: 19-1

4. In order to assure achievement of an organizational goal, performance measures must be established for that goal.

ANS: T DIF: Easy OBJ: 19-2

5. Internal performance measures focus on the efficiency and effectiveness of an organization's production process.

ANS: T DIF: Easy OBJ: 19-2

6. External performance measures focus on the efficiency and effectiveness of an organization's production process.

ANS: F DIF: Easy OBJ: 19-2

7. The most common external performance measure used for all organizations is financial in nature.

ANS: T DIF: Moderate OBJ: 19-2

8. Performance measures need not be correlated with the mission of a subunit.

ANS: F DIF: Moderate OBJ: 19-3

9. Benchmarks for performance measures may be monetary or non-monetary.

ANS: T DIF: Easy OBJ: 19-3

10. The segment margin of a profit or investment center includes allocated common costs.

ANS: F DIF: Moderate OBJ: 19-4

11. The segment margin of a profit or investment center does not include allocated common costs.

ANS: T DIF: Moderate OBJ: 19-4

12. Manipulation of segment expenses may result in the segment margin not being an accurate performance measure.
- ANS: T DIF: Moderate OBJ: 19-4
13. Profit margin indicates management's efficiency with regard to sales and expenses.
- ANS: T DIF: Moderate OBJ: 19-4
14. Asset turnover measures the effective use of assets relative to revenue production.
- ANS: T DIF: Moderate OBJ: 19-4
15. Economic value added (EVA) applies the target rate of return to the market value of the capital invested in a division.
- ANS: T DIF: Moderate OBJ: 19-4
16. Economic value added (EVA) applies the target rate of return to the book value of the assets invested in a division.
- ANS: F DIF: Moderate OBJ: 19-4
17. Economic value added (EVA) is a more appropriate performance measure when there is a large difference between the market value of invested capital and the book value of assets.
- ANS: T DIF: Moderate OBJ: 19-4
18. Economic value added (EVA) is focused on short-term performance measurement.
- ANS: T DIF: Moderate OBJ: 19-4
19. Financial measures are lagging indicators.
- ANS: T DIF: Easy OBJ: 19-5
20. Speed of delivery is an example of a leading indicator.
- ANS: T DIF: Moderate OBJ: 19-5
21. Non-financial measures are generally more indicative of productive activity than are financial performance measures.
- ANS: T DIF: Easy OBJ: 19-6
22. Non-financial measures are generally less timely than are financial performance measures.
- ANS: F DIF: Easy OBJ: 19-6

23. Non-financial measures are generally more appropriate for gauging teamwork than are financial performance measures.
- ANS: T DIF: Easy OBJ: 19-6
24. The number of good units or quantity of services that are produced and sold by an organization within a specified time is referred to as process quality yield.
- ANS: F DIF: Moderate OBJ: 19-7
25. Total units produced during the period divided by the value-added processing time is referred to as process productivity.
- ANS: T DIF: Moderate OBJ: 19-7
26. The balanced scorecard approach complements measures of past performance with measures of the drivers of future performance.
- ANS: T DIF: Easy OBJ: 19-8
27. Cultural differences between countries may make performance evaluation in multinational settings more difficult.
- ANS: T DIF: Easy OBJ: 19-9
28. Hourly compensation provides a definite link between performance and reward.
- ANS: F DIF: Moderate OBJ: 19-10
29. In a pay-for-performance plan, defined performance measures must be highly correlated with an organization's operational targets.
- ANS: T DIF: Moderate OBJ: 19-10
30. Tax deferral is the most desirable form of tax treatment for employee compensation elements.
- ANS: F DIF: Easy OBJ: 19-10
31. Expatriate workers should receive a compensation package that reflects cost of living factors and currency fluctuations.
- ANS: T DIF: Easy OBJ: 19-10

COMPLETION

1. A statement that identifies fundamental beliefs about what is important to an organization is referred to as a _____.

ANS: values statement

DIF: Easy OBJ: 19-1

2. Performance measures that provide a focus on the efficiency and effectiveness of production processes are referred to as _____ measures.

ANS: internal

DIF: Moderate OBJ: 19-2

3. Performance measures that reflect an organization's ability to satisfy customers better than rival firms do are referred to as _____ measures.

ANS: external

DIF: Moderate OBJ: 19-2

4. The ratio of income to assets invested is referred to as _____.

ANS: return on investment (ROI)

DIF: Easy OBJ: 19-4

5. The ratio of income to sales is referred to as _____.

ANS: profit margin

DIF: Easy OBJ: 19-4

6. The ratio of sales to assets is referred to as _____.

ANS: asset turnover

DIF: Easy OBJ: 19-4

7. Profit margin x Asset Turnover is often referred to as the _____.

ANS: DuPont Model

DIF: Moderate OBJ: 19-4

8. Profit earned in excess of an amount charged for funds committed to a profit center is referred to as _____.

ANS: residual income

DIF: Easy OBJ: 19-4

9. A measure of profit produced above the cost of capital is referred to as _____.

ANS: economic value added (EVA)

DIF: Moderate OBJ: 19-4

10. An indicator that reflects the results of past decisions is referred to as a(n) _____.

ANS: lagging indicator

DIF: Easy OBJ: 19-5

11. Statistical data about the steps that will create the results desired as referred to as _____.

ANS: leading indicators

DIF: Easy OBJ: 19-5

12. The number of good units or quantity of services that are produced and sold by an organization within a specified time is referred to as _____.

ANS: throughput

DIF: Moderate OBJ: 19-7

13. Total units produced during the period divided by the value-added processing time is referred to as _____.

ANS: process productivity

DIF: Medium OBJ: 19-7

14. The proportion of good units resulting from activities is referred to as _____.

ANS: process quality yield

DIF: Moderate OBJ: 19-4

15. The three components of throughput are _____, _____, and _____.

ANS: manufacturing cycle efficiency, process productivity, process quality yield

DIF: Moderate OBJ: 19-7

MULTIPLE CHOICE

1. Variance analysis would be appropriate to measure performance in
- profit centers.
 - investment centers.
 - cost centers.
 - all of the above.

ANS: D DIF: Easy OBJ: 19-4

2. Which of the following responsibility centers may be evaluated on the basis of residual income?
- a. investment center
 - b. revenue center
 - c. profit center
 - d. cost center

ANS: A DIF: Easy OBJ: 19-4

3. Net cash flow could be used to measure performance in
- a. cost centers and investment centers.
 - b. revenue centers and profit centers.
 - c. revenue centers and investment centers.
 - d. profit and investment centers.

ANS: D DIF: Easy OBJ: 19-4

4. Using a single performance evaluation criterion for an investment center
- a. is most effective because a manager can concentrate on a single goal.
 - b. can result in manipulation of the performance measure.
 - c. allows multinational investment centers' performances to be equitably compared.
 - d. is only appropriate if the criterion is non-monetary.

ANS: B DIF: Easy OBJ: 19-3,19-7

5. A company has set a target rate of return of 16% for its investment center. An investment center manager in this company would
- a. acquire assets that would increase divisional income by more than 16%.
 - b. sell all assets that do not generate divisional income of more than 16%.
 - c. acquire assets that would increase sales by more than 16%.
 - d. acquire any technologically advanced assets that would cause costs to be reduced by 16% or more.

ANS: A DIF: Easy OBJ: 19-4

6. In evaluating the performance of a profit center manager, the manager
- a. and the sub-unit should be evaluated on the basis of the same costs and revenues.
 - b. should only be evaluated on the basis of variable costs and revenues of the sub-unit.
 - c. should be evaluated on all costs and revenues that are controllable by the manager
 - d. should be evaluated on all costs and revenues that can be directly traced to the sub-unit.

ANS: C DIF: Easy OBJ: 19-4

7. The Statement of Cash Flows may be superior to the cash budget as a performance evaluation measure because
- a. cash flows are shown on the accrual basis on the cash budget.
 - b. the cash budget does not include capital investments.
 - c. cash flows are arranged by activity.
 - d. of all the above reasons.

ANS: C DIF: Moderate OBJ: 19-4

8. The Statement of Cash Flows indicates the cash inflows and outflows from
- investing, financing, and borrowing activities.
 - operating, investing, and sending activities.
 - merchandising, financing, and investing activities.
 - operating, investing, and financing activities.

ANS: D DIF: Easy OBJ: 19-4

9. Division A's investment in a new project will raise the overall organization's return on investment if
- the return on investment on the new project exceeds the target return of the overall organization.
 - the return on investment on the new project exceeds the return on investment of Division A.
 - the return on investment on the new project exceeds the overall organization's return on investment.
 - Division A's return on investment exceeds the return on investment of the overall organization.

ANS: C DIF: Easy OBJ: 19-4

10. If sales and expenses both rise by \$100,000
- residual income will increase.
 - return on investment will increase.
 - return on investment will be unchanged.
 - asset turnover will decrease

ANS: C DIF: Easy OBJ: 19-4

11. ABC Corp. is composed of three operating divisions. Overall, the ABC Corp. has a return on investment of 20%. A Division has a return on investment of 25%. If ABC Corp. evaluates its managers on the basis of return on investment, how would the A Division manager and the ABC Corp. president react to a new investment that has an estimated return on investment of 23%?

<u>A Division manager</u>	<u>ABC Corp. president</u>
---------------------------	----------------------------

- | | |
|-----------|--------|
| a. accept | accept |
| b. accept | reject |
| c. reject | accept |
| d. reject | reject |

ANS: C DIF: Easy OBJ: 19-4

12. A company's return on investment is affected by a change in

<u>Asset Turnover</u>	<u>Profit Margin</u> <u>on Sales</u>
-----------------------	---

- | | |
|--------|-----|
| a. Yes | Yes |
| b. Yes | No |
| c. No | No |
| d. No | Yes |

ANS: A DIF: Easy OBJ: 19-4

13. The return on investment (ROI) ratio measures
- only asset turnover.
 - only earnings as a percent of sales.
 - both asset turnover and earnings as a percent of sales.
 - asset turnover and earnings as a percent of sales, correcting for the effects of differing depreciation methods.

ANS: C DIF: Easy OBJ: 19-4

14. Return on investment (ROI) is a term most often used to express income earned on assets invested in a business unit. A company's return on investment would increase if sales
- increased by the same dollar amount as expenses and total assets increased.
 - remained the same and expenses were reduced by the same dollar amount that total assets increased.
 - decreased by the same dollar amount that expenses increased.
 - and expenses increased by the same percentage that total assets increased.

ANS: B DIF: Moderate OBJ: 19-4

15. A sub-unit of an organization is evaluated on the basis of its ROI. If this sub-unit's sales and expenses both increase by \$30,000, how will the following measures be affected?

	<u>ROI</u>	<u>Asset turnover</u>	<u>Profit margin</u>
a.	increase	increase	increase
b.	indeterminate	increase	decrease
c.	no change	increase	decrease
d.	no change	decrease	no change

ANS: C DIF: Moderate OBJ: 19-4

16. Which of the following would be an appropriate alternative to the use of ROI in evaluating the performance of an investment center?

	<u>Residual income</u>	<u>Net cash flow</u>	<u>Cost and revenue variance analysis</u>
a.	yes	yes	yes
b.	no	yes	no
c.	yes	no	no
d.	yes	no	yes

ANS: C DIF: Easy OBJ: 19-4

17. Return on investment is computed by dividing income by
- contribution margin.
 - inventory turnover.
 - assets invested.
 - average assets employed.

ANS: C DIF: Easy OBJ: 19-4

18. Presently, the Classic Book Division of Griffin Publishing Corporation has a profit margin of 30%. If total sales rise by \$100,000, the net result will be
- an increase in the profit margin ratio to above 30%.
 - a decrease in the profit margin ratio to below 30%.
 - no change in the profit margin ratio.
 - a change in the profit margin ratio that cannot be determined from this information.

ANS: C DIF: Moderate OBJ: 19-4

19. Profit margin indicates the portion of sales that
- covers fixed expenses.
 - is not used to cover expenses.
 - equals contribution margin.
 - equals product contribution margin.

ANS: B DIF: Easy OBJ: 19-4

20. Profit margin equals
- income divided by sales.
 - incomes divided by average inventory.
 - income divided by average assets.
 - income divided by average stockholder's equity.

ANS: A DIF: Easy OBJ: 19-4

21. The Du Pont model measures
- residual income.
 - return on investment.
 - throughput.
 - profit.

ANS: B DIF: Easy OBJ: 19-4

22. In the Du Pont model, profit margin is a ratio of
- income to sales.
 - income to assets.
 - sales to income.
 - sales to assets.

ANS: A DIF: Easy OBJ: 19-4

23. The Du Pont model measures ROI as it is affected by
- contribution margin and asset turnover.
 - profit margin and asset turnover.
 - asset turnover.
 - profit margin.

ANS: B DIF: Easy OBJ: 19-4

24. Residual income is used as a performance measure in
- profit centers.
 - cost centers.
 - investment centers.
 - revenue centers.

ANS: C DIF: Easy OBJ: 19-4

25. If a new project generates a positive residual income, the
- project's return on investment is less than the target rate.
 - project's return on investment is greater than the target rate.
 - project's return on investment is equal to the target rate.
 - relationship between the project's return on investment and the target rate cannot necessarily be determined.

ANS: B DIF: Easy OBJ: 19-4

26. A prospective project under consideration by the Telephone Division of Communications Corporation. has an estimated residual income of \$(20,000). If the project requires an investment of \$400,000, the
- project generates a negative return on investment.
 - project's return on investment is zero.
 - project's return on investment is 5% less than the company's target rate.
 - company's target rate is 15%

ANS: C DIF: Moderate OBJ: 19-4

27. Residual income is the
- contribution margin of an investment center, less the imputed interest on the invested capital used by the center.
 - contribution margin of an investment center, plus the imputed interest on the invested capital used by the center.
 - income of an investment center, less the imputed interest on the invested capital used by the center.
 - income of an investment center, plus the imputed interest on the invested capital used by the center.

ANS: C DIF: Easy OBJ: 19-4

28. Residual income is an example of a _____ performance measurement.
- long-term
 - short-term
 - qualitative
 - profit center

ANS: B DIF: Easy OBJ: 19-4

29. If a division generates a positive residual income then the division's
- asset turnover was very high.
 - profitability was greater than that of other divisions in the company.
 - performance was above expectations.
 - actual return on investment exceeds the division's target return.

ANS: D DIF: Easy OBJ: 19-4

30. Residual income is determined as
- income times the asset turnover rate.
 - income times the inventory turnover rate.
 - income minus (asset base times target rate of return).
 - sales minus (asset base times target rate of return).

ANS: C DIF: Easy OBJ: 19-4

31. Residual income is used as a performance measure in which of the following types of centers?

<u>Revenue</u>	<u>Investment</u>	<u>Profit</u>
a. yes	no	yes
b. yes	yes	yes
c. no	yes	yes
d. no	yes	no

ANS: D DIF: Easy OBJ: 19-4

32. An increase in a corporation's target rate would result in a(n)
- increase in residual income.
 - decrease in return on investment.
 - decrease in residual income.
 - decrease in both residual income and return on investment.

ANS: C DIF: Easy OBJ: 19-4

33. All other things being equal, an increase in sales price would increase
- asset turnover.
 - profit margin.
 - residual income.
 - all of the above.

ANS: D DIF: Easy OBJ: 19-4

34. If sales and expenses both rise by \$100,000, profit margin will
- decrease and asset turnover will decrease.
 - increase and asset turnover will decrease.
 - decrease and asset turnover will increase.
 - increase and asset turnover will increase.

ANS: C DIF: Moderate OBJ: 19-4

35. Asset turnover equals
- income divided by average assets.
 - sales divided by assets.
 - sales divided by average assets.
 - assets divided by sales.

ANS: C DIF: Easy OBJ: 19-4

36. The information below relates to costs, revenues, and assets anticipated in the Boot Division of BVD Footwear Corporation:

Sales	\$ 4,000,000
Variable costs	75% of sales
Average assets employed	\$12,000,000
Fixed costs	0

How would each of the following measures be affected if sales rise by \$5,000 in the Boot Division?

<u>ROI</u>	<u>Asset turnover</u>	<u>Profit margin</u>
a. increase	increase	increase
b. increase	no change	increase
c. increase	increase	no change
d. no change	no change	increase

ANS: C DIF: Easy OBJ: 19-4

37. A division of Lachman Corporation reported a return on investment of 20% for a recent period. If the division's asset turnover was 5, its profit margin must have been
- 100%
 - 4%
 - 25%
 - 2%

ANS: B

$\begin{aligned}\text{ROI} &= \text{Profit Margin} \times \text{Asset Turnover} \\ .20 &= \text{PM} \quad \times \quad 5 \\ \text{PM} &= \text{ROI}/\text{Asset Turnover} \\ \text{PM} &= .04 \text{ or } 4\%\end{aligned}$

DIF: Easy OBJ: 19-4

38. Which measure is limited by the fact that it uses accounting income?
- ROI
 - RI
 - EVA
 - All of the above

ANS: D DIF: Easy OBJ: 19-4

39. The Cake Division of Bakery Corporation has the following segment information:

Assets available for use	\$1,800,000
Target rate of return	10%
Residual income	\$ 270,000

What was Cake Division's return on investment?

- a. 15%
- b. 10%
- c. 25%
- d. 20%

ANS: C

$\text{ROI} = \text{Income} / \text{Assets Invested}$ $\text{Income} = \text{Residual Income} + (\text{Target Rate} * \text{Assets})$ $= \$270,000 + (.10 * \$1,800,000)$ $= \$450,000$ $\text{ROI} = \$450,000 / \$1,800,000$ $= \mathbf{25\%}$
--

DIF: Moderate OBJ: 19-4

United Toy Company

The Doll Division of United Toy Company had the following financial data for the year:

Assets available for use	\$1,000,000 Book Value \$1,500,000 Market Value
Residual income	\$100,000
Return on investment	15%

40. Refer to United Toy Company. What was the Doll Division's segment income?

- a. \$150,000
- b. \$100,000
- c. \$250,000
- d. \$ 50,000

ANS: A

$\text{Segment Income} = \text{ROI} * \text{BV of Total Assets}$ $= 0.15 * \$1,000,000$ $= \mathbf{\$150,000}$
--

DIF: Moderate OBJ: 19-4

41. Refer to United Toy Company. What was the target rate of return for United Toy Company?
- 10%
 - 15%
 - 25%
 - 5%

ANS: D

Net Income - (Target Rate x Asset Base) = Residual Income
 $\$150,000 - (\text{Target Rate} \times \$1,000,000) = \$100,000$
 $(\text{Target Rate} \times \$1,000,000) = \$50,000$
 Target Rate = **5.0%**

DIF: Moderate OBJ: 19-4

42. Refer to United Toy Company. If the manager of the Doll Division is evaluated based on return on investment, how much would she be willing to pay for an investment that promises to increase net segment income by \$50,000?
- \$ 50,000
 - \$ 333,333
 - \$1,000,000
 - \$ 500,000

ANS: B

$\$50,000 / 0.15 = \$333,333$

DIF: Moderate OBJ: 19-4

43. Refer to United Toy Company. If expenses increased by \$20,000 in Apple Division,
- return on investment would decrease.
 - residual income would increase.
 - the target rate of return would decrease.
 - asset turnover would decrease.

ANS: A DIF: Easy OBJ: 19-4

Houston Company

Texas Division of the Houston Company has the following statistics for its most recent operations:

Assets available for use (Market Value)	\$3,600,000
Assets available for use (Book Value)	\$2,000,000
Texas Division's return on investment	25%
Texas Division's residual income	200,000
Return on investment (entire Houston Company)	20%

44. Refer to Houston Company. Compute EVA assuming the cost of capital is 10% and the tax rate is 40%.
- a. \$ 90,000
 - b. \$ 150,000
 - c. \$0
 - d. \$ (60,000)

ANS: D

EVA = After Tax Net Income - (Cost of Capital x Market Value of Assets)
EVA = $((\$2,000,000 \times .25) \times .60) - (.10 \times \$3,600,000)$
EVA = $\$(300,000 - 360,000)$
EVA = $\$(60,000)$

DIF: Moderate OBJ: 19-4

45. Refer to Houston Company. What is the target rate of return in Houston Company?
- a. 25%
 - b. 20%
 - c. 15%
 - d. 10%

ANS: C

Net Income - (Target Rate of Return x Total assets) = Residual Income
 $\$500,000 - (\text{Target Rate of Return} \times \$2,000,000) = \$200,000$
 $\text{Target Rate of Return} \times \$2,000,000 = \$300,000$
Target Rate of Return = **15%**

DIF: Moderate OBJ: 19-4

46. Refer to Houston Company. If Houston Company evaluates its managers on the basis of return on investment, the manager of Texas Division would invest in a project costing \$100,000 only if it increased net segment income by at least
- a. \$10,000.
 - b. \$15,000.
 - c. \$20,000.
 - d. \$25,000.

ANS: D

$\$100,000 \times .25 = \$25,000$

DIF: Moderate OBJ: 19-4

47. Andersen Corporation has a target return of 15%. If a prospective investment has an estimated return on investment of 20%, and a residual income of \$10,000, what is the estimated cost of the investment?
- a. \$200,000
 - b. \$ 66,667
 - c. \$ 50,000
 - d. The answer can't be determined from this information.

ANS: A

$0.20 - 0.15 = 0.05$ residual income $\$10,000 / 0.05 = \mathbf{\$200,000}$
--

DIF: Moderate OBJ: 19-4

48. The Steelrod Division of Metal Products Company is considering an investment in a new project. The project has an estimated cost of \$1,000,000. If Metal Products Company has a target rate of return of 12%, how large does the return on investment on this project need to be to generate \$150,000 of residual income?
- a. 15%
 - b. 12%
 - c. 25%
 - d. 27%

ANS: D

$(ROI \times \text{Total Assets}) - (\text{Target Rate} \times \text{Total Assets}) = \text{Residual Income}$ $(ROI \times \$1,000,000) - (0.12 \times \$1,000,000) = \$150,000$ $(ROI \times \$1,000,000) = \$270,000$ $ROI = \mathbf{27\%}$
--

DIF: Moderate OBJ: 19-4

49. In the South Division of Occident Company, segment income for the most recent year exceeded residual income by \$15,000. Also, return on investment exceeded the target rate of return by 10%. What was the level of investment in the X Division for the most recent year?
- a. \$ 15,000
 - b. \$100,000
 - c. \$150,000
 - d. An answer can't be determined from this information.

ANS: C

$\$15,000 / 0.10 = \mathbf{\$150,000}$
--

DIF: Difficult OBJ: 19-4

RAD Company

RAD Co. has established a target rate of return of 16% for all divisions. For the most recent year, Division D generated sales of \$10,000,000 and expenses of \$7,500,000. Total assets at the beginning of the year were \$5,000,000 and total assets at the end of the year were \$7,000,000.

50. Refer to RAD Company. In the most recent year, what was Division D's residual income?
- a. \$ 960,000
 - b. \$1,380,000
 - c. \$1,540,000
 - d. \$1,700,000

ANS: C

$\begin{aligned}\text{Residual Income} &= \$ (10,000,000 - 7,500,000) - ((.16) * \$ 6,000,000) \\ &= \$ (2,500,000 - 960,000) \\ &= \mathbf{\$ 1,540,000}\end{aligned}$

DIF: Moderate OBJ: 19-4

51. Refer to RAD Company. For the most recent year, what was Division D's return on investment ?
- a. 20.83 %
 - b. 35.71 %
 - c. 41.67 %
 - d. 50.00 %

ANS: C

$\begin{aligned}\text{ROI} &= \text{Net Income} / \text{Average Total Assets} \\ &= \$ (2,500,000 / 6,000,000) \\ &= \mathbf{41.67\%}\end{aligned}$

DIF: Moderate OBJ: 19-4

52. The Card Division of Party Company reported the following results for a recent year

Sales	\$8,000,000
Expenses	6,250,000
Total assets (1/1)	5,000,000
Total assets (12/31)	5,400,000

What was the profit margin for the Card Division?

- a. 68%
- b. 35%
- c. 32%
- d. 22%

ANS: D

$\begin{aligned}\text{Profit Margin} &= \text{Gross Margin} / \text{Sales} \\ &= \$ (1,750,000 / 8,000,000) \\ &= \mathbf{22\%}\end{aligned}$

DIF: Moderate OBJ: 19-4

53. The Card Division of Party Company reported the following results for a recent year

Sales	\$8,000,000
Expenses	6,250,000
Total assets (1/1)	5,000,000
Total assets (12/31)	5,400,000

What was the asset turnover ratio of the Card Division?

- a. 1.538
- b. 2.97
- c. 0.650
- d. 1.20

ANS: A

$$\$8,000,000 / (\$((5,000,000 + 5,400,000) / 2)) = \mathbf{1.538}$$

DIF: Moderate OBJ: 19-4

54. Empire Division of New York Delights, is evaluated based on residual income generated. In the most recent year, the Empire Division generated a residual income of \$2,000,000 and net income of \$5,000,000. The target rate of return for all divisions of New York Delights is 20%. What was the return on investment for the Empire Division?
- a. 40%
 - b. 13%
 - c. 20%
 - d. 33%

ANS: D

$$\begin{aligned} (\text{Net Income}) - (\text{Target Rate} \times \text{Total Assets}) &= \text{Residual Income} \\ (\$5,000,000) - (0.20 \times \text{Total Assets}) &= \$2,000,000 \\ (0.20 \times \text{Total Assets}) &= \$3,000,000 \\ \text{Total Assets} &= \$15,000,000 \\ \text{ROI} &= (5,000,000 / 15,000,000) \\ \text{ROI} &= \mathbf{33\%} \end{aligned}$$

DIF: Moderate OBJ: 19-4

55. Qualitative non-financial performance measures
- a. are usually the most well-received by managers.
 - b. often reflect long-term organizational goals better than financial performance measures.
 - c. can only be developed in the production area of an organization.
 - d. is limited by the number of critical success factors defined by the organization.

ANS: B DIF: Easy OBJ: 19-6

56. Relative to qualitative performance measures, quantitative performance measures are less
- a. subject to manipulation.
 - b. dependent on accounting information.
 - c. effective in the pursuit of organizational goals.
 - d. subjective.

ANS: D DIF: Easy OBJ: 19-6

57. Improved effectiveness and efficiency of a product is considered a _____ performance measurement?
- non-financial
 - financial
 - quantitative
 - qualitative

ANS: D DIF: Easy OBJ: 19-6

58. Non-financial performance measures (NFPMs) are better than financial measures in that NFPMs
- provide a better indication of customer satisfaction.
 - may better predict the direction of future cash flows.
 - directly measure how well an organization does those things that create shareholder value.
 - all of the above

ANS: D DIF: Easy OBJ: 19-6

59. In selecting non-financial performance measures managers should choose measures that reflect
- qualitative characteristics that point out sub-optimization activities and throughput bottlenecks.
 - both short-term and long-term measures related to critical success factors.
 - long-term supplier satisfaction levels.
 - short-term financial viability.

ANS: B DIF: Easy OBJ: 19-6

60. Which of the following would be considered a non-financial performance measurement?
- increase in market share
 - variances from standards
 - number of customer complaints
 - cost of engineering changes

ANS: C DIF: Easy OBJ: 19-6

61. Which type of financial measure better predicts the direction of future cash flows?

<u>Non-financial Measures</u>	<u>Financial Measures</u>
-------------------------------	---------------------------

- | | |
|--------|-----|
| a. yes | yes |
| b. yes | no |
| c. no | no |
| d. no | yes |

ANS: D DIF: Easy OBJ: 19-6

62. Which of the following would be classified as a non-financial critical success factor?

	<u>Quality</u>	<u>Technical Excellence</u>	<u>Manufacturing Efficiency</u>	<u>Manufacturing Effectiveness</u>
a.	no	no	no	yes
b.	yes	no	no	no
c.	yes	yes	yes	yes
d.	yes	yes	no	yes

ANS: C DIF: Easy OBJ: 19-5

63. Which of the following is necessary for any valid performance measurement?
- a. It must be part of the financial accounting system in use.
 - b. It must be quantifiable.
 - c. Goal congruence must be promoted by its use.
 - d. It must be financial in nature.

ANS: C DIF: Easy OBJ: 19-3

64. Process quality yield is used in the measurement of
- a. throughput.
 - b. cash flows.
 - c. asset turnover.
 - d. profit margin.

ANS: A DIF: Easy OBJ: 19-7

65. An increase in productive processing time will increase
- a. throughput.
 - b. process yield.
 - c. return on investment.
 - d. productive capacity.

ANS: A DIF: Easy OBJ: 19-7

66. Which of the following is the throughput measure?
- a. Processing time/Total time
 - b. Good units/Total time
 - c. Good units/Processing time
 - d. Total units/Total time

ANS: B DIF: Easy OBJ: 19-7

67. Productive capacity is a measure used in computing
- a. residual income.
 - b. net cash flow.
 - c. return on investment.
 - d. throughput.

ANS: D DIF: Easy OBJ: 19-7

68. Process quality yield reflects the proportion of
- a. good units to bad units.
 - b. time required to produce a good unit.
 - c. total units manufactured that are good.
 - d. total time spent to time available.

ANS: C DIF: Easy OBJ: 19-7

69. When inventory sits idle in a department, this would **not** affect the department's
- a. processing time.
 - b. throughput.
 - c. process quality yield.
 - d. dollar days.

ANS: C DIF: Easy OBJ: 19-7

70. Process quality yield reflects the proportion of
- time it takes to make a good unit.
 - good units to defective units.
 - total time spent to total time available.
 - total units produced that are good units.

ANS: D DIF: Easy OBJ: 19-7

71. Holding total production in units constant, as the proportion of defective units to total units declines, all of the following measures will be affected, except
- total unit sales.
 - throughput.
 - process quality yield.
 - process productivity.

ANS: D DIF: Easy OBJ: 19-7

72. Process productivity is calculated as
- total units divided by non-value-added processing time.
 - total units divided by value-added processing time.
 - value-added processing time divided by total units.
 - value-added processing divided by total time.

ANS: B DIF: Easy OBJ: 19-7

73. Which of the following would **not** be an appropriate cost driver to measure internal failure?
- design error
 - product failure
 - machine reliability
 - operator error

ANS: B DIF: Easy OBJ: 19-7

74. When assessing performance, one way to compensate for differences among divisions of a multinational organization would be for the parent company to
- use different target rates of return to compute residual incomes.
 - modify the return on investment calculation so that foreign currency fluctuations are removed from all financial statement figures.
 - classify all domestic divisions as investment centers and all foreign divisions as profit centers.
 - use financial performance measures for units whose records are kept in the domestic currency and non-financial measures for units whose records are kept in a foreign currency.

ANS: A DIF: Moderate OBJ: 19-9

75. If performance measures are perfect proxies for organizational goals,
- sub-optimization will be enhanced.
 - sub-unit managers will strive to achieve organizational goals.
 - sub-units can all be decentralized.
 - residual income will rise.

ANS: B DIF: Easy OBJ: 19-7

Rio Hondo Company

Rio Hondo Company is a manufacturer of electronic components. The following manufacturing information is available for the month of May:

Good units manufactured	40,000
Value-added hours of manufacturing time	20,000
Total units manufactured	50,000
Total hours of manufacturing time	30,000

76. Refer to Rio Hondo Company. What is the throughput per hour?

- a. 1.3 units (rounded)
- b. 2.0 units
- c. 1.8 units
- d. .8 units

ANS: A

$$\frac{20,000}{30,000} \times \frac{50,000}{20,000} \times \frac{40,000}{50,000} = 1.3 \text{ units}$$

DIF: Easy

OBJ: 19-7

77. Refer to Rio Hondo Company. What is the process quality yield?

- a. 50%
- b. 75%
- c. 80%
- d. 125%

ANS: C

$$\frac{40,000}{50,000} = 80\%$$

DIF: Easy

OBJ: 19-7

McAllen Company

One of the products manufactured by McAllen Company is a plastic disk. The information below relates to the Disk Production Department:

Good units produced	200,000
Units started in production	250,000
Processing time (budgeted hours)	425
Processing time (total hours)	400
Value-added processing time	300

78. Refer to McAllen Company. What is the process quality yield in the Disk Production Department?
- a. 75%
 - b. 44%
 - c. 80%
 - d. 125%

ANS: C

$$\frac{200,000}{250,000} = \mathbf{80\%}$$

DIF: Easy OBJ: 19-7

79. Refer to McAllen Company. What is the throughput per hour in the Disk Production Department?
- a. 470 units
 - b. 500 units
 - c. 625 units
 - d. 667 units

ANS: B

$$\frac{300}{400} \times \frac{200,000}{250,000} \times \frac{250,000}{300} = \mathbf{500 \text{ units}}$$

DIF: Moderate OBJ: 19-7

80. Refer to McAllen Company. What is the process productivity in the Disk Production Department?
- a. 588
 - b. 625
 - c. 667
 - d. 833

ANS: D

$$\frac{250,000}{300} = \mathbf{833 \text{ units}}$$

DIF: Moderate OBJ: 19-7

81. Which of the following is **not** a balanced scorecard category?
- a. financial measures
 - b. environmental measures
 - c. business process measures
 - d. personnel measures

ANS: B DIF: Easy OBJ: 19-8

82. A primary purpose of a balanced scorecard is to give
- managers a way to judge past performance.
 - stockholders a way to judge current performance.
 - managers a way to forecast future performance.
 - stockholders a way to tie strategy to profitability.

ANS: C DIF: Moderate OBJ: 19-8

83. In a balanced scorecard, measurements should be directly linked to
- organizational strategy and values.
 - the cost management system.
 - current organizational profitability.
 - activity-based management concepts.

ANS: A DIF: Easy OBJ: 19-8

84. Customer measures on the balanced scorecard should be

<u>Internal</u>	<u>External</u>	<u>Monetary</u>	<u>Non-monetary</u>
a. yes	no	no	yes
b. no	yes	yes	no
c. no	yes	no	yes
d. yes	yes	yes	yes

ANS: D DIF: Moderate OBJ: 19-8

85. A balanced scorecard
- records the variances between budgeted and actual revenues and expenses.
 - can be used at multiple organizational levels by redefining the categories and measurements.
 - is most concerned with organizational financial solvency and business processes.
 - all of the above.

ANS: B DIF: Moderate OBJ: 19-8

86. On a balanced scorecard, which of the following would be most appropriate to measure customer service?
- Rapid time-to-market of new products
 - Corporate financial profits
 - On-time delivery
 - Decrease in reworked products

ANS: C DIF: Easy OBJ: 19-8

87. On a balanced scorecard, which of the following would be most appropriate to measure production process integrity?
- Rapid time-to-market of new products
 - Corporate financial profits
 - Low employee turnover
 - Decrease in reworked products

ANS: D DIF: Easy OBJ: 19-8

88. On a balanced scorecard, which of the following would be most appropriate to measure innovation:
- a. Rapid time-to-market of new products
 - b. Corporate financial profits
 - c. On-time delivery
 - d. Manufacturing cycle efficiency

ANS: A DIF: Easy OBJ: 19-8

89. On a balanced scorecard, which of the following would be most appropriate to measure financial performance?
- a. Market share
 - b. Customer retention
 - c. Percentage of sales from new products
 - d. Investment in intellectual capital

ANS: A DIF: Easy OBJ: 19-8

90. A primary characteristic of a performance management system is
- a. consistency at all levels in the organization.
 - b. adaptability to differing situations in the organization.
 - c. efficiency of application to all individuals in the organization.
 - d. flexibility to delay rewards although performance objectives have been met.

ANS: B DIF: Moderate OBJ: 19-10

91. Which of the following would **not** normally affect the compensation strategy of a firm?
- a. organizational goals
 - b. location of firm
 - c. competition
 - d. number of subsidiaries

ANS: D DIF: Easy OBJ: 19-10

92. Managers should be paid
- a. on a periodic basis.
 - b. based on results achieved.
 - c. using ESOPs.
 - d. on a piece rate basis.

ANS: B DIF: Easy OBJ: 19-10

93. Financial incentives are
- a. different from monetary rewards
 - b. the same thing as a salary element
 - c. provided to all employee groups.
 - d. available to top management whose performance exceeds targeted objectives

ANS: D DIF: Easy OBJ: 19-10

94. Which of the following steps in the performance reward plan model comes before the others listed?
- a. set performance rewards
 - b. identify performance measures
 - c. determine reward
 - d. identify critical success factors

ANS: D DIF: Easy OBJ: 19-10

95. Objectives for a pay plan
- a. are not needed in a performance-based plan.
 - b. must be stated for a performance-based plan to work.
 - c. are essential for a periodic compensation plan to be successful.
 - d. are unnecessary for a merit pay plan.

ANS: B DIF: Easy OBJ: 19-10

96. Merit pay is
- a. a contingent amount of pay that is earned by managers whose subunits meet a target rate of return.
 - b. always for a limited period of time and must be re-earned each period.
 - c. any pay earned when the company is profitable.
 - d. a pay increment received when a specific performance level is achieved.

ANS: D DIF: Easy OBJ: 19-10

97. Contingent pay
- a. is always paid in stock options.
 - b. is the sole source of pay an employee receives from his/her employer.
 - c. is received in addition to the basic wage and is dependent upon performance exceeding some performance objective.
 - d. can only apply to individual performance.

ANS: C DIF: Easy OBJ: 19-10

98. Piece rate pay
- a. is a suitable pay plan for low-IQ workers.
 - b. involves a salary plus pay for each unit produced or carried out.
 - c. encourages quality output.
 - d. does not encourage workers to look at the company's well being.

ANS: D DIF: Easy OBJ: 19-10

99. Which of the following pay plans encourages the improvement of the overall company's well-being?
- a. monthly salary
 - b. cafeteria plan
 - c. profit sharing
 - d. pensions

ANS: C DIF: Easy OBJ: 19-10

100. Which performance plan is most tied to company objectives?

- a. profit sharing
- b. pensions
- c. piece rate
- d. merit pay

ANS: A DIF: Easy OBJ: 19-10

101. Which performance plan best promotes quality of the product or service?

- a. piece rate
- b. health insurance
- c. pensions
- d. profit sharing

ANS: D DIF: Easy OBJ: 19-10

102. Employee stock ownership in the employees' firm

- a. will encourage short term earnings growth patterns.
- b. will encourage employees to take a longer term perspective regarding their performance in the company.
- c. is not suitable for hourly or salaried employees.
- d. is common for management in American firms.

ANS: B DIF: Moderate OBJ: 19-10

103. A pay plan that gives an employee cash or stock equal to the difference between some specified stock price and the quoted market price at some future time period is

- a. stock appreciation rights.
- b. an ESOP.
- c. profit sharing.
- d. merit pay.

ANS: A DIF: Easy OBJ: 19-10

104. Which of the following types of employee compensation are tax-exempt?

- a. contingent pay
- b. profit sharing
- c. cafeteria plans
- d. stock appreciation rights

ANS: D DIF: Moderate OBJ: 19-10

105. The traditional compensation package provides

- a. fixed monthly or weekly salaries.
- b. the same salary structure for all groups of employees.
- c. no incentive for non-top management to improve performance.
- d. no need to include incentive compensation.

ANS: C DIF: Easy OBJ: 19-10

106. Compensation packages for executives of American firms
- a. are beginning to emphasize the long-term commitment executives should have in the firm.
 - b. are considered comparable to packages earned by European and Asian executives.
 - c. are shifting towards lower percentages of annual incentives.
 - d. are shifting away from long-term awards.

ANS: A DIF: Easy OBJ: 19-10

107. A pay plan that does **not** encourage the overall company good is
- a. profit sharing.
 - b. an employee stock option plan.
 - c. contingent pay.
 - d. monthly salary.

ANS: D DIF: Easy OBJ: 19-10

108. Which performance plan is **most** motivating?
- a. health insurance
 - b. piece rate
 - c. hourly wages
 - d. pensions

ANS: D DIF: Moderate OBJ: 19-10

109. Expatriate employees
- a. should be paid a base comparable to what he/she was earning domestically.
 - b. will be paid more than corresponding managers in their home country.
 - c. will always pay taxes in the country in which they are based.
 - d. should receive retirement benefits based on local currencies.

ANS: A DIF: Moderate OBJ: 19-10

110. Which of the following statements is true about the values statement of an organization?
- a. It is used to formulate the mission statement.
 - b. It reflects the organization's culture by identifying beliefs about what is important to the organization.
 - c. It focuses on long-range plans for the organization.
 - d. The values contained in the statement must be quantifiable.

ANS: B DIF: Easy OBJ: 19-1

111. Which of the following statements about an organization's mission statement is true?
- a. The mission statement should express an organization's purpose.
 - b. The mission statement should identify how an organization will meet the needs of its targeted customers.
 - c. The mission statement must be communicated throughout the organization.
 - d. All of the statements are true.

ANS: A DIF: Easy OBJ: 19-1

SHORT ANSWER

1. Answer the following questions regarding economic value added (EVA):

- a. What is it intended to do?
- b. How is it measured?
- c. How is the measurement different than that of RI?
- d. Why is EVA a better performance measure of RI?
- e. What is the major problem with using EVA as a long-term performance measure?

ANS:

- a. The purpose of EVA is to more directly align the interests of common shareholders and managers.
- b. $EVA = \text{After-tax profit} - (\text{market value of invested capital} \times \text{cost of capital \%})$.
- c. EVA uses after-tax profit, cost of capital and market value of assets invested. RI uses segment income, target rate of return and book value of assets invested.
- d. Because it recognizes that there may be a significant difference between book value and market value of assets. The market value of a company is reflected in stock prices which are another measure of performance evaluation.
- e. EVA includes the increased investment immediately even though significant income may not occur until sometime in the future. Most investments will show decreased short-term performance (EVA) and may cause a company to refuse projects that are profitable in the long-term (similar to shortcomings of the payback method).

DIF: Moderate OBJ: 19-4

2. What items affect comparability of different divisions within the same company on the basis of EVA, ROI and RI?

ANS:

- a. Each measure is based on accounting income which can be manipulated in the short-term by accounting methods used, which can differ between investment centers.
- b. The measurement of the asset base is affected by the choice of what to include, and may include items that relate to decisions made by prior managers.
- c. All measures focus primarily on how well the segments do in isolation with results compared to prior years for the same segment, rather than relative company-wide objectives.

DIF: Moderate OBJ: 19-4

3. Why is it likely that a subordinate manager would be more attentive to certain performance measures than overall corporate objectives to guide his decision making?

ANS:

Managers are evaluated based on how their actual results compare to specific measures of performance. These performance measures are intended to be surrogates for the overall corporate goals as they apply to specific managers. Thus performance measures are selected by the extent to which they are good proxies for corporate goals (that is the extent to which they operationally define, and are consistent with, corporate goals) and are intended to be major focal points for managers.

DIF: Moderate OBJ: 19-5

4. What are some of the major problems associated with accrual-based accounting performance measures?

ANS:

There are two major problems with accrual-based accounting numbers. The first problem is that they can be easily manipulated by managers. For example, the timing of end of period transactions can be accelerated or delayed to affect performance measures. Secondly, accounting measures cannot capture all corporate goals. Accounting measures are particularly inappropriate to measure qualitative changes in the workforce, qualitative changes in products, and achievement of social and non-monetary objectives. Additionally, accounting measures reflect only a short-term perspective of operations rather than a long-range goal orientation.

DIF: Moderate OBJ: 19-5

5. What distinct advantage does a return on investment measure have over a residual income measure? Explain.

ANS:

The advantage of ROI measure over RI is that ROI facilitates a comparison of organizational sub-units of differing sizes. Because ROI is a performance measure that automatically scales for size, large and small sub-units can be compared to each other (subject to all the factors that should be considered when two units in different industries, different geographical areas, etc. are compared).

DIF: Moderate OBJ: 19-4

6. How can return on investment result in sub-optimization when it is used as a performance measure?

ANS:

Because performance measures are used to reward performance, managers use them as decision criteria when they evaluate alternative courses of action. For example, if ROI is the performance criterion, a division manager will only invest in new projects that will result in an increase in his/her division's ROI. This is sub-optimal if the overall organization would be better off by the division manager's investment in available projects with lower ROIs.

DIF: Moderate OBJ: 19-4

7. Define residual income. Evaluate residual income as a measure of performance.

ANS:

Residual income is the remainder of net profit once a target cost of capital has been taken into consideration. Residual income is determined by deducting from net income a prescribed or imputed interest charge on assets. This method allows an organization to use different rates of interest for various organizational assets. A main advantage of using RI is that it overcomes some limitations of ROI (sub-optimization).

DIF: Moderate OBJ: 19-4

8. What are some common problems encountered in determining ROI?

ANS:

Net income and investment involved can both be calculated several ways. Multiple calculations are often presented to show the different factors that affect ROI, changes in sales, expenses, and capital investments.

DIF: Moderate OBJ: 19-4

9. Discuss the ways in which management uses flexible budgets.

ANS:

Flexible budgets are important to managers in performing a variety of functions. Formulating budgets commits certain activities agreed to during the planning process to specific monetary amounts. The flexible budget provides the means to estimate costs at various levels of activity. The control function is undertaken to assure that actual operations meet planned operations. Through this function, deviations are determined and variances can be ascertained. Managers also use flexible budgets in performance evaluation. Evaluation is more meaningful with valid and accurate data to make the process of evaluation beneficial to all involved.

DIF: Moderate OBJ: 19-4

10. Identify the steps to follow in establishing the performance reward system for a company.

ANS:

The steps are in the following order:

1. set strategic goals
2. identify the critical success factors
3. set the compensation strategy
4. identify performance measures
5. set performance rewards
6. measure/monitor performance
7. determine rewards

DIF: Moderate OBJ: 19-10

11. Discuss pay-for-performance plans.

ANS:

Employees should be encouraged by compensation plans to perform and be loyal to the organization. Performance measures should be related to a company's operational targets. These performance measures do not have to be evenly weighted. Management can assign higher weights to more important performance measures as they are related to the corporate goals.

DIF: Moderate OBJ: 19-10

12. Discuss the rethinking taking place regarding the time frame used in American business performance systems.

ANS:

Historically, American time frames for performance has been short term, often only one year. Presumably management tries to do what is best for the firm and its owners. Thus, shareholder wealth maximization should be the primary focus of management. Short term profit maximization doesn't necessarily result in long-run shareholder wealth maximization.

To encourage this different attitude, employees and management are being asked to take a longer run perspective. This is enhanced with employee stock ownership in their firm.

DIF: Moderate OBJ: 19-10

13. Deferred compensation techniques are currently used in the American work place. What are they and how do they benefit the employer and the employee?

ANS:

Deferred compensation is pay that was earned on current performance but is paid later to the employee. The compensation may include profit sharing plans, pensions, and stock-based plans like ESOPs. The payment by the employer can be deducted currently for tax purposes but the employee doesn't recognize it as income until it is received. In stock option plans, earnings in the plan are not taxable to the employee until the plan is distributed. Size of the plans are affected by the firm's stock value and encourage employees to take a more positive attitude about the company's future.

DIF: Moderate OBJ: 19-10

14. List the five general criteria that should be considered when designing a performance measurement system.

ANS:

1. The measures should be established to assess progress toward the organizational mission and its related goals and objectives.
2. The persons being evaluated should be aware of the measurements used and have some input in developing them.
3. The persons being evaluated should have the appropriate skills, equipment, information, and authority to be successful under the measurement system.
4. Feedback of accomplishment should be provided in a timely and useful manner.
5. The system should be flexible to adapt to new conditions in the organizational environment.

DIF: Moderate OBJ: 19-3

15. What are five advantages that nonfinancial performance measures have over financial performance measures

ANS:

Answers will vary on this. The major advantages are listed below:

Compared to financial measures, nonfinancial performance measures are more:

- **relevant** to nonmanagement employees who are generally more familiar with nonfinancial items (such as times and quantities) than financial items (such as costs or profits)
- **timely** than historical financial data and, thus, more apt to indicate where problems lie or where benefits can be obtained
- **reflective** of the leading indicators of activities that create shareholder wealth, such as manufacturing and delivering quality goods and services and providing service for the customer
- **causative** of goal-congruent behavior (rather than suboptimization) because they promote long-term success rather than the short-term success promoted by financial measures
- **integrated** with organizational effectiveness because they can be designed to focus on processes rather than simply outputs
- **indicative** of productive activity and the direction of future cash flows
- **appropriate** for gauging teamwork because they can focus on outputs that result from organizational effort (such as quality) rather than inputs (such as costs)
- **cross functional** than financial measures, which are generally related to one function
- **comparable** for benchmarking externally than financial measures (which can be dramatically affected by differences in accounting methods)
- **aligned** with the reward system because they are more likely to be under the control of lower-level employees than are financial measures

DIF: Moderate OBJ: 19-6

PROBLEM

Entertainment Division

The Entertainment Division is one of the operating units of Software Solutions, Inc. The following operating data of the division is presented below:

Sales	\$3,000,000
Profit margin	10%
Target return	15%
Residual income	\$ 60,000

1. Refer to the Entertainment Division. What was the segment income of the Entertainment Division for the year?

ANS:

Segment income = Profit Margin * Sales = .10 * \$3,000,000 = \$300,000

DIF: Easy OBJ: 19-4

2. Refer to Entertainment Division. What was the return on investment for the Entertainment Division?

ANS:

ROI = Segment Income/Assets

Segment Income = \$3,000,000 * .10 = \$300,000

Assets = (\$300,000 - \$60,000)/.15 = \$1,600,000

ROI = \$300,000/\$1,600,000 = 18.75%

DIF: Moderate OBJ: 19-4

Eastern Division

The Eastern Division of Texas Chemical Co. produced the following operating results for the previous year:

Sales	\$10,000,000
Segment income	1,500,000
Assets	6,000,000

The Eastern Division is considering a \$1,000,000 investment in a new project. The Eastern Division estimates that its return on investment (for all of its operations) would be at 22% with the new investment.

3. Refer to Eastern Division. How much net segment income is the new project expected to produce?

ANS:

the total of the new segment income = .22(\$6,000,000+\$1,000,000) =

.22(\$7,000,000) = \$1,540,000

the portion of the total segment income that is produced by the new project =

\$1,540,000 - \$1,500,000 = \$40,000

DIF: Moderate OBJ: 19-4

4. Refer to Eastern Division. If the manager of the Eastern Division is evaluated on return on investment alone, will the manager invest in the new project? Explain.

ANS:

The manager would not invest in the new project because the new project would lower the Division's ROI from the current 25% (\$1,500,000/\$6,000,000) to 22%. The new project only generates an ROI of 4% (\$40,000/\$1,000,000)

DIF: Moderate OBJ: 19-4

5. The manager of the Waco Division of National Church Tours is preparing the budget for the upcoming year. At this point, he has determined that average total assets for the upcoming year will equal \$4,000,000. The manager is evaluated on the amount of residual income generated by the division. Assume variable costs in the Waco Division are expected to equal 60% of total sales and fixed costs are expected to equal \$400,000.
- Compute the sales level that would generate a 20% return on investment.
 - Assuming the rate of return is 15%, determine the level of sales that would generate \$200,000 of residual income.

ANS:

a. The required net income = $20\% \times \$4,000,000 = \$800,000$.

sales = net income + fixed costs + variable costs

sales = $\$800,000 + \$400,000 + (.60 \times \text{sales})$

sales $\times 40\% = \$1,200,000$

sales = \$3,000,000

b. sales = fixed costs + variable costs + required return + residual income

sales = $\$400,000 + (.60 \times \text{sales}) + (.15 \times \text{sales}) + \$200,000$

sales = \$2,400,000

DIF: Moderate OBJ: 19-4

6. The following information is given for Alpha and Beta Divisions of Fraternity Corporation.

	<u>Alpha</u>	<u>Beta</u>
Sales	\$600,000	\$300,000
Var. cost of goods sold	200,000	150,000
Fixed manufacturing costs	50,000	40,000
Variable selling	30,000	5,000
Fixed admin. (50% allocated)	20,000	4,000
Fixed selling (20% allocated)	50,000	30,000
Assets at cost	800,000	600,000
Accumulated depreciation	200,000	100,000

- If Fraternity Corporation uses income to evaluate division managers, compute net income that should be used for that purpose given the limited data above.
- If Fraternity Corporation uses ROI to evaluate division managers and uses historical cost as the investment base, compute the ROI for Alpha and Beta.

ANS:

a.		<u>Alpha</u>	<u>Beta</u>
	Sales	\$600,000	\$300,000
	CGS	(250,000)	(190,000)
	Gross Margin	\$350,000	\$110,000
	Variable selling	(30,000)	(5,000)
	Fixed admin	(10,000)	(2,000)
	Fixed selling	(40,000)	(24,000)
	Controllable income	<u>\$270,000</u>	<u>\$ 79,000</u>
b.		<u>Alpha</u>	<u>Beta</u>
		\$270,000 x \$800,000	\$79,000 x \$600,000
		= 33.75%	= 13.17%

DIF: Moderate OBJ: 19-4

7. Information for two divisions of Charming Confections Company is given below:

	<u>Peanut</u>	<u>Plain</u>
Net income	\$ 60,000	\$100,000
Capital investment	\$400,000	\$500,000

- If Charming Confections Company charges each division 12% for capital employed, compute residual income for the Peanut and Plain divisions.
- Compute the ROI for each division.

ANS:

a.		<u>Peanut</u>	<u>Plain</u>
	Net income	\$60,000	\$100,000
	Interest charge	(48,000)	(60,000)
	Residual income	<u>\$12,000</u>	<u>\$ 40,000</u>
b.	ROI	\$60,000 x \$400,000	\$100,000 x \$500,000
		= 15%	= 20%

DIF: Moderate OBJ: 19-4

8. Innovative Furnishing Solutions (IFS), a division of Steelman Corporation buys and installs modular office components. For the most recent year, the division had the following performance targets:

Asset turnover	2.5
Profit margin	6%
Target rate of return on investments for RI	13%
Cost of capital	10%
Income tax rate	40%

Actual information concerning the company's performance for last year follows:

Total assets at beginning of year	\$3,600,000
Total assets at end of year	5,300,000
Total invested capital (annual average)	8,000,000
Sales	9,000,000
Variable operating costs	3,650,000
Direct fixed costs	4,770,000
Allocated fixed costs	675,000

Required:

- For IFS, compute the segment margin and the average assets for the year.
- Based on segment margin and average assets, compute the profit margin, asset turnover and ROI.
- Evaluate the ROI performance of IFS.
- Using your answers from part b., compute the residual income of IFS.
- Compute the EVA of IFS. Why are the EVA and RI levels different?
- Based on the data given in the problem, discuss why ROI, EVA and RI may be inappropriate measures of performance for IFS.

ANS:

a. Sales	\$9,000,000
Variable costs	(3,650,000)
Direct fixed costs	<u>(4,770,000)</u>
Segment margin	\$ 580,000

$$\text{Average assets} = (\$3,600,000 + \$5,300,000) / 2 = \$4,450,000$$

- $\text{Profit margin} = \$580,000 / \$9,000,000 = 6.44\%$
 $\text{Asset turnover} = \$9,000,000 / \$4,450,000 = 2.02$
 $\text{ROI} = \$580,000 / \$4,450,000 = 13\%$
- The target ROI for the division was $2.5 \times 6 = 15\%$. The division generated an ROI of only 13%. Thus the division did not achieve its target rate of return. The poor performance resulted from the divisions failure to achieve its targeted asset turnover.
- $\text{RI} = \$580,000 - (13\% \times \$4,450,000)$
 $= \$580,000 - \$578,500 = \$1500$

e. After-tax profits = pretax income - taxes

$$= \$580,000 - (\$580,000 \times 40\%) = \$348,000$$

$$\text{EVA} = \$348,000 - (\$8,000,000 \times 10\%) = \$(452,000)$$

EVA and RI differ for three reasons. First, RI is based on pre-tax rather than after-tax income. Second, RI is based on the book value of investment, whereas EVA is based on the market value of investment. Third, the target rates of return differ between the methods.

f. ROI, RI and EVA are measures of short-term performance. These measures may be particularly inappropriate for divisions that have long-term missions (such as high growth). In this case, the relatively large growth and assets of IFS from the beginning of the period to the end of the period may indicate this division is oriented to growth. If so, the ROI, RI and EVA measures will provide an incentive contrary to the growth mission.

DIF: Difficult OBJ: 19-4

9. The Cuddly Creations Company produces small plastic dolls in its Georgia manufacturing plant. The company is currently evaluating ways to improve productivity. The accountant of the firm's parent organization suggested that management implement a new compensation plan based on throughput performance measure as an incentive to increase productivity. To demonstrate how such a measure might work, the accountant gathered the following production data for a recent month:

Total units attempted	6,000,000
Good units manufactured	4,800,000
Processing time (total hours)	800
Value-added processing time	600

- How many defective units were produced?
- Compute manufacturing cycle efficiency.
- Compute process productivity.
- Compute process quality yield.
- Compute hourly throughput.

ANS:

- Defective units = $6,000,000 - 4,800,000 = 1,200,000$
- $\text{MCE} = 600 \div 800 = 75\%$
- Process productivity = $6,000,000 \div 600 = 10,000$ units per hour
- Process quality yield = $4,800,000 \div 6,000,000 = 80\%$
- Throughput = $10,000 \times .75 \times .8 = 6,000$ dolls per hour

DIF: Moderate OBJ: 19-7