Performance Measures

**NP 7-2**

Suppose that a division of a company is treated as an investment center. Its manager is currently obtaining an ROI of 15% from existing assets of $1 million. The cost of capital -corporate discount rate- is 10%. The division manager has the option of choosing among the following projects, which are independent of existing operations and the other alternative projects:

|  |  |  |
| --- | --- | --- |
| Project | Investment | ROI |
| A | $100,000 | 14% |
| B | 400,000 | 20 |
| C | 200,000 | 14 |
| D | 300,000 | 12 |
| E | 500,000 | 8 |

a. Given the current investment in existing assets, in which additional projects should the division manager invest if the objective is to maximize ROI?

b. Which projects have a negative residual income?

c. Using this example, explain why underinvestment is a problem when using ROI for evaluation purposes.

**NP 7-9**

Alaskan Fishing Company operates five trawlers (fishing boats) out of Juneau, Alaska. The boats are of different sizes and incur different operating expenses during the year. The following table describes the operating data and value of each boat:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Boats |  |  |  |  |
|  | A | B | C | D | E |
| Revenues | $5.500.000 | $8.300.000 | $10.400.000 | $12.800.000 | $20.400.000 |
| Annual expenses | 3.800.000 | 8.200.000 | 9.100.000 | 9.900.000 | 18.900.000 |
| Income | 1.700.000 | 100.000 | 1.300.000 | 2.900.000 | 1.500.000 |
| Book value | 0 | 5.200.000 | 6.100.000 | 5.200.000 | 8.300.000 |
| Market value | 5.000.000 | 6.200.000 | 8.000.000 | 10.000.000 | 15.000.000 |

The cost of capital for the company is 10%.

a. What is the ROI of each boat using the book value of the investment in it?

b. What is the ROI of each boat using the market value fo the investment in it?

c. what is the residual income of each boat using its book value?

d. what is the residual income of each boat using its market value?

e. which trawler had the best year?

**NP 12-10**

The Lunatic Fringe operates a chain of hair salons. Each salon manager has four measures in their balanced scorecard. If a manager meets all four targets they get a $10,000 bonus. They receive $7.500 for meeting three targets, $5.000 for meeting two targets, and $2.500 for meeting one target. The following table defines the four targets:

|  |  |  |
| --- | --- | --- |
| Lunatic Fringe Balanced Scorecard | | |
| Objectives | Performance measures | Target |
| **Financial Perspective** |  |  |
| Increase shareholder wealth | Return on assets | 20% |
| **Customer Perspective** |  |  |
| Provide customer satisfaction | Percentage satisfied through survey | 95% |
| **Internal Business Process Perspective** |  |  |
| Provide on time delivery | Percentage customers not waiting for appointment | 90% |
| **Learning and Growth perspective** |  |  |
| Reduce employee turnover | Percentage annual turnover | 20% |

The Lunatic Fringe’s West End salon had the following operating statistics for the fiscal year:

|  |  |
| --- | --- |
| Net income | $139.500 |
| Total assets | $634.000 |
| Number of customer surveys | 672 |
| Number of customers surveys “satisfied” | 646 |
| Number of customers | 915 |
| Number of customers served on time | 833 |
| Employee turnover | 5 |
| Number of employees | 15 |

How much bonus will Lucy Chan, the West End manager will receive?

**NP 7.2 : ROI and Residual Income** (10 minutes)

a. The manager would only want to accept projects, which would raise the existing ROI above 15%. Only project B would raise the existing ROI.

b. Any project that has an ROI less than the cost of capital of 10% will have a negative residual income. Therefore, project E is the only project with a negative residual income.

c. Underinvestment is a problem because the manager would only choose project B if the manager is evaluated based on ROI. Yet projects B, C, and D also have a positive residual income and should be accepted.

**NP 7.9: ROI and Residual Income** (20 minutes)

a. ROI using book value:

Boat A: $1,700,000/0 Infinite

Boat B: $100,000/$5,200,000 1.92%

Boat C: $1,300,000/$6,100,000 21.31%

Boat D: $2,900,000/$5,200,000 55.77%

Boat E: $1,500,000/$8,300,000 18.07%

b. ROI using market value:

Boat A: $1,700,000/$5,000,000 34.00%

Boat B: $100,000/$6,200,000 1.61%

Boat C: $1,300,000/$8,000,000 16.25%

Boat D: $2,900,000/$10,000,000 29.00%

Boat E: $1,500,000/$15,000,000 10.00%

c. The residual income using the book value:

Boat A: $1,700,000 - 0 $1,700,000

Boat B: $100,000 - (.10)($5,200,000) ($420,000)

Boat C: $1,300,000 - (.10)($6,100,000) $690,000

Boat D: $2,900,000 - (.10)($5,200,000) $2,380,000

Boat E: $1,500,000 - (.10)($8,300,000) $670,000

d. The residual income using the market value:

Boat A: $1,700,000 - (.10)($5,000,000) $1,200,000

Boat B: $100,000 - (.10)($6,200,000) ($520,000)

Boat C: $1,300,000 - (.10)($8,000,000) $500,000

Boat D: $2,900,000 - (.10)($10,000,000) $1,900,000

Boat E: $1,500,000 - (.10)($15,000,000) $ 0

e. The market value of the boats should be used to evaluate the performance of the boats. The market value represents the opportunity cost of using the boats because they can be sold for the market value. Whether the ROI or residual income should be used to evaluate the performance of the trawlers depends on the purpose of the evaluation. If the evaluation is simply to determine which boat added more value to the organization, then the boat with the highest residual income (Boat D) added the most value. If the evaluation is to determine which captain did the best job given their equipment, then the captain of the boat with the highest ROI (Boat A) did the best.

## NP 12-10: Using a Balanced Scorecard (15minutes)

The first step is to calculate the actual performance on each of the four metrics:

Performance Measure Target Actual

Return on assets 20% Net income $139,500

Total assets $634,000

Return on assets 22%

MET TARGET

% satisfied through 95% Number of surveys 672

survey Number “satisfied” 646

% satisfied 96%

MET TARGET

% customers not waiting 90% Number of customers 915

for appointment Number served on time 833

% served on time 91%

MET TARGET

% annual turnover 20% Employee turnover 5

Number of employees 15

Employee turnover 33%

**DID NOT MEET TARGET**

Since the West End salon manager met three of the four performance targets, Chen’s bonus for the year is $7,500 (3 x $2500).