

## Capital Budgeting Decisions

119. (Ignore income taxes in this problem.) Tranter, Inc., is considering a project that would have a ten-year life and would require a \$1,200,000 investment in equipment. At the end of ten years, the project would terminate and the equipment would have no salvage value. The project would provide net operating income each year as follows:

Sales .....		\$1,700,000
Variable expenses.....		<u>1,200,000</u>
Contribution margin.....		500,000
Fixed expenses:		
Fixed out-of-pocket cash expenses .....	\$200,000	
Depreciation.....	<u>120,000</u>	<u>320,000</u>
Net operating income.....		<u><u>\$ 180,000</u></u>

All of the above items, except for depreciation, represent cash flows. The company's required rate of return is 12%.

Required:

- a. Compute the project's net present value.
- b. Compute the project's internal rate of return to the nearest whole percent.
- c. Compute the project's payback period.
- d. Compute the project's simple rate of return.

a. Because depreciation is the only noncash item on the income statement, the annual net cash flow can be computed by adding back depreciation to net operating income.

Net operating income.....	\$180,000
Depreciation.....	<u>120,000</u>
Annual net cash flow .....	<u>\$300,000</u>

	Year(s)	Amount of Cash Flow	12% Factor	Present Value of Cash Flows
Initial investment.....	Now	\$(1,200,000)	1.000	\$(1,200,000)
Annual net cash flows.....	1-10	\$300,000	5.650	<u>1,695,000</u>
Net present value.....				<u>\$ 495,000</u>

b. The formula for computing the factor of the internal rate of return (IRR) is:

Factor of the IRR = Investment required ÷ Annual net cash inflow

$\$1,200,000 \div \$300,000 = 4.00$  Factor

To the nearest whole percent, the internal rate of return is 21%

c. The formula for the payback period is:

Payback period = Investment required ÷ Annual net cash inflow

$\$1,200,000 \div \$300,000$  per year = 4.0 years

d. The formula for the simple rate of return is:

Simple rate of return = Annual incremental net operating income ÷ Initial investment

$\$180,000 \div \$1,200,000 = 15\%$

*Learning Objective: 08-01 Evaluate the acceptability of an investment project using the net present value method.*

*Learning Objective: 08-02 Evaluate the acceptability of an investment project using the internal rate of return method.*

*Learning Objective: 08-05 Determine the payback period for an investment.*

*Learning Objective: 08-06 Compute the simple rate of return for an investment.*

*Level: 2 Medium*

136. (Ignore income taxes in this problem.) The management of an amusement park is considering purchasing a new ride for \$40,000 that would have a useful life of 10 years and a salvage value of \$4,000. The ride would require annual operating costs of \$19,000 throughout its useful life. The company's discount rate is 8%. Management is unsure about how much additional ticket revenue the new ride would generate-particularly because customers pay a flat fee when they enter the park that entitles them to unlimited rides. Hopefully, the presence of the ride would attract new customers.

Required:

How much additional revenue would the ride have to generate per year to make it an attractive investment?

Item	Year(s)	Amount of Cash Flow	8% Factor	Present Value of Cash Flows
Initial investment.....	Now	\$ (40,000)	1.000	\$ (40,000)
Annual operating costs.....	1-10	\$ (19,000)	6.710	(127,490)
Salvage value.....	10	\$4,000	0.463	<u>1,852</u>
Net present value.....				<u><u>\$ (165,638)</u></u>

Minimum annual cash flows required = Negative net present value to be offset ÷ Present value factor

$$\$165,638 \div 6.710 = \$24,685$$

This much additional revenue would result in a zero net present value. Any less than this and the net present value would be negative. Any more than this and the net present value would be positive.

*Learning Objective: 08-03 Evaluate an investment project that has uncertain cash flows.*

*Level: 3 Hard*

140. (Ignore income taxes in this problem.) Brewer Company is considering purchasing a machine that would cost \$537,600 and have a useful life of 9 years. The machine would reduce cash operating costs by \$82,708 per year. The machine would have a salvage value of \$107,520 at the end of the project.

Required:

- a. Compute the payback period for the machine.
- b. Compute the simple rate of return for the machine.

a. The payback period is computed as follows:

Payback period = Investment required ÷ Annual net cash flow

= \$537,600 ÷ \$82,708 = 6.50 years

In this case the salvage value plays no part in the payback period because all of the investment is recovered before the end of the project.

b. The simple rate of return is computed as follows:

Annual incremental cost savings.....		\$82,708
Annual incremental expenses:		
Annual depreciation (\$537,600 – \$107,520 )/9	\$47,787	<u>47,787</u>
Annual incremental net operating income.....		<u>\$34,921</u>

Simple rate of return = Annual incremental net operating income ÷ Initial investment

= \$34,921 ÷ \$537,600 = 6.50%

*Learning Objective: 08-05 Determine the payback period for an investment.*

*Learning Objective: 08-06 Compute the simple rate of return for an investment.*

*Level: 2 Medium*