

QUESTIONS

- Describe the process a company may use in screening and approving the capital expenditure budget.
- What are the advantages and disadvantages of the cash payback technique?
- Tom Wells claims the formula for the cash payback technique is the same as the formula for the annual rate of return technique. Is Tom correct? What is the formula for the cash payback technique?
- Two types of present value tables may be used with the discounted cash flow techniques. Identify the tables and the circumstance(s) when each table should be used.
- What is the decision rule under the net present value method?
- Discuss the factors that determine the appropriate discount rate to use when calculating the net present value.
- What simplifying assumptions were made in the chapter regarding calculation of net present value?
- What are some examples of potential intangible benefits of investment proposals? Why do these intangible benefits complicate the capital budgeting evaluation process? What might happen if intangible benefits are ignored in a capital budgeting decision?
- What steps can be taken to incorporate intangible benefits into the capital budget evaluation process?
- What advantages does the profitability index provide over direct comparison of net present value when comparing two projects?
- What is a post-audit? What are the potential benefits of a post-audit?
- Identify the steps required in using the internal rate of return method when the net annual cash flows are equal.
- El Cajon Company uses the internal rate of return method. What is the decision rule for this method?
- What are the strengths of the annual rate of return approach? What are its weaknesses?
- Your classmate, Mike Dawson, is confused about the factors that are included in the annual rate of return technique. What is the formula for this technique?
- Sveta Pace is trying to understand the term "cost of capital." Define the term and indicate its relevance to the decision rule under the internal rate of return technique.

BRIEF EXERCISES

BE12-1 Bella Company is considering purchasing new equipment for \$450,000. It is expected that the equipment will produce net annual cash flows of \$50,000 over its 10-year useful life. Annual depreciation will be \$45,000. Compute the cash payback period.

Compute the cash payback period for a capital investment.
(LO 2), AP

BE12-2 Hsung Company accumulates the following data concerning a proposed capital investment: cash cost \$215,000, net annual cash flows \$40,000, present value factor of cash inflows for 10 years 5.65 (rounded). Determine the net present value, and indicate whether the investment should be made.

Compute net present value of an investment.
(LO 3), AN

BE12-3 Magic Corporation, an amusement park, is considering a capital investment in a new exhibit. The exhibit would cost \$136,000 and have an estimated useful life of 5 years. It will be sold for \$65,000 at that time. (Amusement parks need to rotate exhibits to keep people interested.) It is expected to increase net annual cash flows by \$25,000. The company's borrowing rate is 8%. Its cost of capital is 10%. Calculate the net present value of this project to the company.

Compute net present value of an investment.
(LO 3), AP

BE12-4 Caine Bottling Corporation is considering the purchase of a new bottling machine. The machine would cost \$200,000 and has an estimated useful life of 8 years with zero salvage value. Management estimates that the new bottling machine will provide net annual cash flows of \$34,000. Management also believes that the new bottling machine will save the company money because it is expected to be more reliable than other machines, and thus will reduce downtime. How much would the reduction in downtime have to be worth in order for the project to be acceptable? Assume a discount rate of 9%. (Hint: Calculate the net present value.)

Compute net present value of an investment and consider intangible benefits.
(LO 3, 4), AN

BE12-5 Beacon Company is considering two different, mutually exclusive capital expenditure proposals. Project A will cost \$400,000, has an expected useful life of 10 years, a salvage value of zero, and is expected to increase net annual cash flows by \$70,000. Project B will cost \$280,000, has an expected useful life of 10 years, a salvage value of zero, and is expected to increase net annual cash flows by \$50,000. A discount rate of 9% is appropriate for both projects. Compute the net present value and profitability index of each project. Which project should be accepted?

Compute net present value and profitability index.
(LO 3, 5), AN

Perform a post-audit.

(LO 6), AN

Calculate internal rate of return.

(LO 7), AP

Calculate internal rate of return.

(LO 7), AN

Compute annual rate of return.

(LO 8), AP

BE12-6 Quillen Company is performing a post-audit of a project completed one year ago. The initial estimates were that the project would cost \$250,000, would have a useful life of 9 years, zero salvage value, and would result in net annual cash flows of \$46,000 per year. Now that the investment has been in operation for 1 year, revised figures indicate that it actually cost \$260,000, will have a useful life of 11 years, and will produce net annual cash flows of \$39,000 per year. Evaluate the success of the project. Assume a discount rate of 10%.

BE12-7 Horowitz Company is evaluating the purchase of a rebuilt spot-welding machine to be used in the manufacture of a new product. The machine will cost \$176,000, has an estimated useful life of 7 years, a salvage value of zero, and will increase net annual cash flows by \$33,740. What is its approximate internal rate of return?

BE12-8 Viera Corporation is considering investing in a new facility. The estimated cost of the facility is \$2,045,000. It will be used for 12 years, then sold for \$716,000. The facility will generate annual cash inflows of \$400,000 and will need new annual cash outflows of \$150,000. The company has a required rate of return of 7%. Calculate the internal rate of return on this project, and discuss whether the project should be accepted.

BE12-9 Mecha Oil Company is considering investing in a new oil well. It is expected that the oil well will increase annual revenues by \$130,000 and will increase annual expenses by \$70,000 including depreciation. The oil well will cost \$470,000 and will have a \$10,000 salvage value at the end of its 10-year useful life. Calculate the annual rate of return.

> DO IT! REVIEW

Compute the cash payback period for an investment.

(LO 2), AP

Calculate net present value of an investment.

(LO 3), AN

Calculate internal rate of return.

(LO 7), AN

Calculate annual rate of return.

(LO 8), AP

DO IT! 12-1 Wallowa Company is considering a long-term investment project called ZIP. ZIP will require an investment of \$120,000. It will have a useful life of 4 years and no salvage value. Annual cash inflows would increase by \$80,000, and annual cash outflows would increase by \$40,000. Compute the cash payback period.

DO IT! 12-2 Wallowa Company is considering a long-term investment project called ZIP. ZIP will require an investment of \$120,000. It will have a useful life of 4 years and no salvage value. Annual cash inflows would increase by \$80,000, and annual cash outflows would increase by \$40,000. The company's required rate of return is 12%. Calculate the net present value on this project and discuss whether it should be accepted.

DO IT! 12-3 Wallowa Company is considering a long-term investment project called ZIP. ZIP will require an investment of \$120,000. It will have a useful life of 4 years and no salvage value. Annual cash inflows would increase by \$80,000, and annual cash outflows would increase by \$40,000. The company's required rate of return is 12%. Calculate the internal rate of return on this project and discuss whether it should be accepted.

DO IT! 12-4 Wallowa Company is considering a long-term investment project called ZIP. ZIP will require an investment of \$120,000. It will have a useful life of 4 years and no salvage value. Annual revenues would increase by \$80,000, and annual expenses (excluding depreciation) would increase by \$40,000. Wallowa uses the straight-line method to compute depreciation expense. The company's required rate of return is 12%. Compute the annual rate of return.



EXERCISES

Compute cash payback and net present value.

(LO 2, 3), AN

E12-1 Palo Alto Corporation is considering purchasing a new delivery truck. The truck has many advantages over the company's current truck (not the least of which is that it runs). The new truck would cost \$56,000. Because of the increased capacity, reduced maintenance costs, and increased fuel economy, the new truck is expected to generate cost savings of \$7,500. At the end of 8 years the company will sell the truck for an estimated

Instructions

Calculate the net present value and profitability index of each machine. Assume a 9% discount rate. Which machine should be purchased?

Determine internal rate of return.

(LO 7), AN

E12-5 Eisler Corporation is involved in the business of injection molding of plastics. It is considering the purchase of a new computer-aided design and manufacturing machine for \$430,000. The company believes that with this new machine it will improve productivity and increase quality, resulting in an increase in net annual cash flows of \$101,000 for the next 6 years. Management requires a 10% rate of return on all new investments.

Instructions

Calculate the internal rate of return on this new machine. Should the investment be accepted?

Calculate cash payback period, internal rate of return, and apply decision rules.

(LO 2, 7), AN

E12-6 BSU Inc. wants to purchase a new machine for \$29,300, excluding \$1,500 of installation costs. The old machine was bought five years ago and had an expected economic life of 10 years without salvage value. This old machine now has a book value of \$2,000, and BSU Inc. expects to sell it for that amount. The new machine would decrease operating costs by \$7,000 each year of its economic life. The straight-line depreciation method would be used for the new machine, for a six-year period with no salvage value.

Instructions

- Determine the cash payback period.
- Determine the approximate internal rate of return.
- Assuming the company has a required rate of return of 10%, state your conclusion on whether the new machine should be purchased.

(CGA adapted)

Determine internal rate of return.

(LO 7), AN

E12-7 Ueker Company is considering three capital expenditure projects. Relevant data for the projects are as follows.

Project	Investment	Annual Income	Life of Project
22A	\$240,000	\$16,700	6 years
23A	270,000	20,600	9 years
24A	280,000	17,500	7 years

Annual income is constant over the life of the project. Each project is expected to have zero salvage value at the end of the project. Ueker Company uses the straight-line method of depreciation.

Instructions

- Determine the internal rate of return for each project. Round the internal rate of return factor to three decimals.
- If Ueker Company's required rate of return is 11%, which projects are acceptable?

Calculate annual rate of return.

(LO 8), AP

E12-8 Pierre's Hair Salon is considering opening a new location in French Lick, California. The cost of building a new salon is \$300,000. A new salon will normally generate annual revenues of \$70,000, with annual expenses (including depreciation) of \$41,500. At the end of 15 years the salon will have a salvage value of \$80,000.

Instructions

Calculate the annual rate of return on the project.

Compute cash payback period and annual rate of return.

(LO 2, 8), AP

E12-9 Brady Service Center just purchased an automobile hoist for \$35,000. The hoist has an 8-year life and an estimated salvage value of \$3,000. Installation costs and freight charges were \$3,300 and \$700, respectively. Brady uses straight-line depreciation.

The new hoist will be used to replace mufflers and tires on automobiles. Brady estimates that the new hoist will enable his mechanics to replace five extra mufflers per week. Each muffler sells for \$72 installed. The cost of a muffler is \$36, and the labor cost to install a muffler is \$12.

Instructions

- Compute the cash payback period for the new hoist.
- Compute the annual rate of return for the new hoist. (Round to one decimal.)