assuming a salvage value of $9,600 for the building, which he still thinks is an appropriate figure. He feels sure that the building can be rented for another 16 years. He also feels sure that 16 years from now the land will be worth 2.5 times what he paid for it.

**Sell the property.** A realty company has offered to purchase the property by paying $150,000 immediately and $23,000 per year for the next 16 years. Control of the property would go to the realty company immediately. To sell the property, Professor Ryatt would need to pay the mortgage off, which could be done by making a lump-sum payment of $71,000.

*Required:*

(Ignore income taxes.) Professor Ryatt requires a 14% rate of return. Would you recommend he keep or sell the property? Show computations using the total-cost approach to net present value.

## Cases

connect ACCOUNTING

**All applicable cases are available with McGraw-Hill's *Connect™ Accounting*.**

**CASE 13–33 Comparison of Alternatives Using Net Present Value Analysis [LO1]**

Woolrich Company's market research division has projected a substantial increase in demand over the next several years for one of the company's products. To meet this demand, the company will need to produce units as follows:

| Year | Production in Units |
|---|---|
| 1 | 20,000 |
| 2 | 30,000 |
| 3 | 40,000 |
| 4–10 | 45,000 |

At present, the company is using a single model 2600 machine to manufacture this product. To increase its productive capacity, the company is considering two alternatives:

*Alternative 1.* The company could purchase another model 2600 machine that would operate along with the one it now owns. The following information is available on this alternative:

a. The model 2600 machine now in use was purchased for $165,000 four years ago. Its present book value is $99,000, and its present market value is $90,000.
b. A new model 2600 machine costs $180,000 now. The old model 2600 machine will have to be replaced in six years at a cost of $200,000. The replacement machine will have a market value of about $100,000 when it is four years old.
c. The variable cost required to produce one unit of product using the model 2600 machine is given under the "general information" on the next page.
d. Repairs and maintenance costs each year on a single model 2600 machine total $3,000.

*Alternative 2.* The company could purchase a model 5200 machine and use the old model 2600 machine as standby equipment. The model 5200 machine is a high-speed unit with double the capacity of the model 2600 machine. The following information is available on this alternative:

a. The cost of a new model 5200 machine is $250,000.
b. The variable cost required to produce one unit of product using the model 5200 machine is given under the "general information" on the next page.
c. The model 5200 machine is more costly to maintain than the model 2600 machine. Repairs and maintenance on a model 5200 machine and on a model 2600 machine used as a standby would total $4,600 per year.

The following general information is available on the two alternatives:

a. Both the model 2600 machine and the model 5200 machine have a 10-year life from the time they are first used in production. The scrap value of both machines is negligible and can be ignored. Straight-line depreciation is used by the company.
b. The two machine models are not equally efficient. Comparative variable costs per unit of product are as follows:

| | Model 2600 | Model 5200 |
|---|---|---|
| Direct materials per unit | $0.36 | $0.40 |
| Direct labor per unit | 0.50 | 0.22 |
| Supplies and lubricants per unit | 0.04 | 0.08 |
| Total variable cost per unit | $0.90 | $0.70 |

c. No other factory costs would change as a result of the decision between the two machines.
d. Woolrich Company uses an 18% discount rate.

*Required:*
(Ignore income taxes.)
1. Which alternative should the company choose? Use the net present value approach. (Round to the nearest whole dollar.)
2. Suppose that the cost of direct materials increases by 50%. Would this make the model 5200 machine more or less desirable? Explain. No computations are needed.
3. Suppose that the cost of direct labor increases by 25%. Would this make the model 5200 machine more or less desirable? Explain. No computations are needed.

**~~CASE 13–34 Ethics and the Manager; Postaudit~~**


After five years with a national CPA firm with mostly large manufacturing clients, Amy Kimbell joined Hi-Quality Productions Inc. (Hi-Q) as manager of Manufacturing Accounting. Amy has both CPA and CMA credentials.

Hi-Q is a publicly held company producing automotive components. One operation in the Alpha Division requires a highly automated process. Hi-Q's top management and board of directors had outsourced this particular high-tech operation to another company to avoid making a large investment in technology they viewed as constantly changing.

Each operating division of Hi-Q has a budget committee. Two years ago, the Alpha Division budget committee presented to the board its proposal to bring the high-tech operation in house. This would require a capital investment of approximately $4 million but would lead to more than enough cost savings to justify this expenditure. The board approved the proposal, and the investment was made. Later the same year, Amy Kimbell was promoted to assistant corporate controller. In this position, she sits on the budget committee of all divisions.

A little more than a year after the high-tech process was put into operation, the board requested a postaudit review of the actual cost savings. When the board requests such a review, the data are supplied by the management of the affected division and are reviewed by the division's budget committee. When the data were sent to the budget committee for review, Amy Kimbell noted that several of the projections in the original proposal were very aggressive. These included a very high salvage value for the equipment as well as a very long useful life over which cost savings were projected to occur. If more realistic projections had been used, Amy doubted that the board would have agreed to make the investment.

Also in the postaudit review, Amy noted that substantial amounts of incremental service department operating costs directly caused by the new investment were not being attributed to the high-tech operation. Instead, these costs were being allocated as general overhead to all departments. In addition, she noted that the estimated rate for spoiled and defective work contained in the proposal was being used in the review rather than the actual rate, which was considerably higher.

When Amy Kimbell brought these points to the attention of the division's budget committee, she was told that as a new member of the committee she would not be held responsible for decisions, such as the investment in the high-tech operation, that were made prior to her arrival. Accordingly, she should let the seasoned members of the committee handle this particular review. When Amy continued to express her concerns, she was firmly informed that it had been the unanimous decision of the committee to approve the original proposal because it was thought to be in the best long-run interest of the company. And given this consensus, it was felt that certain "adjustments and exceptions" to the postaudit review were justified to ensure the overall long-run well-being of the company.

*Required:*
1. What should Amy do? (Refer to the IMA's Statement of Ethical Professional Practice for guidance.)