ALTERNATIVE INVESTMENTS

It might appear that the $2 million investment should be recommended because it yields the greater amount of profit per year.

The extra investment of $800,000 gives a profit of only $60,000, or an incremental return of 7.5 percent.

Therefore, if the company has $2 million to invest, it would be more profitable to accept the $1,200,000 proposal and put the other $800,000 in another investment at the indicated 14 percent return.

ALTERNATIVE INVESTMENTS

A general rule for making comparisons of alternative investments can be stated as follows:

The minimum investment which will give the necessary functional results and the required rate of return should always be accepted <u>unless</u> there is a specific reason for accepting an alternative investment requiring more initial capital.

ALTERNATIVE INVESTMENTS (example)

An existing plant has been operating in such a way that a large amount of heat is being lost in the waste gases. It has been proposed to save money by recovering the heat that is now being lost.

Four different heat exchangers have been designed to recover the heat, and all prices, costs, and savings have been calculated for each of the designs. The results of these calculations are presented in the following:

Design	No. 1	No. 2	No. 3	No. 4
Total initial installed cost, $	10,000	16,000	20,000	26,000
Operating costs, $/yr	100	100	100	100
Fixed charges, % of initial cost/yr	20	20	20	20
Value of heat saved, $/yr	4,100	6,000	6,900	8,850

ALTERNATIVE INVESTMENTS (example)

The company in charge of the plant demands at least a 10 percent annual return based on the initial investment for any unnecessary investment.

Only one of the four designs can be accepted. Neglecting effects due to income taxes and the time value of money, which (if any) of the four designs should be recommended?

Investment comparison for required operation with limited number of choices.

Example 4 A plant is being designed in which 450,000 lb per 24-h day of a water-caustic soda liquor containing 5 percent by weight caustic soda must be concentrated to 40 percent by weight. A single- effect or multiple-effect evaporator will be used, and a single-effect evaporator of the required capacity requires an initial investment of $18,000. This same investment is required for each additional effect. The service life is estimated to be 10 years, and the salvage value of each effect at the end of the service life is estimated to be $6000. Fixed charges minus depreciation amount to 20 percent yearly, based on the initial investment. Steam costs $0.60 per 1000 lb, and administration, labor, and miscellaneous costs are $40 per day, no matter how many evaporator effects are used.

Where X is the number of evaporator effects, 0.9X equals the number of pounds of water evaporated per pound of steam. There are 300 operating days per year. If the minimum acceptable return on any investment is 15 percent, how many effects should be used?

ANALYSIS OF ADVANTAGES AND DISADVANTAGES OF VARIOUS PROFITABILITY MEASURES FOR COMPARING ALTERNATIVES

Of the methods presented for profitability evaluation and the economic comparison of alternatives, net present worth and discounted cash flow are the most generally acceptable, and these methods are recommended.

Capitalized costs have limited utility but can serve to give useful and correct results when applied to appropriate situations.