

Incremental Analysis

Based on concept that any avoidable investment that does not yield at least the MARR should not be made

Involves determining the ROR on the extra investment required for the higher first-cost alternative

If the rate of return on the extra investment is less than the MARR, select the lower cost alternative, and vice versa



Incremental Investment Amount

The first step in an incremental analysis is to determine the **extra investment amount** and its associated cash flow. The next example illustrates the procedure.

Example: Either of the service alternatives shown below can be used in a certain process. Tabulate the incremental cash flow involved.

	<u>A</u>	<u>B</u>	<u>B-A</u>
First cost, \$	-40,000	-60,000	-20,000
Annual cost, \$/yr	-25,000	-19,000	+6000
Salvage value, \$	8,000	10,000	+2000



The incremental CF is shown in the (B-A) column
(The **ROR** on this column determines which alternative to select)

Alternative Selection by ROR

Example: Either of the service alternatives shown below can be used in a certain process. If the company's MARR is 15% per year, Determine which should be selected on the basis of ROR

	<u>A</u>	<u>B</u>
First cost, \$	-40,000	-60,000
Annual cost, \$/yr	-25,000	-19,000
Salvage value, \$	8,000	10,000
Life, yrs	5	5



**Find ROR on incremental investment and compare to MARR.
If $i < \text{MARR}$, select lower first-cost alternative, and vice versa**

Solution:

	<u>A</u>	<u>B</u>	<u>B-A</u>
First cost, \$	-40,000	-60,000	-20,000
Annual cost, \$/yr	-25,000	-19,000	+6000
Salvage value, \$	8,000	10,000	+2000
Life, yrs	5	5	



First find incremental cash flow

Next, find ROR on incremental CF and compare to MARR:

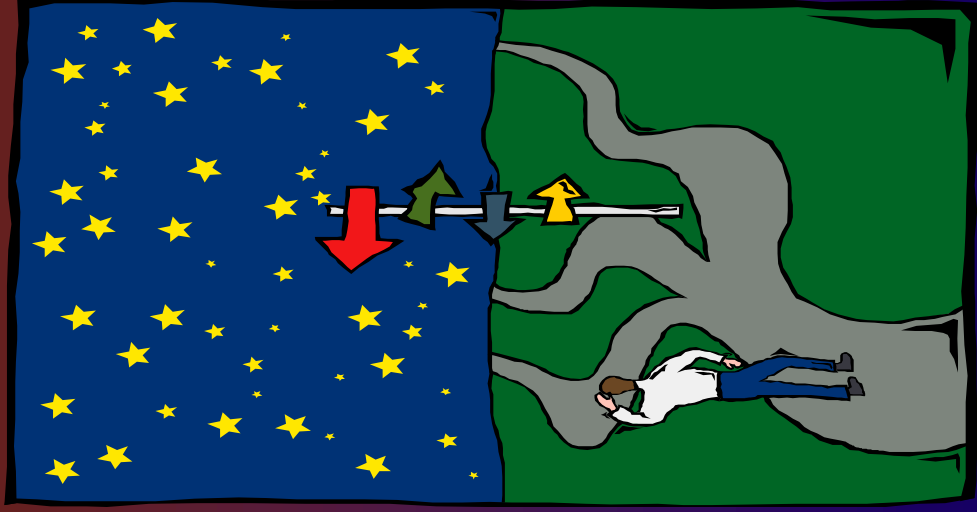
$$0 = -20,000 + 6000(P/A, i, 5) + 2000(P/F, i, 5)$$

$$i = 17.2\% > \text{MARR of } 15\%$$

\$20,000 investment is attractive: **Select Alt B**



Multiple Alternatives



Two types: independent and mutually exclusive

For independent, compare alts against DN and select all that have $ROR > MARR$

For mutually exclusive, first **rank** alternatives according to increasing initial investment cost (add DN for revenue alternatives)

Next, compare **first two** alts incrementally

Then, **eliminate one** and compare survivor w/ next alt

Finally, **continue comparing** alts until only 1 remains