COST-REVENUE DOMINATED CASH FLOW

CASH FLOW

CASH FLOW

Present Worth Method

Revenue Dominated Cash Flow
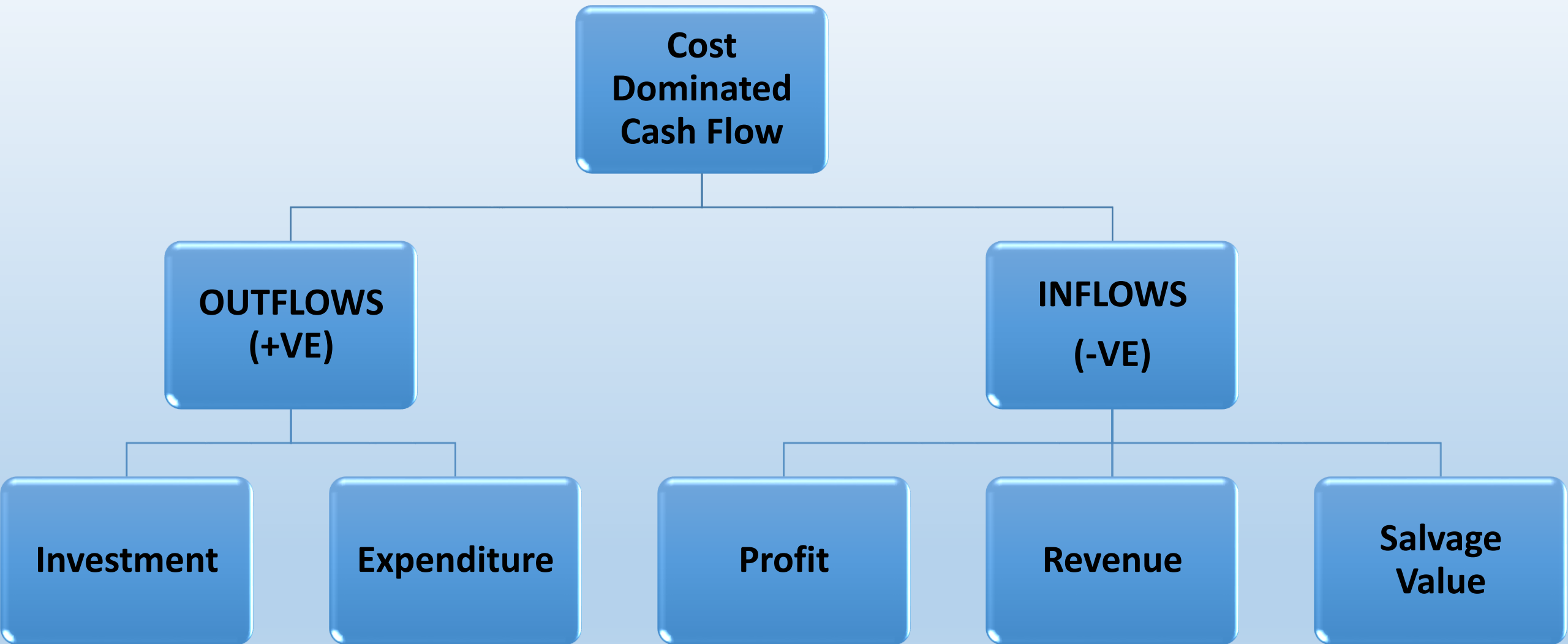
Cost – Dominated Cash Flow

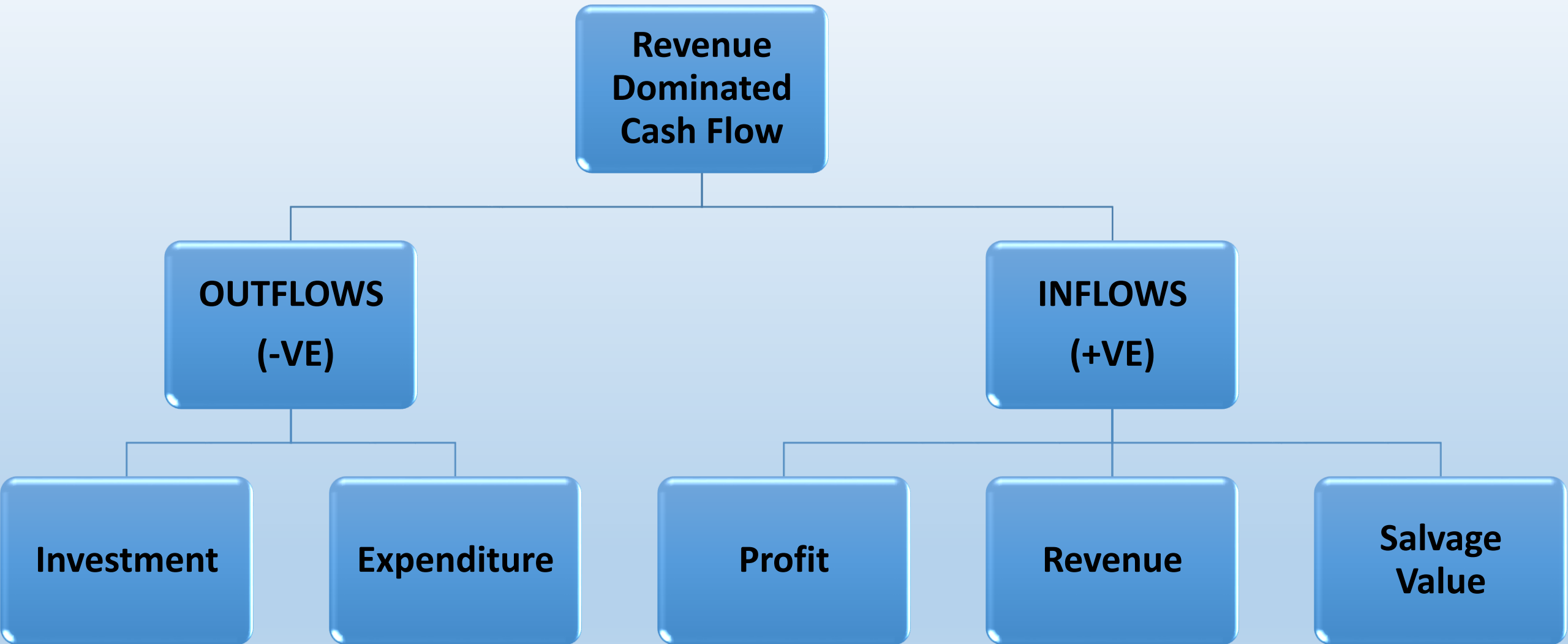### Future Worth Method

Revenue Dominated Cash Flow

Cost – Dominated Cash Flow

Annual Equivalent Method

Revenue Dominated Cash Flow

Cost – Dominated Cash Flow

S.Balamurugan AP/Mech AAA College of
Engg. & Tech.

SIGN CONVENTION

- In revenue/profit dominated cash flow diagram :

    (a) all inflows to the organization such as profit, revenue, salvage value is (+).

   (b) The cost (Outflows) will be assigned with (-).

- In the cost dominated cash flow diagram:

    (a) The cost (Outflows) will be assigned   with (+)

    (b) All inflows to the organization such   as profit, revenue, salvage value is (-)

Present Worth Method of Comparison – Revenue Dominated

Positive Sign – Profit, Revenue, Salvage Value (Inflows)
Negative Sign – Costs (Outflows)

- The cash flow of each alternative will reduced to time zero by assuming interest rate i.(Time zero = Present time)

- Best alternative will be selected by comparing the present worth amount of alternatives.(Maximum Present Worth)

-

Revenue-Dominated Cash Flow Diagram
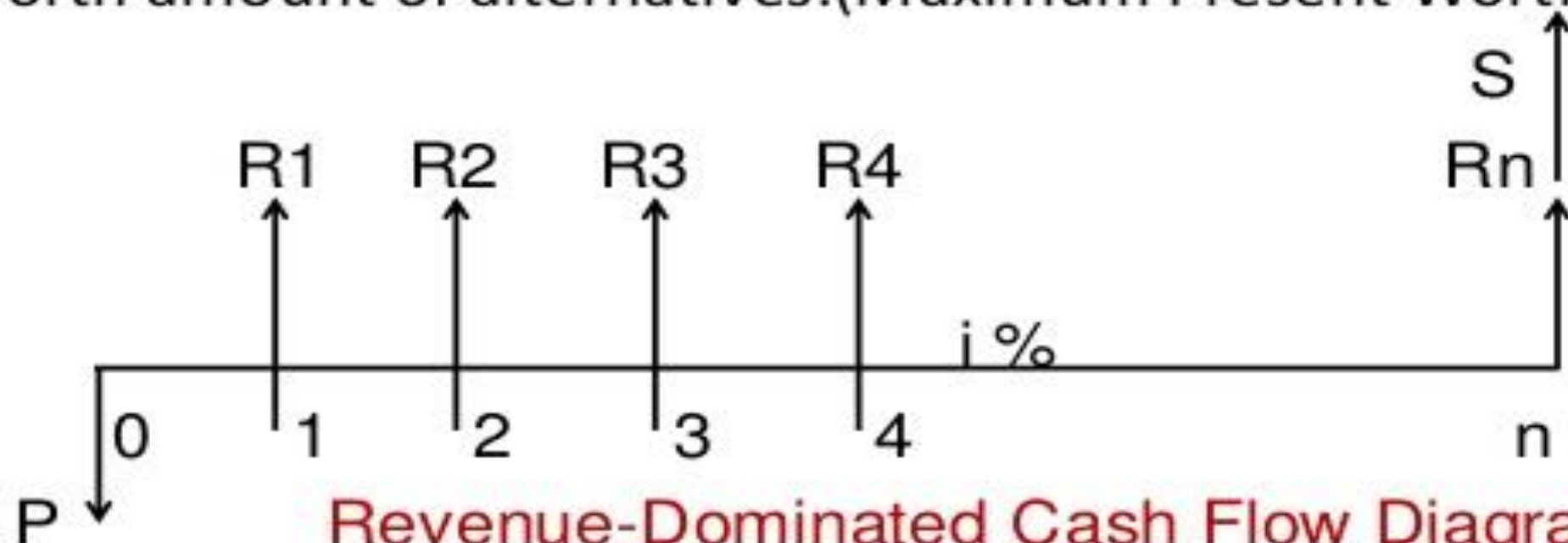
$$PW(i) = -P + R1[1/(1+i)^1] + R2[1/(1+i)^2] + .. + [Rj[1/(1+i)^j] + Rn[1/(1+i)^n] + S[1/(1+i)^n]$$

Present Worth Method of Comparison – Cost Dominated

Positive Sign –Costs (Outflows)
Negative Sign – Profit, Revenue, Salvage Value (Inflows)

- The cash flow of each alternative will reduced to time zero by assuming interest rate i.(Time zero = Present time)

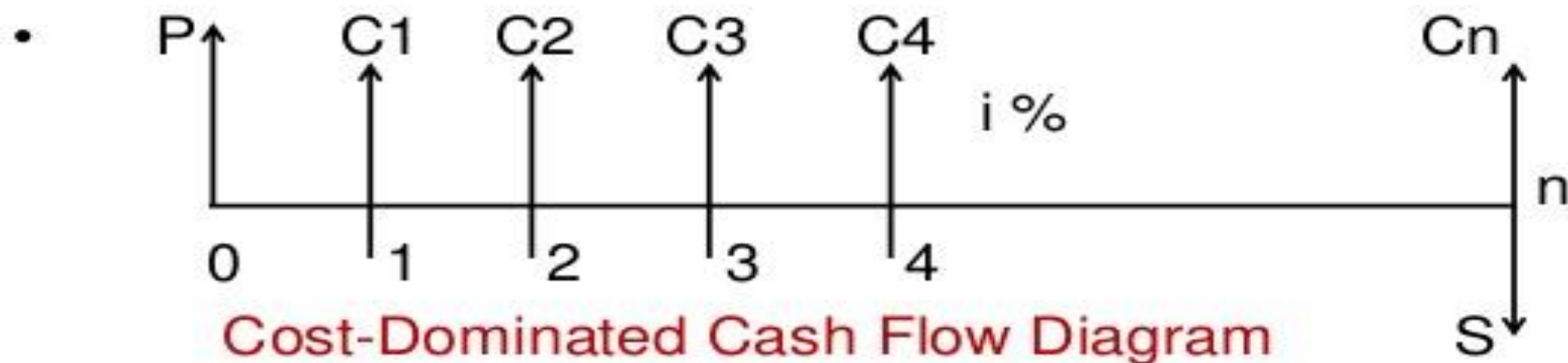- Best alternative will be selected by comparing the present worth amount of alternatives. (Minimum Present Worth)

-

P $\uparrow$ C1   C2   C3   C4   Cn

i %

n

0   1   2   3   4   S

Cost-Dominated Cash Flow Diagram

$$PW(i) = P + C1[1/(1+i)^1] + C2[1/(1+i)^2] + .. + [Cj[1/(1+i)^j] + Cn[1/(1+i)^n] - S[1/(1+i)^n]$$

Annual Equivalent Method of Comparison – Revenue Dominated
Positive Sign – Profit, Revenue, Salvage Value (Inflows)
Negative Sign – Costs (Outflows)

- A company invests in one of the two mutually exclusive alternatives. The life of both alternatives is estimated to be 5 years with the following investments, annual returns and salvage values. Determine the best alternative based on the annual equivalent method by assuming i = 25%

	Alternative	
	A	**B**
Investment (Rs.)	1,50,000	1,75,000
Annual equal return (Rs.)	60,000	70,000
Salvage value (Rs.)	15,000	35,000

Alternative A	$AE_A(25\%) = -1,50,000(A/P, 25\%, 5) + 60,000 + 15,000 \times (A/F, 25\%, 5)$ $AE_A(25\%) = -1,50,000(0.3718) + 60,000 + 15,000 \times (0.1218)$ $AE_A(25\%) = Rs. 6,057$
Alternative B	$AE_A(25\%) = -1,75,000(A/P, 25\%, 5) + 70,000 + 35,000 \times (A/F, 25\%, 5)$ $AE_A(25\%) = -1,75,000(0.3718) + 70,000 + 35,000 \times (0.1218)$ $AE_A(25\%) = Rs. 9,198$

Revenue dominated cash flow, the Alternative B is more than that of Alternative A.
Alternative B is best alternative.

Production engineers of a manufacturing firm have proposed a new equipment to increase productivity of manual gas cutting operation. The initial investment is Rs 5,00,000 and equipment will have a salvage value of Rs 1,00,000 at the end of its expected life of 5 years. Increased productivity will yield an annual revenue of Rs 2,00,000 per year. If the firm's minimum attractive rate of return is 15%; is the procurement of new equipment economically justified? Use Present worth, Annual Equivalent and Future Worth Method.

GIVEN:-

P= -5,00,000
F= 1,00,000
N=5 YEARS
i= 0.15
A= 2,00,000

REVENUE BASED

$$PW = -P + F \longrightarrow P + A \longrightarrow P$$

PW= -5,00,000

                    +

  1,00,000 (P/F, 0.15,5)

                    +

2,00,000 (P/A, 0.15,5)

= 2,20,160 > 0

It is economically justified.

$$FW = -P \longrightarrow F + F + A \longrightarrow F$$

FW = -5,00,000 (F/P, 0.15,5)

+

1,00,000

+

2,00,000 (F/A, 0.15,5)

= 4,42,500 > 0

It is economically justified.

AW= -P $\longrightarrow$ A + F $\longrightarrow$ A + A

AW = -5,00,000 (A/P, 0.15,5)
+
2,00,000
+
1,00,000 (A/F, 0.15,5)

= 65,653.79525 > 0

It is economically justified.

Investment proposals A and B have the net cash flows as given in the table. Compare the Present worth of A with that of B at i=18%. Which proposal should be selected?

PROPOSAL	0	1	2	3	4
A	-10,000	3000	3000	7000	6000
B	-10,000	6000	6000	3000	3000

For A:
P=-10,000
R=0.18
F1=3000
F2=3000
F3=7000
F4=6000

FOR B:
For A:
P=-10,000
R=0.18
F1=6000
F2=6000
F3=3000
F4=3000
REVENUE BASED

PW(A)= -10,000
+
3000(P/F, 0.18, 1)
 +
3000(P/F, 0.18, 2)
+
 7000(P/F, 0.18, 3)
+
6000(P/F, 0.18, 4)
=
Rs 2052.10

PW(B)= -10,000
+
6000(P/F, 0.18, 1)
+
6000(P/F, 0.18, 2)
+
3000(P/F, 0.18, 3)
+
3000(P/F, 0.18, 4)
=
Rs 2767.40 . B will be selected.

A granite company is planning to buy a fully automated granite cutting machine. If it is purchased under installment basis, the company has to pay 25% of the cost (Rs 16,00,000) at the time of purchase and the remaining amount in 10 annual equal installments of Rs 2,00,000 each. Suggest the best alternative (whether to buy at original cost or at down payment and installment basis) for the company using present worth basis at i=18%

P= 4,00,000
A=2,00,000
R=0.18
N=10

COST BASED

PW= 2,00,000 (P/A, 0.18,10)
+
4,00,000

= Rs 12,98,820
second option is selected.

A finance company advertises two investment plans. In plan I, company pays Rs 12,000 after 15 years for every 1000 invested now. In plan II, for every Rs 1000 invested now, the company pays Rs 4000 at the end of 10th year and Rs 4000 at the end of 15th year. Select the best alternative plan from investor's point of view (R= 12%)

Plan I:
P= -1000
F=12,000
R=0.12
N=15

Plan II:
P= -1000
F1= 4000, N=10
F2= 4000, N=15
R=0.12
N=15

PW: -1000

  +

  12,000(P/F, 0.12,15)

   =

   Rs 1192.40

PW: -1000

  +

  4000(P/F, 0.12,10)

   +

  4,000(P/F, 0.12,15)

   =

   Rs 1018.8

Plan 1 is selected.

A man owns a corner flat. He must decide which of the several alternatives to select in trying to obtain a desirable return on his investment. After much study and calculations, he decides that the two best alternatives are as given below. Which one will be selected based on Future worth analysis? (R= 12%)

	Build gas station	Build soft ice-cream stand
First cost	20,00,000	36,00,000
Annual Property Tax	80,000	1,50,000
Annual Income	8,00,000	9,80,000
Life	20	20

	Build gas station	Build soft ice-cream stand
P	20,00,000	36,00,000
A	80,000	1,50,000
A	8,00,000	9,80,000
N	20	20

A(Build gas station)= 8,00,000-80,000= 7,20,000

A(Build soft ice-cream stand)= 9,80,000- 1,50,000 = 8,30,000

Revenue based

FW(Build gas station)= -20,00,000(F/P, 20,0.12)
+
7,20,000 (F/A, 20,0.12)

= Rs 3,25,85,440

FW(Build soft ice-cream stand)= -36,00,000(F/P, 20,0.12)

+

8,30,000 (F/A, 20,0.12)

= Rs 2,50,77,560

M/S Krishna Casting Ltd. Is planning to replace its annealing furnace. It has received tenders from three different original manufacturers of annealing furnace. The details are as follows: (i= 20%). Which one will be selected based on Future worth analysis?

Manufacturers	1	2	3
Initial Cost	80,00,000	70,00,000	90,00,000
Life	12	12	12
Annual Maintenance Cost	8,00,000	9,00,000	8,50,000
Salvage Value	5,00,000	4,00,000	7,00,000

Cost based

Manufacturers	1	2	3
P	80,00,000	70,00,000	90,00,000
N	12	12	12
A	8,00,000	9,00,000	8,50,000
F	5,00,000	4,00,000	7,00,000

FW(Alternative 1)= 80,00,000 (F/P, 12,0.20)
+
8,00,000 (F/A, 12,0.20)
-
5,00,000

= Rs 10,24,92,800

FW(Alternative 2)= 70,00,000 (F/P, 12,0.20)

+

9,00,000 (F/A, 12,0.20)

-

4,00,000

= Rs 9,76,34,900

FW(Alternative 3)= 90,00,000 (F/P, 12,0.20)

+

8,50,000 (F/A, 12,0.20)

-

7,00,000

= Rs 11,31,87,850

A Company is planning to purchase an advance machine centre. Three original manufacturers have responded to its tenders whose particulars are tabulated as follows. Which one will be selected based on Annual Equivalent Worth analysis?

Manufacturers	Down payments	Yearly equal installments	Number of Installments	Rate of Interest (%)
1	5,00,000	2,00,000	15	20
2	4,00,000	3,00,000	15	20
3	6,00,000	1,50,000	15	20

COST BASED

Manufacturers	P	A	N	I
1	5,00,000	2,00,000	15	20
2	4,00,000	3,00,000	15	20
3	6,00,000	1,50,000	15	20

AE(Alternative 1)= 5,00,000 (A/P, 15,0.20)
+
2,00,000

= Rs 3,06,950

AE(Alternative 2)= 4,00,000 (A/P, 15,0.20)
+
3,00,000

= Rs 3,85,560

AE(Alternative 3)= 6,00,000 (A/P, 15,0.20)

$+$

1,50,000

= Rs 2,78,340