

Sensitivity Analysis

(i) Cost of project (20%)

(अगर project cost 20% से Increase होता है तो NPV पर क्या Effect होगा)

$$NPV = (45000 \times 3.791 - 144000) = ₹ 26595$$

(COP = 120000 + 20%)

$$\Delta NPV = \frac{50595 - 26595}{50595} \times 100 = \boxed{47.44\%}$$

② Annual CFAT (20% ↓)

$$CFAT = 45000 \times 80\% = 36000$$

$$NPV = (36000 \times 3.791) - 120000 = 16476$$

$$\Delta NPV = \frac{50595 - 16476}{50595} \times 100 = \boxed{67.44\%}$$

③ life of project (20% ↓)

$$\text{life } 5\text{YEAR} - 20\% = 4\text{YEARS}$$

$$NPV = (45000 \times 3.170) - 120000 = 22650$$

$$\Delta NPV = \frac{50595 - 22650}{50595} \times 100 = \boxed{55.23\%}$$

④ Cost of Capital 10% (20% ↑) = 12%

$$NPV = (45000 \times 3.605) - 120000 = 42225$$

$$\Delta NPV = \frac{50595 - 42225}{50595} \times 100 = \boxed{16.56\%}$$

Most critical factor is CFAT

$$\text{Cost of project} = \boxed{47.44\%}$$

Sensitivity Analysis

- Sensitivity Analysis means analysis of various variables of project like Cost of project, Selling price of product, Cost of product, life of project, Cost of Capital etc.
- In Sensitivity Analysis, we change each factor in unfavorable direction, keeping other factors constant to find out critical factor so that further research may carry out about such factor before accepting the project.

H.W

TYK 10

10%

1st

Question: 31

From the following details relating to a project, analyze the sensitivity of the project to changes in initial project cost, annual cash inflow and cost of capital:

Initial Project Cost (₹)

Annual Cash Inflow (₹)

Project Life (Years)

Cost of Capital

1,20,000

45,000

4

10%

10%

5

11%

To which of the three factors, the project is most sensitive? (Use annuity factors: for 10% 3.169 and 11% 3.103).

TYK 9

Question: 32

XYZ Ltd. is considering a project for which the following estimates are available:

	₹
Initial Cost of the project	10,00,000
Sales price/unit	60
Cost/unit	40
Sales volumes	
Year 1	20000 units
Year 2	30000 units
Year 3	30000 units

Discount rate is 10% p.a.

You are required to measure the sensitivity of the project in relation to each of the following parameters:

- Sales Price/unit
- Unit cost
- Sales volume
- Initial outlay and
- Project lifetime Taxation may be ignored.

(Page No. 43)

$$\frac{60 - 55.26}{60} \times 100 = 7.9\%$$

Calculation of NPV (55.26)

$$NPV = \frac{PVC_1}{(1.10)^1} + \frac{PVC_2}{(1.10)^2} + \frac{PVC_3}{(1.10)^3} - \frac{PVC_0}{(1.10)^0}$$

$$= \frac{20000(60-40)}{(1.10)^1} + \frac{30000(60-40)}{(1.10)^2} + \frac{30000(60-40)}{(1.10)^3} - \frac{1000000}{(1.10)^0}$$

$$= 20 \times \left[\frac{20000}{(1.10)^1} + \frac{36000}{(1.10)^2} + \frac{30000}{(1.10)^3} \right] - 1000000$$

$$= 20 \times 65514.65 - 1000000 = 310293$$

16

1 Sensitivity in selling price per unit

1st Approach

$$\text{Selling price } ₹60 (10\% \downarrow) = ₹54$$

$$\text{NPV} = -82795$$

$$\Delta \text{NPV} = \frac{310293 - (-82795)}{310293} \times 100 = 126.68\%$$

2nd Approach

Let assume contribution per unit be x so that NPV should be zero

$$x \times 65514.651 - 1000000 = 0$$

$$x = \frac{1000000}{65514.651} = ₹15.26$$

$$\text{change in CPV} = ₹20 - ₹15.26 = 4.74$$

It means maximum decrease in selling

price ₹4.74

$$\text{Sensitivity in selling price} = \frac{₹4.74}{60} \times 100 = 7.9\%$$