

Question - 34

The Easygoing Company Limited is considering a new project with initial investment for a product "Survival". It is estimated that IRR of the project is 16% having an estimated life of 5 years.

Financial Manager has studied that project with sensitivity analysis and informed that annual fixed cost sensitivity is 7.8416%, whereas cost of capital (discount rate) sensitivity is 60%.

Other information available are:

Profit Volume Ratio (P/V) is 70%,

Variable cost ₹ 60/- per unit

Annual Cash Flow ₹ 57,500/-

Ignore Depreciation on initial investment and impact of taxation.

Calculate

(i) Initial Investment of the Project

(ii) Net Present Value of the Project

(iii) Annual Fixed Cost

(iv) Estimated annual unit of sales

(v) Break Even Units

Cumulative Discounting Factor for 5 years

8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%
3.339	3.890	3.791	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127

S.P. 2000
VC = 60
FC = 10000
CF = 57500

$$x + (x \times 60\%) = 16\%$$

11.14.1 LUL

$$\text{COC Sensitivity} = \frac{\text{IRR} - \text{COC}}{\text{COC}} \times 100$$

$$0.60 = \frac{16 - x}{x}$$

$$x = \frac{16}{1.60} = 10\%$$

W.N.2 Selling price per unit

$$\text{Selling price} = \frac{\text{VC}}{30\%} = \frac{60}{0.30} = 200$$

IRR is a rate at which .

$$PVC I = PVCO$$

$$PVCO (\text{cost of project}) = \text{Annual CFAT} \times PVAF_{(IRR)}$$

$$PVC I = \text{Annual CFAT} \times PVAF_{(COC)}$$

① Initial Investment

$$\begin{aligned} \text{Initial Investment} &= \text{Annual Cash flows} \times PVAF_{(IRR)}^{16\%} \\ &= 57500 \times 3.274 = ₹ 188255 \end{aligned}$$

$$\begin{aligned} \text{② NPV} &= PVC I - PVCO \\ &= (57500 \times PVAF_{10\%, 5}) - 188255 = ₹ 29727.50 \end{aligned}$$

③ Annual fixed Cost

fixed cost sensitivity is 7.8416%

(It means if fixed cost 7.8416% से बढ़ाया जाये तो NPV (29728) से 0 हो जाएगा)

$$\text{Sensitivity in fixed cost} = \frac{\text{NPV}}{\text{PVFC}} \times 100$$

$$0.078416 = \frac{29727.50}{x}$$

$$x = \frac{29727.50}{0.078416} = ₹ 379106$$

$$\text{PV of FC} = \text{Annual FC} \times \text{PVAF}(10\%, 10)$$

$$379106 = x \times 3.791$$

$$x = ₹ 100000$$

(iv) Estimated Annual units of Sales

$$Q (200 - 60) - 100000 = 57500$$

$$Q = \frac{157500}{140} = 1125 \text{ units}$$

⑤ BEP

$$\text{BEP} = \frac{FC}{CPU} = \frac{100000}{140} = 714.285 \text{ units}$$

Question - 35

Unnat Ltd. is considering investing ₹ 50,00,000 in a new machine. The expected life of machine is five years and has no scrap value. It is expected that 2,00,000 units will be produced and sold each year at a selling price of ₹ 30.00 per unit. It is expected that the variable costs to be ₹ 16.50 per unit and fixed costs to be ₹ 10,00,000 per year. The cost of capital of Unnat Ltd. is 12% and acceptable level of risk is 20%.

You are required to measure the sensitivity of the project's net present value to a change in the following project variables:

- (a) sale price;
- (b) sales volume;
- (c) variable cost;
- (d) On further investigation it is found that there is a significant chance that the expected sales volume of 2,00,000 units per year will not be achieved. The sales manager of Unnat Ltd. suggests that sales volumes could depend on expected economic states which could be assigned the following probabilities:

State of Economy	Annual Sales (in Units)	Probability
Poor	1,75,000	0.30
Normal	2,00,000	0.60
Good	2,25,000	0.10

Calculate expected net present value of the project and give your decision whether company should accept the project or not.

① Calculation of NPV

$$\begin{aligned} & (30 - 16.50) (200000 \times 3.605) - (1000000 \times 3.605) - 5000000 \\ & 13.50 \times 721000 - 3605000 - 5000000 \end{aligned}$$

$$\text{(a) Sensitivity in Selling price} = ₹ 1128500$$

$$x \times 721000 - 3605000 - 5000000 = 0$$

$$x = \frac{5000000 + 3605000}{721000} = ₹ 11.93$$

$$\begin{aligned} \text{Sensitivity in selling price} &= \frac{13.50 - 11.93}{30} \times 100 \\ &= 5.23\% \end{aligned}$$

(b) Sensitivity in Sales Volume

$$13.50 \times x - 3605000 - 5000000 = 0$$

$$x = 637407.41$$

$$\text{Sensitivity}_Q = \frac{721000 - 637407.41}{721000} \times 100$$
$$= 11.59\%$$

(c) Sensitivity in VC per unit

$$\text{Sensitivity}_Q = \frac{1.57}{16.50} \times 100 = 9.52\%$$