7. Capital budgeting

① Net present value (NPV) = Present value of inflow − Present value of outflow

② Profitability Index = $\frac{\text{Present value of Cash inflow}}{\text{Present value of Cash outflow}}$.

⊙ Profitability Index is also known as Benefit to Cost Ratio or Desirability factor.

③ If life of two project are not same then decision shall be based on Annualised NPV.

⊙ Annualised NPV = $\frac{NPV}{PVIFA(r\%, n)}$

④ For Calculation of IRR, we have to use interpolation technique.

⑤ Modified IRR → In this Concept, Intermediary Cash flow will also reinvest at a given rate.

⑥ Pay back period → Time period during which outflow of the project would be recovered from future inflow.

(7) Pay back Reciprocal = $\frac{1}{\text{Pay back period}}$

(8) Adjusted NPV = Base Case NPV + Present value of tax Saving on Interest

(9) Risk adjusted NPV

(a) Using Certainty Equivalent approach

Total Cash flow × Certainty factor

(or)

Total Cash flow × Probability

→ Risk free Cash flow.

For Computing risk adjusted NPV, we will use risk free Cash flow and risk free rate.

(b) Using risk adjusted discount rate method

In this method, we will use CAPM to Calculate discounting rate

Discounting rate = $R_F + \beta(R_m - R_F)$

(10) Expected NPV = $(NPV_1 \times P_1) + (NPV_2 \times P_2) + (NPV_3 \times P_3)$

(11) Expected Utilities = Utility × Probability

(12) Inflation in Capital budgeting

(a) Nominal Cash flow = Real Cash flow × $(1 + \text{Inflation})^n$

(b) (1+ Nominal rate) = (1+ Real rate) × (1 + Inflation rate)

(13) Standard deviation of Project

(a) Year wise

Case-I → If $\gamma = 1$

$$\sigma_{\text{Project}} = \sigma_{Y_1} \times PVIF(RR, 1) + \sigma_{Y_2} \times PVIF(RR, 2) + \dots$$

Case-II → If $\gamma = 0$

$$\sigma_{\text{Project}} = \sqrt{(\sigma_{Y_1} \times PVIF(RR,1)^2 + (\sigma_{Y_2} \times PVIF(RR,2)^2 + \dots}$$

(b) Cash Stream wise

$$\sigma_{Project} = \sqrt{\Sigma (NPV - \overline{NPV})^2 \times Probability}$$