

Financial Analysis of Projects

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Financing the project

- Financing the project is to guarantee that the amount of money needed is available.
- This means that the project management team, in order to know how much money is needed, needs to be able to calculate the amount of the cost, benefits and investment.

Investor's point of View

- From an investor's point of view, for every project there is at least one alternative
- An investor will adopt to invest in a project if it is better than the best looking alternative.
- The alternative could be another project, investing money in treasury bills or a fixed deposit, etc.

Government Investments Vs Private Sector Investments

- When the governments make investments there may be broader scope for the expected benefits.
- It may not target profits in direct financial terms but may expect to up lift a certain segment of the economy.
 - For example, when the government invest in a highway, it will aim development of a certain area by way of providing a faster transportation media for both economic and social activities.

Government Investments Vs Private Sector Investments

- A private investment will usually target at earning a profit while providing a service to the society.
- A private investment on a highway project will directly target earning a revenue by way of a toll and earning a profit over the investment.

Financial Analysis of Projects

- A project that shows quick returns is preferred to one that shows the same returns later, because the returns from the first project can be re-invested and earn higher profits
- A project is usually evaluated in total, and not any particular year of operation and it is required to estimate the incremental cash flows over its whole life.

Discounted Cash Flow

- Discounted cash flow (DCF) is a general term for all methods of financial evaluation which take into account the timing of the future cash flows.
 - **Net Present Value (NPV) method**

Net Present Value (NPV) method

- In this method the future cash flows are discounted back to the present value.
- This is usually done by taking each year's cash flow, discounting it at the cost of capital to its present value equivalent and summing the present values.
- This gives the Net Present Value of the project, and if this exceeds the original capital outlay, the project is accepted.

Present Value (PV)

F_i = *Income or an expense in a future year i*

PV_i = *Present value of F_i*

r = *discount rate*

$$PV_i = \frac{F_i}{(1 + r)^i}$$

Net Present Value (NPV)

$$NPV = \sum_{i=0}^n \frac{F_i}{(1 + r)^i}$$

Net Present Value (NPV)

$$\text{NPV} = (\text{PV of Benefits} - \text{PV of Costs})$$

If the discount rate is r , for a period of n years, the present worth factor is given by,

$$\sum_{1=1}^n \frac{1}{(1+r)^n}$$

which is equal to

$$\frac{1}{r} \left[1 - \frac{1}{(1+r)^n} \right]$$

Example for DCF Calculations

- It is proposed to mechanize a manual invoicing system. The new equipment will cost Rs.1,000,000. It is expected that it will save two clerks who each gets Rs.23,500 per month including allowances. The equipment is expected to last 5 years and to have no residual value. The cost of electricity and maintenance will be Rs. 20,000 per annum. Rate of tax is 20%.

Example for DCF Calculations

Parameter	Value
The capacity of the rooftop solar PV system	3 kW
The capital cost of the rooftop solar PV system	Rs 900,000
O&M Cosr	Rs 5,000 per year
Operation Period	20 years
Construction duration	1 week (negligible)
Plant factor	18%
The average cost of electricity	Rs 30 per kWh

Calculate the NPV of the project and comment on the results.