MEFA Assignment

N. Sai Shrikar
ECE-C
4E9

Capital budgeting

The process of long-term planning, developing of resources, making investment decision in capital expenditure to get profit which is expected to receive or generate over period of an year or more than an year is referred as Capital budgeting. It is applied to large & small organizations. It is not restricted.

Methods of Capital Budgeting

Capital Budgeting is mainly classified into 2 methods. They are:

1. Traditional method
2. Discounted cash flow method

1. Traditional method

(a) Pay back Period

Pay back period is one of methods of traditional approach. Under this method the decision to accept or reject a project is based on its pay back period. The period in which the original cost of the project is recovered is taken as pay back period. It is calculated as

$$\text{Pay back period} = \frac{\text{Original cost / cash outlay of project}}{\text{Annual cash inflows.}}$$

Interpretation

i) If calculation of pay back period is less than the maximum, accept the project, otherwise reject

ii) If payback period is shorter than the life of project, accept it, otherwise reject.

iii) In more than one project, accept the project gives the least pay back period.

(b) Average Rate of Return (ARR)

This method is based on accounting information rather than cash flows. It is also called as Accounting Rate of Return (ARR).

$$ARR = \frac{\text{Average income}}{\text{Average investment}} \times 100$$

$$\text{Average income} = \frac{\text{Total income}}{\text{No; of years}}$$

(or)

$$\text{Average income} = \frac{\text{Net profit after tax}}{\text{No; of years}}$$

Average investment = Scrap value + $\frac{1}{2}$ (investment − scrap value) + additional working capital.

Interpretation

i) If ARR of the project is > predetermined ARR of the firm, the project is accepted else it is rejected.

ii) In case of more than one project, the project with high ARR value is accepted.

2. Discounted Cash Flow Method

(a) Net Present Value (NPV)

(b) Profitability Index (PI)

(c) Internal Rate of Return (IRR)

(a) Net Present Value (NPV)

In this method return on investment is attained with introduction of time element factor.

$$NPV = \left[\frac{A_1}{(1+k)^1} + \frac{A_2}{(1+k)^2} + \cdots + \frac{A_n}{(1+k)^n}\right] - C_0$$

Present value of cash can also be determined by using present value tables.

Interpretation:

(i) If present value of cash inflow > present value of cash outflow, accept the project.

(ii) In case of more than 1 project, the project has the highest net present value, it is to be selected & accepted, otherwise rejected.

(b) Profitability Index (PI)

PI is the ratio of Present value of Cash Inflow (PVCI) to the Present value of Cash Outflow (PVCO)

$$PI = \frac{PVCI}{PVCO} \times 100.$$

This is the modified form of NPV, also called as benefit cost ratio.

Interpolation:

If the project's profitability index is >1 accept, else reject the project.

(c) Internal Rate of Return (IRR)

This technique is also called as time adjusted rate of return. Rate of return which equates the present cash inflows to present outflow of cash.

The steps involved in calculating IRR are

1. Calculate cash flow
2. Calculate FPBP

$$FPBP = \frac{\text{Initial investment}}{\text{Average Cash flow}}$$

3. In present value annuity table, look for the value which is closest to the fake pay back period in years column.
4. The corresponding percentage obtained is noted
5. NPV is calculated at that % tage.
6. If NPV is +ve, take a higher rate & if NPV is -ve take lower & calculate NPV again.
7. Continue steps 5 & 6 until 1 +ve & 1 -ve NPV obtained
8. Calculate IRR by interpolation formula.

$$IRR = r_L + \frac{PVC_{FAT} - PVCO}{\Delta PV} \times \Delta r$$

Interpretation

(i) If IRR > min rate of return, it is accepted else rejected.

(ii) In case of more than one project, accept that project whose IRR is highest.