CAPITAL BUDGETING

Meaning:

Capital Budgeting is the process of evaluating the investment opportunity. Capital Budgets involves planning of Capital investment decisions.

Capital investment involves large expenditure to purchase fixed assets like Machinery which give benefits for many years. Capital Budgeting considers both Capital outlay as well as financing, Capital Budgeting decisions include Acquisition; Replacement, Expansion and Modernization of Assets.

Each Capital Budget has two aspects,

1) Cash is expected to be paid out i.e. Cash Outflow
2) Cash expected in Return i.e. Cash inflow.

The Decision of Capital Expenditure is generally taken on the basis of Cash outflow or Cash inflow.

1 Cash Outflow:

Cash Outflow means amount out going on account of investment. The sum paid at the time, the expenditure on investment or the initial investment is called Cash outflow period.

It is calculated as follows:

	₹	₹
Cost of the New Project	xxx	
Add: Installation Charges	xx	
	xxx	
Add: Increase in working capital	xx	xxx
Less: Freed working capital		xx
		xxx
Less: Sales proceeds of Assets (after Tax)		xx
Net Outflow of Cash		xxx

2 Cash Inflow :

Cash Inflow means estimation of future benefits accruing from the investment proposal. An investment may increase either by actual receipt of cash or by reducing expenses. It is calculated on cash basis i.e. ignoring not cash item. i.e. depreciation. It is estimated after tax.

It is calculated as follows:

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Net Profit / Annual Saving	xxx
Less: Depreciation	xx
Net Profit / Annual Saving Before Tax	xxx
Less: Income Tax	xx
Net Profit / Annual Saving After Tax	xxx
Add: Depreciation	xx
Cash inflow after Tax	xxx

- Salvage is the estimated value of assets at the end of economic life of asset. It is treated as cash inflow in that your in which it is received.
- Investment may increase or free some working capital. Increase in working capital will be recovered at the end of Project life and hence it is treated as Cash inflow in year in which it is received.

Ist Method : Payback Period (PB)

The Payback Period is length of time a Project takes to recover its initial cash Outlay. i.e. Original cost of an investment.

For eg. Project Cost is ₹ 10 lakhs and Cash flow is ₹ 2.5 lakhs it has payback period of 4 yrs.

$$\textbf{Payback Period} = \frac{\textbf{Initial Investment / Cash Outflow}}{\textbf{Salvage / Cash Inflow}}$$

There are two ways of calculating Payback (PB) period.

a) When Cash in flow are uniform every year :

Pg. 415 A.P. (4)

Investment ₹ 1,00,000 depn. on S.L.M. @ 12.5%

NIP ₹ 15,000 Tax @ 50% (after depn.)

Net Profit B. T.	15,000
Less: Tax	7500
N.P.A.T.	7500
Add: Depn. (₹ 100000 @ 12.5%)	12,500
Net Cash inflow	20,000

$$\text{P. B. P.} = \frac{\text{Invt.}}{\text{C.F.}} = \frac{₹\ 100000}{₹\ 20{,}000} = 5 \text{ yrs.}$$

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b) When the Projected Cash inflow are not equal:

In such situation payback is calculated by process of cumulating cash inflow till they equate the original Investment.

$$\textbf{Payback Period} = \frac{\textbf{Year before}}{\textbf{Full recovery}} + \frac{\textbf{Unrecovered amount}}{\textbf{Cash flow during period}}$$

For eg. Initial cost is ₹ 50,000

Annual Inflow after Tax before depreciation

1	2	3	4
₹ 10,000	₹ 15,000	₹ 20,000	₹ 25,000

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Year	Cash inflow	Cumulative inflow
1	₹ 10,000	₹ 10,000
2	₹ 15,000	₹ 25,000
3	₹ 20,000	₹ 45,000
4	₹ 25,000	₹ 70,000

Initial investment is ₹ 50,000 which will be received between 3rd and 4th year. i.e.

₹ 45,000 will be covered in 3rd Year

₹ 5,000 will be covered in 4th year whose cash flow is ₹ 25,000

$$\text{P. B. P.} = 3^{rd} = \frac{₹\ 5{,}000}{₹\ 25{,}000} = 3 + {}^{1}/_{5} \text{ years}$$

∴ Payback period is $3\ {}^{1}/_{5}$ year.

C) Post Payback Profitability:

Payback period method neglects the profitability after the excess period of economic life. So that it is suggested that to calculate post payback period of economic life of various project.

If the post payback profit if higher than project is selected.

Formula:

Post Payback Profit = Total saving - Investment

d) Post Payback Profitability Index:

For the purpose of Company surplus saving is converted into index.

Formula:

$$\textbf{Post Payback Profitability} = \frac{\textbf{Post Payback Profit}}{\textbf{Net Investment}} \times \textbf{100}$$

For eg. Project cost ₹ 1,00,000 having life of 20 yrs. Average annual earning before depreciation and Tax ₹ 20,000

Tax @ 50%

Find out
- Payback Period
- Post Payback Profitability
- Payback profitability Index

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→ **Payback Period**

Annual Earning	₹ 20,000
Less : Depreciation	₹ 5,000
N.P.B.T.	₹ 15,000
Less : Tax @ 50%	₹ 7,500
N.P.B.T.	₹ 7,500
Add : Depreciation	₹ 5,000
Cash inflow	₹ 12,500

Payback Period = Original Invt. / Cash inflow
= ₹ 1,00,000 / ₹ 12,500
= 8 years

→ Payback Profitability = Total Saving - Investments
= (₹ 12,500 × 20 yrs.) - ₹ 1,00,000
= ₹ 2,50,000 - ₹ 1,00,000
= ₹ 1,50,000

→ $\textbf{Post Payback Profitability} = \frac{\textbf{Post Payback Profit}}{\textbf{Net Investment}} \times \textbf{100}$

$= \frac{₹1,50,000}{₹1,00,000} \times 100 = 150\ \%$

IInd Method : Average Rate of Return (A.R.R.)

This Method is also called as Accounting Rate of Return.
Here, Average Profit after Tax and depreciation expressed as percentage of investment.

$$\textbf{A. R. R.} = \frac{\textbf{Average Profit after Tax and depreciation}}{\textbf{Average Capital Invested}} \times \textbf{100}$$

$= \_\_\_\_\_\%$

Where;
Average Profit are found by dividing the project's total expected profits by number of years

Average Capital Invested is value of = $^{1}/_{2}$ of Capital Investment + Additional W.C.

(Because invt. in W.C. is made throughout the life of F.A.)

When Split of working capital and Investment is not given it is usual to take half (1/2) the value of Invt.

If salvage value is given then.

Average Investment = $^{1}/_{2}$ (Investment - Salvage) + Additional W.C. + Salvage

Salvage is considered because it is also tie up with life of the project.

Generally Higher ARR is preferred in Comparison term.

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If Predetermine rate of cutoff rate is given
ARR > Cut of Rate g Accepted
ARR = Cut of Rate g Considered
ARR < Cut of Rate g Rejected.

III[rd] Method : Discounted Payback

Under this Method cash flow in a project are discounted back to present value.

Suppose you have invested ₹ 100 in to the Bank. Bank provides 10% compounded interest. Then ₹ 100 will grow to ₹ 110 at end of 1st year & ₹ 121 at the end of 2nd year.

Therefore, Present Value is ₹ 100 & after 2 years i.e. Future value means how much what you got now grow to when compounded at given rate.

Present Value g Compounding □ future value
Future Value g Discounted □ Present value

For eg. You are going to get ₹ 10,000 on 1st Jan for 3 years Discount Rate is 10% Find out Present value

Year	Cash flow future value	PVF	Discounted Cash flow (P/V)
1	₹ 10,000	0.909	9090
2	₹ 10,000	0.826	8260
3	₹ 10,000	0.751	7510
	₹ 30,000 (future)		₹ 24860 (Present)

IV[th] Method : Net Present Value Method (NPV)

This Method recognised that cash flow at different points of time differ in value and are comparable only when they are first brought down to a present value.

This Method is discount all cash flows to present value at predetermined rate of interest.

Present value of the outflows is then deducted from present value of the inflows to arrive at Net Present Value (NPV)

Evaluation:

NPV > 0 → Accepted
NPV < 0 → Rejected
NPV = 0 → Marginally / Considerly accepted.

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Vth Method : Profitability Index

It means Net Present Value Method gives value in absolute rupees without relating into the size of Invt. If project involves different outlay than Profitability indeed is used.

$$\mathbf{P.I.} = \frac{\textbf{Present Value of Cash Inflows}}{\textbf{Present Value of Cash Outflows}}$$

For eg. Initial Investment of ₹ 6,000

Year	P/V factor	Cash flow	Present Value
1	0.909	₹ 1,000	₹ 909
2	0.826	₹ 2,000	₹ 1,652
3	0.751	₹ 3,000	₹ 2253
4	0.683	₹ 4,000	₹ 2,732
	Total present value		₹ 7,546

$$\text{Profitability Index} = \frac{\text{P/V of Cash Inflows}}{\text{P/V of Cash Outflows}}$$

$$= \frac{₹\ 7{,}546}{₹\ 6{,}000} = 12.577\%$$

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