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CAPITAL BUDGETING

Meaning

Capital Budgeting is a process related to long term investment of Capital funds in which future profitability of Capital investment could be studied.

Capital Budgeting refers to the total process of generating, evaluating, selecting and following up of Capital expenditure alternatives.

Definition

According to Hampton Johan " As a firms formal planning process for the acquistion and investment of Capital"

Objectives

1. To allocate or to invest the available funds among various projects in order to maximise profitability.
2. To establish proper co-ordination among various Capital expenditure projects.
3. Capital budgeting involves huge expenditure in fixed assets
4. To plan for long term financial requirements and the sources to meet them.
5. To minimise losses and wastages arising on account of wrong investment in Capital assets
6. To maintain effective control on cost of Capital expenditure.

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Importance / Role / Advantages of Capital Budgeting

1. Long term investment
2. Wealth maximization of shareholders
3. Helps in loss reduction
4. Helps in expansion
5. Helps in long term planning
6. Helps in Cash forecasts

Disadvantages

1. Prediction is impossible
2. No alternatives
3. Change in attitudes of the customers
4. It involves risk

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Factors affecting Capital Budgeting or Investment decision

1. The amount of investment additional funds
2. Additional funds
3. Urgency of the projects
4. Technological change
5. Type of management
6. Government policy (Fiscal policy)
7. Non-economic factors
8. Risk and uncertainity
9. Ranking the investment and proposals
10. Minimum sate of Return.

1. Amount of investment → If the company has unlim-ited funds i.e huge amount of funds for investme-nts. The company accepts all the capital investment proposal which gives a sate of return higher than the minimum acceptable or cut off sate

2. Additional funds → Investment in new project may also result in increase or decrease of working capit-al requirement.

3. Urgency of the project → Sometimes management has to take immediate or quick decision which are essential for the survival of the firm.

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4. Technological change → New technology which is more efficient takes the place of old technology. In such cases management has to consider the cost new equipment, productive efficiencies of both new and old machineries

5. Type of management → Capital investment depends upon the management. If the management is mordern and progressive its outlook for innovation will be encouraged where as a conservative management discourages innovation.

6. Government policy → Various tax policy of the governm-ent such as tax concessions on various investment income, methods of depreciation etc. These factors may be favourable or unfavourable on capital investment

7. Non-economic factor → The benefits which cannot be evaluated interms of money are called non-econo-mic factors.

8. Risk and Uncertainity → These two terms are used interchangeably risk arises due to change economic

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conditions, competitions, labour conditions etc. The management has consider all the factors while taking capital investment decision.

7. Ranking the investment of proposals → When there are more numbess of projects the management accepts the project which is more profitable. Ranking of capital investment proposals concentrates on two main situations
   i) There is limit of funds available for investments
   ii) Where two or more investment opportunities are mutual out of which one can be choosen

10. Minimum Rate of Return → The managements expects a minimum Rate of return on the capital investment The minimum rate of return decided on the basis of Cost of Capital to be invested.

Methods of Capital Budgeting

a) Traditional method
   i) Payback period method
   ii) Improvement of traditional approach
   iii) Rate of Return method / Accounting method.
b) Time adjusted method / Discount method

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i) Net present value method
ii) Internal rate of return method.
iii) Profitability Index method.

Net Present value → The difference between the present value of cash outflows and the present value of cash inflows occuring in future period over the entire life of the project.

Acceptance Rule
1. When NPV is positive - Cash inflows are generated at higher rate than the minimum required by the firm
2. When NPV is zero - Cash inflow are generated at rate equal to the minimum required.
3. When NPV is negative - Cash inflows generated at a lower rate than the minimum required by the

Symbolically :- Accept : when NPV is greater than zero (NPV > 0)

or PV > C.

PV = Cash inflows

C = Cash outflows

Reject : When NPV is lesser or lower than zero (NPV < 0) or

PV < C

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1. Following information Calculate NPV of two projects at a discounted rate of 10%.

Particulars	Project X	Project Y
Initial investments	200000	300000
Scrap value	10,000	20000
Estimated life	5years	5years

Cash inflows

Year	Project X	Project Y
1	50000	200000
2	100000	100000
3	100000	50,000
4	30000	50,000
5	20000	20,000

Discounted Chart

Present value of Rs 1 for 5 years at discount rate 10%

Year	1	2	3	4	5
PV factor	0.909	0.826	0.751	0.683	0.621

Suggest which project is profitable.

→ Calculation of NPV of Project X

Year	Cash inflows	PV factor @10%	PV Cash inflows
1	50000	0.909	45450
2	100000	0.826	82600
3	100000	0.751	75100
4	30000	0.683	20490
5	20000	0.621	12420
(scrap value) 5	10.000	0.621	6210
		PV →	242270
		Initial :	200000
		NPV	42270

Calculation of NPV of Project Y

Year	Cash inflows	PV factor @10%	PV Cash inflows
1	200000	0.909	181800
2	100000	0.826	82600
3	50000	0.751	37550
4	50000	0.683	34150
5	20000	0.621	12420
scrap value 5	20000	0.621	
		PV →	360940
		Initial →	300000
		NPV	60940

Project Y yields more profit investment of ₹ 60940 that is with 300000 initial investment Project Y to be choosen.

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2. There are two proposals to buy machine costing 500000 having 5 years of life

Year	Proposal A	Proposal B
1	120,000	150000
2	150000	200000
3	200000	300000
4	200000	200000
5	250000	100000

Proposal A has cost of Capital at 10% and proposal B has at 12%.

Suggest which proposal to be selected.

only for proposal B

PV factor rate at 12% :- 0.893, 0.797, 0.712, 0.636, 0.567

→ Calculation of NPV of proposal A

Year	Cash inflows	PV factor @ 10%	PV Cash inflows
1	120000	0.909	109080
2	150000	0.826	123900
3	200000	0.751	150200
4	200000	0.683	136600
5	250000	0.621	155250
		PV →	675030
		initial →	500000
		NPV	175030

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Calculation of NPV of proposal B

Year	Cash inflows	PV factor @ 12%	PV Cash inflows
1	150000	0.893	133950
2	200000	0.797	159400
3	300000	0.712	213600
4	200000	0.636	127200
5	100000	0.567	56700
		PV →	690850
		initial →	500000
		NPV →	190850

3. Calculate the present value of the foll. assuming discount rate at 8%.

Year	Cash flows	discount rate @ 8%
1	20,000	0.926
2	24000	0.857
3	12000	0.794
4	8000	0.735
5	6000	0.681

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→ Calculation of NPV

Years	Cash inflow	@8% discount factor	PV Cash inflows
1	20,000	0.926	18520
2	24000	0.857	20568
3	12000	0.794	9528
4	8000	0.735	5880
5	6000	0.681	4086
			58582

4. There are two projects to buy a machine costing Rs 1000000 having 5 years life.

Project A (cost of capital 10%)

Year	Cash flow	PV factor
1	240000	0.909
2	300000	0.826
3	400000	0.751
4	400000	0.683
5	500000	0.621

Project B (cost of capital 12%)

Year	1	2	3	4	5
Cash flow	300000	400000	600000	400000	200000
PV factor	0.893	0.797	0.712	0.636	0.567

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Which proposal is accepted based on NPV

→ Calculation of NPV of project A

Year	Cash flow	PV factor @10%	PV Cash flows
1	240000	0.909	218160
2	300000	0.826	247800
3	400000	0.751	300400
4	400000	0.683	273200
5	500000	0.621	310500
		PV →	1350060
		initial →	1000000
		NPV =	350060

Calculation of NPV of Project B

Year	Cash flow	PV factor @12%	PV cash flows
1	300000	0.893	267900
2	400000	0.797	318800
3	600000	0.712	427200
4	400000	0.636	254400
5	200000	0.567	113400
		PV →	1381700
		initial →	1000000
		NPV =	381700

Project B has to choosen.

5. From the following calculation NPV of two projects at discount rates at 10% and suggest which is profitable

Particulars	Project X	Project Y
initial investment	100000	100000
estimated life	5years	5years

Cash inflows

	Project X	Project Y
1	10000	10000
2	30000	25000
3	40000	30000
4	25000	30000
5	20000	25000

→ Calculation of NPV of Project X

Year	Cash flow	PV factor@10%	PV Cash flows
1	10000	0.909	9090
2	30000	0.826	24780
3	40000	0.751	30040
4	25000	0.683	17075
5	20000	0.621	12420
		PV =	93405
		initial =	100000
			-6595

Calculation of NPV of Project Y

Year	Cash flow	PV factor@10%	PV Cash flows
1	10000	0.909	9090
2	25000	0.826	20650
3	30000	0.751	22530
4	30000	0.683	20490
5	25000	0.621	15525
		PV	88285
		initial	100000
		NPV =	11715

Both the plans or projects have to be rejected.