

S.A JAIPURIA COLLEGE (MORNING) B.COM

SUBJECT: FINANCIAL MANAGEMENT

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NOTES NO. 1

CAPITAL BUDGETING

Meaning:

It is a process that helps in planning the investment projects of an organization in long run. It takes all possible consideration into account so that the company can evaluate the profitability of the project. . Capital budgeting is a company's formal process used for evaluating potential expenditures or investments that are significant in amount. The large expenditures include the purchase of fixed assets like land and building, new equipment, rebuilding or replacing existing equipment, research and development, etc. The large amounts spent for these types of projects are known as capital expenditures.

Importance:

- ❖ Involves substantive amount of fund.
- ❖ The major part of capital investment project is irreversible.
- ❖ It has long term impact on the profitability.
- ❖ The decisions are complex and difficult.
- ❖ It facilitates wealth maximization.

Factors affecting capital budgeting decisions:

- ❖ Correct forecasting of cash flow.
- ❖ The urgency of any situation should be considered.
- ❖ Time value of money to be considered.
- ❖ It is necessary to check the availability of adequate fund.
- ❖ Possibility of obsolescence is to be considered.
- ❖ Additional investment, if required in future has to be considered.

- ❖ Choosing appropriate technique of capital budgeting.
- ❖ All the legal restrictions has to be considered.
- ❖ The risk factor should be considered.
- ❖ Adequate future return should be considered.
- ❖ The cost of capital should be considered.

Capital budgeting decisions:

1. **Accept / Reject decision** – Under this decision all the proposals are independent of each other. If a proposal is accepted, the firm invests in it and if rejected the firm does not invest.
2. **Mutually exclusive project decision** – Mutually exclusive projects compete with other projects in such a way that the acceptance of one will exclude the acceptance of the other projects. Only one may be chosen.
3. **Capital rationing decision** – In a situation where the firm has unlimited funds, capital budgeting becomes a very simple process. In that, independent investment proposals yielding a return greater than some predetermined level are accepted. But actual business has a different picture. They have fixed capital budget with large number of investment proposals competing for it. It means distribution of capital in favour of more acceptable proposals. The firm should rank the projects and choose the projects with higher ranks according to the availability of funds.

Capital budgeting techniques:

1. Payback period method:

As the name suggests, this method refers to the period in which the proposal will generate cash to recover the initial investment made. It purely emphasizes on the cash inflows, economic life of the project and the investment made in the project, with no consideration to time value of money.

Decision criteria: project with shortest PBP is given the highest rank i.e. more priority.

2. Accounting rate of return method (ARR):

The Accounting rate of return (ARR) method uses accounting information, as revealed by financial statements, to measure the profit abilities of the investment proposals. The accounting rate of return is found out by dividing the average income after taxes by the average investment.

Decision criteria: Highest ARR is accepted.

3. Net Present Value Method:

The net present value (NPV) method is a process of calculating the present value of cash flows (inflows and outflows) of an investment proposal, using the cost of capital as the appropriate discounting rate, and finding out the net profit value, by subtracting the present value of cash outflows from the present value of cash inflows.

Decision criteria: If $NPV < 0$ = Reject,
If $NPV > 0$ = Accept
If $NPV = 0$ = Indifferent

For mutually exclusive projects, the project with highest NPV is given the highest rank.

4. Discounted Pay Back Period Method:

One of the limitations in using payback period is that it does not take into account the time value of money. However, the discounted payback period solves this problem. It considers the time value of money. In this approach, the PV of future cash inflows are cumulated up to time they cover the initial cost of the project.

Decision criteria: project with shortest DPBP is given the highest rank i.e. more priority.

5. Internal Rate of Return (IRR):

The internal rate of return (IRR) equates the present value cash inflows with the present value of cash outflows of an investment. Like the NPV method, it considers the time value of money. IRR is "The Discount rate at which the costs of investment equal to the benefits of the investment. Or in other words, IRR is the Required Rate that equates the NPV of an investment zero.

Decision criteria: The project should be accepted if its IRR is higher than its opportunity cost of capital or the required rate of return.

6. Profitability Index Method:

It is the ratio of the present value of future cash benefits, at the required rate of return to the initial cash outflow of the investment.

$PI = PV \text{ cash inflows} / \text{Initial cash outlay}$

Decision criteria:

If $PI > 1$ = Accept

If $PI < 1$ = Reject

If $PI = 1$ = Indifferent

Sums:

1. X Ltd wants to purchase a new machine costing ₹ 100000. The life of the machine is 5 years.

Year	Output
1	5000
2	4000
3	6000
4	7000
5	5000

Sales price per unit of the product is ₹10. Variable cost to sales ratio is 40%. Scrap value is ₹10000 at the end of 5th year. Operating fixed cost is ₹5000. Cost of capital is 10%. Tax rate @ 50%.

Evaluate the proposal under NPV method.

Ans: CALCULATION OF CIAT

Particulars	Yr 1	Yr2	Yr3	Yr4	Yr5
Sales (unitsX10)	50000	40000	60000	70000	50000
Less: Variable Cost(40% of sales)	20000	16000	24000	28000	20000
Contribution	30000	24000	36000	42000	30000
Less: Fixed Cost	5000	5000	5000	5000	5000
EBDT	25000	19000	31000	37000	25000
Less: Dep(100000-10000)/5	18000	18000	18000	18000	18000
EBT	7000	1000	13000	19000	7000
Less: Tax@50%	3500	500	6500	9500	3500
EAT	350	500	6500	9500	3500

Add: Dep	18000	18000	18000	18000	18000
	21500	18500	24500	27500	21500
Add: Scrap Value	-	-	-	-	10000
Annual Cash Inflow After Tax(CIAT)	21500	18500	24500	27500	31500

CALCULATION OF NPV

YEAR	CIAT	PV FACTOR@ 10%	PV
1	21500	.909	19544
2	18500	.826	15281
3	24500	.751	18400
4	27500	.683	18783
5	31500	.621	19562
TOTAL PV			91570
LESS: CASH OUTFLOW			100000
NPV			(8430)

The proposal should be rejected as NPV is negative.

2. Z Ltd. is planning to invest in a project costing ₹20lacs with life of 5years. Salvage value is zero. Straight line method of depreciation is followed.

Tax rate is 50%. The EBDT are given:

Year	1	2	3	4	5
EBDT(in lacs)	4	6	8	8	10

Determine:

- i) Pay back period
- ii) ARR
- iii) NPV
- iv) PI
- v) IRR

Ans: CALCULATION OF CIAT

YE R	EBDT	DEP	EBT	TAX@5 0%	EAT	CIAT	CUMUL ATIVE CASH INFLOW
1	400000	-	-	-	-	400000	400000
2	600000	400000	200000	100000	100000	500000	900000
3	800000	400000	400000	200000	200000	600000	1500000
4	800000	400000	400000	200000	200000	600000	2100000
5	1000000	400000	600000	300000	300000	700000	2800000

i) PBP

$$\frac{\text{PB-3}}{4-3} = \frac{(2000000-1500000)}{(2100000-1500000)}$$

$$\text{PB-3} = 500000 / 600000$$

Or, PB = 3.8333 Years

ii) ARR = (Average annual profit after tax/Annual investment)X100

$$= \frac{800000/5 \times 100}{2000000/2}$$

$$= 16\%$$

iii) NPV

YEAR	CIAT	DISC FACTOR	PV
1	400000	.9091	363640
2	500000	.8264	413200

3	600000	.7513	450780
4	600000	.6830	409800
5	700000	.6209	434630
TOTAL PV			2072050
LESS: CASH OUTFLOW			2000000
NPV			72050

iv) $PI = PV \text{ of Cash Inflows} / PV \text{ of Cash Outflows}$
 $= 2072050 / 2000000$
 $= 1.036$

v) IRR

vi) $\frac{\text{Initial Investment}}{\text{Avg Cash Inflow}} = \frac{2000000}{(2800000/5)}$

$= 3.571 \text{ years}$

In the PV of Annuity Table, the factor nearest to 3.571 for 5 years is 3.605 for a rate of 12%. So 11% & 12% rates may be applied for trial & error test.

Yr	CIAT	PV FACTOR @11%	PV	PV FACTOR @12%	PV
1	400000	.901	360400	.893	357200
2	500000	.812	406000	.797	398500
3	600000	.731	438600	.712	427200
4	600000	.659	395400	.636	381600
5	700000	.593	415100	.567	396900
TOTAL PV			2015500		1961400
LESS: CASH OUTFLOW			2000000		2000000
NPV			15500		(38600)

Applying interpolation technique:

$IRR-11/12-11 = 2000000-2015500/1961400-2015500$

Or, $IRR-11 = -15500/-54100$

Or, $IRR = 11.2865\%$