5. Capital and Capital Budgeting

Capital Budgeting:

Capital:

It is very important aspect of an enterprise without enough capital no enterprise can run it's bussiness smoothly and achieve business objectives.

* The capital require by an enterprise depend upon factors like cost of fixed asserts. Ex: land, buildings, machinery, etc...
* Capital is the initial amount or the investment which is invested by the owner of that enterprise

Introduction to Capital budgeting:

* It means planning for capital asserts it involves decision making on investment of a firm funds in long-term activities in expecta-ions of future benefits over a series of years.

defination of Capital budgeting:

* Charles D Hongren defines Capital budgeting as long-term planning to make and finance Proposed Capital outplace. The Capital budgeting decision involves long-term planning for selection and also financin the investment Proposal.
* Capital budgeting is the Process of evaluting relative growth of the long-term investment Proposal's on the basis of their respective Profitability.

Nature of Capital budgeting:

1. generating investment Proposals
2. Estimating cash flows for the Proposal's
3. Evaluting the cash flows.
4. selection of Projects based on an acceptance criterian

5. [illegible] on continuous basis.
6. and then invest on Projects once they are accepted.

Features of Capital budgeting:
1. Large investments
2. Long-term Commitments.
3. " " effect on Profitability.
4. Greater risk
5. National importance.

Significance of Capital budgeting:
1. Substantial Capital outlays.
2. Long-term implications.
3. Strategic in nature.
4. Irreversible

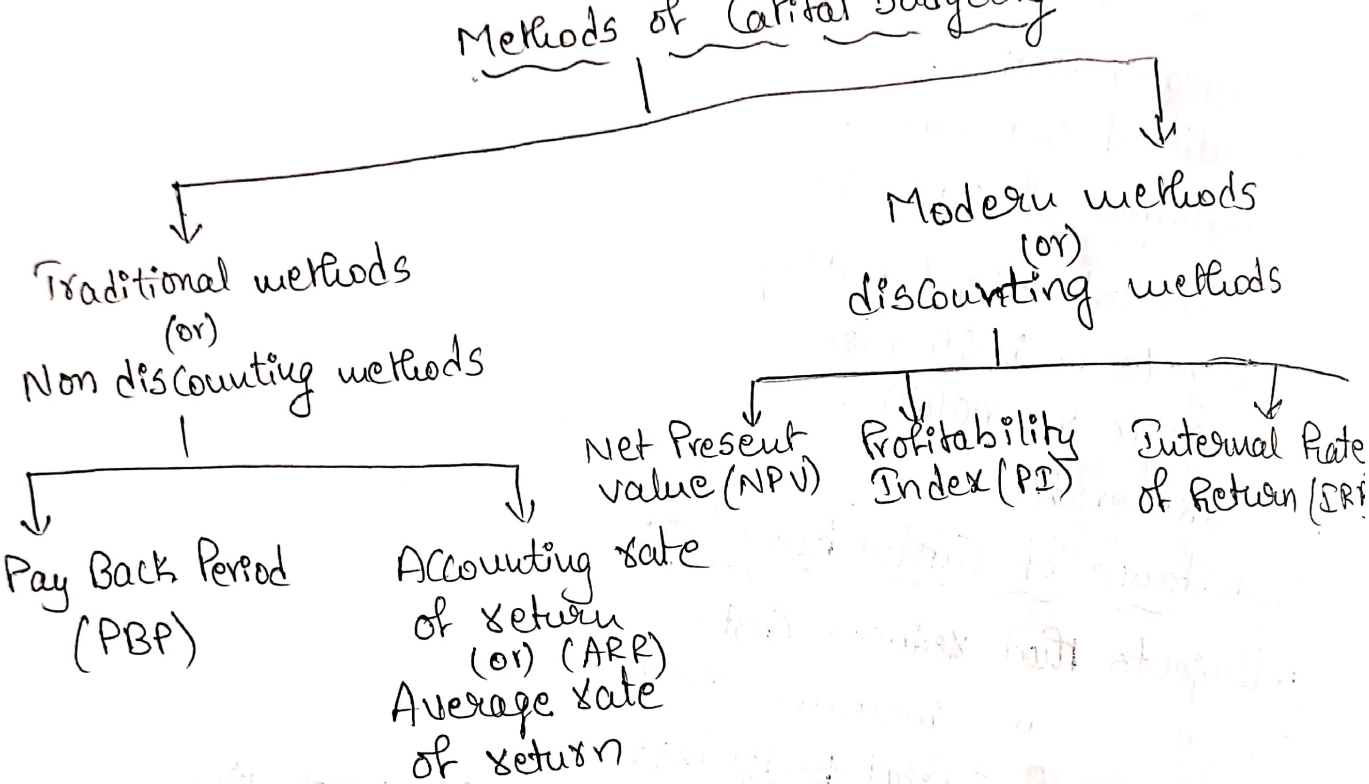
Importance of Capital budgeting:
1. Projects that reduces Cost.
2. " " increases revenues.

Problems of Capital budgeting:
1. Varying Cash flows at a different Points of time.
2. Time value factor.

Capital budgeting Process:
1. Identification of investment Proposal's.
2. Screening Proposal's
3. Evaluation of various Proposal's.
4. Establishing realities.
5. Final approval
6. Implementation of Proposal's.
7. Performance review.

Limitations of Capital budgeting:

1. Uncertainity in future.
2. Qualitative factors ignore.
3. Volatile business Conditions.
4. Unrealistic assumptions.



raditional methods:

1. Pay Back Period:

* under Pay Back Period method the decision under Pay Back Period to accept or reject a Proposal or a Project is based on it's Pay Back Period
* The Pay Back Period refers to the Period within which the original Cost of the Project is recovered.

Adv:

1. easy to Calculate and understand.
2. liquidity is emphasized.
3. Reliable technique in volatile business Conditions.
4. Time and Cost reduces.

1. Post Pay Back earnings are ignored.
2. Time of Cash Flows ignores.
3. Liquidity is over emphasized

Formulas:

1. Pay Back Period when Cash Flows are same/Similar

$$\text{PayBack Period} = \frac{\text{initial investment}}{\text{Annual Cash flow}}$$

2. Pay Back Period when cash flows are different

$$\text{Pay Back Period} = \text{estimated yr} + \frac{\text{Required amount}}{\text{Next yr Cash flow}}$$

Problems on Pay Back Period:

a) A Project requires an initial investment of ₹20,000/- with a useful life of 5 years. The Project Cash flows for each year as follows. Find out the Pay back Period.

Years	1	2	3	4	5
Cash Flows	8000	8000	8000	8000	8000

Sol:-

$$\text{Pay back Period} = \frac{\text{initial investment}}{\text{Annual Cash Flow}}$$

$$= \frac{20,000}{8000}$$

$$= 2.5 \text{ yrs.}$$

b) From the following information of Vijay's Organisation the initial investment is observed as 50,000/- and the Cash flows are as follows and what will be the Payback Period.

years	1	2	3	4	5	6	7
Cash flows	13,000	13,000	13,000	13,000	13,000	13,000	13,000

Sol:-

$$\text{Payback Period} = \frac{50,000}{13,000} = 3.8 \text{ years.}$$

Q) From the following information a Project ... initial investment of ₹20,000 and it generates cash flows as follows

Years	1	2	3	4	5
Cash Flows	6000	8000	5000	4000	4000
Cummulative Cash Flow	6000	14,000	19,000	23,000	27,000

Pay back Period = estimated year + $\frac{\text{Required Amount}}{\text{Next year Cash Flow}}$

$= 3 + \frac{20,000 - 19,000}{4,000}$

$= 3 + \frac{1}{4}$

$= \frac{13}{4} = 3.25$ years = 3yrs 3 months.

From the following information Calculate Pay Back Period when the initial investment is ₹50,000.

yrs	1	2	3	4	5	6	7
Cash Flows	8000	15,000	17,000	27000	31,000	44,000	47,000
Cummulative Cash Flows	8000	23,000	40,000	67000	98000	142000	189000

$PBP = 3 + \frac{50,000 - 40,000}{27,000}$

$= 3 + \frac{10,000}{27,000}$

$= 3 + 0.3$

$= 3.3$ yrs.

Accounting rate of return (ARR):

* It refers to the ratio of annual Profit after taxes to the average inputs.
* The avg investment = half of the original investment.
* It is also known as Average rate of return.

Adv:

1. It is easy to understand and Calculate
2. It can be Compared with Cut off Point of return. Hence, the decision to accept or reject is made easier.
3. It Considers all the Cash flows during life of the Project not by Pay Back Period method.
4. It is a reliable measure because it Considers net earnings i.e., earnings of the depreciation, interest, taxes.

disadv:

1. The Concept of time value of money is ignored
2. Unless we have a Cut off Point of return accounting rate of return can't be meaningful and effective.
3. The avg. Concept is not reliable Particularly in times of high fluctuations in the returns.
4. The avg Concept dilutes the Profitability of the Project
5. The methods of Competition of ARR is not standardized

Formula's of ARR:

1. When the Scrap value and working Capital are not given in the Problem

$$ARR = \frac{\text{Average of Income}}{\text{Average of Investment}} \times 100.$$

where,

$$\text{Average of Income} = \frac{\text{The total of Incomes (cashflows)}}{\text{No. of years}}$$

$$\text{Average of Investment} = \frac{\text{Initial Investment}}{2}$$

2. when the scrap value

Problem:

$$ARR = \frac{\text{Average of Income}}{\text{Average of Investment}} \times 100$$

where,

$$\text{Average of Income} = \frac{\text{the total of Income (cashflow)}}{\text{No. of years}}$$

$$\text{Average of Investment} = \text{Scrap Value} + \frac{1}{2}\left[\text{Initial Investment} - \text{Scrap Value}\right] + \text{working Capital}$$

6) From the following information, calculate ARR the Project Cost is 50,000/-. Annual cash flows are as follows:

Years	1	2	3	4
Cashflows	25,000	25,000	25,000	25,000

Sol:- Initial Investment = 50,000.

$$\text{Average Investment} = \frac{50,000}{2} = 25,000.$$

$$\text{Average of Income} = \frac{\text{The total Incomes (Cashflows)}}{\text{No. of yrs}}$$

$$= \frac{4(25,000)}{4}$$

$$= 25,000.$$

$$ARR = \frac{\text{Average Income}}{\text{Average of Investment}} \times 100$$

$$= \frac{25,000}{25,000} \times 100$$

$$= 100\%$$

) From the following information, Calculate ARR with the initial investm is 80,000. For A and B. and the Cashflows are follows:

years	1	2	3	4	5
Project A	19000	27,000	35,000	49,000	55,000
Project B	17,000	29,000	39,000	53,000	61,000

Suggest the best one

Sol:- $II_A = II_B = 80,000$.

$AI_A = \frac{80,000}{2} = 40,000$

$AOI_A = \frac{185000}{5} = 37,000$

$ARR_A = \frac{40,000}{37,000} \times 100 = 108\%$

$AI_B = 40,000$

$AOI_B = \frac{199000}{5} = 39,800$

$ARR_B = \frac{40,000}{39,800} \times 100 = 100\%$

5) From the following information, Calculate ARR where the initial investment is 3,00,000. Scrap value is 60,000 and working capital is 2,50,000. for each and every measure, the cashflows are as follows: Suggest best one/ which is suitable.

years	1	2	3	4
Machine-1	1,50,000	3,50,000	1,50,000	—
Machine-2	2,00,000	3,00,000	2,50,000	1,50,00.

Sol:-

Initial Investment = 3,00,000.
Scrap value = 60,000
working capital = 2,50,000.

$AOI_1 = 60,000 + \frac{1}{2}[3,00,000 - 60,000] + 2,50,000.$

$= 60,000 + 12,00,000 + 2,50,000$

$= 4,3,0,0,000$

$AI_1 = \frac{6,50,000}{4} = 1,62,500.$

$ARR_1 = \frac{AI}{AOI} \times 100$

$= \frac{1,62,500}{4,30,000} \times 100$

$= 37.7\%$

$AI_2 = \frac{9,00000}{2} = 2,25,000.$

$AOI_2 = 4,30,000.$

$ARR_2 = \frac{2,25,000}{4,30,000} \times 100 = 52.3\%$

$\therefore$ M-2 is best

Q) From the following information calculate ARR.

Particulars	Machine-1	Machine-2
Initial Investment	1,50,000	1,90,000
Scrap Value	25,000	40,000
Working capital	80,000	1,20,000

years	Machine-1	Machine-2
1	50,000	75,000
2	1,20,000	1,35,000
3	1,45,000	1,50,000
4	2,10,000	2,25,000
5	2,40,000	2,75,000
6	2,95,000	3,05,000
7	3,10,000	3,15,000
8	3,30,000	3,44,000
9	3,51,000	3,79,000
10	4,25,000	4,50,000.

Introduction to Accounting & Project Management

Project management :

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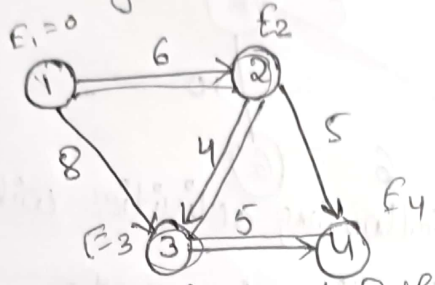
Problems on network analysis:

a) From the following information evolute the network analysis

Activities	1-2	1-3	2-3	2-4	3-4
Time duration	6	8	4	5	5

Sol:-

i) Network diagram:



ii) Critical Path: (Highest Path from 1 to 4)

① ⟹ 1-2-4
= 6+5
= 11

② ⟹ 1-2-3-4
= 6+4+5
= 15 → C.P

③ ⟹ 1-3-4
= 8+5
= 13

iii) PERT - Probability Evolution and Review Technique.

(EST, LFT)

a). EST (Earlier starting Time)

$E_1 = 0$

$E_2 = E_1 + d_{12}$
$= 0 + 6$
$= 6$

$E_3 = \max(E_1 + d_{13}, E_2 + d_{23})$
$= \max(0+8, 6+4)$
$= \max(8, 10)$
$= 10$

$E_4 = \max(E_2 + d_{24}, E_3 + d_{34})$
$= \max(6+5, 10+5)$
$= \max(11, 15)$
$= 15$

b) LFT (Latest Finishing Time)

$L_4 = 15$

$L_3 = L_4 - d_{34}$
$= 15 - 5$
$= 10$

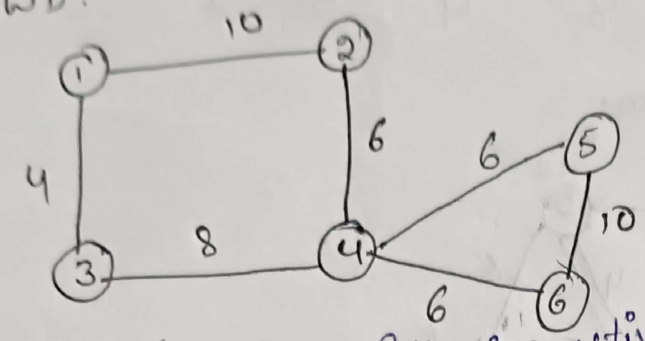
$L_2 = \min(L_3 - d_{23}, L_4 - d_{24})$
$= \min(10-4, 15-5)$
$= \min(6, 10)$
$= 6$

$L_1 = \min(L_2 - d_{12}, L_3 - d_{13})$
$= \min(6-6, 10-8)$

5) 5-6 1-2 1-3 2-4 3-4 4-5

10 10 4 6 8 6 6

Sol:- i) NWD:



) A Small Project Consist of the following activities with given estimates

Project Successor event	Estimated duration in months		
	Optimistic time (to)	most slightly time (tm)	Pessimistic time (tp)
1-2	2	2	4
1-3	2	8	14
1-4	4	4	16
2-5	2	2	2
3-5	4	10	28
4-6	4	10	16
5-6	6	12	30

you are required to

i) draw NWD

ii) Calculate avg expected time for each activity

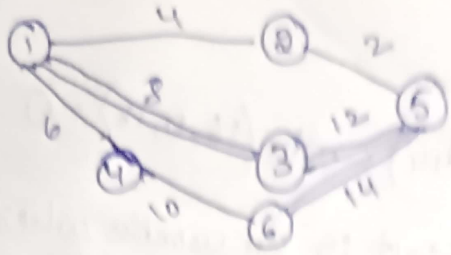
iii) Calculate earlier Startingtime and latest finishing time for each event.

iv) Determine the Critical Path Considering the Project Completion time for 36 times

Note: avg expected time $(T_E) = \frac{T_o + 4T_m + T_p}{6}$

expected variable/variance $(\sigma_e^2) = \left(\frac{T_p - T_o}{6}\right)^2$.

Sol:- i) NWD:



ii)

activities	to	tm	tp	$t_e = \frac{t_o + 4t_m + t_p}{6}$	$\sigma_e = \left(\frac{t_p - t_o}{6}\right)^2$
1-2	2	2	14	4	4
1-3	2	8	14	8	4
1-4	4	4	16	6	4
2-5	2	2	2	2	0
3-5	4	10	28	12	16
4-6	4	10	16	10	4
5-6	6	12	30	14	16

iv) Critical Path:

① ⇒ 1-2-5-6 = 20

① ⇒ 1-3-5-6 = 34 ✓

① ⇒ 1-4-6 = 16

1-3-5-6 ⇒ 4+16+16 = 36.

iii) EST

$E_1 = 0$,

$E_2 = E_1 + d_{12} = 0 + 8 = 8$

$E_3 = \max(E_1 + d_{13}, E_2 + d_{35}) = \max(8, 20) = 20$

$E_4 = \max(E_2 + d_{25}, E_3 + d_{56}) = \max(20, 34) = 34.$

iii) EST

$E_1 = 0$

$E_2 = E_1 + d_{12} = 0 + 4 = 4$

$E_3 = E_1 + d_{13} = 0 + 8 = 8$

$E_4 = E_1 + d_{14} = 6$

$E_5 = \max(E_2 + d_{25}, E_3 + d_{35}) = \max(6, 20) = 20$

$E_6 = \max(E_4 + d_{46}, E_5 + d_{56}) = \max(16, 34) = 34.$

LFT:

$L_6 = 34$

$L_5 = L_6 - L_{56} = 34 - 14 = 20$

$L_4 = L_6 - d_{46} = 34 - 10 = 24$

LFT:

$L_5 = \max(L_2 - d_{25}, L_3 - d_{35})$

$= \max(4 - 2, 8 - 12)$

=

$L_3 = L_5 - d_{35} = 20 - 10 = 8$

$L_2 = L_5 - d_{25} = 20 - 2 = 18$

$L_1 = \min(L_2 - d_{12}, L_3 - d_{13}, L_4 - d_{14}) = \min(16, 0, 18) = 0.$

The expected completion time of Project is 34 months where as the variance of critical path is $4 + 16 + 16 = 36$ which is given in Proble

Rules:

1. Personal account:
   Debit the Receiver
   Credit the giver

2. Real account:
   debit what comes in
   credit what goes out

3. Nominal account
   Debit all expenditure &
   Credit all incomes & gai

Q) Journalize the following transactions if the books of Ramu.

1/1/2010 - Business started - 5,00,000/-
2/1/2010 - Purchases - 3,00,000/-
3/1/2010 - Sales - 2,00,000/-
4/1/2010 - Rent Paid - 5000/-
5/1/2010 - Salary Received - 30,000/-

Sol:- Journal entries in the Books of Ramu

Date	Particulars		LF	Debit (₹)	Credit (₹)
1/1/2010	Cash a/c	Dr		5,00,000	
	To Capital a/c				5,00,000
	(Being Business started)				
2/1/2010	Purchases a/c	Dr		3,00,000	
	To Cash a/c				3,00,000
	(Being Cash Purchases)				
3/1/2010	Cash a/c	Dr		2,00,000	
	To Sales				2,00,000
	(Being Cash sales)				
4/1/2010	Rent a/c	Dr			
	To Cash a/c				
	(Being Rent Paid)				
5/1/2010	Cash a/c	Dr			
	To Salaries a/c				
	(Being salary received)				