

## **04. Project Appraisal**

- ❖ The prime objective of capital investment is to make profit by way of investing in various capital assets.
- ❖ Similarly the prime objective of the financier to finance for capital investment is to see that his finance gets proper return and at end of the contracted period the loan amount is repaid.
- ❖ There are various techniques, which can be employed to carry out project appraisal.

### **❖ Traditional Methods:**

- ❖ Pay back period.
- ❖ Profitability index (post pay back)
- ❖ Rate of return method.

### **❖ Time Adjusted methods:**

- ❖ Net present value method
- ❖ Internal rate of return method.
- ❖ Profitability Index method.

## **Pay back Period**

- ❖ This indicates the period during which the entire capital investment is recovered.
- ❖ Yearly cash inflow should be added up till the total is equal to initial capital investment / project cost.
- ❖ Financier prefers a unit having lower payback period.

### **Limitations:**

- ❖ It does not consider time value of money.

❖ It ignores all cash flows after the payback period.

❖ **Merits:**

❖ It is easy to calculate.

❖ It emphasizes short and medium term liquidity.

❖ It tends to eliminate high-risk projects.

**Post Pay-back Profitability Index**

❖ Post payback cash inflows x 100 divided by capital investment = Post payback profitability index.

❖ Cash in flows after reaching payback period are considered to ascertain safety margin in recovery of capital outlay.

**Rate of Return Method.**

❖ **Return per investment =**

❖ Total cash in flow x 100 divided by capital investment.

❖ **Average rate of return =**

❖ Average cash in flows x 100 divided by capital investment.

**Net Present Value (NPV)**

❖ A bird in hand is equal to two birds in bush.

❖ Time value of money is considered.

❖ Any project, which gives big return in the shortest possible time, is more important.

❖ **Steps involved in computing NPV:**

❖ Decide rate of return expected from the project. It should be at least equal to

'cost of capital'.

- ❖ Find out present value of capital outlay.
- ❖ Find out present value of cash inflows.
- ❖ If NPV is 0 or positive, the project should be accepted.
- ❖ In case of multiple projects, the one with maximum NPV should be accepted.

### **Internal rate return (IRR)**

- ❖ In case of NPV method, the net present value is found out by discounting cash flows at pre-determined rate. i.e. Cost of capital.
- ❖ Under IRR method, the cash flow is discounted at a suitable rate, which equates the present value.
- ❖ If IRR is  $>$  Cost of Capital, the project may be accepted. In case of multiple projects, the one with maximum IRR should be accepted.

### **Profitability Index method**

- ❖ **Profitability Index**= Present value of cash in flows divided by present value of cash out flow.
- ❖ **Net Profitability Index** = Net present value divided by initial capital investment/project cost.
- ❖ If profitability index is  $>$  1, the project should be accepted.

**Refer Chapter 05- Financial Concepts for explanation of Internal Generation, Cost of Capital etc.**

<b>Project Appraisal Examples.</b>
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Cash in flows = PAT less dividend + depreciation
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Rs '000
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Year	Project A		Project B	
	P.A.	Cum.	P.A.	Cum.
0	<b>Cash out flow- 1000</b>		<b>Cash out flow- 2000</b>	
1	200	200	400	400
2	300	500	400	800
3	300	800	400	1200
4	400	<b>1200</b>	500	1700
5	400	1600	600	<b>2300</b>
<b>Total outflow</b>	<b>1000</b>		<b>2000</b>	
<b>Total Inflow</b>	<b>1600</b>		<b>2300</b>	
<b>Net</b>	<b>600</b>		<b>300</b>	

	Project A	Project B
Pay back period	3.5 years	4.5 years
Post payback profitability index	600 x 100 divided by 1000 = 60 %	300 x 100 divided by 2000 = 15 %
Return per investment	1600 divided by 1000 = 160 %	2300 divided by 2000 = 115 %
Average rate of return	320 divided by 1000 = 32 %	460 divided by 2000 = 23 %

Net Present value (NPV)		Rs '000			
Cost of capital say 10 %					
Year	Discounting factor @ 10 %	Cashflows	Present value	Cashflows	Present value
<b>0</b>	1.00000	<b>1000</b>	<b>1000</b>	<b>2000</b>	<b>2000</b>
<b>1</b>	0.90909	200	182	400	364
<b>2</b>	0.82654	300	248	400	331
<b>3</b>	0.75131	300	225	400	301
<b>4</b>	0.68301	400	273	500	341
<b>5</b>	0.62092	400	248	600	373
Total PV of cash inflows		<b>1600</b>	<b>1176</b>	<b>2300</b>	<b>1710</b>
Total PV of cash out flows		<b>1000</b>	<b>1000</b>	<b>2000</b>	<b>2000</b>
Net Present Value		<b>600</b>	<b>176</b>	<b>300</b>	<b>(290)</b>
Profitability Index		1176 divided by 1000 = 1.18		1710 divided by 2000 = 0.86	
Conclusion		<b>Accept</b>		<b>Reject</b>	