

## INVESTMENT APPRAISAL

Investment most of the time refers to the purchase of capital goods such as equipment, vehicles, building or improvements in the fixed assets. Investment is also done in several financial projects to earn interest or profits.

### TYPES OF INVESTMENT

1. Capital Goods
2. Construction
3. Stocks
4. Public Sector Investment  
i.e. investing in government projects (e.g. saving schemes)
5. Investment in other financial projects in the private sector.

### RISKS INVOLVED IN INVESTMENT

1. Number of alternative investment choices
2. Forecasts of revenue and cost figures are involved which can be inaccurate.
3. Resources are committed for a long period of time so opportunity costs are involved.
4. Investments are often funded from borrowed money which has its own interest costs so return on investment should cover that cost.
5. In case of failure of a project, heavy debt burden can be there on the organization.

### INVESTMENT APPRAISAL

It means evaluating the profitability or desirability of an investment project. It also tells us how to compare alternative projects. Investment appraisal is done using following two techniques:

1. Quantitative techniques/methods/factors
2. Qualitative techniques/methods/factors

### QUANTITATIVE TECHNIQUES

1. Pay-back period
2. Average or accounting rate of return (ARR)
3. Internal rate of return (IRR)
4. Net present value (NPV) or Discounted Cash flow method

For every quantitative technique some basic information is required which is as follows:

1. Initial cost of investment
2. Life span or useful life of the investment
3. Residual value or scrap value or disposal value
4. Forecasted net cash flows = Forecasted Cash inflows – Forecasted Cash Outflows

### QUALITATIVE TECHNIQUES

- These are the factors other than the quantitative/numeric data; which is important for investment decision making.
- These factors cannot be so easily expressed in numerical yet have a crucial bearing on an investment decision.
- These factors are given below but not limited to this list.
  1. The impact of proposed investment on environment and the local community
  2. Degree of risk-taking power of the manager
  3. Approval of the project may not be given by the government or pressure groups may lobby against the project; all after commencement.
  4. Ethical and environmental considerations
  5. Human relations aspect
  6. Aims, objectives and corporate strategies of a business
  7. Availability of funds
  8. Current cash flow position

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**PAY-BACK PERIOD**

The pay-back period is the length of time it takes for the net cash inflows to pay-back the original investment. This method is used to compare different projects and the project with the shortest payback period is given consideration according to this criteria.

**ADVANTAGES**

1. Quick and simple to calculate.
2. Easily understood by managers so it facilitates decision – making.
3. More accurate short-term forecasts of the project’s profitability can be obtained.
4. Cash flows received quickly have more real value.
5. Elimination the projects that give returns too far in future.

**DISADVANTAGES**

1. It doesn’t measure the overall profitability of project.
2. Sometimes more profitable projects may be rejected because they take more time to payback.
3. It does not take into account the time value of money.

Project	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total Inflows
A	(70)	10	10	20	20	30	40	130
B	(70)	20	20	20	20	20	20	120
C	(70)	30	30	10	10	10	10	100

5<sup>th</sup>  
4<sup>th</sup>  
3<sup>rd</sup> years

$$\text{Last year's months} = \left[ \frac{\text{Additional cashflow needed to cover initial investment}}{\text{Cash inflow of that year}} \right] \times 12$$

For Project A

$$\frac{10}{30} \times 12 = 4 \text{ months}$$

Payback period = 4 years 4 months

For Project B =

$$\frac{10}{20} \times 12 = 6 \text{ months}$$

Payback period = 3 years 6 months

For Project C

Payback period = 3 years

**AVERAGE RATE OF RETURN (ARR)**

ARR is the average annual rate of return which can be expected from an investment over its lifespan. It measures the overall profitability of an investment as a %age of its initial cost. It can be compared with other project returns and also with the minimum expected return set by the business or the economy.

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Steps involved in the calculation of ARR

1. Add up all the net cash flows
2. Subtract the cost of investment (initial cost) from the total
3. Divide this figure by the lifespan of the investment in years
4. Calculate the percentage of this figure with respect to the initial capital cost.

$$\text{Formula} = \frac{\text{Average annual profit}}{\text{Initial investment}} \times 100$$

Project A

$$\begin{aligned}\text{Avg} &= \frac{130 - 70}{6} \\ &= \frac{50}{6} = 8.33\end{aligned}$$

$$\text{ARR} = \frac{8.33}{70} \times 100 = 11.9\%$$

Project C

$$\begin{aligned}\text{Avg} &= \frac{100 - 70}{6} \\ &= \frac{30}{6} = 5\%\end{aligned}$$

$$\text{ARR} = \frac{5}{70} \times 100 = 7.14\%$$

Advantages of ARR

1. It uses all the cash flows unlike the payback period
2. It focuses on profitability
3. Easy to calculate, simple to understand
4. Easy for comparison between alternative projects
5. Can be quickly assessed against the minimum set criteria (required rate of return) of a business

Disadvantages of ARR

1. It ignores the timings of the cash flow. It means that two projects having the same ARR can have different payback periods.
2. As all cash flows are included, the later ones which are less accurate and less certain are also involved.
3. Time value of money is ignored.

## INVESTMENT APPRAISAL

Peter Stimpson, Page 450, Activity.

### 1. PROJECT X

Payback period last year months

$$= \frac{5000}{20000} \times 12$$

$$= 3 \text{ months}$$

Payback period = 2 years 3 months

### PROJECT Y

$$\text{Last year's months} = \frac{5000}{35000} \times 12$$

Payback period = 2 years

2. If payback is the only criteria chosen then Project Y should be chosen because it takes exactly 2 years to regain the initial investment whereas Project X takes an additional 3 months to only return the initial investment i.e. payback period for Project Y is shorter.

### 3. PROJECT X

$$\text{Avg. annual profit} = \frac{90 - 50}{5} = \$8000$$

$$\text{ARR} = \frac{\text{avg. annual profit}}{\text{initial investment}} \times 100$$

$$= \frac{8000}{50000} \times 100$$

$$= 16\%$$

### PROJECT Y

$$\text{Avg. annual profit} = \frac{112 - 80}{4}$$

$$= \$8000$$

$$\text{ARR} = \frac{8000}{80000} \times 100$$

$$= 10\%$$

4. Yes under the restriction, Project X would be acceptable as it has a return rate of 16% which is higher than the set interior rate of 11%. Project Y would not be acceptable as it has a return of 10% which is less than 11%.

5. Taking both ARR and pay-back period together I would advise the company should take Project X. Even though it has a slightly higher payback period by 3 months but it has a 6% higher rate of return as compared to Project Y. Also its initial investment requires less capital at \$50000 while Project Y requires a very high sum of capital at \$80000. So if company has to borrow then it would borrow less for Project X which would mean less burden of interest. Then a higher ARR means that Project X is very profitable as well compared to Project Y and so it appears worth while to invest into Project X.
- Not only does Project Y give a shorter ARR it also has a lesser life expectancy than Project X. Measuring that while Project X lasts 5 years, Project Y only lasts 4 years after which another investment would have to be planned. This could mean a great burden on the financial position of the business. Also the Project Y doesn't reach or meet the required rate of return of 11%. So we can't take this at all.
- The additional information that would help me to advise better would be the financial position of the business. If the business has a liquidity problem then it would be better to choose a project with lesser or shorter payback period as it could then quickly pay of its debts.
- Secondly, if the business is investing only for profit so that its profitability improves then, the project with a higher ARR would be both. So information related to profitability would also be helpful.
- Then knowledge about the affordability of business is also important. Only if the business has a large amount of idle capital or can easily arrange for large sums of money then it should invest in a project with high cost.
- Also ethical knowledge of investments is required. If a project would produce a lot of pollution, then it is sensible to discard it as this would give a bad reputation to the business and could trigger action from pressure groups.
- Also it would be helpful if the prevailing rate of interest in economy is known. This could then be used to compare the rate of returns of both projects.