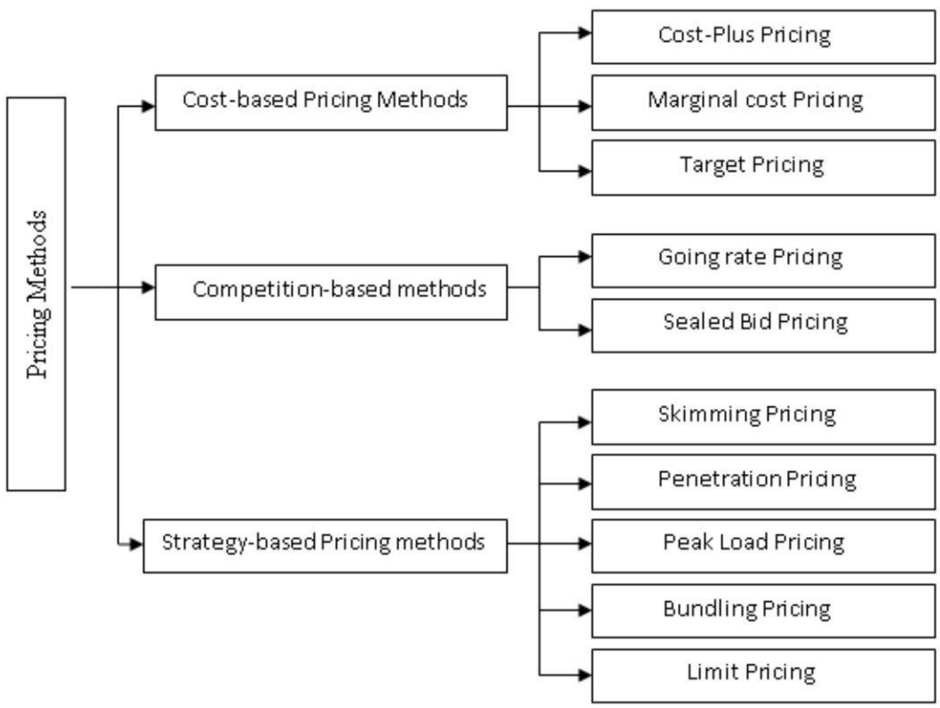
1.What is Pricing? What are different methods of pricing ?

Ans Pricing strategies/methods will depend on the pricing objectives of the company. The strategy must be suitable for achieving the desired objectives. Generally, the following are the pricing objectives:

1. To maximize profits
2. To increase sales
3. To increase the market share
4. To satisfy customers and
5. To meet the competition.

Pricing methods:



A. COST-BASED PRICING METHODS:

1. Cost-Plus Pricing Method: This is also called full-cost or mark-up pricing. Under this method, required margin adds to production cost by using the following formula.

$$\boxed{\text{Mark-up Price} = \frac{d}{1-r}}$$

Where,

d=cost per unit (both fixed & variable

r=required rate of return.

2. Marginal Cost Pricing: Marginal cost means additional cost to produce an additional unit of product. In this method price of a product determined on the basis of marginal cost or variable cost. Fixed costs are totally ignored.

3. Target Pricing: In this method, the manufacturer considers a pre-determined target rate of return on capital invested. The following formula is used to calculate the desired rate of return.

B. COMPETITION BASED PRICING METHODS:

1. Going rate Pricing: In this method firms adopt a price ruling in the market rather than independently determining the price on their own.

2. Sealed Bid Pricing: This method is more popular in tenders and contracts. To win a contract firm quotes less than the competitors in a sealed cover.

C. STRATEGY BASED PRICING METHODS:

1. Skimming Pricing: When the product is introduced for the first time in the market, the company follows this method. In this method, the companies launching the new product at a higher price. There are two ways of skimming. They are:

i) Rapid skimming Strategy: In this method the marketers launch the new product at a high price and high promotion strategies.

ii) Slow skimming Strategy: : In this method the marketers launch the new product at a high price and low promotion strategies.

2. Penetration Pricing: This is exactly opposite to the market skimming method. In this method, the companies launching the new product at a low price. There are two ways of penetration.

i) Rapid Penetration Strategy: In this method the marketers launch the new product at a low price and high promotion strategies.

ii) Slow Penetration Strategy: In this method the marketers launch the new product at a low price and low promotion strategies.

3. Peak Load Pricing: In this method firms fix higher price during the peak times and low prices in the off-peak times.

4. Bundling Pricing: It refers to the practice of bundling two or more different products together and selling them at a single „bundle price.

5. Limit Pricing: In this method a monopoly firm or oligopoly firms determines prices by collusion in such a way that they do not allow the entry or survival of new competitors.

2.Explain how price is determined under oligopoly market?

Ans

Price and Output Determination under Oligopoly

Price and Output Determination under Oligopoly!

A diversity of specific market situations works against the development of a single, generalized explanation of how an oligopoly determines price and output.

Pure monopoly, monopolistic competition and perfect competition, all refer to rather clear cut market arrangements; oligopoly docs not.

It consists of the ‘tight’ oligopoly situation in which two or three firms dominate the entire market and the ‘loose’ oligopoly situation where six or seven firms occupy the maximum share of the market.

Other firms share the balance. It includes both differentiation and standardization. It encompasses the cases in which firms are acting in collusion and in which they are acting independently. Therefore, the existence of various forms of oligopoly prevents the development of a general theory of price and output. The element of mutual interdependence in oligopolistic market further complicates the determination of price and output.

In-spite of these difficulties, two interrelated characteristics of oligopolistic pricing stand out:

1. Oligopolistic prices tend to be inflexible or Sticky Price change less frequently in Oligopoly than they happen under other competitions like perfect, competition, monopoly and monopolistic competition.

2. When oligopolistic prices change, firms are likely to change their prices together they act in collusion in setting and changing prices.

Keeping these facts in mind, the price and output determination under oligopoly is in the following situations:

1. Price Determination in Non-Collusive Oligopoly:

In this case, each firm follows an independent price and output policy on the basis of its judgment about the reactions of his rivals. If the firms are producing homogeneous products, price war may occur. Each firm has to fix the price at the competitive level. On the contrary, in case of differentiated oligopoly, due to product differentiation, each firm has some monopoly control over the market and therefore charge near monopoly price.

Thus the actual price may fall between the two limits:

(i) The Upper Limit of Monopoly Price and,

(ii) The Linear limit of Competitive Price.

Practically, there is every possibility to determine the exact price within these limits. However there may be the following possibilities:

(i) There may be complete price instability in the market which results in price war.

(ii) The price may settle down at intermediate level due to the working of the market forces.

(iii) The firm may accept the prevailing price and adjust itself according to prevailing price.

So long as the firm earns adequate profits at the prevailing price, it may not try to change it. Any effort to change it may create uncertainties in the market. A firm will stick to that price to avoid uncertainties. Thus the price tends to be rigid where oligopolist takes independent action.

B. Equilibrium under Collusion:

The modern economists are of the view that independent price determination cannot exist for long in oligopoly. It leads to uncertainty and insecurity and to overcome them there is a tendency among oligopolists to act collectively by tacit collusion. In addition, the firms can gain the economics of production. All the firms in oligopoly tend to enlarge their size and lower their costs of production per unit and capture maximum share of the market.

Collusive oligopoly is a situation in which firms in a particular industry decide to join together as a single unit for the purpose of maximising their joint profits and to negotiate among themselves so as to share the market.

The former is known as:

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(i) The joint profit maximisation cartel and

(ii) The latter as the market-sharing cartel. There is another type of collusion, known as leadership, which is based on tacit agreements.

Under it, one firm acts as the price leader and fixes the price for the product while other firms follow it. Price leadership is of three types: low-cost firm, dominant firm, and barometric.

3.What is oligopoly market? What are the features of oligopoly market?

Ans The term „oligopoly‟ is derived from the two Greek words „**oligos**‟ meaning „<u>a few</u>‟ and „**pollen**” meaning „<u>tosell</u>”.

Definition: ***“Oligopoly is a market structure, in which a few large firms produce either homogeneous or differentiated products and which are close substitutes to each other.”***

Simply Oligopoly means competition among a few firms. Oligopoly markets can be classified into two categories. They are:

- Pure Oligopoly Market
- Differentiated Oligopoly Market

<u>Pure Oligopoly:</u> In this market firms producing homogeneous product.

<u>Differentiated Oligopoly:</u> In this market firms producing differenced products, which are close substitutes of each other.

- **<u>Features of Oligopoly:</u>**

1. Existence of Few Sellers: There is small number of large sellers supplying either homogeneous products or differentiated products.

2. Homogeneous or Distinctive Product: The oligopoly firm may be selling either homogeneous product like steel or distinctive product like automobile-passenger cars.

3. Blockaded Entry and Exit: Firms in the oligopoly market face strong restrictions on entry or exit.

4. Imperfect Dissemination of Information: Detailed market information relating to cost, price and product quality are usually not published.

5. Interdependence: The firms have a high degree of interdependence in their business policies about fixing of price and output determination.

6. Advertising: Advertising and selling costs have strategic importance to oligopoly firms. Each firm tries to attract consumers towards its product by incurring excessive expenditure on advertising.

7. Price Rigidity: In an oligopolistic market, each firm sticks to its own price. This is because; it is in constant fear of relation from rivals if it reduces the price.

4.What are different methods of pricing followed by companies?

Ans Same as 1

5.What are public enterprises? Explain the various forms of public enterprises?

Ans A public sector enterprise is one which is owned, managed and controlled by the central government or state government or any local authority. In a public enterprise, government contributes the whole or major part of the capital. Ex: Postal, Railways, FCI, LIC, BHEL etc.

- **<u>Types of Public Sector Enterprises:</u>** Public enterprises can be classified into three categories:

Public Enterprises

Departmental Undertaking | Public Corporation | Government Companies

I. DEPARTMENTAL ORGANISATION:

This is the earliest form of public enterprise. Under this form, each department has a minister,

who controls the operations of these enterprises. Normally a managing director is appointed to control these enterprises. IAS offices are posted as the managing directors. Ex: Railway Department.
Cryptography

- **<u>Features :</u>**

  1. These departmental organizations are controlled and managed by the government through IAS officers.
  2. The capital or finance is provided from the government revenue.
  3. The budgets of these undertakings are approved and passed by the legislature.

- **<u>Advantages:</u>**

  1. **Efficiency:** These undertakings can work efficiently because they are controlled by the minister of thedepartment.
  2. **Accountability:** Accountability becomes possible because the budget of the undertaking is passed by the legislature.
  3. **Source of Finance:** It is a direct source of revenue for the government.

- **<u>Disadvantages:</u>**

  1. **Reactive Decisions:** The decisions taken by these undertakings, with regard to market changes, are reactive. They do not normally, take a pro-active approach.
  2. **Excessive Government Control:** Government does not allow adequate freedom to these undertakings, which hider‟s their growth.
  3. **Inefficient Staff:** These undertakings lack competent staff, which may be because of the recruitment policy, monetary benefits offered to the employees etc.
  4. **Slow response to market conditions**: Since there is no competition, there is no profit motive; there is no incentive to move quickly to market needs

II. PUBLIC CORPORATION (Statutory Corporation):

Public Corporation is a body, which is formed by the government, by passing an act in the legislature. The main aim of creating these corporations is to simplify the process of governance. These bodies are autonomous. It means they have their own sources of income and the liberty to spend it, according to their requirements.

- **<u>Features of Company:</u>**

  - **Own Sources of Revenue:** Unlike departmental undertaking, public corporations have their own sources of revenue. It means they enjoy financial autonomy.
  - **Minimum Government Interference:** Government does not interfere in the day-to-day activities of the corporations. They are free to function without any excessive pressure.
  - **Separate Entity:** Corporations have their own identity. They have a seal and are capable to deal with third parties in its own name.

- **Management:** The heads of the corporations are appointed by the government. Ex: APSRTC managing director is appointed by the government.

- **Advantages of Companies:**

- **Autonomous Body:** Being an autonomous body, a corporation is free to operate in the best possible manner.
- **Service Motive:** Corporations do not work for profits. They are formed to serve the society.
- **No Political Pressure:** There is very less scope of political interference in these corporations. Being as independent body it can ignore political pressures, if any.

6.What is sole trading firm? What are its merits and demerits?

Ans

A sole trading concern is a business that is controlled by a single individual who is accountable not just for the administration of the business but also for the risks associated with it."

Because it is owned, controlled, overseen, and managed by a single individual, known as a sole trader, it is a straightforward and natural sort of organisation. The proprietor is free to engage in any business activity that is permissible under the laws of the land. Anyone with a tiny amount of funds, little expertise, and little intelligence can establish any legal business. The sole proprietorship, promoters, management, control, and risk-bearing of a business or individual entrepreneurship are all clearly defined in the preceding paragraphs: "sole trader."

With the advancement of science and technology, the demands of business have increased as well, resulting in the development of new organisational structures. This type of organisation is also referred to as Sole Proprietorship, Individual Proprietorship, and Single Entrepreneurship, among other terms and phrases.

Advantages of Sole Trading Concern

(1)Easy and Quick Formation: Establishing a sole trading company is a straightforward process. A sole trading concern can be started by anyone who has the legal capacity to engage in an agreement. There are no legal requirements to follow. In other instances, he is the only one who must receive a licence. For example, operating a restaurant, trading in booze or tobacco, or dealing in medications are all examples of business ventures. Because the formation is simple and straightforward, it saves both time and money.

(2) Constant Personal Contact: In this organisation, it is quite simple to maintain the greatest possible number of personal relationships with consumers and employees. Customers' preferences and dislikes may be catered to by a sole trader, and he can also foster positive relationships with his workers, which leads to customers being repeat customers and spreading the word about his business. Employees are likewise held to high standards of loyalty and honesty.

(3) Quick Decisions and Actions: As the sole proprietor of his or her business, the sole trader is responsible for all decisions and actions; there is no need to consult with anyone else. A speedy judgement is required for certain forms of business, such as speculative business. Because a single proprietorship is a one-person operation, there is no one to consult, give advice, or resolve issues. As a result, the choices made by the proprietor are final and are carried out as soon as possible.
(4) Adaptability: This refers to the ability to make quick and easy changes in the workplace. This type of business allows for complete adaptability. A single trader has the freedom to change the type, object, location, and other aspects of his or her business whenever he or she chooses. In part because this corporate organisation is not governed by any official legislation, and in part, because there are no government restrictions in place.

Disadvantages of Sole Trading Concern
(1) Limited Capital: One of the most significant limitations to starting a business is the lack of readily available finance. The owner has just two options for raising capital: personal savings or borrowing money from friends, relatives, and financial organisations. It is always possible for one person to borrow more money than they have saved. A large scale business is therefore not conceivable in the case of a sole trader because his or her capital is constrained according to the nature of the business.
(2) Limited Managerial Capability: Because there is just one person in charge of running and controlling the business, a lone trading concern has limited managerial capability. If paid staff are hired, they will also work to the extent that their salary will allow them to do so in a productive manner. Because the employees are disinterested in the firm, it is difficult for the sole proprietor to effectively oversee all of the company's operations. To put it another way, no one person is capable of having a complete understanding of all business activities. However, in the case of a sole proprietorship, all decisions pertaining to expansion, additional money, purchases, and sales are made by the proprietorship. Thus, the managerial abilities of this organisation are severely restricted.
(3) Doubtful Continuity: This type of organisation does not have a long-term sense of stability. Because of this, it is completely reliant on the life of its owner to continue being. In most cases, it comes to an end as a result of the death, insolvency, or insanity of the sole proprietor. As a result, a sole proprietorship is always a source of concern. There is a possibility that the sole trader's family members will continue the business after his death, among other possibilities.
(4) Unlimited Liability: This means that the lone trader is individually liable for any losses incurred in the course of his or her business activities. He needs to sell his personal property in order to cover the liability of the firm. The sole proprietor and his business are inextricably linked. As a result, a lone trader must conduct his or her business with the necessary care and prudence and must consider twice before embarking on a new or risky venture in the commercial world.

7.Explain the features of partnership form of organization. What are the features of partnership?

Ans

Introduction: Partnership form of organization is an improved version of sole proprietorship. Where there are like-minded persons with resources, they can come together to do business and share the profits/losses of the business in an agreed ratio. Persons who have entered into such an agreement are individually called „partners‟ and collectively called „firm‟. The relationship among partners is called a „partnership‟.

Definition: "The relationship between two or more persons who agree to share the profits of the business carried on by all or any one of them acting for all is called as partnership".

__The Indian Partnership Act 1932(Section 4)

Features of Partnership:

1. **Two or More Persons:** There should be two or more number of persons.
2. **Agreement:** There must be an agreement to form a partnership. This agreement may be whether written or oral.
3. **Business:** There should be a business. For example when two or more persons agrees to share income of a joint property, it is not partnership because, there is no business.
4. **Carried on by All or Any one of Them Acting for All:** In this form of business, the business can be carried on by all or any one of the persons acting for all.
5. **Sharing of Profits:** In this form of business partners should share the profits or losses derived from the business.

- **Merits / Advantages of Partnership:**

1. **Easy to Form:** A partnership form of organization can be started with an agreement between the partners. No legal formalities are required.
2. **More Financial Resources:** A partnership facilitates pooling of financial resources of its entire partner. Therefore the financial resources available are large, when compared to sole-trade business.
3. **Sharing of Risk:** The burden of loss, if any borne by all the partners, which make partnership less risky, when compared to sole proprietorship.
4. **Better Decision Making:** The decisions taken by a partnership firm can be better because, opinion of all the partners is taken into account. Unlike sole-proprietorship where only one person takes a decision with the limited knowledge he has.
5. **Democratic Management:** All the partners, irrespective of their contribution to the capital of the organization, will have equal right in the management of the business.
6. **Flexibility:** The operations of a partnership firm are flexible because, there is no need for any prior permission from the government before making any change in the business activity,

capital etc.

8.Define Joint Stock Company? Explain the features and types of Joint stock Company.

Ans

The drawbacks of sole-proprietorship and partnership gave rise to company form of organization. The first joint stock company was started in Italy in 13th Century. In India the first companies Act was passed in 1850. In 1956, a comprehensive act was passed, which is still in existence.

Definition: "A joint stock company is a voluntary association of persons for profits whose capital is divided into transferable shares and ownership is required for its membership"

________Honey

- **Features of Joint Stock Company:**

1. **Artificial Person:** A company is an artificial person created by law. It has its own name and seal. It can perform all the activities of business like purchase and sale of goods etc.
2. **Voluntary association of persons:** It is a voluntary association of persons who want to carry on business for profit. To carry on business, they need capital. So they invest in the share capital of the company.
3. **Capital is divided into shares:** In this form of business total capital is divided into a certain number of units. Each unit is called a share.
4. **Common Seal:** It is an artificial person created by law has no physical shape, it can not sign its name on a paper. So, it has a common seal on which its name is engraved.
5. **Management and Ownership in separate hands:** Shareholders are the owners of the business. But they do not manage the business. The board of directors appointed by them to manage the company.
6. **The name of the company ends with „limited‟:** It is necessary that the name of the company ends with limited (Ltd.) to give an indication to the outsiders that they are dealing with the company with limited liabilities.

- **Advantages of Joint Stock Company:**

1. **Limited Liability:** The shareholders have limited liability i.e., liability limited to the face value of the shares held by him.
2. **Transferability of shares:** When in need of money, a shareholder can transfer his share in the company to any persons by following the procedure laid down for such a transfer.
3. **Availability of Large resources:** As the capital is collected from the public, by selling the shares in the primary market, a company enjoys the benefit of large resources.

4. **Stability of Existence:** The company has perpetual existence. Its existence is not affected by death, insolvency of any of its members.
5. **Efficient Management:** The affairs of the company can be managed efficiently since the company is in a position to employ experts as professional managers due to availability of large amount of funds.
6. **Economies of Large Scale Production:** With the availability of huge capital and management expertise, a joint stock company enjoys economies of marketing, production, specialization, etc.

9.What is meant by Ratio analysis? Explain briefly about various types of ratios?

10.Explain in brief the Double Entry Principles

Ans

Double-entry is an accounting system thatrecords a transaction in a minimum of two accounts. It is based on a dual aspect, i.e., Debit and Credit, and this principle requires that for every debit, there must be an equal and opposite credit in any transaction. The ***double entry system*** *is a more comprehensive way to maintain an entity's overall accounts.*

Principle

Double entry accounting is based on a simple principle, that for every debit, must have equal and opposite credit. There should be at least two accounts involved in any transaction.

Debit Side = Credit Side

The double entry is based on the debit and credit accounts of the transaction. So, we need to understand what account kind of debits and what credits.

There are three different types of accounts, Real, Personal, and Nominal Accounts. Rules of recording the transactions are decided based on the type of account.

#1 - Real Accounts - Debit what comes in and Credit what goes out. Real accounts include Pant & Machinery, Buildings, Furniture, or any other Asset account. So when we purchase Machinery, the Machinery account is debited, and when we sell Machinery, the Machinery account is credited.

#2 - Personal Accounts - Debit the Receiver and Credit the Giver. The personal account includes the account of any person, such as an owner, debtor, creditor, etc. When we make payment to our creditors, the receiver account is debited, and when we receive the payment, the giver account is credited.

#3 - Nominal Accounts - Debit all Expenses and Losses and Credit all Incomes and Gains. Nominal accounts include all the Expenses, Income, Profit, and Loss accounts. For example, the Salary Paid account is debited, and the rent received account is credited.

Features

Let us understand the features of the **double entry system** through the discussion below.

- **Two Parties**: Two parties are involved, one is the receiver, and another is the giver. The receiving party is debited, and another party is credited. For example, A purchases goods from B, where A is a receiver party, and B is a giver party.
- **Equal Effect:** Each transaction should have an equal financial effect. The debit amount should be equal to the credit amount.
- **Separate Legal Entity**: This accounting system records the transaction separately from its owners.
- **Debit and Credit**: There are two aspects for recording any transaction, the Debit aspect, and the Credit aspect.

11.Explain in detail the modern techniques used for appraising the project?

PROJECT APPRAISAL:- MEANING

It is a process of detailed examination of several aspects of a given project. It is basically aimed at determining the viability of a project. Such appraisal is usually done at two stages

- Project identification stage, which is done by the firm.
- Project financing stage which is done by the financial institution financial institutions and banks make a critical appraisal of projects.

Project appraisal aims at increasing quality of projects, enhancing long-term profitability and minimizing risk.

Various aspects of project appraisal are grouped into seven categories:-

1. Economic aspects:- through this analysis, the entrepreneur can arrive at a decision as to accept or reject the investment proposal. The parameters taken into consideration during economic analysis are capital cost, working capital needs, operating cost, operating revenue, tax aspects, inflation, government policies, technological changes etc. Economic benefits brought by successful project normally take the form of increased output of goods or services. This increased production will generate additional income such as increased wages or employment of labor, larger government revenues, and higher earnings for the owners of capital etc.
2. Financial aspects:- the profitability aspect is studied after estimating cash inflows(returns) and cash outflows(cost) of the project. It also determines the appropriate means of financing a project.
3. Market aspects:- identifies the possible market of the product/service i.e. The demand of customers, when and where the goods are to be sold, price of the product etc is also called as demand forecasting.
4. Technical aspects:- the entrepreneur ensures that the necessary technology is available. If it is to be imported he should see if it is possible and look into the legal formalities to be complied with. He also ensures whether the inputs such as land & site, water, power, transportation, communication etc are available.
5. Managerial aspects:- the success of an enterprise depends on the managerial competence. In its absence the projects which are otherwise feasible may fail. The promoters strength weakness etc may be considered before starting the project. The track record of the entrepreneur is very useful in predicting the future of the project.
6. Social considerations:- the entrepreneur forms part of a society and naturally he must give due weightage for social consideration when evaluating a project proposal. How many employment opportunities are created, whether the project is going to be located in remote place etc.
7. Ecological analysis:- certain industries like leather industries and chemical industries create ecological problems. Therefore entrepreneur should do ecological analysis before taking a final decision . He must make sure that the proposed business does not adversely affect the environment.

12.Explain the various techniques of capital budgeting?

Ans

CAPITAL BUDGETING TECHNIQUES / METHODS

There are different methods adopted for capital budgeting. The traditional methods or non discount methods include: Payback period and Accounting rate of return method. The discounted cash flow method includes the NPV method, profitability index method and IRR.

- **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. Through this method selection of a proposal is based on the earning capacity of the project. With simple calculations, selection or rejection of the project can be done, with results that will help gauge the risks involved. However, as the method is based on thumb rule, it does not consider the importance of time value of money and so the relevant dimensions of profitability.

Payback period = Cash outlay (investment) / Annual cash inflow

Example

	Project A		Project B
Cost	1,00,000		1,00,000
Expected future cash flow			
Year 1	50,000		1,00,000
Year 2	50,000		5,000
Year 3	1,10,000		5,000
Year 4	None		None
TOTAL	2,10,000		1,10,000
Payback	2 years		1 year

Payback period of project B is shorter than A, but project A provides higher returns. Hence, project A is superior to B.

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- **Accounting rate of return method (ARR):**

This method helps to overcome the disadvantages of the payback period method. The rate of return is expressed as a percentage of the earnings of the investment in a particular project. It works on the criteria that any project having ARR higher than the minimum rate established by the management will be considered and those below the predetermined rate are rejected.

This method takes into account the entire economic life of a project providing a better means of comparison. It also ensures compensation of expected profitability of projects through the concept of net earnings. However, this method also ignores time value of money and doesn't consider the length of life of the projects. Also it is not consistent with the firm's objective of maximizing the market value of shares.

ARR= Average income/Average Investment

- **Discounted cash flow method:**

The discounted cash flow technique calculates the cash inflow and outflow through the life of an asset. These are then discounted through a discounting factor. The discounted cash inflows and outflows are then compared. This technique takes into account the interest factor and the return after the payback period.

- **Net present Value (NPV) Method:**

This is one of the widely used methods for evaluating capital investment proposals. In this technique the cash inflow that is expected at different periods of time is discounted at a particular rate. The present values of the cash inflow are compared to the original investment. If the difference between them is positive (+) then it is accepted or otherwise rejected. This method considers the time value of money and is consistent with the objective of maximizing profits for the owners. However, understanding the concept of cost of capital is not an easy task.

The equation for the net present value, assuming that all cash outflows are made in the initial year (tg), will be:

$$NPV = \left[\frac{A_1}{(1+k)^1} + \frac{A_2}{(1+k)^2} + \frac{A_3}{(1+k)^3} + \ldots\ldots + \frac{A_n}{(1+k)^n}\right] - C$$

$$= \sum \frac{A_1}{(1+k)^1} - C$$

$$= t = 1$$

Where A1, A2. represent cash inflows, K is the firm's cost of capital, C is the cost of the investment proposal and n is the expected life of the proposal. It should be noted that the cost of capital, K, is assumed to be known, otherwise the net present, value cannot be known.

NPV = PVB – PVC

where,

PVB = Present value of benefits

PVC = Present value of Costs

- **Internal Rate of Return (IRR):**

This is defined as the rate at which the net present value of the investment is zero. The discounted cash inflow is equal to the discounted cash outflow. This method also considers time value of money. It tries to arrive to a rate of interest at which funds invested in the project could be repaid out of the cash inflows. However, computation of IRR is a tedious task.

It is called internal rate because it depends solely on the outlay and proceeds associated with the project and not any rate determined outside the investment.

It can be determined by solving the following equation:

$$C = \frac{A_1}{(1+r)^1} + \frac{A_2}{(1+r)^2} + \frac{A_3}{(1+r)^3} + \dots\dots\dots + \frac{A_n}{(1+r)^n}$$

$$C = \sum_{t=1}^{n} \frac{A_t}{(1+r)^t} \neq C$$

$$0 = \sum_{t=1}^{n} \frac{A_t}{(1+r)^t} - C$$

If IRR > WACC then the project is profitable.

If IRR > k = accept

If IR < k = reject

- **Profitability Index (PI):**

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. It may be gross or net, net being simply gross minus one. The formula to calculate profitability index (PI) or benefit cost (BC) ratio is as follows.

PI = PV cash inflows/Initial cash outlay A,

$$= \frac{\sum_{t=1} \frac{A_t}{(1+k)^t}}{C}$$

PI = NPV (benefits) / NPV (Costs)

All projects with PI > 1.0 is accepted.