NIRMA UNIVERSITY
INSTITUTE OF TECHNOLOGY
NAAC ACCREDITED 'A+' GRADE

# Project Management

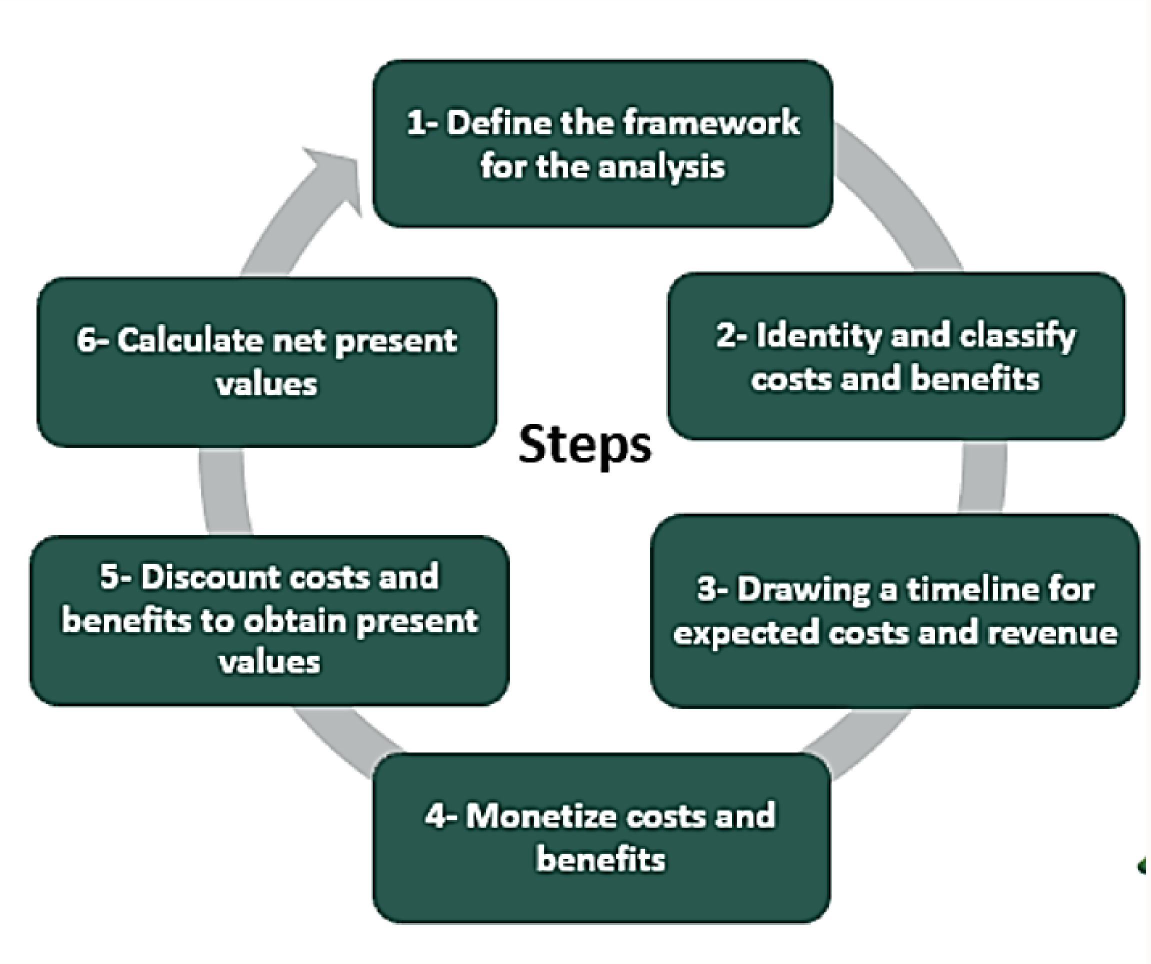
## 2CLOE29

*Prof. Raghavendra Kumar*
*Asst. Professor*
*Department of Civil Engineering*
*Institute of Technology*

# Cost Benefit Analysis

- Cost-Benefit Analysis (CBA) measures a project's societal value by quantifying the project's societal effects and making costs and benefits comparable in monetary terms.
- CBA is most widely applied tool for the appraisal of projects.
- Principal analytical framework used to evaluate public expenditure decisions.
- General purpose of CBA is to help government & society better allocate their scarce productive resources.
- Societal goal behind CBA is to achieve maximum economic efficiency.
- Economic efficiency: it requires Benefits > Costs

# Steps in a CBA



**Define the framework for the analysis**

- ➢Identify the state of affairs before and after the policy change or investment on a particular project.

➢Measure the profit of taking up the investment option.

**Identity and classify costs and benefits**

Costs and benefits are classified in the following manner to ensure that you understand the effects of each cost and benefit.

– Direct Costs (Intended Costs/Benefits)

– Indirect Costs (Unintended Costs/Benefits)

– Tangible (Easy To Measure And Quantify)

– Intangible (Hard To Identify And Measure)

## Drawing a timeline for expected costs and revenue

- Mapping needs to be done when the costs and benefits will occur and how much they will pan out over a phase.
- A defined timeline enables businesses to align with the expectations of all interested parties.
- Understanding the timeline allows to plan for the impact that the cost and revenue will have on the operations.

## Monetize costs and benefits

- Convert an asset into cash by selling or using it as the security for loan
- Ensure to place all costs and all benefits in the same monetary unit.

## Discount costs and benefits to obtain present values

- It implies converting future costs and benefits into present value.
- Also known as discounting the cash flows or benefits by a suitable discount rate.
- Every business tends to have a different discount rate.

## Calculate net present values

- It is done by subtracting costs from benefits.
- Investment proposition is considered efficient.

## Importance of Cost-Benefit analysis

- **Determining the feasibility of an opportunity:** Massive sum of money is invested in a project, it should at least break even or recover the cost. To determine whether the project is in the positive zone, the costs and benefits are identified and discounted to present value to ascertain the viability.

**To provide a basis for comparing projects:** It is one of the tools to pick through the available options. When one out of the many options seems more beneficial, the choice is simple. This model helps businesses to rank the projects according to their order of merit and select the most viable one.

- **Evaluating Opportunity Cost:** It is imperative to be aware of the Opportunity Cost or the cost of the next best alternative foregone. It helps businesses to identify the benefits that could have arisen if the other option was chosen.

**Performing Sensitivity Analysis for the various real-life scenarios**: Sensitivity analysis can be instrumental in improving the credibility of a Cost-benefit analysis and is mainly used where there is ambiguity over the discount rate. The investigator may change the discount rate and the horizon value to test the sensitivity of the model.

Cost-benefit analysis has two main methods of arriving at the overall results.

- **Net Present Value (NPV) and the Benefit-Cost Ratio (BCR)**

**Net Present Value Model**

NPV of a project refers to the difference between the present value of the benefits and the present value of the costs. If NPV > 0, then it follows that the project has economic justification for going ahead.

Represented by the following equation:

***NPV = ∑ Present Value of Total Future Benefits – ∑ Present Value of Total Future Costs***

## Benefit-Cost Ratio

Benefit-Cost provides value by calculating the ratio of the sum of the present value of the benefits associated with a project against the sum of the present value of the costs associated with a project.

***BCR = ∑ Present Value of Total Future Benefits / ∑ Present Value of Total Future Costs***

Greater the value above 1, the greater are the benefits associated with the alternative considered.

# Sources of Finance

- ➢Money required to run business functions known as business funds

➢Funds are required continuously in business

➢Every source of funds needs to be analyzed carefully.

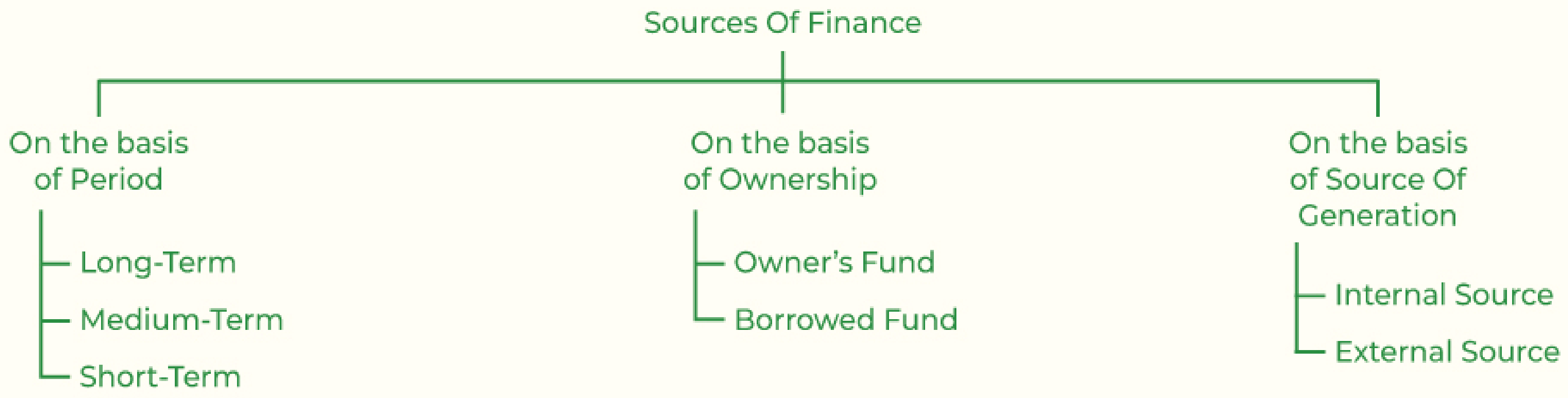
Two types of financial needs of a business:

Fixed Capital Requirement: Refers to the money which is required to purchase fixed assets of a business such as Plants and Machinery, Land and Buildings, etc. These assets are kept in the business for more than one year. Nature of the business plays a very important role in deciding the type of capital requirements. If the business concern is based on retailing, then it requires very less fixed assets as compared to the manufacturing industry.

- Working Capital Requirement: Working capital is a vital aspect of any business organization, whether it is trading, manufacturing, or retailing. No matter how large or small the enterprise is, working capital is required. The amount required for working capital may vary according to the size of the enterprise. The day-to-day operations, such as payments to creditors and suppliers and payment of salaries, rent, and wages fall under the category of working capital.

➢Firms raise funds through different sources

➢Sources are classified based on Time, Ownership and control, Sources of generation.



# Based on period

***Long-term Sources:*** Fulfill the needs of any business for a period exceeding 5 years. Generally used for purchasing fixed assets. Examples of long-term sources of funds are shares, debentures, bonds, long-term loans from banks.

***Medium-term Sources:*** Funds required for more than one year but less than five years. These include public deposits, borrowing from banks, lease financing, etc.

***Short-term Sources:*** Funds required for less than one year is termed short-term sources of fund. These kinds of funds are easily available and are easy to repay also. For Example, short-term loans from commercial banks, trade credit etc.

# Based on ownership

***Owner's Funds***: Owner's funds are those which are provided to the firm by its owners. The owner can be a sole trader, a shareholder of the company, or a partner. The owners not only invest capital but also reinvest profits in the organization. The investment made by the owners decides their control over the management. Issue of equity shares and retained earnings are the two most important sources of the owner's fund.

***Borrowed Funds:*** A fund which is borrowed from different financial institutions or raised through the issue of bonds debentures. These sources provide a firm with different sources of funds for a fixed period with a fixed amount of interest, which a company has to pay whether it is making a profit or not. Usually, the borrowed funds are provided to the firms by keeping some fixed assets as security. So this source of funds is a bit riskier as compared to the owner's fund. For Example, public deposits, loans from a bank etc.

**Based on the Source of Generation**

- ***Internal Sources*** – Every business organization has some funds which are kept aside for future uncertainties and needs. When the funds are generated internally, then they are said to be internal sources of funds. The biggest advantage is that these are a permanent source of funds that could be easily availed, and does not involve any explicit cost. However, internal funds lead to various risks to the firm and can accomplish only the limited needs of the firm.

***External Sources*** – When a large amount of funds is required by a business enterprise, then it opts for external financing. Therefore, external sources of finance are the sources that are obtained from outside the business. The cost of raising funds from external sources is more than the cost from internal sources. For example, lease financing, Commercial papers, etc.