Project Appraisal & Financing

Prepared By:- Dr. Chinmaya Kumar Rout

Module-1

Project

A project is a type of assignment, typically involving research or design, that is carefully planned to achieve a specific objective.

A project is defined as a sequence of tasks that must be completed to attain a certain outcome.

Project refers to " to any temporary endeavour with a definite beginning and end".

A project is a group of unique, interrelated activities that are planned and executed in a certain sequence to create a unique product or service, within a specific time frame, budget and the client's specifications.

A project is an organized program of pre-determined group of activities that are non-routine in nature and that must be completed using the available resources within the given time limit

Definition

According to Harison, a Project can be defined as a non-routine, non-repetitive, one-off undertaking , normally with discrete time, financial and technical performance goals.

Project Management Institute , USA defines Project as ' a system involving the co-ordination of a number of separate department entities through out the organization and which must be completed within prescribed schedule and time constraints.

Project Management

Project management is the application of the knowledge, skills, tools and techniques to project activities in order to meet or exceed stakeholder needs and expectations.

Project management is the discipline of organizing and managing resources in such a way that these resources deliver all the work required to complete a project within defined scope, time and cost constraints.

Project Characteristics

Objectives

Life cycle: (Conception stage, Design, Implementation, Commissioning)

Definite Time limit

Uniqueness

Team Work

Complexity

Sub-Contracting

Risk & Uncertainty

Customer Specific

Response to Environment

Change

Forecasting

Rational Choice

Attributes of a good Project Manager

Planning and Organizational skill

Personnel Management skill

Communication skill

Change Orientation

Ability to solve Problem

High Energy Level

Ambition for Achievement

Acceptability to take suggestions

Understanding the views of team members

Ability to develop alternative action quickly

Knowledge about the project management methods & tools

Ability to make self evaluation

Effective Time Management

Knowledge of Technology

Conflict Resolving skill

Team building skill

Resource Allocation skill

Entrepreneurial skill

Good Negotiation skill

Taxonomy of Projects

Based on type of Activity

- Industrial Project
- Non- industrial Project

Based on Location of the Project

- National Project
- International Project

Based on Project Completion Time

- Normal Project
- Crash Project

Based on Ownership

-Private Sector Project

-Public Sector Project

-Joint Sector Project

Based on Size

- Small Scale Project
- Medium Scale Project
- Large Scale Project

Based on Need

- New Project
- Balancing Project
- Expansion Project

  -Modernization Project

  -Replacement Project
- Diversification Project

- Backward Integration project
- Forward Integration Project

Project Identification

Project identification is a process in the initiating phase of project life cycle for identifying a need, problem, or opportunity.

The purpose of project identification is to develop a preliminary proposal for the most appropriate set of interventions and course of action, within specific time and budget frames, to address a specific development goal in a particular region.

Sources of Project idea

Identifying a new worthwhile project is a complex problem. It involves careful study from many different angles. Following are some of the sources from which new project idea may emerge.

- Performance of existing Industries
- Availability of raw material
- Availability of skilled labour
- Import/ Export Statistics
- Price Trend
- Research Laboratories
- Data of various publications
- Consumption in Abroad
- Identifying Unfulfilled Psychological needs
- Analysis of Economic & Social Trends
- Government Guidelines & Policies
- Possibility of reviving sick units

Screening of project Ideas

Screening of project ideas under project appraisal is a crucial initial step to evaluate and select potential projects for further analysis and development. This process involves assessing the feasibility, viability, and alignment of various project ideas with the strategic objectives and resource capabilities of the organization.

Steps in Screening of Project Ideas

1. Initial Idea Generation

- **Sources**: Ideas can come from brainstorming sessions, stakeholder suggestions, market analysis, R&D, and competitor analysis.
- **Documentation**: Brief descriptions of each idea are documented for further evaluation.

2. Preliminary Screening Criteria

- **Strategic Fit**: Alignment with organizational goals, vision, and mission.
- **Market Demand**: Assessment of potential market needs and demand for the project's output.
- **Technical Feasibility**: Initial check if the necessary technology and expertise are available.
- **Resource Availability**: Availability of financial, human, and material resources.
- **Regulatory Compliance**: Compliance with legal and regulatory requirements.

Environmental Impact: Preliminary evaluation of the environmental impact

3. Initial Feasibility Analysis

- **Cost Estimates**: Rough cost estimation to check the financial viability.
- **Timeframe**: Estimation of the time required to complete the project.
- **Risk Assessment**: Identification of potential risks and challenges.

4. Scoring and Ranking

- **Weighted Scoring Model**: Assigning weights to various criteria based on their importance and scoring each idea against these criteria.
- **Ranking**: Ranking the ideas based on their scores to identify the most promising ones.

5. Detailed Analysis of Shortlisted Ideas

- **Market Research**: Detailed analysis of market conditions, competition, and customer needs.
- **Technical Analysis**: In-depth feasibility study of technical aspects.

- **Financial Analysis**: Detailed financial projections, including costs, revenues, and profitability.

Risk Analysis: Comprehensive risk assessment and mitigation strategies.

6. Selection and Approval

- **Decision Making**: Based on the detailed analysis, the best project ideas are selected.
- **Approval**: The selected ideas are presented to decision-makers for approval and resource allocation.

7. Documentation and Reporting

- **Report Preparation**: Detailed reports on the selected projects, including all analyses and justifications.
- **Stakeholder Communication**: Informing all relevant stakeholders about the decision and the next steps.

Importance of Screening in Project Appraisal

- **Efficiency**: Helps in focusing resources on the most viable and promising projects.
- **Risk Reduction**: Early identification of potential risks and challenges.
- **Strategic Alignment**: Ensures that selected projects align with organizational goals.
- **Resource Optimization**: Efficient allocation and utilization of available resources.

Project Formulation (Project Preparation)

After identifying the idea to undertake a project, then the promoter has to further analyze the same to ensure that it has the potential . If investment will be done on this project it would give attractive returns. Project Formulation consists of four stages.

1. Pre- feasibility study
2. Functional studies (or Support studies)
3. Feasibility study
4. Detailed Project Analysis/ Report

1. Pre-feasibility study

A Pre-feasibility study is rough screening of most promising idea(s) and discard the unattractive options. This reduces the number of options that are chosen to proceed with a more detailed feasibility study and eventually with business development, ultimately saving time and money.

Objectives of Pre-feasibility study

a) To determine whether the project offers promising investment opportunity

b) To determine whether in-depth analysis required in way of market survey or laboratory test for the project or not ?

Pre-feasibility study includes:

- The market potential for the selected product / service
- The technologies available and the technology suitable for the project
- The source, cost and availability of raw materials
- The plant location
- The plant capacity
- The man power requirement in terms of labor , staff and management personnel, their availability and cost
- The investment required, the rate of return expected.

2. Support Studies (Functional studies)

Support studies may be conducted in any of the following areas

- Market Study
- Raw material/ input study
- Project location study
- Plant size study
- Equipment selection study

3. Feasibility Study

Before making a final decision to take up a project, the technical, economic , commercial and financial justification of the chosen project shall be ascertained in concrete terms. Feasibility study is also known as " techno-economic feasibility study**."**

Feasibility study includes followings

- Technical feasibility
- Economic viability
- Commercial feasibility
- Financial feasibility

4. Detailed Project Report

Detailed Project Report (DPR) will contain almost same information contained in the feasibility study but in a more detailed format. The main idea of preparation of the DPR is to formally communicate the project promoter's decision of starting new project to financial institutions for their perusal and to Government departments for getting their approvals

The main sub divisions of a DPR are as follows

- General information about the project
- Background and experience of the project promoters
- Details and working results of industrial concerns already promoted by project promoter
- Details of proposed project
- Schedule of implementation of the project
- Project cost
- Sources of finance for the project
- Working Capital Requirement
- Marketing and Selling Arrangement
- Profitability and cash-flow estimates
- Mode of repayment of term loan
- Government Approvals, Local body consent
- Details of collateral security that can be offered to the financial institutions

Tax Incentives for Project Investment decision

Tax incentives and tax planning are essential components of project investment decisions in India. They help optimize the tax burden and improve the financial viability of projects. Here's a detailed overview of tax incentives and tax planning strategies in the context of project investment in India

1. **Sector-Specific Incentives**

Infrastructure:

Section 80-IA: Provides deductions for profits generated from infrastructure projects.

Section 35AD: Allows 100% deduction of capital expenditure for specified businesses like setting up and operating cold chains, warehousing, and affordable housing projects.

Manufacturing:

Section 115BAB: Offers a reduced tax rate of 15% for new manufacturing companies incorporated on or after October 1, 2019, and starting production before March 31, 2023.

Renewable Energy:

Accelerated Depreciation: Allows higher depreciation rates for renewable energy equipment, reducing taxable income in the initial years.

Tax Holidays: Profits from certain renewable energy projects may be exempt from tax for a specified period.

2. **Geographical Incentives**

Special Economic Zones (SEZs):

Section 10AA: Provides a deduction of 100% of profits for the first five years, 50% for the next five years, and 50% of plowed-back export profit for the subsequent five years.

North-East and Hilly Areas:

Tax exemptions and subsidies are available for investments in less developed regions to promote balanced regional development.

3. Research and Development (R&D) Incentives

Section 35(2AB): Provides a weighted deduction of 150% for expenditure on scientific research and development.

Patent Box Regime (Section 115BBF): Offers a concessional tax rate of 10% on income from patents developed and registered in India.

4. Capital Gains Tax Exemptions

- **Section 54EC**: Exemption of long-term capital gains if the gains are invested in specified bonds (e.g., bonds issued by National Highways Authority of India or Rural Electrification Corporation).
- **Section 54GB**: Exemption of capital gains on the sale of residential property if the sale proceeds are invested in equity shares of an eligible start-up.

5. **Export Incentives**

Merchandise Exports from India Scheme (MEIS): Provides duty credit scrips to exporters of goods to offset infrastructural inefficiencies.

Service Exports from India Scheme (SEIS): Offers duty credit scrips to service exporters.

Zero Based Project Formulation

A zero-based project creates unprecedented visibility to each activity, step and task across the project. This drives a continual prioritization of activities, and regular trimming of scope, costs and efforts that does not directly contribute to the project's objectives.

In a zero-based project, a company starts by building the project scope and objectives from the bottom up with a clean sheet of paper. Such a surgical look at project scope helps ensure the project aligns directly with the corporate objectives—everything else requires value-based justification driven by economics, benchmarking, reliability or other strategic drivers.

Project Management Objectives

- To complete the project within the allotted funds

- To complete the project within the scheduled time limit
- To execute the project in such a way that the project meets the quality standards
- To ensure that the project is completed to the satisfaction of the end users
- Social Objectives

Establishing the Project

Following are steps involved in establishing a project

- Initiating
- Planning
- Organizing
- Executing

Directing and Controlling

Module-2

Cost of Project

Cost of project includes total funds needed to monetarily cover and complete a project work in specific time limit.

It covers all the input cost required for successful completion of project

Components of Capital Cost of a Project

- Land
- Land Development
- Buildings
- Plant and Machinery
- Electricals
- Transport and erection charges
- Know-how/Consultancy fees
- Preliminary Expenses
- Provision for contingencies

Margin Money for Working capital

Order of Magnitude Estimate

An order of magnitude estimate in project appraisal is a rough estimate used to assess the potential scale and feasibility of a project during its early stages. It's typically used when detailed information is not yet available, providing a broad range of potential costs, timelines, or other project metrics.

Characteristics

- **Accuracy Range**: These estimates usually have a wide accuracy range, often within ±50% to ±100% or even more.
- **Purpose**: The goal is to give stakeholders an initial idea of the project's potential size, helping in decision-making on whether to proceed with further, more detailed studies.

- **Basis**: They are often based on historical data, expert judgment, analogous projects, or high-level assumptions.

Example

If a new infrastructure project is being considered, an order of magnitude estimate might suggest that the cost could be between 10 crores and 20 crores. This range indicates the potential scale of the investment, helping decision-makers understand the project's feasibility without committing to detailed planning and budgeting at this stage.

PROJECT APPRAISAL

- Project appraisal is a cost and benefits analysis of different aspects of proposed project with an objective to adjudge its viability.
- Project Appraisal is a process detailed examination of several aspects of a given project before recommending the same.
-

Types of Project Appraisal

- Technical Appraisal
- Commercial Appraisal
- Economic Appraisal
- Financial Appraisal
- Management Appraisal
- Social Cost Benefit Analysis
- Environmental Appraisal

Technical Appraisal

Technical appraisal is a method of inspection to ensure that a project is potentially designed, engineered and followed the accepted standards.

Technical Appraisal is the technical review to ascertain that the project is. sound with respect to various parameters such as technology, plant. capacity, raw material availability, location, manpower availability, etc

Technical Appraisal covers following aspects

- Selection of process/ Technology
- Scale of operation
- Raw Material
- Technical Know –how
- Collaboration Agreement
- Product mix
- Selection and procurement of plant & machinery
- Plant Layout
- Location of the project
- Project Scheduling implementation

Commercial Appraisal

Commercial appraisal (or market appraisal) of a project is done studying the commercial successfulness of the product/service offered by the project from the following angles.

- Demand for the product
- Supply position for the product
- Distribution channels
- Pricing of the product
- Government policies

Methods of demand forecasting

1. Survey method

(a) Expert's Opinion
(b) Delphi technique
(c) Consumer 's Survey
(d) Sale forecast composite

2. Statistical method

(a) Trend analysis
(b) Regression analysis

Economic Appraisal

Economic analysis refers carefully analyzing the potential of the project in economic development. Government policies affecting the project decision. Incentives and subsidies given by Government in this regard.

What value this particular project is going to add towards GDP, per capita income , raising the standard of living of people.

Economic appraisal also related to cost benefit analysis of the project

Under economic analysis, the project aspects highlighted include requirements for raw material, level of capacity utilization, anticipated sales, anticipated expenses and the probable profits. It is said that a business should have always a volume of profit clearly in view which will govern other economic variables like sales, purchases, expenses and alike.

It will have to be calculated how much sales would be necessary to earn the targeted profit. Undoubtedly, demand for the product will be estimated for anticipating sales volume. Therefore, demand for the product needs to be carefully spelled out as it is, to a great extent, deciding factor of feasibility of the project concern.

In addition to above, the location of the enterprise decided after considering a gamut of points also needs to be mentioned in the project. The Government policies in this regard should be taken into consideration. The Government offers specific incentives and concessions for setting up industries in notified backward areas. Therefore, it has

to be ascertained whether the proposed enterprise comes under this category or not and whether the Government has already decided any specific location for this kind of enterprise.

Financial Appraisal

The purpose of the financial appraisal is determination of whether the project is worthwhile, comparing its costs with its expected benefits.

Financial appraisal addresses not only the adequacy of funds, but also the financial viability of the project, estimating in the end if and when the project returns a profit or not.

Techniques of Financial Appraisal

1. Traditional Methods /Techniques
   (a) Pay - Back Period (PBP)Method
   (b) Average Rate of Return(ARR) Method
2. Modern Methods / Techniques
   (a) Net Present Value (NPV) Method
   (b) Benefit Cost Ratio(BCR) Method

Pay- Back Period Method

The payback period method is the simplest of all. It defines the period in which the company can recover its investment value.

It is the period at which initial investment get back.

The formula for calculating the payback period of a project is:

$$\textbf{Payback Period} = \frac{\text{Initial Investment}}{\text{Annual Cash Inflow}}$$

The shorter is the payback period of the project, the more suitable it is for the company.

Example 1

A project costs Rs.100,000 and yields an annual cash inflow of Rs. 20,000 for 8 years. Calculate its pay-back period.

Solution:

The Pay- back period for the project are as follows:

$$\text{Payback Period} = \frac{\text{Initial Investment}}{\text{Annual Cash Flow}}$$

$$= \frac{100{,}000}{20{,}000} = 5 \text{ years}$$

Example 2

Determine the pay-back period for a project which requires a cash outlay of Rs. 10,000 and generates cash inflows of Rs. 2,000, Rs.4,000, Rs. 3,000 and Rs. 2,000 in the first , second, third and fourth year respectively.

Ans:

Solution:

Total Cash Outlay = 10,000

Total cash Inflows for first 3 years = 2000 + 4000+ 3000= 9000

Up to third year total cost is not recovered and if forth year cash inflow will added the total will Rs 11000. So pay back period lies between 3 to 4 years. To reach in 10000 another 1000 is required . If Rs. 2000 for 12months, then 1000 will for 6months .

So pay back period is 3 years 6 months

Example 3

There are two projects X and Y. Each project requires an investment of Rs. 2,00,000. You are required to rank these projects according to the pay back method from the following information:

Net profit before depreciation and after tax

Years	Project X	Project Y
1st	10,000	20,000
2nd	20,000	40,000
3rd	40,000	60,000
4th	50,000	80,000
5th	80,000	------

Ans:

The Pay back period for Project X is 5 years as

(10,000+20,000+40,000+50,000+80,000) = Rs 200000

The Pay back period for Project Y is 4 years as

(20,000+40,000+60,000+80,000)= Rs. 2,00,000

Hence Project Y should be preferred or ranked first

Average Rate of Return Method

Average Rate of Return=

$$\frac{\text{Average Annual Profit}}{\text{Net Investment in the Project}} X\ 100$$

Example 5

A project requires the investment of Rs. 5,00,000 and scrap value Rs. 20,000 after 5 years. It is expected to yield profits after depreciation and taxes during the five years

amounting to Rs. 40,000, Rs. 60,000, Rs. 70,000, Rs. 50,000, Rs.20,000. Calculate the average rate of return on the investment

Ans:

Total Profit = Rs. 40,000+ Rs.60,000+ Rs. 70,000+Rs. 50,000+ Rs. 20,000 = Rs. 2,40,000

Average Profit = 2,40,000/ 5 = Rs.48,000
Net Investment in the project =
5,00,000-20,000= Rs. 4,80,000
Average Rate of Return = (48,000/ 4,80,000) X 100 = 10%

Net Present Value (NPV) Method

The Net Present Value method is a modern method of evaluating investment proposals

This method takes into consideration the time value of money and attempts to calculate the return on investments by introducing the factors of time element.

Net Present Value (NPV) =
(Present Value of Cash Inflow- Initial Investment)

Steps are involved in the calculation of NPV

1.First of all determine an appropriate rate of interest rate that should be selected as minimum rate of return.
2. Compute the present value of total investment outlay
3. Compute the present value of cash inflows
4. Calculate the Net Present Value of each project by subtracting the present value of cash inflows from present value cash outflows
5. Higher the NPV more acceptable is the Project (Acceptance Rule)

Example 6

From the following Information Calculate the net present value of two projects and suggest which of the project should be accepted assuming a discount rate of 10 %.

	Project X	**Project Y**
Initial Investment	Rs. 2,00,000	Rs.3,00,000
Estimated Life	5 years	5 years

Profit before depreciation and after tax

	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Project X	50,000	1,00,000	1,00,000	30,000	20,000
Project Y	2,00,000	1,00,000	50,000	30,000	20,000

Answer

Calculation of NPV for Project X

Initial Investment is Rs. 2,00,000

Year	Cash Inflows	PV factor at 10%	Present value
1	50,000	.909	45, 450
2	1,00,000	. 826	82,600
3	1,00,000	.751	75,100
4	30,000	.683	20,490
5	20,000	.621	12,420
		Total Present Value =	2,36,060

NPV= 2,36,060- 2,00,000 = Rs. 36,060

Calculation of NPV for Project Y

Initial Investment is Rs. 3,00,000

Year	Cash Inflows	PV factor at 10%	Present value
1	200,000	.909	1,81,800
2	1,00,000	. 826	82,600
3	50,000	.751	37,550
4	30,000	.683	20,490
5	20,000	.621	12,420
		Total Present Value =	3,34,860

NPV= 3,34,860- 3,00,000 = Rs. 34,860

As NPV project X is higher i.e. Rs.36,060 , so project X should be accepted

Example 7

A firm whose cost of capital is 10%, is considering two mutually exclusive projects X and Y the details of which are :

	Project X	Project Y
Initial Investment	Rs. 70,000	Rs. 70,000
Cash Inflows 1st Year	Rs. 10,000	Rs. 50,000
2nd Year	Rs.20,000	Rs. 40,000
3rd Year	Rs. 30,000	Rs. 20,000
4th Year	Rs. 45,000	Rs. 10,000
5th Year	Rs. 60,000	Rs. 10,000

Compute net present value at 10% and Benefit Cost Ratio

Answer:

Calculation of NPV and Benefit Cost Ratio of Project X

Initial Investment is Rs. 70,000

Year	Cash Inflows	PV factor at 10%	Present value
1	10,000	.909	9090
2	20,000	. 826	16,520
3	30,000	.751	22,530
4	45,000	.683	30,735
5	60,000	.621	37,260
		Total Present Value =	1,16,135

NPV= 1,16,135- 70,000 = Rs.46, 135

Benefit Cost Ratio (BCR) = PVCI /Initial Investment

BCR = 1,16,135/70,000 = 1.66

Calculation of NPV and Benefit Cost Ratio of Project Y

Initial Investment is Rs. 70,000

Year	cash Inflows	PV factor at 10%	Present value
1	50,000	.909	45,450
2	40,000	.826	33,040
3	20,000	.751	15,020
4	10,000	.683	6,830
5	10,000	.621	6,210

Total Present Value = 1,06,550

NPV= 1,06,550- 70,000 = Rs.36, 550

Benefit Cost Ratio (BCR) = PVCI /Initial Investment

BCR = 1,06,550/70,000 = **1.52**

Management Appraisal

Management appraisal in the context of project appraisal refers to the evaluation of the managerial capabilities and competence of the team or individuals who will be responsible for executing the project. This aspect of project appraisal is critical because even if a project appears to be financially viable and technically sound, its success heavily depends on the ability of the management team to execute it effectively

Key Aspects of Management Appraisal

- **Leadership Skills**: The leadership abilities of the project managers and key team members are assessed to determine whether they have the vision, decisiveness, and motivation to guide the project to successful completion.
- **Experience and Expertise**: The track record of the management team in handling similar projects is reviewed. This includes their experience in the specific industry, familiarity with the project's technical aspects, and their ability to manage risks.
- **Organizational Structure**: The efficiency of the organizational structure supporting the project is evaluated. This includes assessing whether the roles and responsibilities are clearly defined, if there are efficient communication channels, and if there is a robust decision-making process in place.

- **Team Dynamics**: The synergy and cohesion among the team members are considered. A well-coordinated team that works well together is crucial for the success of the project.
- **Risk Management**: The ability of the management to anticipate, identify, and mitigate risks is a critical factor. This includes their approach to handling unforeseen challenges and their contingency planning capabilities.
- **Financial Acumen**: The management team's understanding of the financial aspects of the project, including budgeting, cost control, and financial forecasting, is examined.
- **Stakeholder Management**: The ability of the management to effectively engage with and manage stakeholders, including investors, clients, suppliers, and regulatory bodies, is evaluated.
- **Innovation and Problem-Solving**: The team's capability to innovate and solve complex problems is assessed, especially in dynamic or uncertain environments.

Importance of Management Appraisal

- **Project Success**: A strong management team increases the likelihood of the project's success by ensuring that it is executed efficiently and effectively.
- **Investor Confidence**: Investors are more likely to support a project if they have confidence in the management team's abilities.
- **Risk Mitigation**: Effective management can foresee potential issues and address them before they escalate, thereby reducing the project's overall risk profile.

In summary, management appraisal is a crucial part of project appraisal as it ensures that the project is in capable hands, which significantly impacts the project's success and overall viability.

Social Cost Benefit Analysis

Social Cost-Benefit Analysis (SCBA) is a method used to evaluate the overall impact of a project on society as a whole, rather than just the financial returns to the investors or the organization undertaking the project. It goes beyond traditional financial analysis by considering both the social costs and benefits that a project might generate, including externalities that are not captured in financial accounts.

Key Components of SCBA

1.Social Costs:

- **Direct Costs**: These are the costs directly associated with the project, such as capital expenditure, operating costs, and maintenance costs.
- **Indirect Costs**: Costs that are not immediately apparent but arise as a consequence of the project, like environmental degradation, displacement of communities, or increased traffic congestion.
- **Externalities**: Negative externalities, such as pollution, health impacts, or loss of biodiversity, are also considered. These are costs borne by society rather than by the project itself.

2. **Social Benefits:**

Direct Benefits: Tangible benefits that result directly from the project, such as job creation, increased income, or improved infrastructure.

Indirect Benefits: These include positive spill-over effects, such as increased economic activity in the region, improved quality of life, or technological advancements.

Externalities: Positive externalities like cleaner air, improved public health, or enhanced social cohesion are included. These are benefits that accrue to society at large, rather than just to the project stakeholders.

3.Valuation of Costs and Benefits

- **Monetary Valuation**: Where possible, both costs and benefits are quantified in monetary terms. This can be challenging, especially for intangible factors like environmental impact or social well-being.
- **Non-Monetary Valuation**: Some social costs and benefits are difficult to quantify, so qualitative assessments or alternative metrics (e.g., quality-adjusted life years for health impacts) may be used.

4.Time Horizon and Discounting

The analysis considers the time frame over which costs and benefits will occur. Since future costs and benefits are worth less than present ones, they are discounted to present value using an appropriate social discount rate. This helps in comparing costs and benefits that occur at different times.

5.Net Social Benefit

The difference between the total social benefits and total social costs is calculated to determine the Net Social Benefit (NSB) of the project. A positive NSB indicates that the project is likely to have a favourable impact on society.

6. Distributional Analysis

SCBA also considers the distribution of costs and benefits across different segments of society. This includes analyzing who gains and who loses from the project, ensuring that vulnerable groups are not disproportionately affected.

Importance of SCBA

- ✓ **Informed Decision-Making**: SCBA provides a comprehensive view of a project's impact, helping policymakers and stakeholders make more informed decisions that consider societal welfare rather than just financial profitability.
- ✓ **Sustainability**: By accounting for environmental and social factors, SCBA promotes sustainable development, ensuring that projects contribute positively to long-term societal goals.
- ✓ **Equity**: SCBA helps to identify and mitigate any adverse effects on disadvantaged or marginalized communities, promoting a more equitable distribution of benefits.
- ✓ **Policy Justification**: Governments and public agencies often use SCBA to justify the allocation of resources to projects that yield significant social benefits, even if they are not financially lucrative.

Example of SCBA

Consider a government-funded infrastructure project, like the construction of a new highway. The SCBA would evaluate not just the construction and maintenance costs but also the potential social costs, such as environmental impact and displacement of local communities. It would also assess the social benefits, such as reduced travel time, economic development in the region, and improved access to markets. The analysis would weigh these factors to determine whether the project should proceed based on its overall impact on society.

Social Cost-Benefit Analysis is a crucial tool for assessing the broader impacts of a project, ensuring that decisions are made with consideration of societal welfare, environmental sustainability, and equity.

Approaches to SCBA

Two approaches for SCBA

UNIDO Approach:- This approach is mainly based on publication of UNIDO (United Nation Industrial Development Organisations) named Guide to Practical Project Appraisal in 1978.

L-M Approach :- IMD Little and J.A. Mireless approach for analysis of Social Cost Benefit in Manual of Industrial Project " Analysis in Developing countries and project Appraisal and planning for Developing Countries.

UNIDO Approach

The UNIDO approach, developed by the United Nations Industrial Development Organization (UNIDO), is a structured method for project appraisal that focuses on evaluating industrial projects, particularly in developing countries. This approach aims to ensure that projects contribute to the economic development of a nation while considering social and environmental factors. It is particularly useful for projects that are intended to have significant economic, social, and environmental impacts.

Phases of UNIDO approach

- **Pre-Investment Phase**:
  - **Project Identification and Formulation**: Potential projects are identified and preliminary feasibility studies are conducted. This phase involves defining the project's objectives, scope, and expected outcomes.
  - **Preliminary Screening**: Projects are screened based on initial financial, economic, social, and environmental criteria to determine if they are worth pursuing further.
- **Investment Phase**:

  - **Detailed Project Appraisal**: A thorough analysis is conducted, including financial, economic, social, and environmental assessments. The detailed feasibility study is prepared during this phase.
  - **Decision-Making**: Based on the appraisal, decisions are made about whether to proceed with the project, adjust it, or abandon it.

- **Implementation Phase**:
  - **Project Execution**: If the project is approved, this phase involves the actual implementation, including construction, operation, and management. The UNIDO approach emphasizes monitoring and evaluation during this phase to ensure that the project meets its objectives.

- **Post-Investment Phase**:
  - **Monitoring and Evaluation**: The project's performance is continuously monitored, and its impacts are evaluated to ensure that it delivers the expected benefits. Lessons learned from the project are used to improve future project appraisals.
  - UNIDO approach to project appraisal is a robust framework that provides a comprehensive evaluation of projects, particularly in the context of industrial and economic development. It ensures that projects are not only financially viable but also contribute positively to the economy, society, and environment

L-M Approach

The Little-Mirrlees (L-M) approach, named after economists Ian Little and James Mirrlees, is a methodology used in project appraisal that focuses on the economic evaluation of development projects. It was developed in the context of international development, particularly for assessing projects in developing countries, and is designed to take into account both the economic efficiency and social welfare impacts of projects.

Steps in the L-M Approach

- **Identify Costs and Benefits:**
  - Identify all the direct and indirect costs and benefits associated with the project, including externalities and social impacts.
- **Calculate Shadow Prices:**
  - Convert market prices into shadow prices to reflect the true economic value of inputs and outputs.
- **Apply Distributional Weights:**

  - Adjust the values of costs and benefits using distributional weights to account for the impact on different income groups and the social objective of reducing inequality**.**

- **Discount Future Values**:
  - Discount future costs and benefits to their present value using an appropriate social discount rate.
- **Compute Net Present Value (NPV)**:
  - Calculate the Net Present Value (NPV) of the project using the adjusted costs and benefits. A positive NPV indicates that the project is economically viable and contributes to social welfare.
- **Sensitivity Analysis**:
  - Conduct sensitivity analysis to understand how changes in key assumptions (like shadow prices, discount rates, and distributional weights) affect the project's viability.

Shadow Pricing

Shadow pricing is a concept used in economics and project appraisal to assign a monetary value to goods, services, or resources that do not have a market price, or where the market price does not reflect the true economic value. It is often employed in the context of cost-benefit analysis, particularly for public sector projects, to ensure that decisions reflect the true cost and benefits to society.

Numéraire

In Social Cost-Benefit Analysis (SCBA), the term **"numéraire"** refers to the unit of account or standard of value against which all costs and benefits are measured and compared. It serves as a common denominator that allows different types of costs and benefits, which may be expressed in various units (like labor hours, goods, or environmental impacts), to be converted into a single, comparable value.

Environmental Appraisal

Environment literally means the surroundings, external objects, influences or circumstances under which someone or something exists.

Environmental Appraisal is the process of identifying opportunities and threats facing an organization.

Characteristics of Environmental Appraisal

The characteristics of environmental scanning are as follows:

- **Continuous Process-** The analysis of the environment is a continuous process rather than being sporadic. The rapidly changing environment has to be captured continuously to be on track.
- **Exploratory Process-** Scanning is an exploratory process that keeps monitoring the environment to bring out the possibilities and unknown dimensions of the future. It stresses the fact that "What could happen" and not "What will happen".
- **Dynamic Process-** Environmental scanning is not static. It is a dynamic process and depends on changing situations.
- **Holistic View-** Environmental Scanning focuses on the complete view of the environment rather than viewing it partially.

Components of Environmental Appraisal

- **Internal Environmental Components-** The components that lie within the organization are internal components and changes in these affect the general performance of the organization. Human resources, capital resources and technological resources are some of the internal environmental components.
- **External Environmental Components:** The components that fall outside the business organization are called external environmental components. Although the components lie outside the organization, they still affect the organizational activities. The external components can be divided into micro environmental components, and macro environmental components.
- Micro environmental components include competitors, consumers, markets, suppliers, organizations, etc. Macro environmental components include political, legal, economical, cultural, demographic, and technological factors.

Module-3

Project Financing

Project Financing may be defined as the raising of funds required to finance an economically separable capital investment proposal in which the lenders mainly rely on the estimated cash flow from the project service their loans.

Sources of Finance for a Project

1. Equity Share
2. Preference Share
3. Debentures

4. Bonds
5. Term Loans
6. Deferred Credit
7. Capital Investment subsidy
8. Lease financing
9. Unsecured loans
10. Internal accruals
11. Bridge loans
12. Public deposits

Role of Financial Institutions in Project Financing

Normally projects are financed by a combination of equity and debt. For large scale projects arranging all the funds from equity is not feasible.

In India All India Financial Institutions like IDBI, ICICI, IFCI, SIDBI, SFCs and Banks undertake project financing.

NBFCs also doing project finance.

Developmental financial institutions were set up with the objective of promoting industrial development. They played a significant role in helping new and first generation entrepreneurs in setting up industrial ventures. The role of developing finance institutions is undergoing a change they are expected to functions on commercial lines.

Whenever project promoter will approach for loans, the financial institutions are taking decision by considering followings

1. The capacity of the project to repay the loan along with interest obligations, out of it's own cash generations
2. The value of security offered for the loan.
3. The integrity and willingness of the borrower to repay the in time

Covenants Attached to Lending

1. The project promoter shall offer collateral security as required by the financial institutions.
2. The project promoter should furnish periodic information about the project

3. The project promoter should use borrowed funds only for the project implementation.
4. The project promoter should maintain all the assets in good conditions, should insure the assets against fire and natural calamities
5. The project promoter should not dispose off any of the assets without the prior approval of the bank/ financial institutions.
6. The project promoter should get the consent of the of the bank/ financial institutions before declaring dividends on equity shares

Infrastructure Project

An infrastructure project is a proposed plan that focuses on the improvement and upkeep of services, facilities and systems already in place throughout a country. Examples include improvements to communications equipment, transportation channels and electrical systems.

Longer maturity

Financing for infrastructure needs to have enough maturities ranging from 5 to 40 years. Such ranging can essentially reflect the accessing options and estimating the life of created infrastructure in actual context.

Larger amount

Infrastructure finance is included with different set of initiatives which essentially measure the range of amount needed in order to complete the projects in the local rationalities.

Higher risk

When large range of amounts are invested for long duration of time a risk may be elevated which can cause immense uncertainty in its course.

Fixed and low real returns

The financing for infrastructures is mostly linked with the scale of economies and annual returns of the projects under maintenance. Further perfect returns must be judged before financing a project of constructing infrastructure essentially. Apart from such characteristics, issues such as capital risks initiates to reduce such risk are considered to the greater extent in order frame the perfect financing action for constructing the infrastructure which is about to construct in the localities of India.

Status of Infrastructure in India

The **state of Infrastructure in India** is very critical in the **Indian economy and is heavily dependent on the infrastructure industry**. The sector is important to India's overall growth, and the government has placed a high priority on enacting regulations that would assure the

country's building of world-class infrastructure in a timely manner. Power, bridges, dams, highways, and urban infrastructure development are all part of the infrastructure industry.

India's capital expenditure as a percentage of GDP increased from 1.7% in 2014 to nearly 2.9% in 2022-23. For infrastructure, Rs 10 lakh crore (3.3% of GDP) was allocated in the budget 2023-24, an increase of three times from 2019.

Challenges of Infrastructure Project

- Insufficient Funds.
- Poor Planning and Project Selection.
- Weak Management.
- Inadequate Maintenance.
- Infrastructure in Fragile and Conflict-Affected States.
- Climate Change and Natural Disasters.

Public-private partnerships (PPP)

Public-private partnerships involve collaboration between a government agency and a private-sector company that can be used to finance, build, and operate projects, such as public transportation networks, parks, and convention centres.

Advantages and Disadvantages of Public-Private Partnerships

Advantages

Partnerships between private companies and governments provide advantages to both parties. Private-sector technology and innovation, for example, can help improve the operational efficiency of providing public services. The public sector, for its part, provides incentives for the private sector to deliver projects on time and within budget. In addition, creating economic diversification makes the country more competitive in facilitating its infrastructure base and boosting associated construction, equipment, support services, and other businesses.

Disadvantages

There are downsides, too. The private partner may face special risks from engaging in a public-private partnership. Physical infrastructure, such as roads or railways, involves construction risks. If the product is not delivered on time, exceeds cost estimates, or has technical defects, the private partner typically bears the burden.

In addition, the private partner faces availability risk if it cannot provide the service promised. A company may not meet safety or other relevant quality standards, for example, when running a prison, hospital, or school. Demand risk occurs when there are fewer users than expected for the service or infrastructure, such as toll roads, bridges, or tunnels. However, this risk can be shifted to the public partner, if the public partner agreed to pay a minimum fee no matter the demand.

India has been undertaking numerous infrastructure projects in recent years to boost economic growth, improve living standards, and enhance connectivity across the country. Here are some prominent examples:

1. **Bharatmala Pariyojana**: This is a major highway development project aimed at improving road connectivity across India. It focuses on building around 34,800 kilometers of roads and highways to enhance transportation efficiency and reduce logistics costs.
2. **Sagarmala Project**: This initiative aims to modernize India's ports and improve logistics along the coastline. It includes the development of port infrastructure, hinterland connectivity, and coastal economic zones to enhance trade and maritime capabilities.
3. **Smart Cities Mission**: This project focuses on developing 100 smart cities across India with modern infrastructure, efficient public services, and better urban planning. The goal is to make cities more sustainable, livable, and technologically advanced.
4. **Pradhan Mantri Awas Yojana (Urban)**: This scheme is designed to provide affordable housing to urban poor and low-income families. It includes constructing new houses and upgrading existing ones to improve living conditions in cities.
5. **Dedicated Freight Corridors**: This project involves building separate rail corridors for freight transport to decongest passenger lines and enhance the efficiency of goods transportation. The Western and Eastern Dedicated Freight Corridors are the major components of this initiative.
6. **Ganga Clean-up Project (Namami Gange)**: This ambitious project aims to clean and rejuvenate the Ganga River. It includes efforts to improve wastewater treatment infrastructure, promote public awareness, and implement pollution control measures.
7. **Delhi-Mumbai Expressway**: One of the longest expressways in India, this project aims to connect Delhi and Mumbai, significantly reducing travel time and boosting economic activities along the route.
8. **National Infrastructure Pipeline (NIP)**: This project outlines the investment needed for infrastructure development across sectors like transportation, energy, and urban infrastructure, with a focus on boosting economic growth and creating job opportunities.

These projects reflect India's commitment to modernizing its infrastructure and addressing various challenges in transportation, urban development, and environmental sustainability.

New Approaches to Infrastructure Project

When it comes to infrastructure projects, traditional approaches are often being re-evaluated to address contemporary challenges such as sustainability, efficiency, and resilience. Here are some innovative approaches and trends shaping the future of infrastructure development:

1. Smart Infrastructure

- **Sensors and IoT:** Integrating sensors and Internet of Things (IoT) technology into infrastructure allows for real-time monitoring and management. This can improve safety, efficiency, and maintenance.

- **Smart Cities:** Implementing technology to optimize traffic management, energy use, and public services.

2. Sustainability and Green Infrastructure

- **Eco-friendly Materials:** Using sustainable materials such as recycled content, low-carbon alternatives, and green concrete.
- **Green Roofs and Walls:** Incorporating vegetation into buildings to improve insulation, reduce urban heat islands, and manage storm water.
- **Energy Efficiency:** Designing infrastructure to minimize energy consumption and integrate renewable energy sources.

3. Resilient Design

- **Climate Adaptation:** Building infrastructure that can withstand extreme weather events and climate change impacts. This includes elevated structures, flood defences, and resilient materials.
- **Redundancy and Flexibility:** Creating systems with built-in redundancy and the ability to adapt to changing conditions or unexpected disruptions.

4. Modular and Prefabricated Construction

- **Modular Units:** Using pre-fabricated components or modules that can be assembled on-site, reducing construction time and improving quality control.
- **Factory Production:** Prefabricating parts in a controlled environment to ensure consistency and reduce on-site waste.

5. Digital Twin Technology

- **Virtual Models:** Creating digital replicas of physical infrastructure to simulate performance, plan maintenance, and optimize operations.
- **Predictive Analytics:** Using data from digital twins to predict and address potential issues before they occur.

6. Community and Stakeholder Engagement

- **Participatory Design:** Involving local communities and stakeholders in the planning and design process to ensure that infrastructure projects meet their needs and gain public support.
- **Transparency:** Using open data and communication platforms to keep the public informed and involved.

7. Advanced Project Delivery Methods

- **Public-Private Partnerships (PPPs):** Collaborating with private entities to leverage expertise and financing for large-scale infrastructure projects.
- **Integrated Project Delivery (IPD):** Encouraging collaboration among stakeholders (designers, contractors, owners) from the start to enhance efficiency and outcomes.

8. Advanced Materials and Techniques

- **High-Performance Materials:** Utilizing materials with enhanced properties, such as self-healing concrete or carbon fibre reinforcements.
- **3D Printing:** Employing 3D printing technology for constructing components or even entire buildings, reducing material waste and allowing for complex designs.

9. Automation and Robotics

- **Construction Robotics:** Using robots for tasks like bricklaying, concrete pouring, and inspection to increase precision and safety.
- **Automated Systems:** Implementing automated systems for traffic management, infrastructure maintenance, and repair operations.

10. Circular Economy Principles

- **Resource Efficiency:** Designing infrastructure with a focus on reusing and recycling materials to minimize waste and extend the lifecycle of resources.
- **End-of-Life Planning:** Considering the future dismantling or repurposing of infrastructure components to reduce environmental impact.

Each of these approaches represents a shift towards more innovative, efficient, and sustainable infrastructure development, reflecting the growing recognition of the need for advanced solutions in the face of modern challenges.

Public-Private Partnerships (PPPs)

Public-Private Partnerships (PPPs) in India have been a significant driver in infrastructure development, with a variety of project like transportation, healthcare, education, and urban development. Here's an overview of notable PPP projects in India, including key sectors, benefits, and challenges:

Key Sectors for PPPs in India

1. **Transportation**
    - **Roads and Highways:** Many road development projects have been executed through PPPs, including expressways and national highways. For example:
        - **Golden Quadrilateral Project:** A major highway network connecting the four largest cities in India, involving extensive PPP participation.
        - **Delhi-Gurgaon Expressway:** A prominent example of a successful PPP in road infrastructure.
    - **Railways:** The Indian Railways has explored PPPs for station redevelopment and high-speed rail projects.
        - **Mumbai-Ahmedabad High-Speed Rail (Bullet Train):** A significant project involving Japanese funding and technology in a PPP model.
    - **Ports and Airports:** Several ports and airports have been developed or expanded through PPPs.
        - **Cochin Port Trust:** Involved in several PPP projects to enhance port facilities and operations.

        - **Delhi International Airport Limited (DIAL):** A successful PPP venture for the development and operation of Delhi's Indira Gandhi International Airport.
2. **Urban Infrastructure**
    - **Smart Cities:** Initiatives under the Smart Cities Mission involve PPPs to develop infrastructure, improve urban services, and enhance sustainability.
        - **Gujarat International Finance Tec-City (GIFT City):** A high-profile urban development project utilizing PPP models for various aspects of infrastructure.
    - **Waste Management:** PPPs are being used for municipal solid waste management and recycling projects.
        - **Bangalore's Waste-to-Energy Plant:** An example of a successful PPP in managing urban waste.
3. **Healthcare**
    - **Hospital Development:** Several public hospitals have been developed or upgraded through PPP models.
        - **Bengaluru's Rajiv Gandhi Institute of Chest Diseases:** Utilizes a PPP model for its operations and expansion.
    - **Diagnostic Services:** PPPs have been used to enhance diagnostic and treatment facilities in public healthcare.
4. **Education**
    - **School Infrastructure:** Some states have engaged in PPPs to improve and expand educational facilities.
        - **Rajasthan's Government Schools:** Initiatives for upgrading infrastructure and management through PPPs.
5. **Renewable Energy**
    - **Solar Power Projects:** India has used PPPs to develop large-scale solar power projects, leveraging private sector investment and expertise.
        - **The Rewa Ultra Mega Solar Park:** A major solar power project developed through a PPP model.

Benefits of PPPs in India

1. **Infrastructure Development:** Accelerates the development of infrastructure projects, often with enhanced efficiency and innovation.
2. **Private Sector Investment:** Mobilizes private capital and expertise, reducing the financial burden on the public sector.
3. **Improved Service Delivery:** Encourages high standards and performance-based management in public services.
4. **Economic Growth:** Stimulates economic activity and job creation through investment in infrastructure.

Challenges of PPPs in India

1. **Regulatory and Policy Issues:** Complex regulatory frameworks and changing policies can create uncertainties for private investors.
2. **Project Delays and Cost Overruns:** Some projects have faced delays and cost overruns, often due to land acquisition issues and regulatory hurdles.

3. **Risk Allocation:** Properly allocating and managing risks between public and private partners is crucial and can be challenging.
4. **Financial Viability:** Ensuring the financial viability of projects, especially in sectors with fluctuating demand or revenue streams, can be difficult.

Notable Examples of PPP Projects in India

1. **Delhi-Mumbai Industrial Corridor (DMIC):** A significant infrastructure project involving PPPs for developing industrial zones, transportation links, and urban areas along the corridor.
2. **Maharashtra's Mumbai Metro:** Various phases of the Mumbai Metro project have been developed through PPPs, improving urban transportation.
3. **Ganga Action Plan:** Involves PPPs for cleaning and rejuvenating the Ganges River, including waste treatment plants and riverfront development.
4. **Surat's Waste Management:** The Surat Municipal Corporation has engaged in PPPs for waste management and sanitation, showcasing effective collaboration.
5. **Bhubaneswar Smart City:** A part of India's Smart Cities Mission, Bhubaneswar's urban development and infrastructure improvements involve significant PPP elements.

PPPs continue to play a crucial role in India's infrastructure development, addressing the country's vast needs while leveraging private sector capabilities. However, successful implementation requires careful planning, clear agreements, and strong oversight to ensure that projects deliver their intended benefits and value.

Project Evaluation

Project evaluation is the process of assessing the planning, implementation, and outcomes of a project to determine its effectiveness, efficiency, and impact. It helps stakeholders to understand whether a project is meeting its goals, using resources effectively, and producing the intended results. Evaluations are usually conducted at different stages of the project—before, during, and after completion.

Types of Project Evaluation

1. **Formative Evaluation**: Conducted during the planning and implementation phases to improve project design and execution.
2. **Summative Evaluation**: Done after the completion of a project to assess its overall success and outcomes.
3. **Process Evaluation**: Focuses on how a project is being implemented, examining procedures and whether they align with the planned activities.
4. **Outcome Evaluation**: Measures the short-term and long-term effects of a project, assessing its impact on the target population.
5. **Impact Evaluation**: Focuses on the broader, long-term changes that occur as a result of the project, often looking at societal or systemic effects.
6. **Cost-Benefit Analysis**: Evaluates the project's financial effectiveness by comparing the costs with the benefits derived from it.

Common Methods of Project Evaluation

1. **Quantitative Methods**:

   - **Surveys and Questionnaires**: Structured tools to gather data on the performance and impact of a project, using statistical methods.
   - **Experimental Designs (e.g., Randomized Control Trials)**: Participants are randomly assigned to either a treatment group or control group to determine the causal effects of the project.
   - **Quasi-experimental Designs**: Non-random assignment but uses comparison groups to evaluate project outcomes.
   - **Key Performance Indicators (KPIs)**: Specific metrics used to measure the success of the project in relation to its objectives.

2. **Qualitative Methods**:

   - **Interviews**: In-depth conversations with stakeholders to understand their perceptions and experiences regarding the project.
   - **Focus Groups**: Discussions among a small group of stakeholders or beneficiaries to gather insights on project effectiveness.
   - **Case Studies**: Detailed examination of particular instances within the project to explore its complexity and outcomes.
   - **Observations**: Directly observing project activities and behaviour to gather information on how it operates.

3. **Mixed Methods**:

   - Combines both quantitative and qualitative methods to gain a comprehensive understanding of the project's outcomes and processes.
   - For example, a survey (quantitative) may be followed by focus groups (qualitative) to validate and further explore findings.

Key Steps in Project Evaluation

1. **Define the Purpose and Scope**: Clarify what the evaluation is intended to achieve and the aspects of the project that will be assessed.
2. **Develop Evaluation Questions**: Create specific questions that will guide the evaluation, such as "Did the project meet its goals?" or "What impact did the project have on the community?"
3. **Select the Evaluation Methodology**: Choose appropriate tools and techniques, depending on whether you're evaluating outputs, outcomes, or processes.
4. **Collect Data**: Gather quantitative and qualitative data through surveys, interviews, observations, and other methods.
5. **Analyze Data**: Use statistical or thematic analysis to interpret the data.
6. **Report Findings**: Present evaluation results, often including recommendations for future improvement.

These methods are tailored based on the type of project, the stage of evaluation, and the specific goals and objectives being assessed.

Project monitoring and control

Project management monitoring and controlling means actively reviewing the status of your project as it proceeds, evaluating potential obstacles, and implementing necessary changes.

Monitoring and control processes continually track, review, adjust and report on the project's performance. It's important to find out how a project's performing and whether it's on time, as well as implement approved changes. This ensures the project remains on track, on budget and on time.

Essentially, project controls are a series of tools that help keep a project on schedule. Combined with people skills and project experience, they deliver information that enables accurate decision making. The project control process mainly focuses on:

- Measuring planned performance vs actual performance.
- Ongoing assessment of the project's performance to identify any preventive or corrective actions needed.
- Keeping accurate, timely information based on the project's output and associated documentation.
- Providing information that supports status updates, forecasting and measuring progress.
- Delivering forecasts that update current costs and project schedule.
- Monitoring the implementation of any approved changes or schedule amendments.

Importance of project monitoring and control

Monitoring and control keeps projects on track. The right controls can play a major part in completing projects on time. The data gathered also lets project managers make informed decisions. They can take advantage of opportunities, make changes and avoid crisis management issues.

Put simply, monitoring and control ensures the seamless execution of tasks. This improves productivity and efficiency.

Monitoring and control method

When setting up a project's monitoring and control process, first establish the project baselines. This includes the scope, schedule and budget. Use this information to benchmark the project's progress throughout the lifecycle.

Use a Work Breakdown Structure (WBS) to break a project down into small units of work, or sub-tasks. This makes the work easier to manage and evaluate. This enables easier detection of issues, keeps the project under control and allows for easier progress verification. It also helps prevent team members from feeling overwhelmed.

Project Termination

Some projects might require termination even before they reach the completion stage. During the project termination process, managing project resources, timelines and team members is beneficial to ensure a smooth end of a project. If you are a project manager, understanding how to end a project can help you terminate them properly. In this article, we define what termination of a project is, outline its reasons and types, explain the different categories, outline the steps to end a project, review who can do so and list how companies can prevent it.

What Is Project Termination?

Project termination is the end of a project, regardless of whether the project is complete. Typically, when a project terminates, the resources become unavailable and the senior management might transfer team members to other projects or the company might end their contracts. Terminating a project at the right time is beneficial for companies as it can help save time and money.

Reasons To Terminate A Project

Here are a few reasons to terminate a project:

- **Lack of funding:** Often, a project might end prematurely when the initial estimate of a project is wrong. A client or senior management might terminate a project when the initial cost exceeds the funding cost.
- **Project length:** When projects exceed their initial time frame, it might become costly to complete them because the team requires additional resources. Ending a project

with no definite deadlines allows a company to transfer or reposition employees in other projects.

- **Natural occurrence:** Certain unpredictable natural events can be a reason for terminating a project. Events like earthquakes, floods, tsunamis and hurricanes might prevent project completion due to damage to the project resources.
- **Unrealistic expectations:** A client expects companies to exceed their expectations when completing a project. Terminating such projects can keep the client's expectations more realistic.
- **Failure in the testing process:** A project might fail during the testing process. Rather than spending more energy and resources, project managers might prefer to terminate such projects.

Related: Different Strategies For Acquiring Funding For Startups

Types Of Project Termination

Here are two ways of terminating a project:

Natural termination of projects

Typically, natural terminations of projects occur when a project reaches its end goals and closes naturally. For example, a development team might terminate a project after delivering software to the client. This allows a team to deliver a report, measure the speed and efficiency at which the project progressed and ensure the team can save project files. When a team successfully completes a project, it allows them to close all project needs and transfer to another project or take a rest period before starting another task.

Unnatural termination of projects

The unnatural termination of a project occurs when a project reaches a premature end. Reasons such as the end of funding and change in investors might force a company to terminate a project. For instance, a client might end the contract with a software development company and give the contract to another company that offers greater resources at a lower cost.

Related: What Is An Angel Investor? (Advantages And Disadvantages)

Categories Of Terminating A Project

Here are four categories of terminating a project:

Termination by extinction

Termination of a project by extinction occurs when the client stops a project because it has a successful or unsuccessful outcome. Typically, this termination occurs when the client accepts the final project outcome or when external factors, such as technological advancement or market crises, negatively affect the project's outcome. Another reason a client might terminate a project is because it failed to achieve its goals. When terminating these projects, all project activities stop.

Termination by addition

In termination by addition, if the project is successful, it might get terminated by institutionalising it as a new and formal part of the parent company. This process might result in an added department, subsidiary, entity and division depending upon the project's importance. When termination by addition happens, resources such as materials, equipment and employees transfer to the parent company's newly created entity.

Termination by integration

In termination by integration, the project that a client is terminating either gets integrated into larger projects or becomes an integral part of the ongoing operations of the client's company. As a result, the project loses its purpose and identity as an individual project. Typically, senior management distributes the project resources, such as materials, equipment and employees, among the existing projects of the client's company.

Termination by starvation

Termination by starvation happens because of budget constraints. Such a project terminates because the project team fails to accomplish their goals. Typically, project managers might terminate this project without warning to save cost and embarrassment in front of clients.

How To Terminate A Project?

Terminating a project requires several steps to ensure that project managers notify the right people or departments. Here are a few steps to follow when terminating a project:

1. Provide notice of the project's termination

Regardless of whether the client or senior management is terminating the project, focus on informing the project managers and team members. In addition, explain the reason for termination. Excellent communication helps everyone understand why the project is ending and what the team members and project managers can expect. Give details about why the team could not deliver the final product.

Related: A Step-By-Step Guide On How To Manage Projects (With Tips)

2. Pause all work on the project

Notifying everyone in the company can help you pause the project's progress. This might mean transferring resources to other projects, closing some programmes and removing access to certain tools to prevent any further progress. Putting a pause on all projects' progress helps ensure that the company faces lower financial losses. For example, when a remote employee receives a notice about the end of a project, the company can immediately end their contract, which helps in saving time and money.

3. Focus on the project's resources

The next step is accounting for all the project's resources, including any programmes, tools and physical resources dedicated to the project. Typically, these resources have a financial value and recovering them can help managers use them in the future. When considering the project's resources, focus on comparing the used resources with the original estimate to understand how much the team used in the previous projects and how much remains for the future. This allows the company to create a termination report.

4. Collect project reports and submit relevant documents

The last step in terminating a project includes creating a report that details the project's progress and termination. Before creating the termination report, collecting as much information as possible might be beneficial. Though some clients might not require termination reports, creating a detailed document can help you keep records of each project. Maintaining records of terminated projects can help a company understand why the project failed and what the company can do to prevent future termination.

Who Can Terminate A Project?

Only some people in a company can terminate a project. Here are some people who have the motive and opportunity to end a project:

- **Client:** A client has the power to end the project. As the client has an interest in obtaining project deliverables, they might try every possibility to avoid this termination.
- **Senior management:** The senior management and client might start or accept a project through a contract. This gives senior management the power to decide whether to terminate the project.
- **Investors:** Though investors might only be relevant in some projects, some investors, like venture capitalists, can decide whether to terminate the project. Often, these investors make quick termination decisions.