23CE702 : PROJECT MANAGEMENT

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UNIT – III: Project Finance

- Project Cost Estimation
- Project Financing
- Investment Criteria
- Project Evaluation Techniques
- Payback Period
- Accounting Rate of Return (ARR)
- Net Present Value (NPV)
- Internal Rate of Return (IRR)
- Profitability Index (PI)
- Cash Flow Estimation
- Cost of Capital
- Risk Analysis

Learning Outcomes

- **Learning Outcomes**
- After completing this unit, students will be able to:
- Estimate project costs.
- Identify different financing sources.
- Apply investment evaluation techniques.
- Calculate NPV, IRR, ARR, PI, and Payback Period.
- Estimate project cash flows.
- Understand the cost of capital.
- Analyze project risks.

Project Cost Estimation

- **Introduction to Project Cost Estimation**
- **Definition**
- Project Cost Estimation is the process of forecasting all costs required to complete a project.
- **Importance**
- Budget preparation
- Financial planning
- Investment decision
- Cost control
- Resource allocation

Components of Project Cost

- **Components of Project Cost**
- **Direct Costs**
- Land
- Building
- Machinery
- Materials
- Labor
- **Indirect Costs**
- Administrative expenses
- Insurance
- Taxes
- Utilities
- Interest during construction

Methods of Cost Estimation

- Analogous Estimation
- Parametric Estimation
- Bottom-up Estimation
- Expert Judgment
- Three-point Estimation

Project Financing

- **Definition**
- Project financing is the process of arranging funds for project implementation

- **Sources of Finance**
- **Internal Sources**
- Owner's Capital
- Retained Earnings
- **External Sources**
- Bank Loans
- Debentures
- Venture Capital
- Government Grants
- Equity Shares

Types of Project Finance

- **Types of Project Finance**
- Equity Financing
- Debt Financing
- Public Funding
- Private Investment
- Public-Private Partnership (PPP)

Investment Criteria

Investment Decision Criteria

- Investment decisions are based on:
- Profitability
- Liquidity
- Risk
- Return
- Cash Flow
- Payback

Project Evaluation Techniques

- **Project Evaluation Methods**
- **Traditional Techniques**
- Payback Period
- Accounting Rate of Return (ARR)
- **Discounted Cash Flow Techniques**
- Net Present Value (NPV)
- Internal Rate of Return (IRR)
- Profitability Index (PI)

Payback Period

- **Payback Period**
- **Definition**
- Time required to recover the initial investment.
- **Formula**
- Payback Period = Initial Investment / Annual Cash Inflow

Payback Period

- **Example**
- Investment = ₹10,00,000
- Annual Cash Inflow = ₹2,50,000
- Payback Period = **4 Years**
- **Advantages**
- Simple
- Easy to calculate
- Measures liquidity
- **Limitations**
- Ignores time value of money
- Ignores profits after payback

Accounting Rate of Return (ARR)

- **Accounting Rate of Return (ARR)**
- **Definition**
- Measures average annual profit as a percentage of investment.
- **Formula**
- ARR = (Average Annual Profit / Average Investment) × 100

Accounting Rate of Return (ARR)

- **Example**
- Average Profit = ₹2,00,000
- Average Investment = ₹8,00,000
- ARR = 25%
- **Advantages**
- Simple
- Uses accounting data
- **Limitations**
- Ignores cash flow
- Ignores time value of money

Net Present Value (NPV)

- **Net Present Value (NPV)**
- **Definition**
- NPV is the difference between the present value of cash inflows and outflows.
- **Decision Rule**
- NPV > 0 → Accept
- NPV = 0 → Indifferent
- NPV < 0 → Reject

NPV Example

- **Example**
- Initial Investment = ₹50,000
- Present Value of Cash Inflows = ₹65,000
- NPV = ₹15,000
- Since NPV is positive, the project is accepted

Internal Rate of Return (IRR)

- **Internal Rate of Return (IRR)**
- **Definition**
- IRR is the discount rate at which NPV becomes zero.
- **Decision Rule**
- IRR > Cost of Capital → Accept
- IRR < Cost of Capital → Reject

Advantages of IRR

- **Advantages**
- Considers time value of money
- Easy comparison of projects
- Widely accepted
- **Limitations**
- Multiple IRRs possible
- Complex calculation

Profitability Index (PI)

Profitability Index

- **Formula**
- PI = Present Value of Future Cash Flows / Initial Investment
- **Decision Rule**
- PI > 1 → Accept
- PI = 1 → Neutral
- PI < 1 → Reject

Profitability Index

- **Example**
- PV of Cash Inflows = ₹1,20,000
- Investment = ₹1,00,000
- PI = 1.20
- Project is accepted.

Cash Flow Estimation

- **Cash Flow Estimation**
- **Definition**
- Cash flow estimation predicts future cash inflows and outflows of a project.
- **Components**
- Cash Inflows
- Sales Revenue
- Salvage Value
- Cash Outflows
- Operating Cost
- Maintenance Cost
- Taxes

Cost of Capital

Cost of Capital

- **Definition**
- Cost of capital is the minimum rate of return expected by investors.
- **Types**
- Cost of Equity
- Cost of Debt
- Cost of Preference Shares
- Weighted Average Cost of Capital (WACC)

Risk Analysis

Project Risk Analysis

- **Definition**
- Risk analysis identifies and evaluates uncertainties affecting project success.
- **Types of Risks**
- Financial Risk
- Market Risk
- Technical Risk
- Operational Risk
- Legal Risk
- Environmental Risk

Risk Management Process

- Risk Identification
- ↓
- Risk Assessment
- ↓
- Risk Prioritization
- ↓
- Risk Mitigation
- ↓
- Monitoring

Risk Mitigation Strategies

- **Risk Mitigation Strategies**
- Insurance
- Diversification
- Contingency Planning
- Quality Control
- Regular Monitoring
- Training

Summary

- **Summary**
- **Key Concepts Covered**
- ✓ Project Cost Estimation
- ✓ Project Financing
- ✓ Investment Criteria
- ✓ Payback Period
- ✓ Accounting Rate of Return
- ✓ Net Present Value
- ✓ Internal Rate of Return
- ✓ Profitability Index
- ✓ Cash Flow Estimation
- ✓ Cost of Capital
- ✓ Risk Analysis