Capital Budgeting Part I

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Module Objectives

- To understand & appreciate following relationships
  - Resource Mobilization Strategy (RMS) & change in financial health (Value Addition)
  - Fundamental economics, Investment Strategy (IS) & Resource Mobilization Strategy (RMS)
Module Objectives - Contd

- Investment Strategy (IS), Operational Strategies & Capacity Utilization
- Investment Strategy (IS), Cost Structure, Cost Behavior & Actual Economics
- Timings of Cash Flows & Financial Health
- Growth of Demand, Investment Strategy(IS) & Financial Health
Module Objectives - Contd

- Be able to ascertain financial, economic & social value of an investment opportunity.
- Be able to simulate values of capital budgeting options and formulate optimal capital budget which maximizes value for stakeholders.
Module Objectives - Contd

- Be able to formulate supportive strategies in the areas of resource mobilization, project management, operations, marketing and performance evaluation to ensure results as per plan.

- Be able to formulate project with balanced asset mix to ensure capacity optimization (minimum bottlenecks)
Role of Corporate Finance

• Maximize shareholders value by
  ➢ In-depth appraisal of Investments proposals to ensure that projects with positive NPV are selected
  ➢ Resource mobilization at minimum cost of capital with suitable hedging arrangements
  ➢ Cost controls to minimize cash outflows during construction & operation period
  ➢ Working capital Management
Role of Public Finance

- Ensure net contribution to national exchequer from commercial enterprises
- Enhance internal surplus to finance investment requirements for realizing corporate objectives.
- Ensure delivery of services at minimum cost to customers, all of them being owners also within the parameters of corporate viability.
Role of Public Finance – contd.

- Expenditure controls in non-remunerative activities to ensure prudent use of public funds
- Ensure expenditure as per public policy and parliamentary sanctions.
- Meet out the objection of statutory audits.
- Render financial advice to administration including investments.
Resource Allocation Issues

- Which projects should be accepted?
- How should the productivity (Financial, Economic & Social) of capital be measured?
- Should we focus on investments that reduces cost/improve profit or add capacity?
- What should be mix of cost reducing/profit improving and capacity creating investments?
Resource Allocation Issues - contd

- What happens to the risk complexion of the firm if investment under consideration is accepted?
- What would happen to the competitive position of the firm if the project under consideration is accepted?
Need for objective investment Analysis & Appraisal

- To right size projects to bare minimum functional utility to avoid wastages in buildings /other assets.
- Cost of project (cash out flows) has been realistically estimated after actual field survey with regards to:
  - Quantity
  - Rates
  - Implementation Schedule as per demand growth pattern
Need for objective investment
Analysis & Appraisal--contd

- Escalation during construction period.
- Interest during construction period.
- Contingencies

- To ensure that various inputs of the cost of production and other overhead costs (cash outflows) have been realistically estimated.
Need for objective investment Analysis & Appraisal--contd

- To ensure correctness of estimates of sales with regards to
  - Quantity
  - Price
  - Timings
- To ensure productivity of capital (Profit potential of the project) has been correctly estimated.
Ascertain expected cost of capital under various financing models

- Total grant from state budget Budgetary Constraints.
- Part grant and part interest bearing capital from state budget. (Budgetary constraints due to demand of other sectors like education, health, Law & Order).
Need for objective investment
Analysis & Appraisal--contd

- Plan Resource mobilization strategy depending upon nature of the project i.e. profit and risk potential of the project and its economic & social contribution
  - Part budgetary support and part private funding (Capital market) - Private participation
  - Domestic markets
  - International markets
  - Total Funding from private sector with full risk expense for bankable projects.
Need for objective investment
Analysis & Appraisal--contd

- Drop optional projects unless they are bankable/viable to be financed from private equity/debt.
- Accept projects in order of profitability taking into account resources available
Need for objective investment Analysis & Appraisal--contd

- 100% of private participation with full risk exposure.
- Private participation through debt capital with full govt. guarantee (No risk)
- Equity participation by private sector in part with risk sharing arrangements.
- Private equity/debt with no risk (payment of access charges as annuity of investment (including profit))
Need for objective investment
Analysis & Appraisal--contd

- Total state funding
- Total state funding but operation and management of private sector on lease rentals.
  - Investment deferment plan to ensure demand generation as anticipated.
  - Assess contingent liabilities of the Govt. realistically in respect of projects viable on socio-economic considerations.
  - Unmask demand risks and enter into buy-purchase agreements.
Need for objective investment Analysis & Appraisal--contd

- Identify corporate strategies to ensure realization of cash flows as estimated in the areas of
  - Marketing to realize sales forecast.
  - Risk Management to minimize the negative impact on cash flows.
  - Partnership with private sector
Need for objective investment
Analysis & Appraisal--contd

- Unbundling and privatization/Corporatization
- Cost controls
- Takeovers/mergers etc.
- Long term financial planning
Project Beneficiaries

- Direct
- Indirect
Direct Project Beneficiaries

- Investors promoters (Return of equity)
- Creditors (Interests on loans)
- Employees (Wages, bonus, housing, facilities)
- Customers (better services/products at cheaper cost)
- Govt (Increase tax receipts)
Indirect Project Beneficiaries

- Economy
- Society
Types of Socio-Economic Benefits

- Increase in household income due to
  - More employment due to increased agricultural activity, industrial & service.
  - Increase in productive man days due to reduction in traveling time and reduction in incidence of sickness.
  - Saving in expenditure on drugs etc. due to less pollution.
Types of Socio-Economic Benefits--contd

- Increase in dividends, interests on deposits etc.
- Availability of cheaper products/services.
- Optimum utilization of resources (Fuel, industrial capacity)
- Increase in tax receipts to Govt.
- Improved productivity in agriculture industry, and service sector.
- Increase corporate savings due to better capacity utilization
Types of Socio-Economic Benefits -- contd

- Increase domestic income leads to
  - Increase in demand of goods and services
  - Increase in tax receipt of Govt.
  - Better quality of life
  - Increase in domestic net savings.
  - Increase in investments
  - Faster Economic development
  - Faster Area development
Social Benefits

- Reduction in pollution
- Rural connectivity due to irrigation canal roads
- Development due to better connectivity
- Increased social interaction
Pollution Control Benefits

- Reduction in respiratory disease
- Reduction in exp on drugs
- Improvement in productive man days
- Improvement in house hold income/savings
Nature of Costs / Benefits

- Easily quantifiable
- Difficulty to quantify
- Non quantifiable
Analysis & Appraisal Methods

- Financial Analysis & Appraisal (quantifiable)
- Economic Analysis & Appraisal (Quantifiable)
- Social cost benefit Analysis & Appraisal of difficult to quantify & not quantifiable costs/benefits- only qualitative assessment to be done and decision taken.
Social cost benefit analysis & appraisal
- Evaluate cost and benefits of difficult to quantify factors associated with projects & Attempt to assign values to these variables
- See whether they could change NPV
- Qualitative assessment of not quantifiable costs/benefits
- Be cautious
Cycle of Value

- Investment/ Grant by Govt/Payment to private parties
- Recovery through increased taxation due to higher economic growth
- Time lag between project investment and increase in tax revenues.
- Gap to be filled by private investment on assured annuity/lease payments by Govt. to private party
- Economic development has to be pushed
Time Value of Money

**Time value of Money** - Why important?

- A rupee today is more valuable than a rupee after one year because
  - Current consumption preferred over future consumption.
  - Productivity of capital - rupee invested/employed in the period (one year) generate positive return. Rs.1.00 will become \((1+r)\) if \(r\) is annual rate of return.
  - In inflationary time a rupee today has more purchasing power than after one year.
Pattern of Cash Flows-Issues

- Cash flows occur at different times
- Cash flows (inflows, outflows and net) have to be brought to the same reference point for aggregation and comparison of likes.
- Usage of concept of time value of money and techniques of discounting essential for Valuation of securities & Projects
Time Line

- Cash flow streams of Rs.10,000/- at the end of each of 5 years
  - 0 12% 1 12% 2 12% 3 12% 4 12% 5 12%
  - 10,000 10,000 10,000 10,000 10,000

0 = present time

- No discounting required in zero year as it is already at present value
Notions used

- PV = Present value
- \( FV_{n,r} \) = Future value \( N \) year hence
- \( Ct \) = Cash flow occurring at the end of the year
- \( A \) = A stream of constant periodical cash flows over a given time
- \( r \) = Interest/cost of capital or discount rate
- \( n \) = a number of periods over which cash flow occurs
(1+r)^n = Future value interest factor

Future value of a single amount can be shown as
- FV_{n,r} = PV(1+r)^n
- Consult future value interest table
- Assumption - Each interest payment due is reinvested to earn future interest.

• Present value of a single amount can be shown as
  PV = FV_n \{1/(1+r)^n\}

• Present value of uneven series can be shown as
  PV_{r,n} = A_1/(1+r) + A_2/(1+r)^2 + \cdots + A_n/(1+r)^n
  (PV_{r,n} = Present value of cash flow stream)
Future value of annuity

- Constant cash flow occurring at regular intervals e.g. premium of LIC
- $FV_{An} = A(1+r)^{n-1} + A(a+r)^{n-2} + \ldots + A$
- $= A \left\{ \frac{(1+r)^{n-1} - 1}{r} \right\}$
Applications

- To know the maturity value of recurring bank deposit at the end of the period.
- To know the accumulated amount in PF if $x$ amount is deposited for 30 years @ $y$ % interest rate
- How much to save annually if we want to buy a house for Rs. 20 lakhs after five years @interest rate of 12 %

FVIFA $n=5$, $r=12$ = $(1.12)^5-1$

\[
\frac{\text{\text{----------}}}{0.12} = 6.353
\]

Annual saving Rs.20 lakhs /6.353=Rs.3,14,882
Present value of Annuity

- $P V_{r,n} = A/(1+r) + A/(1+r)^2 + \cdots - A/(1+r)^n$
- $= A\left\{1 - 1/(1+r)^n\right\}/r$

Applications

- How much to borrow for a car if annual saving is Rs.\(x\)?
- Find maturity period of a loan given annual payment at a given interest rate
Present value of Annuity--contd

- Short (Less than a year) discount period
- \[ \text{PV} = \text{FV}_n \left[ \frac{1}{(1+r/m)} \right]^{mn} \]
- PV=Present value
- FVn=Cash flow after \( n \) years
- M=number of time per year for which discounting to be done
- R=Annual discount rate
Value is the fair price at which an asset can be bought/sold without any influence or coercion in an efficient market. It can be of the following types.

- **Liquidation value** - Amount that than be realized when an asset/group of assets is sold separately from the operating organisation.
- **Going concern value** - Amount that can be realised if the firm is sold as going concern.
Concept of value--contd

- Book Value (BV)- it is accounting value i.e. historical cost less accumulated depreciation or amortization

- Market Value (MV)- It is price at which asset is traded in the market - for profitable company MV>BV
Intrinsic Value (IV)- It is present value of cash flow stream expected from the said asset discounting at the rate appropriate to the risk associated with it. It is also called economic value.

- In a efficient market MV=IV

- Valuation exercise seeks to ascertain intrinsic value