



Calicut University



COURSE

BBA



SEMESTER

2



SUBJECT

FINANCIAL MANAGEMENT



MODULE

3



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MODULE 3: INVESTMENT DECISIONS

9. Capital Budgeting process, Investment Evaluation Techniques

Meaning of Capital Budgeting

Capital budgeting is the process of evaluating and selecting long term investment projects. Businesses use capital budgeting when investing in projects such as new factories, machinery, technology, expansion, or product development.

These decisions are important because they involve large investments and affect the business for many years.

The main objective is to select projects that increase the value and profitability of the firm.

Features of Capital Budgeting

Capital budgeting involves large amounts of money.

The benefits are received over a long period.

The decisions are usually difficult to reverse.

Incorrect investment decisions may lead to losses and financial problems.

Capital Budgeting Process

Identification of Investment Opportunities

The business identifies possible investment projects.

Examples include expansion, replacement of old machinery, or launching new products.

Estimation of Cash Flows

Expected inflows and outflows from the project are estimated.

This includes revenue, operating costs, taxes, and salvage value.

Evaluation of Investment Proposals

Different techniques are used to evaluate profitability and risk.

Selection of Project

The project with the best financial performance and acceptable risk is selected.

Implementation

After approval, the project is executed.

Performance Review

Actual results are compared with expected results to evaluate project success.

Investment Evaluation Techniques

Investment evaluation techniques help businesses compare projects and make rational investment decisions.

The major techniques include:

Net Present Value

Profitability Index

Internal Rate of Return

Modified Internal Rate of Return

Payback Period

Discounted Payback Period

Accounting Rate of Return

Some techniques consider the time value of money while others do not.

Methods that consider time value are generally considered more accurate.

10. Net Present Value

Meaning of Net Present Value

Net Present Value, or NPV, measures the difference between the present value of cash inflows and the present value of cash outflows.

It is one of the most important capital budgeting techniques because it considers the time value of money.

Formula:

$$NPV = \sum \frac{CF_t}{(1+r)^t} - \text{Initial Investment}$$

Where:

CF_t = Cash flow in each period

r = Discount rate

t = Time period

Decision Rule

If NPV is positive, the project is accepted.

If NPV is negative, the project is rejected.

If NPV is zero, the business is indifferent.

A positive NPV means the project is expected to increase shareholder wealth.

Explanation

Future cash inflows are converted into present value using a discount rate.

The initial investment is then deducted.

NPV directly measures the increase in business value created by the project.

Problem

Initial investment = ₹50,000

Cash inflow after one year = ₹60,000

Discount rate = 10%

Find NPV.

Solution:

Present value of inflow:

$$PV = \frac{60000}{1.10}$$

$$PV \approx 54545$$

Now calculate NPV:

$$NPV = 54545 - 50000$$

$$NPV = 4545$$

$$NPV = ₹4,545$$

Since NPV is positive, the project is financially acceptable.

11. Profitability Index

Meaning of Profitability Index

Profitability Index, or PI, measures the relationship between present value of future cash inflows and the initial investment.

It helps businesses compare projects when investment funds are limited.

Formula

$$PI = \frac{\text{Present Value of Cash Inflows}}{\text{Initial Investment}}$$

Decision Rule

If PI is greater than 1, the project is accepted.

If PI is less than 1, the project is rejected.

A higher PI indicates better profitability.

Explanation

Profitability Index shows how much value is created for every rupee invested.

It is useful when businesses must choose among several investment projects.

Problem

Present value of cash inflows = ₹1,20,000

Initial investment = ₹1,00,000

Find PI.

Solution:

$$PI = \frac{120000}{100000}$$

$$PI = 1.2$$

Profitability Index = 1.2

Since PI is greater than 1, the project is acceptable.

12. Internal Rate of Return

Meaning of Internal Rate of Return

Internal Rate of Return, or IRR, is the discount rate at which the Net Present Value of a project becomes zero.

It represents the expected rate of return generated by the investment.

Formula Concept

At IRR:

$$NPV = 0 \text{ or } NPV = 0$$

This means:

Present value of inflows equals present value of outflows.

Decision Rule

If IRR is greater than the required rate of return or cost of capital, the project is accepted.

If IRR is lower, the project is rejected.

Explanation

IRR helps businesses compare project profitability with financing cost.

A higher IRR generally indicates a more profitable project.

Problem

Initial investment = ₹10,000

Annual cash inflow = ₹5,000 for 3 years.

The discount rate that makes NPV zero is approximately 23%.

Therefore:

IRR \approx 23%

If the company's required return is below 23%, the project may be accepted.

13. Modified Internal Rate of Return

Meaning of Modified Internal Rate of Return

Modified Internal Rate of Return, or MIRR, is an improved version of IRR.

It assumes that positive cash inflows are reinvested at the company's cost of capital rather than at the IRR itself.

This makes MIRR more realistic and reliable.

Importance of MIRR

It avoids some limitations of traditional IRR.

It provides more accurate evaluation when projects have irregular cash flows.

It reduces confusion caused by multiple IRRs.

MIRR compares:

Present value of cash outflows

Future value of reinvested cash inflows

The resulting rate becomes the modified return of the project.

14. Payback Period, Discounted Payback Period, Accounting Rate of Return

Payback Period

Payback period measures the time required to recover the initial investment from project cash inflows.

Formula

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

Explanation

Businesses prefer shorter payback periods because investments are recovered faster.

This method is simple and useful for measuring liquidity risk.

However, it ignores the time value of money and cash flows after payback.

Problem

Initial investment = ₹2,00,000

Annual cash inflow = ₹50,000

Find payback period.

Solution:

$$\text{Payback Period} = \frac{200000}{50000}$$

$$\text{Payback Period} = 4 \text{ years}$$

Discounted Payback Period

Discounted payback period is similar to payback period but considers time value of money.

Cash inflows are first discounted to present value before calculating recovery period.

This method is more accurate than the traditional payback method.

Accounting Rate of Return

Accounting Rate of Return, or ARR, measures average accounting profit as a percentage of investment.

Formula

$$ARR = \frac{\text{Average Annual Profit}}{\text{Average Investment}} \times 100$$

Explanation

ARR focuses on profitability rather than cash flows.

It is easy to calculate using accounting data.

However, it ignores the time value of money.

Problem

Average annual profit = ₹40,000

Average investment = ₹2,00,000

Find ARR.

Solution:

$$ARR = \frac{40000}{200000} \times 100$$

$$ARR = 20\%$$

Accounting Rate of Return = 20%

15. Risk Analysis in Capital Budgeting- Sensitivity Analysis, Scenario Analysis, Monte Carlo Simulation.

Meaning of Risk in Capital Budgeting

Risk refers to the possibility that actual project returns may differ from expected returns.

Future cash flows are uncertain because of market conditions, competition, inflation, and economic changes.

Businesses analyze risk before investing in major projects.

Sensitivity Analysis

Sensitivity analysis studies how changes in one variable affect project profitability.

Variables may include:

- Sales volume
- Cost
- Price
- Interest rate

The objective is to identify which factors have the greatest impact on project success.

Example

If raw material cost increases by 15%, the business studies how much NPV or profit changes. Projects highly sensitive to small changes are considered riskier.

Scenario Analysis

Scenario analysis evaluates project performance under different situations.

Usually three scenarios are considered:

- Best case
- Normal case
- Worst case
- Explanation

Businesses estimate possible cash flows under each situation and compare results.

This helps management prepare for uncertainty and market fluctuations.

Monte Carlo Simulation

Monte Carlo Simulation is a statistical method used to analyze risk using probability and repeated random calculations.

Instead of using one single estimate, the model generates many possible outcomes.

It helps businesses understand the probability of different project results.

Importance

It provides more detailed risk analysis.

It is useful in large and complex investment projects.

It improves decision making under uncertainty.

Numerical Illustration

Suppose expected annual sales are ₹10,00,000.

Possible outcomes:

Best case: ₹14,00,000

Normal case: ₹10,00,000

Worst case: ₹6,00,000

Scenario analysis helps evaluate how project profitability changes under each situation.

16. Understanding the role of working capital in business, Factors

Meaning of Working Capital

Working capital refers to funds used for day to day business operations.

It is the difference between current assets and current liabilities.

Formula

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

Current assets include cash, inventory, and receivables.

Current liabilities include short term loans, creditors, and outstanding expenses.

Importance of Working Capital

Working capital ensures smooth daily operations.

It helps businesses pay wages, suppliers, utility expenses, and short term obligations.

Adequate working capital improves liquidity and business stability.

Insufficient working capital may create operational difficulties and delay payments.

Excessive working capital may result in inefficient use of funds.

Factors Affecting Working Capital :

Nature of Business

Trading businesses usually require less working capital compared to manufacturing firms.

Size of Business

Large businesses generally require more working capital.

Production Cycle

Long production cycles increase working capital requirements.

Credit Policy

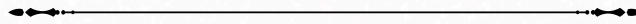
Businesses giving longer credit periods to customers need more working capital.

Seasonal Fluctuations

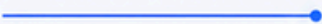
Seasonal businesses may require additional working capital during peak periods.

Business Growth

Rapidly growing businesses often require more funds for operations and inventory management.



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