6th Semester BCOM Finance

Calicut University

FINANCIAL MANAGEMENT

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SYLLABUS

Lecture hours per week: 5
Total credits: 4

Module - 1

Introduction: Nature, scope and objectives of financial management - Time value of money and mathematics of finance concept of risk and return

10 Hours

Module - II

Investment Decision: Capital budgeting process - Estimation of relevant cash flows - Payback period method, Accounting rate of return, Net present value, Net terminal value, Internal rate of return, Profitability index. Capital budgeting under risk - certainty equivalent approach and risk adjusted discount rate.

20 Hours

Module - III

Financing Decision: Cost of capital and financing decision - Estimation of components of cost of capital - Equity capital, Retained earnings, Debt and preference capital - Weighted average cost of capital and marginal cost of capital - Sources of long term capital - Capital structure, Operating and financial leverage, determinants of capital structure.

20 Hours

Module - IV

Dividend Decision: Dividend decision - Relevance and irrelevance of dividend decision - Cash and stock dividends - Dividend policy in practice.

10 Hours

Module V

Working Capital Management: Meaning and nature of working capital - Determination of working capital requirement -A brief overview of Cash management, Inventory management, and Receivables management.

15 Hours

(Theory and Problems may be in the ratio of 50% and 50% respectively)

Module 1

Introduction to financial management

Meaning and definition of business finance /finance function

Finance is the art and science of handling money.It is the management of flows of money through an organization. Finance may be defined as the provision of money at the time it is needed.

Definition

According to RC Osbor "finance function is the process of acquiring and utilising funds by a business"

Approaches of financial management

- First approach

This approach is concerned with only procurement of raising funds. This is a narrow approach

- Second approach

The term finance can be defined as the management of the flows of money through an organisation, whether it will be corporation, school, bank or govt agency.it is broad approach.

- Third approach

According to this approach, finance function or business function is concerned with procurement of funds and effective utilisation in the business.

The management of the finances of a business / organisation in order to achieve financial objectives

- Create wealth for the business
- Generate cash
- Provide an adequate return on investment

Process of financial management

- Financial planning
- Financial control

- Financial decision making

Nature of finance or finance function

- Finance function is related to overall management of an organisation
- Finance function is related to other functions of management
- Finance function is necessary for all types of business organisations
- Finance function is important for the survival and growth of a firm
- Finance function is organized differently in different organizations
- Finance function is different from accounting function
- Finance function is influenced both by external needs and management considerations

Functions of finance (areas of finance function)

- Investment decision
- Financing decision
- Dividend decision
- Liquidity decision

Meaning and definition of financial management

Financial management is that managerial activity which is concerned with the planning and controlling of the firm's financial resources. In other words it is concerned with acquiring, financing and managing assets to accomplish the overall goal of a business enterprise (mainly to maximise the shareholder's wealth).

Definition

According to P.G Hastings "financial management is the art of raising and spending money "

Nature or characteristics of financial management

- Management of money
- Financial planning and control
- Determination of business success
- Focus on decision making
- Centralised in nature
- Continuous administrative function

- Multi-disciplinary

Importance of financial management

- Successful promotion
- Smooth running of the business
- Co-ordination of functional activities
- Decision making
- Determinant of business success
- Solution to financial problems

Objectives or goals of financial management

Financial objectives

- Maximisation of profit

According to Milton Friedman," the business of business is business"

The aim of financial management is to earn the maximum rate of profits on capital employed.

Advantages of Profit Maximisation:

(a) Profit is the standard for measuring

(b) Profit is essential for survival the success or efficiency of a business enterprise.

(c) Social welfare is achieved through profit maximisation. According to Adam Smith "Businessman in order to fulfil their profit motive in turn benefits the society as well".

(d) Maximum profit means maximum return to shareholders.

(e) Maximum profit enables to set aside sufficient funds for future expansion

(f) Profit attracts investors to invest their savings in securities.

Criticisms of Profit Maximisation

(a) Future is uncertain. Hence, profit cannot be ascertained well in advance as it is not possible to maximise what is unknown.

(b) The decision-maker may not have enough confidence in the estimates of future returns so that he does not try further to maximise.

(c) This approach is completely silent on the timing of profits to be maximised.

(d) It leads to exploiting workers and consumers.

(e) It attracts cut-throat competition.

(f) It does not take into consideration the welfare of the society.

(B) Maximisation of Wealth

According to Solomon Ezra, the ultimate goal of the financial management is maximisation of owners' wealth. The concept of shareholder wealth maximisation was introduced by David Durand and Lutz in 1952. Maximisation of wealth means maximisation of market price per share in the long run.

Advantages of Wealth Maximisation:

(a) The net effect of investment and benefits can be measured clearly.

(b) It considers time value of money.

(c) It is universally accepted because it takes care of the interests of financial institutions, employees and the public at large.

(d) It guides the management in framing a suitable dividend policy.

(e) It considers the impact of risk factor.

(f) It focuses on the long term growth and development of an organisation.

(g) It ensures that the resources of an organisation have been used effectively to accomplish the objectives of the organisation.

Criticisms of Wealth Maximisation

(a) It is not descriptive of what firms actually do.

(b) The concept of increasing the wealth of the shareholders differs from company to company.

(c) It leads to confusion and misinterpretation of financial policy, i.e., whether to increase the wealth of shareholders or other interested groups such as debenture holders, preference shareholders etc.

(d) It is not socially desirable.

(e) It is also profit maximisation. It is the indirect name of profit maximisation.

(f) It is useful only in large organisations. Small organisations have limited financial resources. So they prefer to maximise their profit first.

Difference between wealth maximisation and profit maximisation

Wealth maximization	**Profit maximisation**
1. Long term objective,	1. Short term objective
2. Aims at maximising the wealth of the share holders	2. Aims at maximising profit of the organisation
3. Measures the financial stability of the organisation	3. Measures the effectiveness of the organisation.
4. Considers the time value of money.	4. Does not consider the time value of money.
5. Involves directly in increasing EPS.	5. Does not directly involve in increasing EPS.
6. It considers society.	6. It ignores society,
7. It is a modern approach.	7. It is a traditional approach.
8. It considers the risk factor,	8. It ignores the risk factor.

(C) Value Maximisation

The total value of an organisation comprises of all the financial assets, such as equity, debt, preference shares and warrants. When the value of shares of an organisation increases in the market, its total value will increase.

The prime goal of an organisation is to maximise the market value of its equity shares. The value of equity shares acts as a benchmark to measure the performance of the organisation.

Non-financial objectives

- Enhance employee satisfaction welfare
- Enhance management satisfaction
- Promote well-being of society
- Provide quality services to customers

Scope of financial management

- Traditional approach

Scope of Financial management was treated in the narrow sense of procurement of funds by corporate enter to meet their financial needs.

- Transitional approach

In this approach it greater emphasis was being placed on the day to day problems faced by financial managers in the areas of funds analysis, planning and control.

- Modern approach

According to the modern approach, the finance function covers both acquisitions of funds as well as their allocations. According to this approach financial management covers three broad areas namely,

- Investment decision
- Financing decision
- Dividend policy decision

According to Dr.S.C.sexena, the scope of financial management includes following five A's

- Anticipation
- Acquisition
- Allocation
- Appropriation
- Assessment

Functions of finance manager/financial management

A. Executive or managerial functions

- Financial forecasting and planning
- Procurement of funds
- Investment decision
- Management of income
- Management of cash
- Deciding upon borrowing policy
- Negotiations for new financing
- Analysis and appraisal of financial performance
- Advising the top management
- Co-ordination and control
- Helping in valuation decisions
- Tax administration
- Risk management
- Miscellaneous functions

B. Routine function

- Record keeping and reporting
- Preparation of financial statements
- Managing cash balance
- Cash planning and credit management
- Safeguarding the valuable papers, securities, insurance policies etc.
- Providing top management with information on current and prospective financial conditions of the business.

Time value of money and mathematics of finance

The time value of money (TVM) is the concept that money you have now is worth more than the identical sum in the future due to its potential earning capacity.

Money has time value because of the following reasons

- Uncertainty and risk
- Preference for present consumption

- Opportunity for investment
- More purchasing power

Techniques of time value of money

- Compounding value concept(compounding technique)

It is used to find out the future value (FV) of present money.

Future value of a single present cash flow:

$$A = P (1+r)^{n}$$

A=amount at the end of the period
P=principal at the beginning of the period
r=rate of interest
n=number of years

Multiple compounding periods (non-annual compounding)

$$A = P (1+r/m)^{m \times n}$$

m = number of times for which compounding is to be done in a year

Doubling period

According to rule 72, the doubling period calculated as follows

$$\text{Doubling period} = \frac{72}{\text{Rate of interest}}$$

According to rule 69, the doubling period calculated as follows

$$\text{Doubling period} = 0.35 + \frac{72}{\text{Rate of interest}}$$

Effective and nominal rates of interest

$$EIR = (1+r/m)^{m-1}$$

EIR=effective interest rate
r = nominal rate of interest
m= number of times compounding is done in a year

Future value of a series of equal cash flows or annuity of cash flows

$$FV_a = A\left[\frac{(1+r)^n-1}{r}\right]$$

Compound value of annuity due

$$FV_a = A\left[\frac{(1+r)^n-1}{r}\right] \times (1+r)$$

- Discounting or present value technique

This means we calculate the present value of future sum.

PV of single future sum

$$PV = \frac{P}{(I+r)^n}$$

PV=present value or discount sum
P=principal amount or cash flow(or C)
r= rate of interest (or discount rate)
n = number of years

Present values of a series of future cash flows

$$PV= \frac{P_1}{(I+r)} + \frac{P_2}{(I+r)^2} + \frac{P_3}{(I+r)^3} \ldots\ldots\ldots\ldots + \frac{P_n}{(I+r)^n}$$

P_1, P_2, P_3=Principal Amount Or Cash Flows After Period 1, 2, 3 Etc
r =discount rate
n=no of years

Risk and return

Risk

Risk is defined as the possibility of the actual return being different from the expected return on an investment over the period of investment

Types of risk

1. Systematic risk: this is non diversiable risk.it arises due to factors like economic, sociological, and political etc. All these factors have bearing on the entire market.

- Market risk
- Interest rate risk
- Purchasing power risk.

2. Unsystematic risk: this is diversifiable risk.it arises due to factors peculiar to a particular firm such as labour strike, change in management, change in demand and product etc.

- Business risk
- Financial risk

Return

Risk is the chance or probability that a certain investment may or may not deliver the actual/expected returns.

Measurement of the return

- Profit approach
- Income approach
- Cash flow approach
- Ratio approach

Relationship between risk and return

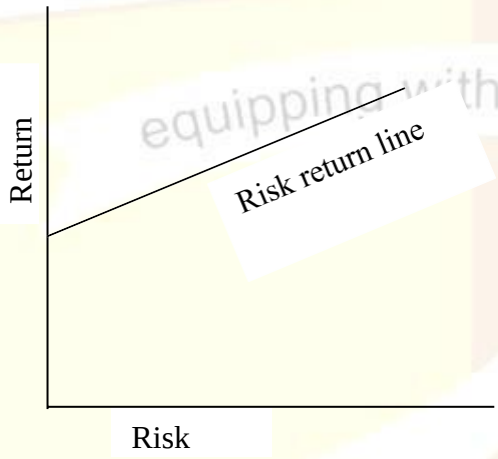
Risk and return are the two sides of a coin. Both are go together. Both are positively correlated

It means that a high return is normally associated with a high risk and low return with low risk.

Return=risk free return + risk premium

Risk free rate is a compensation o reward for time and risk premium

Risk premium means premium for business risk



Risk –return trade off

A particular combination where both risk and return are optimised is known as risk-return trade off.

Areas of financial decision making involving risk return relationship

- Capital budgeting
- Working capital management
- Cost of capital
- Dividend decision

Module 2

Investment Decisions/Capital Budgeting

Meaning of capital budgeting

Capital budgeting simply means investment decisions.It is the process of allocating the resources of the organisations in the long term investment projects to generate profits.

Definition

According to Charles .T.Horngren "capital budgeting is long term planning for making and financing proposed capital outlays"

Features or nature of capital budgeting

- Funds are invested in long term activities
- It involves large outlays
- Current funds are exchanged for future benefits
- The benefits are expected over a number of years in future
- It involves a high degree of risk
- Capital budgeting decisions are irreversible
- Gestation period is long
- On account of high initial cost and long gestation period, firms face long run consequences. This affects the firm's profitability

Role and importance of capital budgeting

- Huge investment
- Long term implications
- Irreversible decisions
- Greater risk and uncertainty
- Capital budgeting decisions affect the rate of growth of a firm.
- Impact on firm's competitive strength
- Most difficult decisions
- Cost control
- Wealth maximisation

- Economic and social consequences because of large size

Limitations of capital budgeting

1. The benefits from investments are received in future. These are uncertain. Therefore, an element of risk is involved. Uncertainty and risk is the biggest problem in capital budgeting
2. Some factors affecting investment proposals cannot be expressed in money value.

3. It is difficult to estimate the period for which investment is to be made and income will generate

4. It is difficult to estimate the rate of return because future is uncertain . Some factors such as employees' morale, firm's goodwill etc. influence capital budgeting decisions. But these factors cannot be quantified. Hence, these factors cannot be incorporated in capital budgeting.

5. It is difficult to estimate the cost of capital.

6. If the capital budgeting decisions go wrong, it may create serious consequence on the firm's liquidity, profitability etc.

Steps in Capital Budgeting (Capital Budgeting Process)

- Project generation
- Project screening
- Project evaluation
- Project selection
- Project execution and implementation
- Performance review

Considerations in determining cash flows

- Cash flows or accounting profit
- Incremental cash flows
    - Sunk costs
    - Opportunity cost
    - Time value of money and inflations
    - Working capital
- Effect of taxes

- Effect of depreciation
- Proceeds from sale of asset
- Effect of overhead costs and other indirect expenses

Types of cash flows

- Initial cash flow(initial investment): It is the investment required for beginning a new project
- Net annual cash inflows or operating cash flows: The initial investment is expected to generate a series of cash inflows in the form of benefits or returns from the project. Operating cash flows can occur by two means
  - Additional revenue
  - Cash saving in operations
- Terminal cash flows: It is the cash inflows for the last or terminal year of the project.

Profitability statement

Annual cash inflows may be calculated by preparing a profitability statement

- In revenue increasing decisions

	Rs
Annual sales revenue	xxx
Less : operating expense including depreciation	xxx
Income before tax	xxx
Less : income tax	xxx
Net income after tax	xxx
Add : depreciation	xxx
Net cash inflows	xxx

- In cost reduction decisions

	Rs
A .*Estimated savings*	
Estimated savings in direct wages	xxx
Estimated savings in scrap	xxx
Total savings(a)	xxx
B. *Estimated additional costs*	
Additional cost of maintenance	xxx
Additional cost of supervision	xxx
Add :cost of indirect material	xxx
Additional depreciation	xxx
Total additional costs(b)	xxx
Net savings before tax (a-b)	xxx
Less : income tax	xxx
Net savings after tax	xxx
Add :additional depreciation	xxx
Cash inflows	xxx

Other information required for capital budgeting decisions

- Required rate of return
- Economic life of the project
- Available funds
- Risk of obsolescence

Investment appraisal methods (methods or techniques of capital budgeting)

1. **Non discounting techniques or traditional methods**
   - Urgency method
   - Pay back method
   - Average rate of return method
2. **Discounting criteria or modern methods**
   - Discounted pay back method
   - Net present value method

- Benefit cost ratio
- Internal rate of return
- Net terminal value method

Non discounting techniques or traditional methods

It does not take into consideration time value of money

- **Urgency method**

Urgency is a criterion used to justify the acceptance of capital projects on the basis of emergency requirements or under crisis conditions. Under this method, urgency or degree of necessity plays an important role and the project that cannot be postponed is undertaken first. In short, the most urgent project is taken up first.

Merits (Advantages)

1. It is a very simple technique.

2. It is useful in case of short term projects requiring lesser investment.

Demerits (Disadvantages)

1. It is not based on scientific analysis.

2. Selection is not made on the basis of economical consideration but just on the basis of situation.

3. A project, even though it is profitable, will not be accepted for the very simple reason that it can be postponed

Pay back method (pay back period or PBP)

The basic element of this method is to calculate the recovery time, by year wise accumulation of cash inflows (inclusive of depreciation) until the cash inflows equal the amount of the original investment. The time taken to recover such original investment is the "payback period" for the project.

Pay back method is also known as „pay out" or „pay off period „or „recoupment „or replacement period"

"The shorter the payback period, the more desirable a project".

The pay back period can be calculated in two different situations as follows

(a) When annual cash inflow are equal

$$\text{Pay back period} = \frac{\text{Original cost of project (cash outlay)}}{\text{Annual net cash inflow (net earnings)}} \text{ OR } \frac{I}{C}$$

Example

A project cost 5, 00,000 and yields an annual cash inflow of Rs 1,00,000 for 7 years, calculate pay back period.

Solution :

$$\text{Pay back} = \frac{5,00,000}{1,00,000} = 5 \text{ years}$$

(b) When annual cash inflows are unequal

It is ascertained by cumulating cash inflows till the time when the cumulative cash inflows become equal to initial investment

$$\text{Pay back period} = E + \frac{B}{C}$$

E=No of years immediately preceding the year of final recovery.

B=Balance amount still to be recovered.

C=Cash inflow during the year of final recovery

Example:

Initial Investment = 10,000

In a project expected future cash inflows 2000, 4000, 3000, 2000

Solution:

Calculation of Pay Back period.

Year	Cash inflows	Cumulative cash inflows
1	2000	2000
2	4000	6000
3	3000	9000
4	2000	11000

Pay back period = $E + \frac{B}{C}$ $\frac{1000}{2000}$

Advantages of pay back period

1. It is simple to understand and easy to apply

2 It is very important for cash forecasting, budgeting and cash flow analysis.

3. The method can be used profitably for short term capital project which start yielding returns in the initial years.

4. It minimises the possibility of losses through obsolescence.

5. It takes into account liquidity.

6. This method can also be used for projects with high uncertainty.

Disadvantages of pay back period

1. It ignores the time value of money.

2. It completely ignores cash inflows after the payback period.

3. Sometimes a project having higher pay back period may be better than lower pay back period owing to higher return after pay back period. This is true in the case of long term project.

4. It does not measure profitability of projects. It insists only on recovery of the cost of the project

5. It does not measure the rate of return.

Suitability of Payback Method

(a) When the cost of the project is comparatively small

(b) When the project is likely to be completed in short period.

(c) When only limited funds are available.

(d) When the cash earning capacity of the company is low.

(e) When there is chance of obsolescence due to technological development.

Modern Payback Period Methods:

The popularity of payback period has promoted efforts to eliminate some of its major drawbacks. The following are some of the more popular improvements to traditional payback period concept:

a) Post pay back profitability method

Under post payback method, the entire cash inflows generated from a project during its working life are taken into account.

Post pay back profitability= Total cash inflows in life – initial cost

OR

Annual cash inflows ×(Total life – pay back period)

Note: the second (alternate) formula is useful only when annual cash inflows are equal

$$\text{Post pay back profitability index} = \frac{\text{Post pay back profit}}{\text{Investment}} \times 100$$

b) Post pay back period method

This method takes into account the period beyond a project's payback period.it is also known as „surplus life over pay back method „under this method projects with longer pay back periods with significant cash flows are preferred.

c) Pay back reciprocals

The major limitation pay back method is that it ignores the time factor and does not consider the rate of return. The weakness is removed by calculating the reciprocal of payback period.

$$\text{Pay back reciprocal} = \frac{1}{\text{Pay back period}} \quad \textbf{OR} \quad \frac{1}{\text{pay back period}} \times 100$$

d) Modified pay back period method (MPBP)

If salvage value is considered during the pay back period, it is called modified back period method.

Average Rate of Return Method/Accounting Rate of Return Method (ARR)

This method measures the increase in profit expected to result from investment. It is based on accounting profits and not cash flows. It is also known as accounting rate of return method or return on investment method or unadjusted rate of return method.

$$\text{ARR} = \frac{\text{Average income or return}}{\text{Average investment}} \times 100$$

$$\text{ARR} = \frac{\text{Original investment + scrap value}}{2}$$

OR

$$\text{ARR} = \frac{\text{Original investment - scrap value}}{2} + \text{Scrap value}$$

$$\text{ARR} = \frac{\text{Original investment - scrap value}}{2} + \text{Scrap value + additional working capital}$$

Decision rule: The higher the average rate of return, the better project

Example

	Project	
	x	y
Capital cost	40000	60000
Earnings after depreciation		
1st year	5000	8000
2nd year	7000	10000
3rd year	6000	7000
4th year	6000	5000

Solution

$$\text{Average earnings of the project of X} = \frac{240000}{4} = 6000$$

$$\text{Average investment} = \frac{\text{Cost at the beginning + cost at the end of the life}}{2}$$

$$= \frac{40000+0}{2} = 20000$$

$$\text{ARR} = \frac{6000}{20000} \times 100 = 30\%$$

$$\text{Average earnings of project Y} = \frac{30000}{4} = 7500$$

$$\text{Average investment} = \frac{60000+0}{2} = 30000$$

$$ARR = \frac{7500}{30000} \times 100 = 25\%$$

Project X will be selected as its ARR is higher than that of project Y

Advantages of ARR

1. It is simple to understand and easy to apply.

2. It takes into consideration earnings over the entire life of the project.

3. It considers profitability of the investment.

4. Projects of different character can be compared.

5. Rate of return may be readily calculated with the help of accounting data.

Disadvantages of ARR

1. It ignores the time value of money.

2. It does not differentiate between the sizes of the investment required for each project.

3. It is based upon accounting profit, instead of cash flow.

4. It considers only the rate of return and not the life of the project.

5. It ignores the fact that profit can be reinvested.

Discounted cash flow techniques (Time adjusted cash flow techniques)

Discounting involves finding the present value of future cash flows

Features of present value methods

1. All present value methods are based on discounted cash flows. Both cash inflows and cash outflows are discounted to ascertain their present value

2. These use cash flows and not accounting concept of profit. That is, cash inflow after tax but before depreciation are taken

3. They take into consideration the interest factor by recognising the value of earlier cash flows compared to later cash flows.

4. They consider the entire cash flows of a project throughout its economic life.

Discounted Pay back Period

A major shortcoming of the conventional pay back period method is that it does not take into account the time value of money. To overcome this limitation, the discounted pay back period method is suggested. In this modified method, cash flows are first converted into their present values (by applying suitable discounting factors) and then added to ascertain the period of time required to recover the initial outlay on the project.

Net present value method (NPV)

Under this method present value of all cash inflows is compared against the present value of all cash outflows.

NPV= Present Value of Cash Inflows – Present Value of Cash Outflows

Computation procedure of NPV

A. Determination of minimum rate of return
B. Computation of PV of cash inflows and outflows
C. Computation of NPV

Decision rule

In the case of mutually exclusive project or alternative project accept a project that has the highest NPV.

In case of independent investment, accept a project if it's NPV is positive

Example

A ltd is considering the purchase of a new machine. Two alternative machines (A and B) have been suggested each costing Rs 400000.Earnings after taxation are expected to be as follows

Cash flows

Year	Machine A	Machine B
1	40000	120000
2	120000	160000
3	160000	200000
4	240000	120000
5	160000	80000

The company has a target of return on capital of 10% and on this basis you are required to compare the profitability of the machine and state which alternative you consider financially preferable.

Solution

Machine A				Machine B	
Year	Discount factor @%	Cash inflow	Present value	Cash inflow	Present value
1	.91	40000	36400	120000	109200
2	.83	120000	99600	160000	132000
3	.75	160000	120000	200000	150000
4	.68	240000	163200	120000	81600
5	.62	160000	99200	80000	49600
			518400		523200

Machine A=

NPV = 518400-400000=118400

Machine B=

NPV= 523200-400000=123200

The NPV is higher in case of machine Hence machine B is preferable

Advantages of NPV

1. It takes into account the time value of money

2. It considers the cash flow stream over the entire life of the project.

3. It focuses attention on the objective of maximisation of the wealth of the firm.

4. This method is most suitable when cash inflows are not uniform.

5. This method is generally preferred by economists.

6. It is highly useful in case of mutually exclusive projects.

7 .It is the true measure of profitability.

Disadvantages of NPV

1. This method may not provide satisfactory results in case of two projects having different useful lives.

2. This method is not suitable in case of projects involving different amounts of investment.
3. Different discount rates will give different present values. As such, the relative desirability of projects will change with a change in the discount rate. It is difficult to select the discount rate.

5. It involves complicated calculations.

Benefit cost ratio (Profitability Index method) (PI)

$$\text{Profitability Index} = \frac{\text{P.V. of cash outflow}}{\text{P.V. of cash inflow}}$$

If P.I > 1, project is accepted

P.I < 1, project is rejected

The Profitability Index (PI) signifies present value of inflow per rupee of outflow. It helps to compare projects involving different amounts of initial investments

Example

Initial investment 20 lacs.

Expected annual cash flows 6 lacs for 10 years.

Cost of Capital @ 15%. Calculate Profitability Index.

Solution:

Cumulative discounting factor @ 15% for 10 years = 5.019

P.V. of inflows = 6.00 × 5.019 = 30.114 lacs.

$$\text{Profitability Index} = \frac{\text{P.V. of cash outflow}}{\text{P.V. of cash inflow}}$$

$$\text{Profitability Index} = \frac{30.114}{20} = 1.51$$

Decision : The project should be accepted

Advantages Profitability Index

1. It is very scientific and logical.

2. It considers the fair rate of return.

3. It is useful in case of capital rationing,

4. It is very useful to compare the projects having different investments.

5. It reflects time value of money.

6. It considers all cash flows during the life of the project.

Disadvantages Profitability Index

1. This method is not in accordance with accounting principles and concepts.

2. It is comparatively difficult to understand and follow.

3. It is difficult to estimate the effective life of a project.

4. It cannot be used for comparing those projects having unequal lives.

5. It is not useful when many small projects have to be aggregated and compared with a large project.

Comparison of NPV and Profitability Index

Profitability index method is based on the NPV method. It is an extension of NPV method.

There are many similarities and differences between NPV and PI.

Similarities

1. Both satisfy the principle of time value of money.

2. Both are discounted cash flow techniques.

3. Both will give the same accept/reject decision.

Differences

1. The NPV is an absolute measure of a project's acceptability, whereas, PI is a relative measure.

2. NPV and PI may give different evaluation results when initial costs and the monetary Benefits are different.

3. In times of capital rationing (or in case of mutually exclusive projects) PI would give superior results.

4. In all cases except in capital rationing (or in case of mutually exclusive projects) NPV technique is superior to the PI technique.

Internal Rate of Return method (IRR)

Internal Rate of Return is a percentage discount rate applied in capital investment decisions which brings the cost of a project and its expected future cash flows into equality, i.e., NPV is zero

Calculation of IRR

When cash inflows are equal

1. First of all a rough approximation may be made with reference to PV factor

$$\text{PV factor} = \frac{\text{Initial investment}}{\text{Annual cash inflow}}$$

2. Search for a value nearest to PV factor
3. In order to make a precise estimation of the IRR ,find out the present values of the project for both these rates
4. Find out the exact IRR by interpolation .the interpolation should be made between two closest discount rates having a positive NPV and negative NPV.

Interpolation formula

$$L + \frac{P_1 - Q}{P_1 - P_2} \times H - L$$

L= Lower discount rate

H=higher discount rate

P_1=present value at lower rate

P_2=present value at higher rate

Q= net cash outlay

When cash flows are unequal

1. Calculate average cash flow and establish first trial rate

$$\text{PV factor} = \frac{\text{Initial investment}}{\text{Average annual cash}}$$

2. Try the second trial rate
3. Compute actual IRR by using interpolation formula

Example

From the following information. Calculate IRR

Cost 22000

Cash inflows

Year 1 12000

2 4000

3 2000

4 10000

Solution

$$\text{Average cash inflow} = \frac{12000+4000+2000+10000}{4} = 7000$$

$$\text{PV factor} = \frac{22000}{7000} = 3.14$$

Year	Cash inflow	Discount factor @10%	PV
1	12000	.909	10908
2	4000	.826	3304
3	2000	.751	1502
4	10000	.683	6830
			22544

NPV =

22544-22000=544

Year	Cash inflow	Discount factor @12%	PV
1	12000	.893	10716
2	4000	.797	3188
3	2000	.712	1424
4	10000	.636	6360
			21688

NPV=

21688-22000=-312

Thus IRR lies in between 10% and 12%.The actual IRR can be interpolated as follows

IRR

$$10+\frac{22544-22000}{225444-21688}\times(12-10)$$

=11.27%

Decision Rule (or Acceptance Criterion): The calculated internal rate of return is compared with the desired minimum rate of return (cut-off rate). If IRR is equal to or greater than the desired minimum rate of return, then the project is accepted. If it is less than the desired minimum rate of return, then the project is rejected.

Advantages of IRR

1. This method considers all the cash flows over the entire life of the project.

2. It takes into account the time value of money.

3. Cost of capital need not be calculated.

4. IRR gives a true picture of the profitability of the project even in the absence of cost of capital.

5. Projects having different degrees of risk can easily be compared.

Disadvantages of IRR

1. The IRR method is difficult to understand and use in practice because it involves tedious and complicated calculation.

2. Under certain conditions it becomes very difficult to take any decision. For example, under conditions of irregular cash flows, IRR may give two or more answers.

3. Sometimes it may yield negative rate or multiple rate which is rather confusing.

4. It yields results inconsistent with the NPV method if projects differ in their expected life span, investment timing of cash flows,

5. It is applicable mainly in large projects.

Comparison between NPV and IRR

Similarities

1. Both consider time value of money

2. Both lead to the same acceptance or rejection decision rule when there is a single project

3. Both methods use cash inflows after tax.

4. Both consider cash inflows throughout the life of the project.

NPV	IRR
1. The minimum desired rate of return (cost of capital) is assumed to be known. 2. It implies that the cash inflows are Invested at the rate of firm's cost of capital. 3.It gives absolute return 4. The NPV of different projects can be added.	1. The minimum desired rate of return is to be determined. 2. It implies that cash inflows are reinvested at the IRR of the project. 3. It gives percentage return. 4. The IRR of different projects cannot be added.

The NPV method is comparatively better because of the following reasons:

1. NPV provides an absolute amount of net addition to the shareholders' wealth.

2. In NPV method, reinvestment rate for each project is the same. But IRR provides different rates for different projects.

3. NPV always ranks mutually exclusive projects correctly, but IRR may not be able to give correct ranking.

Net Terminal Value Method (NTV)

This method is based on the assumption that each annual cash inflow is received at the end of the year and is reinvested in another asset at a certain rate of return from the moment it is received till the termination (end) of the project. Now the total compounded sum is discounted at the discount factor of the last year (cost of capital) and present value is found out. This total present value is compared with cost of project or initial investment. The excess of the present value over the cost of the project is the Net Terminal Value (NTV).

Both NTV and NPV methods are similar in most cases. The only difference is that in the case of NTV method, the values are compounded and in the case of NPV method, the values are discounted

Advantages of Terminal Value Method

1. It is a simple technique of project appraisal.

2. It is simple to understand.

3. It avoids the influence of cost of capital

4. It is more suitable for cash budgeting,

Disadvantages of Terminal Value Method

1. It is difficult to project the future rates of interest.

2. It does not consider the comparative evaluation of two or more mutually exclusive projects.

Example

A project costs 20, 000 with a life of 5 years. The cash inflow is 5000 per annum. Cost of capital is 10%. The expected interest rates at which annual cash inflows can be reinvested are as follows:

Year	1	2	3	4	5
Rate of interest	8%	8%	9%	6%	5%

Advise whether the above project should be accepted or rejected using NTV method.

Solution

Year	Cash inflows	Period of investment	Rate of investment	PV compound factor	Compound sum
1	5000	4	8	1.360	6800
2	5000	3	8	1.260	6300
3	5000	2	9	1.186	5930

4 5	5000 5000	1 0	6 5	1.060 1.000	5300 5000
		Total compound sum			29330

Compounded sum will be discounted at 10% (cost of capital) for 5 Years. The discount factor for the 5^{th} year at 10% is 0.621.

Hence the sum of the present value would be 29,330 x 0.621 = 18,214.

Therefore, NTV = 18,214 - 20,000 = Rs 1,786 (Negative).

Interpretation :- NTV is negative. Hence, the project is rejected.

Risk analysis

The process of comparing the risk and returns to select the most profitable investment is known as risk – return analysis

Methods or traditional techniques

- **Risk adjusted discount rate**

Under the risk adjusted discount rate technique some adjustment will be made in the discount rate. This is done according to the degree of risk associated with the project. If the risk is high the discount rate is raised (adding risk premium to discount rate)

Risk adjusted discount rate is equal to risk-free rate of return + risk premium for investing in a risky project.

Risk free rate is the rate at which the future cash inflows should be discounted if there had been no risk.

Risk premium rate is the extra return expected by investors over the normal rate (i.e., risk free rate) on account of project being risky. A higher discount rate will be used for more risky projects and a lower rate for less risky projects.

Merits

(a) It is simple to understand and easy to calculate.

(b) It provides compensation for the risk factor.

(c) It can be used along with both NPV and IRR.

(d) It takes into account the risk averse attitude of investors,

Demerits

(a) There is no scientific way of determining the risk premium.

(b) This method is subjective and controversial. How much weight should be assigned to risk

Premium depends upon personal judgements.

(c) It is the future cash flow of a project which is subject to risk. Therefore, adjustment should be made in the cash flows and not in the discount rate. Hence this technique is not scientific.

(d) It assumes that risk increases with time at a constant rate. This is not valid.

Decision rule: The risk adjusted rate of discount can be used both in NPV and IRR. If NPV is used, the projects with higher NPVs (discounted at risk adjusted rate of discount) should be selected. In the case of IRR, the projects with IRR greater than the risk adjusted rate of return (risk adjusted rate of discount) are selected.

- **Certainty equivalent method**

Under this method the risk involved in the project is taken into consideration by adjusting the expected cash flows and not the discount rate. First the cash flows are conservatively estimated under the assumption of normal risk for various years during the life of the project. Then these risk-free (or riskless) cash flows are reduced to a certain level by using the correction factor or risk adjustment factor. This correction factor is called 'Certainty Equivalent coefficient. It is ascertained as under:

$$\frac{\text{Risk free cash flow}}{\text{Risky cash flow}}$$

Steps involved in Certainty Equivalent Co-efficient Method

1. Calculate the certainty equivalent co-efficient for each year cash flow is Rs 80,000 and riskless cash flow is 60,000.

$$\text{C.E Co-efficient} = \frac{\text{Risk free cash flow}}{\text{Risky cash flow}} = \frac{60000}{80000} = 0.75$$

2. Calculate the risk adjusted cash flow of a project for each year. For calculating this, the formula is: Estimated cash flow for the year x C.E Co-efficient.

Suppose the estimated cash flow of a project for a year is 780.000 and C.E.Co-efficient for the cash flow of that year is 0.75, the risk-adjusted cash flow for the year will be Rs 60,000 (i.e., 80,000 x 0.75).

When uncertain cash flows are multiplied with certainty equivalent co-efficient, they are converted into certain cash flows.

3. Find the present value of risk-adjusted cash Flow for each year. It is ascertained as follows: Risk adjusted cash flow (as per step 2) for a year x PV or discount factor applicable to that year.

4. Obtain the total present value of all years (ie, each year's present value under step 3 is added up). This gives the total PV of the project.

5. Find the NPV of the project. When the initial investment on the project is deducted from the total PV of the project (as per step 4), we get NPV.

6. Select the project (i.e., take the decision),

Merits

(a) This method is simple and easy to apply.

(b) It reduces uncertain cash flows to make them more realistic.

(c) It takes risk into consideration by adjusting the cash flows which are subject to risk.

(d) It is superior to risk adjusted discount rate.

Demerits

(a) It is very difficult to calculate and understand the certainty equivalent co-efficient

(b) It does not directly use the probability distribution of possible cash flows.

(c) This method is arbitrary and subjective.

(d) It is very difficult to implement this technique in actual practice.

Decision rule: The certainty co-efficient lies between 0 and 1. The higher the risk, the lower is the co-efficient. After converting the uncertain cash flows to certain cash flows by using

certainty co-efficient, these are multiplied with the discount factor. Now we get present values. Then the NPV is found. Projects with higher NPVs may be accepted.

Example

There are two projects A and B.Each involves an investment of Rs 100000.The expected cash inflows are and the certainty co-efficient are as follows

	Project A		Project B	
Year	Cash inflow	C.E coefficient	Cash inflow	C.E coefficient
1	60000	0.8	50000	0.9
2	50000	0.7	70000	0.8
3	50000	0.9	50000	0.7

Risk free cut off rate is 10%.state which project is better

Solution

	Project A			Project B		
Year	Cash inflow	C.E coefficient	Certain cash inflows	Cash inflow	C.E coefficient	Certain cash inflows
1	60000	0.8	48000	50000	0.9	45000
2	50000	0.7	35000	70000	0.8	56000
3	50000	0.9	45000	50000	0.7	35000

Calculation of present values

Project A				Project B			
Year	Cash inflows	DF10%	PV	Year	Cash inflows	DF10%	PV
1	48000	0.909	43632	1	45000	0.909	40905
2	35000	0.826	28910	2	56000	0.826	46256
3	45000	0.751	33795	3	35000	0.751	26285
			106337				113446
Less cost			100000				100000
NPV			6337				13446

The NPV of project B is higher than that of project A.Hence, project B is better than project A

Module 3

Financing Decision

Meaning and definition of cost of capital

Cost of capital simply refers to cost of obtaining funds. Cost of capital is the rate a firm pay to its investors for the use of their money.

In the words of John J. Hampton, the cost of capital is the rate of return, the firm requires from investment in order to increase the value of the firm in the market place". Solomon Ezra has defined it as the minimum required rate of return or the cut-off rate for capital expenditures.

Cost of capital can be defined both from firm's and investor's point of view. From a firm's point of view, cost of capital is the rate at which a firm raises capital to invest in various projects.

From the investor's point of view, cost of capital is the rate of return which investors expect from the capital invested by them in the firm.

Features of Cost of Capital

1. It is not a cost. It is a rate of return required on the projects. Hence, it is a hurdle rate

2. It is the minimum rate of return a firm requires to cam in order to maintain the market value of its equity shares.

3. It is the reward for business risk and financial risk.

4. It consists of three elements - (a) riskless cost of the particular source, (b) business risk premium, and (c) financial risk premium.

Classification of Cost of Capital

1. Historical Cost and Future Cost

Historical cost refers to the cost which has already been incurred for financing a project. It is

Calculated on the basis of past data.

Future cost refers to the expected cost of funds to be raised for financing a project.

2. Specific Cost and Composite Cost

Specific cost refers to the cost of a specific source of capital such as equity share, preference share, debenture etc.

Composite cost of capital refers to the combined cost of various sources of capital. It is the Weighted average cost of capital. It is also called 'overall cost of capital'.

3. Average Cost and Marginal Cost

Average cost of capital refers to the weighted average cost of capital calculated on the basis of cost of each source of capital and weights assigned to them in the ratio of their share to total capital funds.

Marginal cost of capital refers to the cost of obtaining an extra RS 1 of finance.

4. Explicit Cost and Implicit Cost

Explicit cost of capital refers to the discount rate which equates the present value of cash inflows with the present value of cash outflows. Thus it is the internal rate of return which a firm pays for procuring the finance.

Implicit cost of capital refers to the rate of return which can be earned by investing the funds in alternative investments. In other words, it is the opportunity cost of capital

Assumptions of Cost of Capital

1. The cost can be either explicit or implicit

2. The firm's capital structure does not change.

3. Cost of each source of capital is determined on an after tax basis.

4. The financial and business risks are unaffected by the acceptance and financing of projects

Importance of the Concept of Cost of Capital

- Useful in investment decisions
- Useful in designing capital structure

- Useful in deciding the method of finance
- Useful in evaluation of performance of management
- Useful in evaluation of expansion projects
- Optimum mobilisation of resources

Factors Determining Cost of Capital

- General economic conditions
- Risk
- Amount of finance required
- Floatation costs
- Taxes

Determination of Cost of Capital

(a)Cost of debt,

(b) Cost of preference capital,

(c) Cost of equity capital,

(d) Cost of retained earnings

(e) Cost of weighted average cost of capital.

(a)Cost of Debt

Cost of debt capital means the payment of interest on debentures or bonds or loans from financial institutions.

1. Cost of Irredeemable Debt

Irredeemable debt is also known as perpetual debt. Perpetual or irredeemable debts are t debts which are not repayable during the life of the company. These are repayable only one liquidation of the company. In this case the time of maturity is not specified.

a) Before tax cost of debt

$$\mathbf{K_d = \frac{I}{NP} \times 100}$$

I=Interest

NP=principal or Net proceeds of Debt Capital

b) After tax cost of debt

$$\mathbf{K_d = \frac{I(1-T)}{NP} \times 100}$$

T=tax rate

or

Before Tax cost of debt × (1-T)

Example

a)A ltd Rs 100000 8% debentures at par.The tax rate applicable to the company is 50%.compute the cost of debt capital.

b)B ltd issued Rs 100000 8% debentures at a premium of 10%.the tax rate applicable to the company is 60%.compute the cost of debt capital.

c) C ltd issues Rs 100000 8% debentures at a discount of 5%.The tax rate is 50%.Compute the cost of debt capital.

d)D ltd issues Rs 200000 9% Debentures at a premium of 10%.The floatation costs are 2%.The tax rate applicable is 60%.Compute cost of debt capital.

Solution

a) $\mathbf{K_d = \frac{I(1-T)}{NP} \times 100}$

$K_d = \frac{8000(1-0.5)}{100000} \times 100$

=4%

b) $K_d = \frac{I(1-T)}{NP} \times 100$

$K_d = \frac{8000(1-0.6)}{110000} \times 100$

=2.91%

c) $K_d = \frac{I(1-T)}{NP} \times 100$

$K_d = \frac{8000(1-0.5)}{95000} \times 100 = 4.21\%$

d) $K_d = \frac{I(1-T)}{NP} \times 100$

NP=200000+20000-(220000*2/100) =215600

$K_d = \frac{18000(1-0.6)}{215600} \times 100 = 3.34\%$

(2)Cost of Redeemable Debt

Usually the debt is issued to be redeemed after a certain period during the life time of a firm. In the calculation of cost of such debt, the time period of redemption is very important.

(i) Before tax cost of redeemable debt

$$\mathbf{K_d = \frac{I + 1/N(RV - NP)}{1/2(RV + NP)} \times 100}$$

(ii) After tax cost of redeemable debt

$$\mathbf{K_d = \frac{I(1-T) + 1/N(RV - NP)}{1/2(RV + NP)} \times 100}$$

I=Interest

N=Number of years in which debt is to be redeemed

RV=Redeemable value of debt

NP=Net proceeds of debentures

T=Tax rate

Example

Assuming that a firm pays tax at 50% rate, compute the after tax cost of debt capital in the following cases

a) A perpetual bond sold at par, Coupon rate of interest being 7%
b) A 10 year ,8% Rs 1000 per bond sold at Rs 950 less underwriting commission.

Solution

a) Cost of perpetual bond

$$\mathbf{K_d} = \frac{\boldsymbol{I(1-T)}}{\boldsymbol{NP}} \times 100$$

$$K_d = \frac{\mathbf{7(1-0.5)}}{\mathbf{100}} \times 100 = 3.5\%$$

b) cost of redeemable bond

$$K_d = \frac{80(1-0.5)+1/10(1000-912)}{1/2(1000+912)} \times 100$$

=5.10%

(b) Cost of preference share capital

The cost of preference capital is the dividend expected by e preference shareholders.

(1) Cost of irredeemable preference share capital

$$\mathbf{K_p} = \frac{D_p}{NP}$$

K_p = Cost of preference share capital

D_p = Preference share dividend

N_P= Net proceeds from the issue of preference shares. Floatation cost should be deducted

Example

A company issued 10,000, 10% preference share of . 10 each, Cost of issue is . 2 per share. Calculate cost of capital if these shares are issued (a) at par, (b) at 10% premium, and (c) at5% discount.

Solution

When issued at par

$$Kp = \frac{10000}{100000-20000} \times 100 = 12.5\%$$

When issued at premium

$$Kp = \frac{10000}{100000+10000-20000} \times 100 = 11.11\%$$

When issued at discount

$$Kp = \frac{10000}{100000+5000-20000} \times 100 = 13.33\%$$

(2)Cost of redeemable preference share capital

$$\mathbf{K_p} = \frac{\boldsymbol{Dp+1/N(RV-NP)}}{\boldsymbol{1/2(RV+NP)}} \times \mathbf{100}$$

Example

A company issued 1000 7% preferences shares of RS 100 each at a premium of 10% redeemable after 5 years at par.Compute the cost of preference capital

Solution

$$\mathbf{K_p} = \frac{\boldsymbol{Dp+1/N(RV-NP)}}{\boldsymbol{1/2(RV+NP)}} \times \mathbf{100}$$

$$\mathbf{K_p} = \frac{\boldsymbol{7000+1/5(100000-110000)}}{\boldsymbol{1/2(100000+110000)}} \times \mathbf{100}$$

= 4.76%

(c) Cost of equity share capital

Cost of equity share capital may be defined as the minimum rate of return that a firm must earn on the equity part of total investment in a project in order to leave unchanged the market price of such shares.

Various approaches to calculate cost of equity capital

1. Dividend yield method
2. Dividend yield plus growth method
3. Earning price method
4. Realised yield method

1) Dividend yield method

This method is based on the assumption that each shareholder, while investing his savings in the company, expects to receive dividend at the current rate of return

$$K_e = \frac{D}{MP} \times 100$$

Ke = Cost of equity capital

D = Dividend per share

MP= Market price per share

In the case of newly issued equity shares

$$K_e = \frac{D}{NP} \times 100$$

NP= Net proceeds per share

Merits

- Simple approach

Demerits

- It does not take into consideration the changes of capital appreciation
- It ignores the impact of retained earnings

Example

A company issues, 10,000 equity shares of . 100 each at a premium of 10%. The company has been paying 20% dividend to equity shareholders for the past five years and expected to maintain the same in the future also. Compute cost of equity capital. Will it make any difference if the market price of equity share is 150?

Solution

$K_e = \frac{D}{NP} \times 100$

$K_e = \frac{20}{110} \times 100 = 18.18\%$

$K_e = \frac{D}{MP} \times 100$

$K_e = \frac{20}{150} \times 100 = 13.33\%$

2) Dividend yield plus growth method

According to this method, the cost of equity is determined on the basis of the expected dividend rate plus the rate of growth in dividend. This method is used when dividends are expected to grow at a constant rate.

$$K_e = \frac{D1}{MP} \times 100 + G$$

D1=Expected dividend per share at the end of the year

i.e., $D_0 (1+g)$

D_0=Previous years dividend or declared dividend

MP= Market price per share

G=Rate of growth in dividend

In case of new equity shares

$$K_e = \frac{D1}{NP} \times 100 + G$$

NP= Net proceeds per share

$$MP \text{ or } NP = \frac{D1}{Ke - g}$$

Merits and demerits

This method is the best method to evaluate the expectations of investors and to calculate the cost of equity. It ensures the optimum capital budgeting decisions. The main difficulty in this approach is to determine the rate of growth of price appreciation expected by a shareholder when he is willing to pay a certain price for current dividend.

Example

ABC Ltd plans to issue 1,00,000 new equity share of 10 each at par. The floatation costs are expected to be 5% of the share price. The company pays a dividend of 1 per share and the

growth rate in dividend is expected to be 5%. Compute the cost of new equity share. If the current market price is 15, compute the cost of existing equity share.

Solution

Cost of new equity shares = Ke= $\frac{D}{MP} \times 100$+G

Ke = 1 / (10-0.5) + 0.05 = 1 / 9.5 + 0.05

= 0.01053 + 0.05

= 0.1553 or 15.53%

Cost of existing equity share:

Ke = $\frac{D}{NP} \times 100$+G

Ke = 1/ 15 + 0.05 = 0.0667 or 11.67%

(3)Earning price method

According to this approach, the cost of equity is the discount rate that capitalizes a stream of future earnings to evaluate the shareholdings. It is computed by taking earnings per share (EPS) into consideration. It is calculated as

i) Ke = Earnings per share / Net proceeds = EPS / NP [For new share]

ii) Ke = EPS / MP [For existing equity]

This method is used in the following cases:

(a) When the EPS is expected to remain constant

(b) When the dividend pay-out ratio is 100% (all the profit are distributed as dividend)

(c) When a firm is expected to earn an amount on new equity share capital, which is equal to the current rate of earnings.

(d) When the share price is influenced by the EPS.

Evaluation (Merits and Demerits):

The main advantage of earning price method that it considers the future earnings prospects of the company.

This approach has three main limitations:

(a) All earnings are not distributed among the shareholders in the form of dividend

(b) Earnings per share cannot be assumed to be constant

(c) Share price does not remain constant because investment in retained earnings results in increase in market price of shares.

Example

XYZ Ltd is planning for an expenditure of 120 lakhs for its expansion programme. Number of existing equity shares are 20 lakhs and the market value of equity shares is 60. It has net earnings of 180 lakhs. Compute the cost of existing equity share and the cost of new equity capital assuming that new share will be issued at a price of 52 per share and the costs of new issue will be 2 per share

Solution

a) Cost of existing equity

(Ke) = EPS /MP Earnings per share
(EPS) =18000000/ 2000000 =9
Ke =9/60=0.15 or 15%

b) Cost of new equity capital

(Ke) = EPS/NP

NP= 9/52-2

= 9/50 = 0.18 or 18%

Realised yield method

The realised yield is discounted at the present value factor and then compared with the value of investment.

Capital Asset Pricing Model (CAPM)

This Approach was developed by William Sharpe (Nobel Prize Winner). This model states that as the level of risk increases, the investors would expect higher returns to compensate for the risk that they have taken. There are two types of risks associated with an equity share. They are: Systematic risk and Unsystematic risk. The systematic risk is measured by B (beta).

$$Ke = R_f + \beta_i (R_m - R_f)$$

R_f = Risk free rate of return

β_i = The beta co-efficient of the investment

R_m = Average market return

Merits of CAPM Approach

1. It is theoretically sound

2. It directly considers the risk as reflected in beta in order to determine the cost of equity

Demerits of CAPM

1. It does not include the market price.

2. Some problems are involved in the practical application of CAPM model in collecting data

3. Beta measure of risk considers only the systematic risk only. Some investors may be more

Interested in total risk.

Example

You are given the following data relating to a company.

(i) Risk free rate of return 11%

(ii) Beta co-efficient of the firm is 1.25

Compute the cost of equity capital under CAP model assuming a market return of 15% new year. What would be the cost of equity if beta co-efficient increases to 1.75.

Solution

$Ke = R_f + \beta_i (R_m - R_f)$

When β_i = 11% + 1.25 (15%-11%)

= 11%+5% = 16%

When β_i= 11%+1.75(15%-11%)

= 11%+7% = 18%

(d)Cost of Retained Earnings

Retained earnings have the opportunity cost of dividends in alternative investment, which becomes cost of retained earnings. Hence, shareholders expect a return on retained earnings at least equity

$$Kr = Ke = \frac{D \text{ or } EPS}{MP} \times 100 + G$$

However, while calculating cost of retained earnings, two adjustments should be made :a) Income-tax adjustment as the shareholders are to pay some income tax out of dividends, and b) adjustment for brokerage cost as the shareholders should incur some brokerage cost while invest dividend income. Therefore, after these adjustments, cost of retained earnings is calculated as:

Kr = Ke (1-T) (1-B)

Where, Kr = cost of retained earnings

Ke = Cost of equity

T = rate of tax

T = cost of purchasing new securities or brokerage

Example

A firm‘s cost of equity (Ke) is 18%, the average income tax rate of shareholders is 30% and brokerage cost of 2% is excepted to be incurred while investing their dividends in alternative securities. Compute the cost of retained earnings.

Solution:

Cost of retained earnings = (Kr) = Ke (1-T) (1-B) =18(1-.30) (1-.02)

=18×.7×.98=12.35%

(e)Weighted Average Cost of Capital

It is the average of the costs of various sources of financing. It is also known as composite or overall or average cost of capital. After computing the cost of individual sources of finance,

the weighted average cost of capital is calculated by putting weights in the proportion of the various sources of funds to the total funds.

Weighted average cost of capital is computed by using either of the following two types of weights: 1) Market value 2) Book Value

Market value weights are sometimes preferred to the book value weights as the market value represents the true value of the investors.

However, market value weights suffer from the following limitations: i) Market value are subject to frequent fluctuations. ii) Equity capital gets more importance, with the use of market value weights.

Steps involved in calculating (WACC)

1) Assignment of weights
2) Computation of specific cost of each source
3) Computation of WACC

$$WACC = \frac{K_dW_d+K_pW_p+K_eW_e}{W_d+W_p+W_e}$$

Example

The following is the capital structure of A ltd

Source	Amount	Cost of capital
Equity Capital (2,00.000 shares of 7 10 each)	2000000	11%
Preference Share Capital (50.000 shares of 10 each)	500000	8%
Retained Earnings	1000000	11%
9% Debentures (1,000 each)	1500000	4.5%

Presently the debentures are being traded at 94%, preference shares at par and the equity share at 13 per share. Find out the WACC based on book value weights and market value weights.

Solution

On the basis of book value weights

Calculation of book value weights:

Preference Capital = 5, 00,000/50, 00,000 x 100 = 10% or 0.1

Equity Share Capital =20, 00,000/50, 00,000 x 100 = 40% or 0.4

Retained Earnings 10, 00,000/50, 00,000 x 100 = 20% or 0.2

9% Debenture =15, 00, 000/50, 00,000 x 100 = 30% or 0.3

Source	BV	BV Weights	Cost(C)	Weighted cost (W×C)
Preference Capital	500000	10%	8%	0.80
Equity Capital	2000000	40%	11%	4.40
Retained Earnings	1000000	20%	11%	2.20
9% Debentures	1500000	30%	4.5%	1.35
				WACC=8.75%

On the basis of market value weights

Calculation of market values:

Total market value of equity = 2, 00.000 x 13= 26, 00,000 (equity capital + retained earnings)

Total market value of retained earnings =26, 00,000 x 1/3 =8, 66,667

Therefore market value of equity share = 26, 00,000 x 2/3 = 17, 33,333

(The ratio of equity capital and retained earnings is 2:1 in the capital structure)

Total market value of preference share = 50,000 x 10=5, 00,000

Total market value of 9% debentures = 15, 00,000 x 94/100 = 14, 10,000

Calculation of market value weights:

Preference Capital = 5, 00,000/45, 10,000 x 100 = 11.1%

Equity Capital =17, 33,333/45, 10,000 x 100 = 38.4%

Retained Earnings = 8, 66,667/45, 10,000 x 100 = 19.2%

9% Debenture = 14, 10,000/45, 10,000 x 100 =31.3%

Source	MV	MV Weights	Cost(C)	Weighted cost (W×C)
Preference Capital	500000	11.1%	8%	0.89
Equity Capital	1733333	38.4%	11%	4.22
Retained Earnings	866667	19.2%	11%	2.11
9% Debentures	1410000	31.3%	4.5%	1.41
	4510000			WACC=8.63%

Merits of WACC

1. It is a straight forward and logical approach.

2. It takes into consideration all changes in the capital structure.

3. It is more accurate when profits are normal.

4. It is very useful in capital budgeting decisions.

Limitations of WACC

1. It is not suitable in case of excessive low-cost debt.

2. It is not suitable in the case of low profits.

3. It is very difficult to assign weights to different components of capital

4. It is not easy to select capital structure to be used for determining the weighted average cost of capital

Marginal Cost of Capital

When a firm raises new funds from different sources, the WACC not is based on the proportion of funds in the existing capital structure. Mostly firms do not raise new is suitable. The WACC or additional funds in the same proportion as the funds in the existing capital structure, In cases marginal cost of capital is used. The weighted average cost of new or additional capital called marginal cost of capital (or weighted marginal cost of capital). This is calculated by using the marginal weights.

Merits

(a)In the past the firm may be using some source of finance, which may not be available to the firm now

(b) The firm does not have control over arrangement of funds.

(C) The finance manager will have note freedom in making optimum mix of capital for financing new projects.

Demerits

(a) It ignores the long-term implications of firm's current financing.

(b)It ignores the interrelationship among various sources of funds.

Example

A firm has the following capital structure and after tax costs for the different sources o

Funds used:

Source of Funds	Amount	Proportion (%)	After tax Cost (%)
Debt	4,50,000	30	7
Preference Capital	3,75,000	25	10
Equity Capital	6,75,000	45	15

(a) Calculate the WACC using book value weights.

(b) The firm wishes to raise further 6, 00.000 for the expansion of the project in the following manner

Debt	300000
Preference Capital	150000
Equity Capital	150000

Compute the weighted marginal cost of capital

Solution

(a) Weighted Average Cost of Capital (WACC)

Source of funds	Proportion (%) (BVW)	After tax cost (%)	Weighted Cost (%)
Debt	30	7	2.10
Preference Capital	25	10	2.50
Equity Capital	45	15	6.75
			WACC = 11.35%

(b) Weighted marginal cost of capital (WMCC)

Source of funds	Proportion (%) Marginal weights	After tax cost (%)	Weighted marginal Cost(%)
Debt	50	7	3.50
Preference Capital	25	10	2.50
Equity Capital	25	15	3.75
			WMCC=9.75%

Working Note:

Marginal weights are calculated as follows:

Debt 3, 00,000/6, 00,000 x 100 = 50%

Preference Capital 1, 50,000/6, 00,000 x 100 25%

Equity Capital 1, 50,000/6, 00,000 x 100 = 25%

Opportunity Cost of Capital

When a company faces shortage of capital and it has to invest capital in more than one project, then the company will meet the problem by rationing the capital to projects whose returns are estimated to be more. The firm might decide to estimate the opportunity cost of capital in other projects.

Sources of finance

Long term finance

The long term sources include equity shares, preference shares, debt, and term loans from financial options. Long term sources are used for financing the capital cost of the projects.

Thus it is better to raise capital from two or more sources. The technique of raising capital from multiple Sources is known as layered financing. The important sources are:

- Share capital
- Debenture capital
- Term loans
- Venture capital
- Lease finance
- Institutional finance
- Retained earnings

Capital structure & leverage analysis

Meaning and definition of capital structure

Meaning

Capital structure simply refers to the make up of the capitalisation of a firm.It is the mix of debt and equity which a company uses to finance its long –term operations.

Definition

According to R.H .Wessel says,"The term capital structure is frequently used to indicate the long term sources of funds employed in a business"

Difference between capital structure and financial structure

Capital structure and financial structure are different. Capital structure is the proportion of different sources of long term capital (i.e., equity and debt). It excludes short term fund. Financial structure refers to the way the company's assets are financed. It is the entire left hand side of the balance sheet. This represents all the long term sources of capital and short term sources of capital. Thus, financial structure is equal to total liabilities. In other words, financial structure is equal to capital structure plus current liabilities. In short, financial structure shows the pattern of total financing. Capital structure is only a part of financial structure.

Difference between capitalisation and capital structure

Capitalisation	Capital structure
1. It is a quantitative concept.	1. It is a qualitative concept.
2. In narrow sense, it is the total amount of capital raised through shares, debentures, bonds, loans and retained earnings.	2. In a narrow sense, it is the make up of the capitalisation i.e. shares, debentures, bonds, loans etc.
3. In a broad sense, it refers to the determination of the total needs of capital, its structure and arrangement of funds. It includes capital structure in itself.	3. In a broad sense, it is the part of capitalisation It determines the ratio in which the total capital is contributed by different sources.

4. It is classified as over capitalisation and under capitalisation	4. It may be high geared or low geared.
5. It is mainly influenced by the internal requirements of the company	5. It is mainly influenced by external forces such as market conditions, investors' psychology, government policies etc.

Importance of capital structure

1. Capital structure affects the financial risk assumed by the company.

2. Capital structure affects the firm's cost of capital,

3. Capital structure affects the value of the firm

4. Capital structure decision represents the management attitude towards risk and return

Capital structure planning

After estimating how much capital is needed, it is necessary to decide the best mix of different sources to be used in raising the estimated capital. This process is known as capital structure planning

Thus, capital structure planning means estimating the requirement of capital and deciding the best mix of different sources to be used in raising the estimated capital.

In short, capital structure planning means selecting desired debt equity mix.

Methods (Approaches) of capital structure planning

EBIT - EPS Analysis: The relationship between EBIT and EPS is analysed in order to determine the effect of leverage. In other words, this approach is used to analyse the impact of debt on EPS and risk. Thus, this technique is used to examine the effect of financial leverage

Valuation Method : Debt is a cheaper source of finance. But it causes financial risk. This in turn increases the cost of equity. Higher debt adds the cost of financial distress and agency costs. However, there are tax benefits from interest charges on debt. This tax benefit (tax shield) increases the value of equity shares. Thus, there is a trade-off between tax shield and costs of financial distress and agency costs.

Cash flow Analysis: This technique is used to assess the firm's ability to meet debt obligation without much difficulty. If a company uses large sum of debt with short term maturity, the amount of fixed charges will naturally be high.

Factors determining or influencing capital structure(factors governing capital structure planning)

Internal factors

- Profitability
- Liquidity
- Flexibility
- Size of business
- Nature of business
- Regularity and certainty of income
- Period and purpose of financing
- Trading on equity
- Desire to retain control
- Asset structure

External factors

- Conditions in the capital market
- Attitudes of investors
- Cost of financing
- Legal requirements
- Taxation policy
- Attitude of management

Optimal capital structure

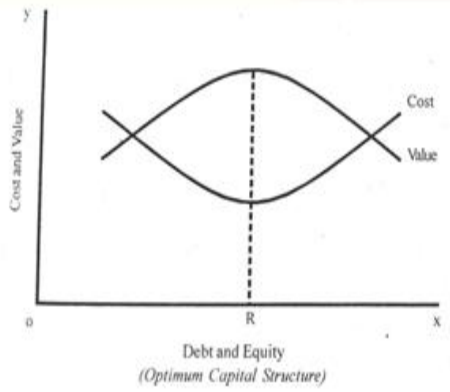
The capital structure which maximises the value of the firm is called optimal structure. Optimum capital structure simply refers to the best or most economical capital structure. It is the mix of debt and equity that maximizes the value of the company and minimizes the cost of capital.

In the words of Ezra, "Optimum leverage is that mix of debt and equity which will maximize the market value of the company and minimize the company's overall cost of capital.

In short, optimum capital structure is the capital structure at which the weighted average cost of capital is minimum and the value of the firm is maximum.

Finding the Optimal Capital Structure

The optimal capital structure is determined by taking into consideration financial leverage, cost of capital and value of firm. The relationship between financial leverage (debt to equity ratio), cost of capital and the value of firm is presented in the following graph:



The above graph shows that firm's value is maximum when its cost is the lowest. This occurs at the debt-equity ratio of OR. Using any debt-equity ratio different from OR would reduce firm's at value and increase its cost. Thus optimal capital structure is represented by debt-equity ratio which cost of capital is lowest and its value is highest

Essentials or Requisites of Sound or Optimal Capital Structure

- Balance
- Economy
- Liquidity and solvency
- Flexibility
- Simplicity
- Safety
- Maximum return
- Maximum control
- Balanced leverage

Patterns or Forms of Capital Structure

(a) Equity shares only.

(b) Equity shares and preference shares.

(c) Equity shares and debentures,

(d) Equity shares, preference shares, and debentures.

Leverage analysis

Meaning and definition of leverage

The term leverage means the relationship between two inter-related Variables. These variables may be cost, output, sales revenue, EBIT, EPS etc. Leverage refers to the percentage change in one variable corresponding to percentage change in the other variable.

In financial management the term 'leverage' is used in a specific sense. Here, it means that by use of certain fixed costs, the firm increases manifold or levers up its profitability. It implies the ability of a firm to use fixed cost assets or funds in order to increase the returns to its shareholders, it may also be defined as relative change in profits due to a change in sales. In UK and Australia, leverage is also known as "gearing".

Types of Leverage

(a) Financial Leverage,

(b) Operating Leverage,

(c) Combined Leverage.

Financial leverage

The Financial leverage may be defined as a % increase in EPS associated with a given percentage increase in the level of EBIT.

Financial leverage emerges as a result of fixed financial charge against the operating profits of the firm. The fixed financial charge appears in case the funds requirement of the firm is partly financed by the debt financing. By using this relatively cheaper source of finance, in the debt financing, the firm is able to magnify the effect of change in EBIT on the level of EPS.

Financial leverage may be favourable or unfavourable. If the earnings by the use of fixed cost bearing securities (debt and preference capital) is more than their fixed costs (interest and

preference dividend), it is known as favourable financial leverage. Favourable financial leverage also known as trading on equity.

If the firm's earnings are less than the cost of borrowed fund (including preference dividend), it is called unfavourable financial leverage. The unfavourable financial leverage cannot be termed as trading on equity.

Impact or effect of financial leverage

- Effect on shareholders earnings
- Effect on financial risk

Computation of financial leverage

$$\text{FL: } \frac{EBIT}{EBT}$$

EBIT: Earnings before interest and tax

EBT: Earning before tax, ie, EBIT-I

I: Interest

Example

Calculate the financial leverage from the following information

Interest: 20000

Sales (1000 units):200000

Variable costs: 100000

Fixed costs: 60000

Solution

Sales	200000
Less: variable costs	100000
Contribution	100000
Less : Fixed costs	60000
Operating profit(EBIT)	40000
Less :interest	20000

Profit before tax (EBT) 20000

FL: $\frac{EBIT}{EBT}$

$\frac{40000}{20000} = 2$

Degree of financial leverage

$$DFL = \frac{\text{\% change in EPS}}{\text{\% change in EBIT}}$$

Characteristics of FL

1. Financial leverage relates with liability side of the balance sheet

2. Financial leverage determines the mix of various methods of financing necessary assets

3. Financial leverage shows the effect of changes in EBIT on EPS due to fixed financial charges

4. Financial leverage involves the financial risk

Importance or Utility of Financial Leverage

- Planning of capital structure
- Profit Planning
- Increase in shareholders' income
- Measurement of risks

Limitations of Financial Leverage

- Double-edged sword
- Increases risk
- Beneficial only to companies having stable earnings
- Restrictions from financial institutions

Operating leverage

Operating leverage refers to the amount of fixed cost in the cost structure. In simple words, presence of fixed cost is known as operating leverage. It measures the extent to which fixed

cost is used in operating the firm. If the fixed costs are more as compared to variable costs, the operating leverage will be high.

Computation of operating leverage

$$\mathbf{OL} = \frac{\boldsymbol{Contribution}}{\boldsymbol{EBIT}}$$

Contribution = sales – variable cost

EBIT = Contribution – Fixed cost

Degree of operating leverage (DOL) = $\frac{\%\ cahnge\ in\ EBIT}{\%change\ in\ sales}$

Example

A firm sells 80,000 units of a product. The selling price per unit is? 8 and the variable cost per unit is Rs 2. Fixed costs for the year amounts to Rs 3, 30,000. Calculate OL and DOL, if it sells (a) 96,000 units, (b) 64,000 units.

Solution

Operating profit or EBIT at various level of sales

	80000 units	96000 units	640000units
Sales	6,40,000	7,68,000	5,12.000
Less: Variable Cost	1,60,000	1,92,000	1,28,000
Contribution	4,80,000	5,76,000	3,84,000
Less: Fixed Cost	3,30,000	3.30,000	3,30,000
Operating Profit (EBIT)	1,50,000	2,46,000	54,000
OL = $\frac{\boldsymbol{Contribution}}{\boldsymbol{EBIT}}$	3.2	2.34	7.1

DOL = $\frac{\%\ cahnge\ in\ EBIT}{\%change\ in\ sales}$

%change in EBIT= $\frac{96000}{150000} \times 100$ $= \frac{-96000}{-150000} \times 100$

+64% -64%

% change in sales $= \frac{128000}{640000} \times 100$ $= \frac{-128000}{-640000} \times 100$

= +20% -20%

$= \frac{+64\%}{+20\%} = 3.2$ $\frac{-64\%}{-20\%} = 3.2$

Interpretation: We can see that a 20% increase in sales results in 64 % increase in profit. On the other hand, a decrease of 20% in sales results in decrease of 64% in profit. It shows that when a firm has fixed operating costs, an increase in sales volume results in a more than proportionate increase in profits and a decrease in sales results in a more than proportionate decrease in profit. This is operating leverage. The former is known as favourable leverage

Characteristics of Operating Leverage

The important features of OL are as follows:

1. OL is related to the asset (fixed assets) side of the balance sheet

2. There is direct relationship between HEP and DOL.

3. DOL is related to selling price per unit and variable cost per unit (I.e. it is related to contribution)

4 .OL magnifies profit as well as risk and the latter is known as unfavourable leverage

Importance or (utility) of operating leverage

- Profit planning
- Capital structure planning
- Risk analysis

Difference between OL and FL

Operating leverage	Financial leverage
1. It magnifies effect of changes in sales volume on operating profit. 2. It establishes relationship between operating profit and sales 3. It relates to the asset side of the balance	It magnifies the effect of changes in operating profit on EPS, 2. It establishes relationship between operating profit and return on equity 3. It relates to the liability side of the balance

sheet	sheet.
4. It influences EBIT.	4. It affects EAT.
5. It is concerned with investment decision	5. It is concerned with financing decision.
6. It is the first stage leverage.	6. It is the second stage leverage.
7. It explains the business risk of the firm.	7. It deals with the financial risk of the firm,

Combined leverage

Combined leverage refers to the combination of OL and FL It is the relationship contribution and the taxable income. It is also known as total or overall leverage

Computation of financial leverage

Combined leverage = OL × FL

or

$$\frac{C}{EBT}$$

Degree of combined leverage

DCL =DOL × DFL

or

$$\text{DCL} = \frac{\%\ change\ in\ EPS}{\%\ change\ in\ sales}$$

Example

A company has a sale of 2, 00,000. The variable costs are 40% of the sales, while the fixed operating costs amount to 60.000 .The amount of interest on long-term debt is 20,000 Calculate the combined leverage and illustrate its impact if sales increase by 5%

Solution

Sales	200000
Less: Variable Cost (40% of sales)	80000
Contribution	120000
Less: Fixed Operating costs	60000

EBIT	60000
Less: Interest	20000
Earning before tax	40000

$CL = \frac{c}{EBT}$ $\frac{120000}{40000} = 3$

The combined leverage 3 indicates that 1 % increase in sales will bring in 3% increase Profit Before Tax. This can be verified when sales increase by 5%

Sales	210000
Less: Variable Cost (40% of sales)	84000
Contribution	126000
Less: Fixed Operating costs	60000
EBIT	66000
Less: Interest	20000
Earning before tax	46000

Increase in percentage of profit = $\frac{increase\ in\ profit}{base\ profit} \times 100$

$$\frac{46000 - 40000}{40000} \times 100 = 15\%$$

From the above calculation, it is clear that 5% increase in sales has resulted in 15% increase in EBT (Earnings Before Tax). That is equal to 16 increase in sales brings 3% increase in EBT

MODULE 4

DIVIDEND DECISIONS

Meaning of dividend

The term dividend refers that portion of after-tax profits which is distributed among the shareholders of the company. It is the reward paid to the shareholders for investments made by them in the shares of the company.

According to the Institute of Chartered Accountants of India dividend is a distribution to shareholders out of profits or reserves available for this purpose.

In short, dividend is the part of profits distributed among the shareholders. Dividend is paid in cash. It is paid out of profit after depreciation and tax.

Types / Forms of Dividend

Cash dividend: This is the most popular form of dividend. It is the dividend paid to shareholders in cash. The cash dividend may be of the following two types

(a) Regular or final dividend:lt is the dividend declared and paid at the end of trading period

After final accounts have been prepared

(b) Interim dividend: It is the dividend declared before the declaration of the final dividend. This is declared at any time between the two annual general meetings.

2. Stock dividend: Companies not having sufficient cash generally pay dividend in the form of shares by capitalising the past reserves and profits. Such shares are called bonus shares.

3. Scrip dividend: In case a company does not have sufficient funds to pay dividend in cash, it may issue transferable promissory notes for a shorter maturity period for amounts due to shareholders. This is called scrip dividend.

4. Bond dividend: In rare cases, dividends are paid in the form of debentures or bonds or notes for a long term period bearing interest at fixed rate. A company issues bonds by way of dividend when it does not have enough funds to pay cash dividend.

5. Property dividend: Sometimes dividend is paid in the form of asset instead of paying dividend in cash.

Mechanics and Practices of Dividend Payment Procedure of Dividend Payment)

1. Declaration date: The declaration date indicates when the Board of Directors meets to declare dividend. It should be noted that the words 'regular and interim are used to impart a message to the shareholder. In a legal sense, they have no meaning

2. Amount: The dividend notice also indicates the amount that shall be paid as dividends

3. Holder of record date: The holder of record date indicates the date on which the company opens the Register of Members to determine who will receive dividends. Anyone holding share on the holder of record date receives the dividend declared.

4. Ex-dividend date: The date from which the stock begins to trade without the right to receive the dividend declared is known as "ex-dividend date". The ex-dividend date helps avoid conflict regarding dividend payments to existing shareholders. Usually the right to the dividend remains with the stock until two days before the holder-of-record date. Who buys the stock on or after the ex-dividend date does not get the dividend.

5. Payment date: The dividend cheques or dividend warrants are mailed to shareholders payment date.

Meaning of Dividend Policy

Dividend policy refers to the policy which determines the allocation of earning into retained earnings and dividend. A company's dividend policy influences the divisions of its net earnings is two parts -dividend and retained earnings

In the words of Weston and Brigham, "Dividend policy determines the division of earnings between payments to shareholders and retained earnings"

Factors or determinants of dividend policy (Considerations of dividend policy)

Internal factors

- stability and size of earnings
- Liquidity of funds
- Investment opportunities and shareholder's preference
- Attitude of management towards control
- Past dividend rates
- Ability to borrow

- Need to repay debt

External factors

- Trade cycle
- Legal requirements
- Corporate tax
- General state of economy
- Conditions in the capital market
- Government policy

Types of dividend policy

1. Stable Dividend Policy

Stable dividend means payment of certain minimum amount of dividend regularly.

(a) Constant dividend per share
(b) Constant percentage of earnings
(c) Constant dividend per share plus extra dividend

Advantages of Stable Dividend Policy

Advantages to shareholders

- It increases the confidence of the shareholders.
- A stable dividend policy meets expectations of investors who are generally income conscious.
- Stable dividend policy attracts investments from institutional investors who wishes always stable rate of dividend.
- It stabilises the market value of shares

Advantages to company

- It increases the goodwill and credit worthiness of the company.
- It helps in preparing financial planning easily
- It is a sign of continued normal operations of the company

Dangers of Stable Dividend

1. Once stable dividend is followed by a company, it is not easy to change it.

2. If the company cannot pay stable dividend in one year, the investors may lose confidence in the company and they may dispose off their holdings.

3. If the company pays stable dividend in spite of its incapacity, it will be suicidal in the long run.

2. Regular and Extra Dividend Policy

Under this policy shareholders are paid a constant rupee dividend as a fixed percentage (called regular dividend) along with extra dividends.

3. Regular Stock Dividend Policy

This is the policy of distributing shares (bonus shares) in lieu of (or in addition to cash dividend to the existing shareholders. Such a policy results in increase in the number of outstanding shares of the company.

4. Regular Dividends Plus Stock Dividend Policy

This is the policy of giving regular (stable) dividend in cash and extra dividend in stock (shares).

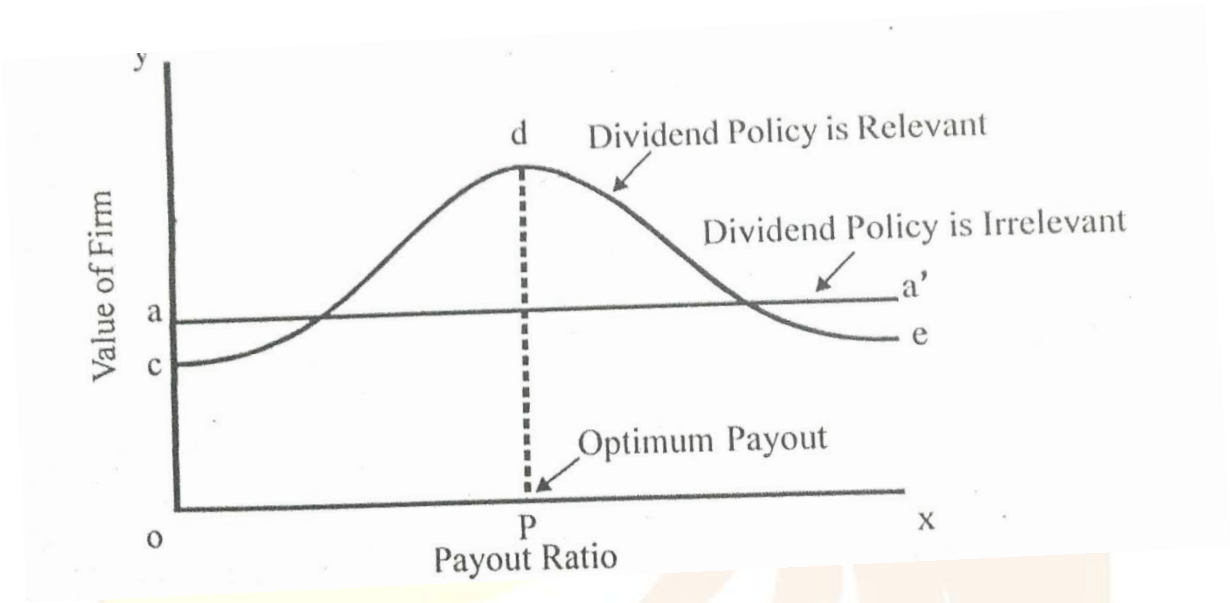
5.Irregular Dividend Policy

This policy is adopted by companies having highly unstable earnings. Under this policy, higher rates of dividends shall be paid in the years of higher profits and lower rates of dividends in the years of lesser profits.

Optimal Dividend Policy

Dividend policy is a controversial issue. Some firms pay 20% of their earnings as dividend some firms pay 60%. Some other firms pay no dividends at all. In short, dividend is a puzzle As regards optimal dividend policy a controversy exists. Some people say that there is no optimal dividend policy. Others say that there is an optimal dividend policy. Let us accept that there is an optimal dividend policy. An optimal dividend policy is one that maximizes the

firm's value its share price. The optimal dividend policy can be studied with the help of the following graph



In the above graph, the horizontal axis shows the pay -out ratio and the vertical axis, the firm value. We get the horizontal line aa' if changes in the dividend pay -out ratio do not affect the firm's value, i.e., dividend policy is irrelevant. If dividend policy is relevant, we get curve cde. Optimum pay-out occurs at point p because maximum firms value (d) occurs at this pay-out. Each firm may have a curve with a different shape. But as long as its line is not horizontal, we can identify an optimal dividend policy.

Dividend Pay-out Ratio

Dividend pay-out ratio is the percentage or ratio of dividend to the earnings. In other words, it is the percentage share of net earning distributed to the shareholders as dividends. In short, it is the ratio between dividend and earnings.

Pay-out ratio and retention ratio are the two terms related to earnings and dividends. These are expressed as follows:

Dividend pay-out ratio= $\frac{Dividend\ per\ share(DPS)}{Earnings\ per\ share(EPS)}$

Retention ratio = $\frac{EPS-DPS}{EPS}$

Pay- out ratio + retention ratio = 1

Dividend policy and value of firms.

The value of firm can be maximised if the shareholders' wealth is maximised. There are two schools of thought on the relationship between dividend policy and value of firm. According to one school of thought, dividend decision (policy) does not affect the shareholders'wealth. It implies that dividends are irrelevant (irrelevance of dividends). According to the other school of thought, dividend decision affects shareholders wealth and also the value of firm. It implies that dividends are relevant (relevance of dividends).

Irrelevance Concept of Dividend (Irrelevance Theory):

This school of thought is associated with Soloman, Modegliani and Miller. According to them dividend policy has no effect on the market price of the share (shareholders' wealth) and value of firm and hence dividend policy is irrelevant. In their opinion investors do not differentiate between dividend and the capital gains

The most important theory explaining this irrelevance concept is Modegliani - Miller Theory.

The market value of the shares is not affected by the dividend payment. Hence shareholders would be indifferent between dividend and retention of earnings. As far as shareholders are concerned whether the company pays dividend or retains earnings, it would not affect them.

MM dividend irrelevance hypothesis also implies that the shareholders are indifferent between dividends and capital gains. When a shareholder gets dividend, he can either spend for consumption or invest it. On the other hand, if the dividend is not paid, even then the market value of shares will increase. This happens because retained earnings increase and the company does not raise funds either through equity or debt.

Assumptions of MM Theory

1. There are perfect capital markets.

2. Investors behave rationally.

3. There are either no taxes or there are no differences in the tax rates applicable to capital gains and dividend

4. There are no floatation and transaction costs.

5. The firm has a fixed investment policy

6. No investor is large enough to affect the market price of shares

Criticisms of the Theory

1. Perfect capital market does not exist in reality

2. While issuing shares the company will have to incur floatation cost.

3. Taxes do exist. Usually capital gains are taxed at a lower rate than dividend income

4. While selling shares investors have to pay brokerage, fees etc. (transaction cost).

5. Most of the shareholders prefer current income rather than future capital gains.

6. Firms need not follow a fixed investment policy

Relevance Concept of Dividend (Relevance Theory):

This concept is associated with M. Gorden, John Linter, James Walter and Richardson. According to them dividend decisions considerably affect the value of the firm. Hence dividend decision or policy is relevant. Those firms which pay higher dividends, will have greater value as compared to those which do not pay dividends or have a lower dividend payout ratio. Thus dividend policy has a positive impact on the firm's position in the stock market. More and more dividend is an indication of more and more profitability.

There are two theories explaining relevance concept of dividend. They are

Walter's theory and Gordon's theory

Walter's Dividend Model (Walter's Dividend Theory:

Prof. James E. Walter has developed dividend model. In this theory Walter argues that dividend decision (dividend policy of a firm is relevant. Hence this is a theory of relevance, This means that dividend policy has an impact on market price of the share. Thus dividend policy affects the value of the firm. According to Walter, the investment policy investment decision of a firm cannot be separated from its dividend policy.

The dividend policy of a firm depends upon the relationship between r and k_e. If $r > k_e$ (i.e., in case of a growth firm) the firm should have zero pay-out (i.e., no dividend) and reinvest the entire profits to earn more than the investors, If however, $r < k_e$ (i.e., in case of a declining firm), then the firm should have 100% pay-out ratio (i.e., entire profits should be distributed as dividends) and let the shareholders invest their dividend income to earn higher returns. If r

= k_e (i.e., in case of a normal firm), the shareholders will be indifferent whether the firm pays dividends or retains the profits. In such a case, the return to the firm from reinvesting the retained earnings will be just equal to the earnings available to shareholders on their investment of dividend income.

a) If r> k_e the payout ratio should be zero (ie., 100% retention ratio)

b) If r< k_e the payout ratio should be 100% (ie zero retention ratio)

c) If r= k_e the dividend is Irrelevant and the dividend policy is not expected to affect the market value of the share,

Assumptions of Walter's Model

1.The firm does not use external sources of fund (only retained earnings). It does not use debt or fresh equity shares

2. The IRR (1.o., firm's rate of earning) and cost of capital (I.e., shareholders expected rate of return) are constant,

3. Earnings and dividend remain constant

4. The firm has a very long life.

5. All earnings are either distributed ais dividend or invested internally immediately.

Criticisms of Walter's Model

1. The assumption that investments are financed through retained earnings is not true. External sources are also used.

2.The IRR and cost of capital do not remain constant.

3. We cannot predict that the firm has a very long life.

4. Risk factor is not considered (because it assumes that EPS is constant)

Gordon's Model:

M. Gordon has also given a model on the line of Walter. He suggested that dividends are relevant and it will affect the value of the firm. He argued that the value of a rupee of

dividend income is more than the value of a rupec of capital gain. This is on account of uncertainty of future and discounting future dividends by shareholders at a higher rate. According to Gordon the market value of a share is equal to the present value of future infinite stream of dividends.

Gordon argues that investors prefer current dividends rather than capital gains, Dividends are more predictable than capital gains. Investors value current dividends more highly than an expected future capital gain, Gordon's model is also known as bird in hand argument. It is called so because this model is based on the assumption that shareholders prefer to receive current dividend rather than distant capital gain.

Assumptions

1. The firm is an all equity firm.

2. Retained earnings are the only source of financing the investment programme

3. The rate of return on the firm's investment (r) is constant.

4. The growth rate of the firm 'g is the product of its retention ratio b' and its rate of return to i.e., $g = b \times r$

5. Cost of capital is constant and it is more than the growth rate.

6. The firm has long-term life.

7. Corporate taxes do not exist.

MODULE 5

WORKING CAPITAL MANAGEMENT

Meaning and Definition of Working Capital

Working capital is the capital required for the day-to-day working of an enterprise.

According to Shubin, "working capital is the amount of funds necessary to cover the cost of operating the enterprise".

Nature of Working Capital

1. Working capital is that part of total capital which is required for the day to day working of Enterprise

2. Working capital is the amount invested in current assets. Current assets are short livied.

3. The level of investment in each of the current assets varies from day to day. Therefore, managing current assets equire more attention than managing fixed assets

4. The level of working capital in a firm determines its liquidity position. However, the working capital should be neither too large nor too less.

5. Generally, the working capital requirements are financed through short term sources. However, a part of it may be financed through long term sources.

6. Working capital management involves cash management, receivables management, payables management, and inventory management.

7. Current assets are inter-related to each other. That is, the decision related to one current asset will also affect other current assets.

8. There are two major concepts of working capital, namely, gross concept and net concept.

Components of Working Capital

Current assets:

Current assets are those assets which can be converted into cash in the normal course of activity of a firm usually one year.

Current liabilities:

Current liabilities are those liabilities which are repayable during short period

Concepts of Working Capital

Gross Concept: According to gross concept working capital refers to the amount of funds invested in current assets. Thus working capital is equal total current assets. The working capital as per gross concept is called gross working capital.

Advantages

1. This concept is helpful in determining the correct amount of working capital at the right time.

2. It helps in planning and control of individual current assets.

3. It helps to maximise return on investment

4. It helps in fixation of financial responsibility.

Net Concept: According to net concept, working capital refers to excess of current assets over current liabilities. The working capital as per net concept is called net working capital.

Advantages

1. It measures the firm's liquidity.

2 It enables the creditors and investors to assess the short term solvency of the firm.

3. It indicates the extent to which working capital can be financed with long term funds.

4 It is an indicator of the financial soundness of an enterprise.

Types of Working Capital

1.Permanent Working Capital

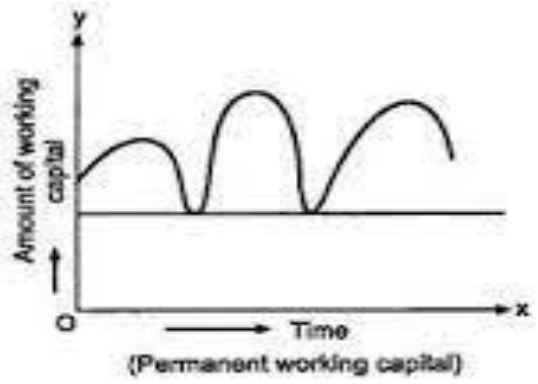
There is always a minimum amount of working capital which is continuously required by the Enterprise to carry out its normal business operations. This is usually called as permanent or fixed working capital. Permanent working capital is again divided into

- Initial working capital
- Regular working capital
- Reserve margin and cushion working capital

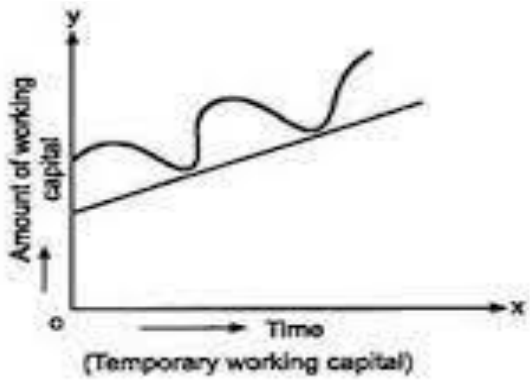
2. Variable Working Capital

Any amount over and above the permanent working capital is variable or temporary working capital. It is the working capital which varies with volume of business. This is the additional capital needed to meet seasonal and special needs.

- Seasonal working capital
- Special working capital



(Permanent working capital)



(Temporary working capital)

Other types of working capital

- Balance sheet working capital
- Cash working capital

Dangers of Deficiency of Working Capital

1. It may lead to business failure.

2. The firm cannot take advantage of new opportunities or adapt to changes

3. Trade discounts will be lost.

4 Cash discounts will be lost.

5. Financial reputation is lost. Creditors may not co-operate in times of difficulty because of the loss of creditworthiness

6. Creditors may apply to court for winding up.

7. Rate of return on investment falls.

8. It affects dividend policy adversely.

9. The company cannot utilise its fixed assets properly.

Dangers of Excessive Working Capital

1. Excessive working capital means idle funds which gives no profit. Thus the rate of return falls

2. The value of shares may fall due to lower rate of return on investment

3. Efficiency of management may deteriorate.

4. It may encourage speculation.

5. Liberal dividend policy may be encouraged.

6. Inefficiency may be encouraged. There may be increased waste and loss due to bad debts.

Advantages of Adequate Working Capital

1. The firm can avail of the cash discount facilities offered by the suppliers.

2. It enhances the liquidity, solvency and creditworthiness of the concern**.**

3. It is possible to meet unseen contingencies and successfully sail through the periods of crisis.

4. It improves the morale of the executives

5. Good relations with banks can be maintained.

6. It is possible to utilise fixed assets fully

7. It enables to undertake research, innovation and expansion programmes,

8. It increases profitability of the business

9. It ensures regular supply of raw materials and continuous production

10. It can make regular payment of day-to-day expenses.

Operating Cycle Concept

Operating cycle refers to the average time elapses between the purchase of raw materials and the final cash realisation. According to Hunt, William and Donaldson, The working capital is required because of the time gap between the sale and their actual realisation in cash. This time gap is technically termed as Operating Cycle of the business.

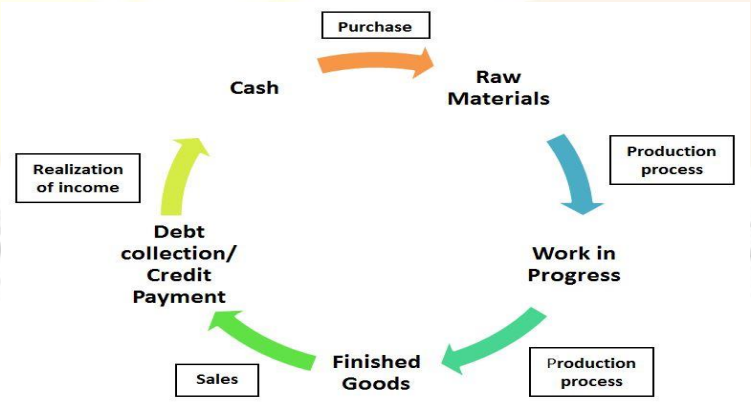
(a) Conversion of cash into raw materials

(b) Conversion of raw materials into work in progress

(c) Conversion of work in progress into finished goods.

(d) Conversion of finished goods into accounts receivables (debtors and bills).

(e) Conversion of accounts receivable into cash



Operating Cycle of a Business

Importance of Operating Cycle Concept

- Operating cycle concept is mainly used to ascertain the requirement of cash working capital

- Management must ensure that the operating cycle does not become too long. Operating cycle concept measures the working capital requirement. It traces the changes in working capital.
- It also determines the optimum level of working capital requirement.
- The operating cycle concept measures the operating efficiency of financial management.

Factors determining working capital requirements

- Nature of business
- Production cycle
- Size of the business
- Turnover
- Terms of trade
- Business cycle fluctuations
- Nature and value of the product
- Seasonal fluctuation
- Use of manual labour or machines
- Growth and expansion of business
- Company policies

Hard Core Working Capital (Core Current Assets)

Hard core working capital is the permanent working capital which is required to produce goods and services necessary to satisfy their demand at the lowest point. It is the minimum amount of current assets that must be kept at all times.

Working capital management

Working capital management simply to management of working capital. In other words, it is the management of current asset current liabilities.

Dimensions of Working Capital Management

1. Formulation of policies with regard to profitability, risk and liquidity.

2. Decisions about the composition and level of current assets.

3. Decisions about the composition and level of current liabilities.

Principles of working capital management

- Principle of risk variation
- Principle of cost of capital
- Principle of equity position
- Principle of maturity payment

Determination of working capital requirement

(a)Total cost incurred on material, wages and overheads.

(b) The length of time for which raw materials are to remain in stores before they are issued for production.

(c)The length of the production cycle or work in progress

(d) The length of the sales cycle during which finished goods are to be kept waiting for sale.

(e) The average period of credit allowed to customers.

(f) The amount of cash required to meet the day-to-day expenses.

(g) The average amount of cash required to make advance payments

(h)Time lag in payment of wages and other expenses

(i)The average period of credit allowed by suppliers.

(j)Amount to be provided for contingencies.

Methods of Estimating Working Capital Requirement

(a)Net current asset forecasting method

(b) Operating cycle method

(c) Projected Balance Sheet method

(d) Adjusted Profit and Loss Account method

(e) Cash Flow Forecast method

Net current forecast method

Under this method, first of all, value of each current asset is estimated. After this an estimate of current liabilities is made. Difference between the total estimated amount of current assets and current liabilities gives the net working capital requirement of the firm.

I Current Assets :	Amount	Amount	Amount
Minimum Cash Balance		****	
Inventories :			
Raw Materials	****		
Work-in-progress	****		
Finished Goods	****	****	
Receivables :			
Debtors	****		
Bills	****	****	
Gross Working Capital (CA)		****	****
II Current Liabilities :			
Creditors for Purchases		****	
Creditors for Wages		****	
Creditors for Overheads		****	****
Total Current Liabilities (CL)		****	****
Excess of CA over CL			****
+ Safety Margin			****
Net Working Capital			****

Example.1

Hi-tech Ltd. plans to sell 30,000 units next year. The expected cost of goods sold is as follows :

	₹ (Per Unit)
Raw material	100
Manufacturing expenses	30
Selling, administration and financial expenses	20
Selling price	200

The duration at various stages of the operating cycle is expected to be as follows :

Raw material stage	2 months
Work-in-progress stage	1 month
Finished stage	1/2 month
Debtors stage	1 month

Assuming the monthly sales level of 2,500 units, estimate the gross working capital requirement. Desired cash balance is 5% of the gross working capital requirement, and working-progress in 25% complete with respect to manufacturing expenses.

Solution :

Statement of Working Capital Requirement

1. **Current Assets** :	Amt. (₹	Amt. (₹.)
Stock of Raw Material (2,500×2×100)		5,00,000
Work-in-progress :		
Raw Materials (2,500×100)	2,50,000	
Manufacturing Expenses 25% of (2,500×30)	18,750	2,68,750
Finished Goods :		
Raw Materials (2,500×½×100)	1,25,000	
Manufacturing Expenses (2,500×½×30)	37,500	1,62,500
Debtors (2,500×150)		3,75,000
		13,06,250
Cash Balance (13,06,250×5/95)		68,750
Working Capital Requirement		13,75,000

Note : Selling, administration and financial expenses have not been included in valuation of closing stock.

Operating cycle method

Operating cycle is the duration of time within which one cycle of business operation is completed. Business operations involve a number of stages.

A)Calculation of duration of operating cycle:

O = R + W+ F +D-C

where, O= Duration of operating cycle

R = Raw material average storage period

W = Work in progress average period

F = Finished goods average storage period

D=Debtors collection period

C=Creditors payment period

1.Raw material storage period:

$$\frac{\text{Average stock of raw material}}{\text{Annual cost of raw material consumed}} \times 365$$

Average stock:

$$\frac{\text{Op.stock+clo.stock}}{2}$$

Average daily consumption:

$$\frac{\text{Material consumed during the year}}{365}$$

If raw material consumed is not given

Raw material consumed = opening stock of material+purchase of material+carriage on purchase-closing stock

2. Average period of WIP:

$$\frac{\text{Average stock of WIP}}{\text{Annual cost of production}} \times 365$$

Average WIP:

$$\frac{\text{Op. WIP+Cl.WIP}}{2}$$

Average daily production cost :

$$\frac{\text{Total production cost}}{365}$$

If cost of production is not given =Cost of raw material consumed + Wages + Manufacturing expenses +Op work in progress - CL work in progress

3.Finished goods average storage period:

$$\frac{\text{Average stock of finished goods}}{\text{Annual cost of goods sold}} \times 365$$

Av stock of FG:

$$\frac{\text{Op FG + CL FG}}{2}$$

Daily average stock of goods sold:

$$\frac{\text{Cost of goods sold}}{365}$$

If annual cost of goods sold is not given, it is found out in the following manner:

Cost of goods sold =Cost of production + Opening stock of finished goods - Closing stock of finished goods

4.Debtors collection period:

$$\frac{\text{Average debtors}}{\text{Annual credit sales}} \times 365$$

Av Debtors : $\frac{\text{Op Drs + CL. Drs}}{2}$

Av daily credit sales :

$$\frac{\text{Credit sales}}{365}$$

5. Creditors payment period:

$$\frac{\text{Average creditors}}{\text{Annual credit purchase}} \times 365$$

Av Creditors :

$$\frac{\text{Op. Crs + Cl..Crs}}{2}$$

Av. daily credit purchase:

$$\frac{\text{Total credit purchase}}{365}$$

B)Calculation of number of operating cycle in aerating period:

Number of operating cycles:

$$\frac{365}{\text{Period of operating cycle}}$$

C) Estimating the working capital requirement

Projected Balance Sheet Method

Under this method, estimates of different assets (excluding cash) and liabilities are made taking into consideration the transactions in the ensuing period. Thereafter, a balance sheet is prepared on the basis of these forecasted assets and liabilities. It is called "Projected Balance Sheet**"**

Adjusted Profit and Loss Method

Under this method, estimated profit is calculated on the basis of transactions of the ensuing period. Thereafter, increase or decrease in working capital is computed adjusting the estimated profit by cash inflows and cash outflows. It is like cash flow statement.

Cash Forecasting Method

In this method, estimate is made of cash receipts and payments in the ensuing period. The difference of these receipts and payments indicates surplus or deficiency of cash. It is like cash budget**.**

Zero Working Capital Concept

Competition is growing in the world economy. In view of this, greater emphasis is being laid on zero working capital concept. According to this concept, at any time, total current assets are exactly equal to total current liabilities. The objective is to avoid excess investment in working capital.

Zero working capital =Current assets =Current liabilities

Sources of working capital

Long term sources: These provide funds for a relatively long period. The main long term sources are share capital, debentures, long term borrowings, retained earnings etc.

Short term sources: These usually provide funds for a short period say up to one year or so. The main short term sources are bank credit (commercial banks and indigenous banks), public deposit, commercial papers, factoring etc.

Transactionary sources: These provide funds to a business through the normal business operation. These are automatic sources of short term funds. These are also called spontaneous sources of finance**.**

Long term or permanent sources

- Shares
- Debentures
- Loan from financial institutions
- Retained earnings(Ploughing back of profit)

Temporary or short term sources

- Commercial banks
- Public deposit
- Indigenous bankers
- Factoring

Transactionary sources

- Trade creditors

- Depreciation
- Tax liabilities(provision for taxation)

Management of cash

Meaning of Cash

Cash is the most liquid asset that a business owns. It is the life blood of working capital. It is defined as demand deposits plus currency. According to S.E. Bolten, "Cash is the oil to lubricate the ever turning wheels of business; without it the process grinds to a stop".

Nature of Cash

1. Cash is necessary for efficient working of the organisation.

2. Cash is the most liquid asset.

3. Cash is not available in abundance like air but is essential for economic development.

4. Cash in itself is unproductive unless human beings make use of it.

Motives for Holding Cash (Reasons)

- Transaction motive
- Transaction motive
- Precautionary motive
- compensating motive

Factors Determining the Cash Level or Cash Needs

- Credit policy
- Distribution Channel
- Distribution Channel
- Size and area of operation
- Cash cycle
- Policy of disbursement of salary etc
- Credit standing of the firm

Meaning of Cash Management

Cash management simply refers to management of cash, i.e. cash inflows and cash outflow: It is the process of forecasting collecting, disbursing, investing and planning for the cash a company needs to operate its business smoothly.

Objectives of Cash Management

(a) To prevent insolvency or bankruptcy

(b) To maintain a good relation with creditors, suppliers etc.,

(c) To ensure strong credit rating

(d) To take advantage of favourable business opportunities.

Scope of cash management

- Cash planning
- Managing cash flows
- Managing optimum cash balance
- Investing cash

Functions of cash management

- Planning cash inflows and outflows
- Controlling cash inflows and outflows
- Investing surplus cash
- Improving investment image
- Maintaining relationship with banks

Advantages of cash management

1. The availability of cash may be a matter of life or death. A sufficiency of cash can keep an unsuccessful firm going. Conversely, insufficiency of cash can bring failure.

2. An efficient cash management enables a firm to obtain optimum working capital. It avoids cash shortage and facilitates investment of cash. This is possible through cash budget.

3. Cash management ensures liquidity and solvency. In this way it assures survival of business. Further, it avoids retaining unnecessarily large cash balances.

4. It helps to frame a sound debt policy. The focus is on the solvency of the firm in adverse circumstances rather than on the effects of leverage in normal circumstances.

5. It helps to regularise cash flows. This helps to management to make planning more effective

6. It brings into light balance sheet changes and other cash flows that do not appear in the P/L

Account

Techniques of cash management

1) Synchronize cash flows

If a firm pays its bill on a weekly basis but collect its payments biweekly, we say the firm has a lack of cash flow synchronization. This means its cash outflows and inflows do not occur simultaneously. The firm can reduce the needed cash balance if it can move the cash disbursements and cash collections into the same cash flow cycle. Sometimes such synchronization is not possible, at other times it is accompanied by additional costs. For example, the firm may be able to pay its bills on a biweekly basis by adding some percentage to the bills to compensate the cash receivers for the week's time delay. The management should consider the benefits and the cost of synchronization before deciding whether it is worthwhile to achieve

2) Accelerating cash receipts

The finance manager should take steps for speedy recovery from debtors. For this purpose proper internal control system should be installed in the firm.

- **Lock box system**

  This system was introduced in USA in 1947. This is a system of speedy collection of cash from debtors. In other words, lock box system reduces the mail time delay. This system is popular in USA (not popular in India). Under this system the firm (payee) establishes (or takes on rent) a post office box near customers area. The firm the orders its debtors to send their cheques to the post office box rather than to the firm's headquarters. The payments are

collected by local banks, which are authorised to do so. The bank opens the box several times a day and collects the cheques from the lock box. Then the bank deposits these cheques in the firm's account. This cuts an average of two or three days out of the whole process. Large firms have many lock boxes in all the areas where their customers are concentrated.

Merits of Lock Box System:

(a) It reduces the mailing time of customers' payments

(b) It reduces the chances of fraud in the collection process

(c) It reduces the time during which payments received remained uncollected

(d) It reduces costs associated with the manual preparation of daily deposits

(e) It provides early knowledge of dishonest cheques,

(f) It reduces uncertainty attached with traditional postage system.

Demerits of Lock Box System:

(a) It is expensive

(b) It is not suitable for small firms

(c) It is economical only if there is a relatively large number of payments being received in a particular area

- **Concentration Banking**: Firms that have many branches at different places can collect their account receivables quickly by applying a concentration banking system. This system works on a decentralized manner. Under this system, multiple collection points are made to expedite the collection of funds. This reduces mailing time. Collection centers or points are set up in different geographical centres. The company has a central account called concentration banking. When the customer deposits his payment to the local collection center, it gets transferred to the central office.
- **Automated Clearing Houses**: This is an electronic network. It sends data from one bank to another. No paper cheques are sent. Hence this avoids mail time delay. ACH guarantees one-day clearing regardless of the bank's location

- **Zero Balance Accounts**: Under this system a firm does not keep any cash balance in the bank account. Cash is transferred only when the cheque is presented for the payment to the bank. Thus a zero balance account is a bank account with a zero balance. Only an amount sufficient to cover day's cheques is deposited. Idle cash balance is thus minimized.
- **Wholly owned collection centre**: Under this method, a firm sets up its own collection centres in the cities where there are the majority of its customers. The customers mail their payments, processes them and records the transactions in the books of accounts. It then Deposits the cheques with the designated bank and transmits payment to the central office.
- **Pre-authorized cheques**: Customers deposit with the customer pre signed cheques. The date of the cheque corresponds to the date when payment is due. The supplier deposits the cheque on the appointed date and the amount is credited to his account.

3) Delaying Payments (Managing Outflows or Disbursements)

An effective control over cash outflows or payments also help a firm in better cash management Financial manager should try to slow down the payments as much as possible

- Centralised cash payments
- Avoidance of early payments:
- Payment through cheques
- Float management

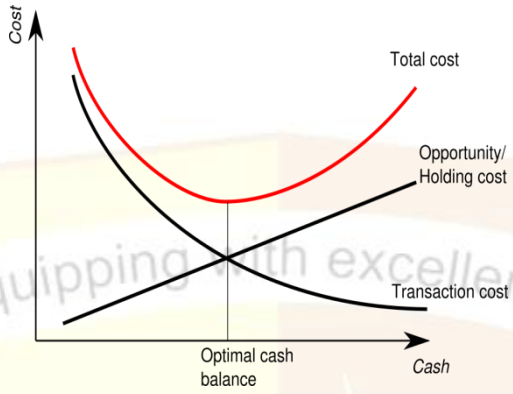
Other Techniques of Cash Management

- Effective inventory management
- Minimum operational cost
- Reducing the time span of production cycle
- Investment in marketable securities

Optimum Cash Balance

Every firm needs an optimum level of cash to ensure smooth operations. Therefore the aim of efficient cash management is to maintain an optimum level of cash. The optimum level of cash is that level of cash at which there is a trade off between cost of maintaining the cash

surplus and cost of deficit financing. The optimum level of cash should be adequate enough to manage the contingencies and basic cash requirements of the firm.



Cash Conversion Cycle

Cash conversion cycle refers to the time period between the dates when it pays its suppliers and the date it receives cash from its customers.

Cash conversion cycle =Operating cycle - Average payment period

Operating cycle = Average inventory period + Average receivables period

Thus, cash conversion cycle = Average inventory period + Average receivable period - Average payment period

Inventory management

Meaning of inventory

Inventory or stock refers to the goods and materials that a business holds for the ultimate goal of resale, production or utilisation. Inventory management is a discipline primarily about specifying the shape and placement of stocked goods.

Types or forms of inventory

- Raw materials inventory
- Work in progress inventory
- Finished goods inventory

Meaning of Inventory management

Inventory management simply refers to management of inventory. Inventory management is the sum total of those activities needed for the acquisition, storage and usage of materials, Although the finance department does not itself manage the firm's inventory, it has a responsibility to ensure that the inventory is being managed effectively and efficiently.

Objectives of inventory management

1. To ensure that adequate inventories are available for smooth operation.

2. To minimise investment of funds in the inventories.

3. To minimise the costs of ordering and carrying inventories.

4.To maximise the wealth of the shareholders (i.e. to maximise profitability).

5. To avoid cash crisis

6. To avoid both over-stocking and under-stocking of inventories

7. To minimise losses on account of obsolescence, pilferage, wastage etc,

8. To ensure right quality products at reasonable prices

Motives for holding inventory

- Transaction motive
- Production motive
- Speculative motive

Benefits and cost of inventories

Benefits of inventories

- Uninterrupted production
- Efficient purchase
- Independent sales
- Goodwill with customers

Costs of inventory

- Ordering cost
- Carrying cost
- Stock out cost

Factors affecting level of inventory

- Nature of business
- Nature of product
- Length of manufacturing cycle
- Financial position
- Inventory turnover
- Inventory cost

Techniques of inventory management

1.Economic order quantity(EOQ)

Economic order quantity is a technique used in inventory management. It refers to the optimal amount of inventory a company should purchase in order to meet its demand while minimizing its holding and storage costs.

Assumptions of EOQ

1. The demand for the material (i-e consumption) is exactly

2. The consumption rate is constant

3. The purchase price of material per unit is fixed.

4. The carrying cost or storage cost per unit is fixed.

5. The ordering cost per order is fixed.

6. The quantity of material ordered is received immediately, i.e. the lead time is zero.

Determination of EOQ

There are four methods or approaches to determine EOQ. They are as follows:

1. Algebraic method

2. Graphical method

3. Tabular method

4. Cost comparison method

Algebraic or formula method: This method is very useful if the purchase of material does not fluctuate from one order size to another. Under this method, EOQ is computed by the following formula:

$$ECQ = \sqrt{\frac{2\ CO}{I}}$$

where, C = Annual consumption or usage of material

O = Cost of placing an order

I = Annual carrying or storage cost per unit.

Benefits of EOQ

EOQ is a useful technique of inventory management. It tells the quantity to order and also the time to order. It helps in deciding when to replenish the inventory and also the quantity to be replenished. It avoids the demerits of both small orders and large orders. In short, it helps in maintaining an optimum level of inventory

Limitations of EOQ

1. It is difficult to predict the exact usage of items. This is because consumption fluctuates with demand as well as with seasonal variation.

2. The assumption that constant rate of consumption of inventories is not feasible in actual situations the rate of consumption may vary over time.

3. The assumption that quantity ordered is received immediately is not realistic. The supply may not immediately reach the firm as soon as the order is placed.

4. EOQ concept is based on the fact that ordering costs and transportation costs are constant for the order quantities and period considered. But this is not true.

Period Order Quantity (POQ)

POQ refers to the time gap between two orders. It simply refers to order interval.

Classification and Codification of Materials

For efficient storage, proper classification and codification of materials is necessary Classification of materials refers to grouping of materials according to their nature in suitable categories.

Having classified the materials, the next step is to codify the materials. Codification is the process of giving distinct numbers or letters or symbols to each item of material to facilitate easy identification.

Stock Levels

Maximum level: Maximum stock is the upper level of inventory. It is the maximum quantity of an item of material that can be held in stock at any time.

Maximum level = Reorder level + Reorder quantity - (Minimum consumption x Minimum reorder period)

Factors to be considered: While fixing the maximum level, the following factors should be considered:

a)Rate of consumption of material, (b) Availability of funds, (c) Storage space available, (d) Time necessary to obtain new materials, (e) Storage cost, (f) Economic order quantity, (g) Seasonal and cyclical fluctuations, (h) Risk of obsolescence.

Minimum Level: Minimum stock level is the minimum quantity of stock that should be held at all times. It is that level below which stock should not normally be allowed to fall. Minimum level = Reorder level - (Normal consumption x Normal reorder period)

Normal consumption means average consumption of material. Normal or average reorder period is computed as follows:

$$\frac{\text{Minimum reorder period + Maximum reorder period}}{2}$$

Factors to be considered: In fixing the minimum level, the following factors should be considered a Nature of item of material, (b) Average time required to get new materials, (c) Average rate of consumption of material, (d) Production requirement, (e) Reorder level, (g) Reorder quantity,

Reorder Level (Ordering Level): This is the level at which order is placed for further supply of materials. When the stock of material reaches this level, the storekeeper should initiate action for the purchase of material. Reorder level is fixed somewhere between minimum level and maximum level,

Reorder level = Maximum consumption x Maximum reorder period

or

Minimum level + Average consumption x Average reorder period.

Factors to be considered: While determining reorder level, the factors to be taken into consideration are: (a) Rate of consumption, (b) Reorder period, (c) Variation in reorder period, (d) Minimum level, (e) Economic order quantity:

Average stock level: This is the average stock held by a concern. It is calculated by the following formula:

Average stock level = Minimum level +1/2 Reorder quantity

or

$$\frac{\text{Minimum level + Maximum level}}{2}$$

Danger level: This is the level of stock below which the stock should never be allowed to fall. If the stock level falls below the minimum level is called the danger level.

Danger level = Average consumption x Maximum reorder period for emergency purchases.

Reorder Period: In connection with stock levels, the term reorder period refers to the time required to obtain new materials. It is the time gap required between placing an order and the actual receipt of the materials.

Safety Stocks

A safety stock is an addition supply of inventory that is carried all the time to be used when normal stocks run out. It is the minimum additional inventory to serve as a safety margin or buffer or cushion to meet an unanticipated increase in usage. In short, safety stock is the extra inventory carried to serve as insurance against fluctuations in demand.

Inventory Turnover Ratio

Material turnover ratio is the ratio of cost of material consumed during a given period to the average stock during that period. It indicates the speed with which the raw materials have been consumed in production

Selective Inventory Control

Selective Inventory Control is an essential part of Materials Management. Selective control is emphasizes on variations in methods of control from item to item based on selective basis. We cannot apply uniform control since it's expensive and gives diffused effect.

The various selective inventory control techniques are: ABC Analysis, VED Analysis, SAP Analysis, FSN Analysis, HML Analysis, SDE Analysis, SOS Analysis, GOLF Analysis, XYZ Analysis etc. Only ABC Analysis and VED Analysis are discussed here:

ABC Analysis (Always Better Control or Alphabetic Control)

In materials management, ABC analysis is an inventory categorization technique. ABC analysis divides an inventory into three categories—"A items" with very tight control and accurate records, "B items" with less tightly controlled and good records, and "C items" with the simplest controls possible and minimal records.

VED analysis (Vital, essential and desirable)

VED analysis is an inventory management technique that classifies inventory based on its functional importance. It categorizes stock under three heads based on its importance and necessity for an organization for production or any of its other activities. VED analysis stands for Vital, Essential, and Desirable

Aging schedule of inventories

An aging schedule is an accounting table that shows a company's accounts receivables, ordered by their due dates. It's a breakdown of receivables by the age of the outstanding invoice, along with the customer name and amount due.

Stock verification (inventory system)

Stock Verification Stock verification is done by actual counting, weighing and measuring of items in stock which is necessary to support stock value as per ledger balance

- Periodic inventory system
- Perpetual inventory system

Just in time technique (JIT)

The just-in-time (JIT) inventory system is a management strategy that aligns raw-material orders from suppliers directly with production schedules. ... The JIT inventory system contrasts with just-in-case strategies, wherein producers hold sufficient inventories to have enough product to absorb maximum market demand.

Management of receivables

Meaning of Receivables: Receivables, also regarded as accounts receivable, are debts owed to a firm by its customers for goods or services used or delivered but not yet paid for.

Receivables=Debtors + Bills receivable

Characteristics of receivables

- Risk
- Economic value
- Uncertainty

Meaning of receivables management

Receivables management simply refers to management of receivables, It refers to planning and control of receivables of a firm. It is the process of making decisions relating to investment in trade debtors. In short, receivable management is a process to minimise the risk (of bad debts maximise the returns on receivables.

Objectives of Receivables Management

1. To increase sales.

2. To increase profitability.

3. To increase market share of product.

4. To increase customer base

5. To evaluate and control receivables

Scope of Receivables Management (Techniques of Receivables)

- Determining optimum credit policy
- Determining credit terms
- Evaluating the credit applicants
- Determining collection policies and methods
- Control and analysis receivables

Cost and benefit of receivables

Cost of receivables

- Administration cost
- Capital cost
- Delinquency cost
- Default cost

Benefit of receivables

- Increase in sales
- Increase in profits
- Extra profit
- Increase in market share

Factors affecting size of receivables

- Credit policy
- Credit terms
- Nature of business
- Stability of sales

- Cost of receivables
- Collection policy
- Quality of customers