PERIYAR UNIVERSITY

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CENTRE FOR DISTANCE AND ONLINE EDUCATION

(CDOE)

BACHELOR OF BUSINESS ADMINISTRATION

SEMESTER - III

CORE – VI: FINANCIAL MANAGEMENT

(Candidates admitted from 2024 onwards)

PERIYAR UNIVERSITY

CENTRE FOR DISTANCE AND ONLINE EDUCATION (CDOE)

B.B.A 2024 admission onwards

CORE – VI
Financial Management

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Syllabus

Financial Management

Unit I: Meaning, objectives and Importance of Finance —Sources of finance – Functions of financial management — Role of financial manager in Financial Management.

Unit II: Capital structures planning - Factors affecting capital structures — Determining Debt and Equity proportion — Theories of capital structures — Leverage concept.
Cost of capital — Cost of equity — Cost of preference share capital — Cost of debt — Cost of retained earnings — Weighted Average (or) Composite cost of capital (WACC)

Unit III: Capital Budgeting: ARR, Payback period, Net present value, IRR, Capital rationing, simple problems on capital budgeting methods.

Unit IV: Dividend policies — Factors affecting dividend payment - Company Law provision on dividend payment —Various Dividend Models (Walter's Gordon's —M.M. Hypothesis)

Unit V: Working capital — Components of working capital —operating cycle — Factors influencing working capital — Determining (or) Forecasting of working capital requirements.

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UNIT 1 Introduction to Financial Management

Meaning, objectives and Importance of Finance – Sources of finance – Functions of financial management – Role of financial manager in Financial Management.

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Welcome learners, To Financial Management! This essential discipline focuses on the strategic management of financial resources for organizational success. Financial managers oversee budgeting, risk assessment, and investment decisions, ensuring efficient resource allocation. Through rigorous study, we'll explore the principles of financial planning, investment analysis, and fiscal responsibility. Together, we'll unravel the complexities of Financial Management and its pivotal role in business sustainability.

1.1.1 Introduction to Financial Management:

Financial management is crucial in any organization, as it involves the strategic planning, organizing, directing, and controlling of financial undertakings. Finance is often referred to as the lifeblood of an enterprise because it is essential for the smooth operation and growth of any business. Whether an organization is large or small, adequate financial resources are necessary to maintain operations and achieve business goals. Effective financial management ensures that funds are procured at the right time and cost, and are efficiently allocated and utilized to maximize the value of the organization. It encompasses various activities, such as budgeting, forecasting, investment analysis, and managing cash flows.

Good financial management helps in making informed decisions, mitigating risks, and ensuring the long-term sustainability of the business. Without sound financial practices, no enterprise can achieve its objectives or sustain its competitive edge in the market. Therefore, understanding and implementing robust financial management strategies is vital for the success and growth of any business entity.

Definitions:

Financial management deals with procurement of funds and their effective utilisation in the business. - S.C. Kuchhal

Financial management is the operational activity of a business that is responsible for obtaining and effectively utilizing the funds necessary for efficient operations.- JL Massie

Meaning:

Financial management is about using a company's financial resources wisely to reach its goals. It involves deciding how to arrange and use both short-term and long-term funds. This includes choosing the best sources of funds and making sure the funds are used effectively. Financial management helps ensure the company has enough cash and credit to operate smoothly. It involves planning and controlling financial activities to support the company's objectives.

Business Finance: Business Finance means the funds and credit employed in the business. Finance is the foundation of a business. Finance requirements are to purchase assets, goods, raw materials and for the other flow of economic activities.

1.1.2 Objectives of Financial Management:

Financial management is concerned with procurement and use of funds. It is main aim is to use business funds in such a way that earnings are maximized. Its primary aim is to utilize business funds effectively to maximize earnings and ensure the economic welfare of the owners. Within financial management, there are two main objectives:

- ❖ Profit maximization
- ❖ Wealth maximization

Profit maximization:

Profit maximization is the traditional approach that emphasizes maximizing the profit of the business. Business being an economic institution must earn profit to cover its cost and profit funds for growth. No business can survive without earning profit. Profit is a measure of efficiencies of a business enterprise. Profit also serves as a protection against risk.

Features of profit maximization:

Profit maximization is also a narrow approach which aims at, maximizing the profit of the concern. Profit maximization consists of the following important features:

- Profit maximization focuses on maximizing the profit per share, which is vital for attracting investors and maintaining shareholder confidence.

- The primary goal of any business is to earn a profit, as it indicates the efficiency of its operations.
- Profit maximization helps in mitigating risks associated with the business by ensuring sufficient funds for growth and future uncertainties.

Arguments in favour of profit maximization:

❖ Test of Economic Efficiency:

Profit serves as a measure of the company's economic performance, indicating its ability to generate returns on investments.

❖ Efficient Allocation of Funds:

Maximizing profit ensures that resources are allocated to the most profitable uses, leading to optimal utilization of resources.

❖ Social Welfare:

Profitable businesses can distribute dividends to shareholders, pay wages to employees, and fulfill their obligations to creditors, thereby contributing to social welfare.

❖ Basis of Decision Making:

Profitability is a critical factor in decision-making processes within a business, guiding strategic choices and resource allocation.

Limitations of profit maximization:

❖ Quality of Benefits:

Maximizing profit may lead to sacrificing quality or ethical considerations in pursuit of financial gains.

❖ Ambiguity and Vagueness:

Profit maximization objectives may lack clarity and precision, making it challenging to implement effectively.

❖ Time Value of Money:

Profit maximization may not account for the time value of money, leading to suboptimal investment decisions.

- Change in Organizational Structure:

  Business environments and structures evolve over time, impacting the relevance of profit maximization as a sole objective.

- Social Welfare Concerns:

  Profit maximization may overlook broader social welfare considerations, such as environmental sustainability or ethical practices.

- Financing and Dividend Considerations:

  Sole focus on profit may neglect the long-term sustainability of the business and its ability to meet financing and dividend obligations.

Wealth maximization:

The wealth maximization is also known as net present worth maximization approach. It takes into consideration the time value of money. Its operational features ensure that financial decisions meet three key criteria: the quality of benefits, the timing of benefits, and exactness. The core principle of wealth maximization is to enhance the owner's economic welfare. The wealth maximization principle implies that the fundamental objectives of a firm should be to maximize the market value of its share.

Arguments in favour of wealth maximization:

- Focus on Shareholder Value:

  Wealth maximization prioritizes enhancing the value or wealth of shareholders. By increasing the market value of shares, it directly benefits shareholders, aligning the interests of management with those of the owners.

- Consideration of Cost-Value Comparison:

  Unlike profit maximization, which focuses solely on earnings, wealth maximization evaluates the comparison between costs and the value generated. This approach ensures that financial decisions contribute positively to overall wealth creation.

- Incorporation of Time and Risk:

  Wealth maximization takes into account both the time value of money and the associated risks of business operations. By considering the present value of future

cash flows and risk factors, it provides a more comprehensive framework for decision-making.

- Efficient Resource Allocation:

  The wealth maximization objective encourages efficient allocation of resources within the firm. Investments and financial decisions are evaluated based on their potential to enhance shareholder wealth, leading to optimal utilization of available resources.

- Societal Economic Interest:

  By focusing on long-term wealth creation, wealth maximization contributes to the economic well-being of society as a whole. Sustainable growth and value creation by businesses positively impact various stakeholders, including employees, suppliers, and the broader community.

Limitation of wealth maximization:

- Social Desirability:

  While wealth maximization benefits shareholders, it may not always align with broader social welfare objectives. Maximizing shareholder wealth does not necessarily address societal concerns such as income inequality, environmental sustainability, or ethical considerations.

- Interests of Other Stakeholders:

  Wealth maximization primarily serves the interests of equity shareholders. However, it may not prioritize the interests of other stakeholders, such as debenture holders or preference shareholders, whose claims may be subordinate to equity holders.

- Managerial Agency Issues:

  Managers, tasked with maximizing shareholder wealth, may prioritize their own interests or short-term gains over long-term value creation for shareholders. This divergence of interests can lead to agency problems and conflicts within the firm.

- Sustainability and Long-term Risks:

  Focusing solely on immediate wealth maximization can lead companies to ignore long-term risks, such as those associated with climate change or resource depletion. This short-sighted approach can ultimately jeopardize the company's future stability and profitability.

Different between profit maximization &wealth maximization:

Basis of distinction	Profit maximization	Wealth maximization
1.Purpose	Main purpose profitability derived out of economic activity of business.	Main purpose value of firm and market value of share.
2.Formula	Profit=total revenue receipts - total cost	Wealth=no. of share*current stock price per share
3.Time span	Short term period	Long term period
4.Constraints	1.time value of money concept 2. Short term vision based.	1. Suffer from fluctuation in financial market. 2. Very long span of time.
5.Immediate beneficiaries	Benefit for Management	Benefits for Shareholder.

Profit maximization Vs. Wealth maximization

The profit maximization concept measures the performance of a firm by looking at its total profit. It does not take into account the risk which the firm may undertake in maximization of profit. The profit maximization concept does not consider the effect of earnings per share, dividends paid or any other return to shareholders on the wealth of shareholders. On the contrary, the objective of wealth maximization considers all future cash flows, dividends, earnings per share, risk of a decision etc. So the wealth maximization concept is operational and objective in its approach.

A firm, interested in maximizing its profits may not like to pay dividend to its shareholders, whereas a firm interested in maximizing wealth of shareholders, may pay regular dividends. The shareholders would certainly prefer an increase in wealth against the generation of increasing flow of profits to the firm. Moreover, the market price of a share explicitly reflects the shareholders expected return, considers risk and recognizes the importance of distribution of returns. Therefore, the maximization of shareholders wealth as reflected in the market price of a

share is considered as a proper objective of financial management. The profit maximization can be considered as a part of the wealth maximization strategy, but should never be permitted to overshadow the latter.

1.1.3 Importance of Financial Function:

The finance function is really important in any company. It's like the engine that keeps everything running smoothly. It helps with managing money, looking at financial information, and making smart decisions about where to spend and save. Basically, it's all about making sure the company stays profitable and can keep growing in the long run.

- Optimizing Fund Utilization:

  Financial management plays a critical role in any economic environment, whether it's a centrally planned economy or a capitalist system. Its primary objective is to ensure that funds are used efficiently and effectively to achieve the maximum possible output from the resources available. By focusing on optimizing fund utilization, financial management aims to enhance productivity and profitability across various activities within an organization. This involves strategic allocation of funds to different projects, investments, and operational expenses, considering factors such as risk, return, and opportunity cost. Essentially, financial management acts as a guiding force in making decisions related to resource allocation, ensuring that funds are directed towards activities that generate the highest returns and contribute to the overall growth and success of the organization.

- Predicting Future Performance:

  One of the key functions of financial management is to forecast the future performance of a firm. By analyzing past financial data, current market trends, and other relevant factors, financial managers can make educated predictions about the company's financial health and its ability to generate sufficient funds to meet its obligations in the future. This includes assessing the firm's ability to repay loans, redeem other liabilities, and sustain growth over time. By having insights into future performance, management can make informed decisions regarding investments, expansion plans, and financial strategies, thereby minimizing risks and maximizing opportunities for the firm's long-term success.

❖ Coordinating Functional Areas:

Financial management serves as the backbone of organizational coordination, ensuring seamless collaboration between different functional areas such as marketing, production, and sales. For instance, the finance department plays a crucial role in providing the necessary funds for purchasing raw materials, investing in production facilities, and meeting day-to-day operational expenses. Without adequate financial support, other departments may struggle to fulfill their objectives, leading to inefficiencies and suboptimal performance across the organization. Therefore, effective financial management is essential for maintaining synergy between various departments, aligning their efforts towards achieving common goals, and ultimately driving the overall success of the firm.

❖ Ensuring Profit-Oriented Decision Making:

Profitability is the cornerstone of every business decision, and financial management provides the analytical tools and frameworks needed to evaluate the profitability of different courses of action. By conducting financial analysis using techniques such as cost-benefit analysis, budgeting, and financial modeling, managers can assess the potential risks and rewards associated with various investment opportunities and strategic initiatives. This enables them to make informed decisions that maximize profits while minimizing costs and risks. Additionally, financial management helps in setting realistic financial goals, monitoring performance against these goals, and adjusting strategies accordingly to ensure sustained profitability and long-term viability of the firm.

❖ Promoting Savings:

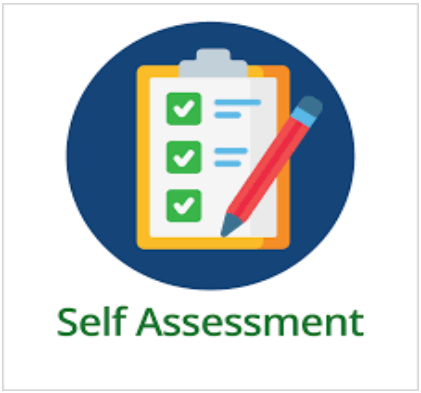
Effective financial management is instrumental in promoting savings both at the individual and corporate levels. By efficiently managing resources and generating substantial profits, firms are able to accumulate wealth and invest in income-generating assets. This not only enhances the financial well-being of the firm but also creates opportunities for individuals to save and invest their surplus income. Moreover, sound financial management practices instill confidence among investors and creditors, encouraging them to entrust their funds with the firm, which in turn contributes to the overall growth of the economy. This show that financial management plays a crucial role in promoting economic stability and prosperity.

❖ Enabling Various Financial Tasks:

Financial management encompasses a wide range of tasks and activities aimed at ensuring the efficient use of financial resources and achieving the financial objectives of the organization. These tasks include profit planning, capital budgeting, cost measurement, inventory control, accounts receivable management, and financial reporting, among others. Profit planning involves setting targets for revenue and expenses, identifying areas for cost reduction, and maximizing profitability. Capital budgeting involves evaluating investment opportunities and allocating funds to projects that offer the highest returns. Cost measurement involves analyzing the costs associated with production, distribution, and other business activities to identify inefficiencies and improve cost-effectiveness. Inventory control involves managing inventory levels to optimize cash flow and minimize carrying costs. Accounts receivable management involves monitoring and collecting outstanding customer debts to improve cash flow and liquidity. Overall, effective financial management ensures that these tasks are performed efficiently and effectively, contributing to the financial success and sustainability of the organization.

1.1.4 Lets Sum up

Financial management is the strategic handling of a company's finances to achieve its goals. It involves planning, organizing, directing, and controlling financial activities to ensure efficient operation and growth. Adequate financial resources are vital for any organization's functioning, regardless of its size. Effective financial management aims to procure funds at the right time and cost and allocate them efficiently to maximize value. It encompasses various activities such as budgeting, forecasting, investment analysis, and cash flow management. By making informed decisions, mitigating risks, and ensuring sustainability, good financial management is essential for achieving business objectives and maintaining competitiveness in the market.



1.1.5 Check Your Progress

1. What is the primary objective of financial management?
   A. Maximizing shareholder wealth
   B. Maximizing market share
   C. Maximizing revenue
   D. Maximizing employee satisfaction

2. Which of the following is NOT a feature of profit maximization?
   A. Focus on maximizing profit per share
   B. Primary goal of any business
   C. Helps in mitigating risks
   D. Emphasizes long-term sustainability

3. Wealth maximization considers the:
   A. Immediate benefits for management
   B. Time value of money concept
   C. Short-term vision
   D. Quality of benefits

4. Financial management is essential for:
   A. Promoting inefficiencies in resource allocation
   B. Creating obstacles in decision-making
   C. Optimizing fund utilization
   D. Encouraging excessive spending

5. What does effective financial management help in promoting?
   A. Excessive spending
   B. Economic instability
   C. Savings and investment
   D. Financial mismanagement

1.2.1 Sources of Finance:

Finance is the backbone of any business, ensuring its smooth operation by providing the necessary funds to meet both short-term working capital needs and long-term fixed capital requirements. Short-term funds, required for periods of one year or less, cater to immediate working capital needs, while long-term funds are necessary for more extended investment in fixed assets. These funds can further be categorized into medium and long-term, based on their duration. In this part of the unit, we will explore the diverse sources of finance available to businesses to fulfill their financial needs and sustain growth.

LONG TERM FINANCE

Long-term finance refers to funds needed by a business for a duration exceeding one year. These funds are utilized for acquiring fixed assets such as land, buildings, machinery, and furniture. Additionally, a portion of long-term finance may also be allocated to finance the permanent part of working capital.

Purpose of Long-Term Finance:

- Financing Fixed Assets:

  Long-term finance is essential for purchasing fixed assets like land, buildings, and machinery, which are used over an extended period and are not intended for immediate resale.

- Permanent Working Capital:

  Businesses require a certain level of working capital continuously. A portion of this working capital is of a fixed or permanent nature and is financed through long-term funds.

- Business Growth and Expansion:

  Long-term finance is crucial for financing growth and expansion initiatives. Businesses need substantial capital investments, either permanently or for an extended period, to expand operations, enter new markets, or introduce new products/services.

Factors Determining Long-Term Financial Requirements:

❖ Nature of Business:

The type of business significantly influences its long-term financial needs. Manufacturing firms typically require large investments in fixed assets like land, buildings, and machinery, whereas trading concerns may require relatively smaller amounts of long-term funds since they deal primarily in goods rather than fixed assets.

❖ Nature of Goods Purchased:

The complexity and size of the goods produced or traded by a business also impact its long-term financing requirements. Businesses manufacturing heavy machinery or consumer items like cars and refrigerators require more significant investments in fixed capital compared to those producing simpler or smaller articles.

❖ Technology Used:

The level of technology utilized by a business affects its long-term capital requirements. Industries employing advanced technology, such as heavy manufacturing or high-tech sectors, often necessitate larger investments in fixed capital compared to those using simpler or labor-intensive techniques.

Sources of Long term Finance

The main sources of long term finance are as follows:

- Shares
- Retained earnings
- Debentures
- Public Deposits
- Loan from Financial institutions
- Lease Financing
- Venture capital Financing
- Hire purchase Financing
- Debt Securitisation
- International Financing

1. Shares:

Shares are like pieces of ownership in a company. When you buy shares, you become a part-owner and can get a share of the company's profits. Investors buy shares of a company through the stock market. The company can issue different types of shares, such as common shares and preferred shares. Shareholders may receive dividends if the company makes a profit.

Example:

Company XYZ decides to raise capital by issuing shares to the public through an initial public offering (IPO). Investors can purchase shares of Company XYZ through the stock market, becoming partial owners of the company and sharing in its profits.

2. Retained Earnings:

Retained earnings are profits that a company makes but doesn't give out to shareholders as dividends. Instead, the company keeps this money to use for growing the business. This money is reinvested back into the company for things like buying new equipment, expanding operations, or developing new products. Retained earnings help the company grow without needing to borrow money.

Example:

Company ABC earns a profit of $1 million in a fiscal year. Instead of distributing the entire profit as dividends to shareholders, the company decides to retain $700,000 for reinvestment into the business, such as expanding its production facilities or launching a new product line.

3. Debentures:

Debentures are like loans that companies take from people. Companies promise to pay back the money with interest at a later date. Investors buy debentures from companies, and in return, they receive regular interest payments. Debentures are a way for companies to borrow money for long-term projects or investments. They are a form of debt financing where the company does not give up ownership to investors.

Example:

Company DEF issues debentures to raise $10 million for financing a major expansion project. Investors purchase these debentures and receive regular interest

payments from the company. The debentures have a maturity date of ten years, at which point the company repays the principal amount to investors.

4. Public Deposits:

Public deposits are money that companies collect from people by offering them a fixed rate of interest. It's like saving money in a bank, but instead, you're lending it to a company. Companies use public deposits to fund their operations or finance long-term projects. Public deposits are considered a safer form of investment because they are usually backed by the company's assets.

Example:

Company GHI offers public deposit schemes to raise funds from individual investors. Investors deposit money with the company for a fixed period, such as three years, and receive a fixed rate of interest on their deposits. These public deposits provide Company GHI with additional funds for its working capital requirements.

5. Loan from Financial Institutions:

Companies can borrow money from banks or other financial institutions. They have to pay back the loan amount along with some money called interest. Loans from financial institutions can be used for various purposes, such as purchasing equipment, expanding operations, or refinancing existing debt. The terms of the loan, including the interest rate and repayment schedule, are agreed upon by the borrower and the lender.

Example:

Company JKL obtains a $5 million loan from a bank to finance the construction of a new manufacturing plant. The loan agreement specifies the terms, including the interest rate, repayment schedule, and any collateral required. Company JKL uses the loan proceeds to purchase equipment and hire construction contractors for the project.

6. Lease Financing:

Lease financing is like renting something for a long time. Instead of buying it outright, a company pays regular rent to use the item. Lease financing allows companies to use assets like machinery, vehicles, or equipment without having to pay the full purchase price upfront. It's a way for companies to conserve cash flow and access the assets they need for their operations.

Example:

Company MNO leases a fleet of delivery trucks from a leasing company instead of purchasing them outright. The lease agreement allows Company MNO to use the trucks for a specified period in exchange for monthly lease payments. At the end of the lease term, Company MNO may have the option to purchase the trucks or return them to the lesser.

7. Venture Capital Financing:

Venture capital is money given to new or growing companies by investors. In return, the investors get a share of the company and help make important decisions. Venture capital financing is often sought by startups and high-growth companies that need funding to develop new products, expand operations, or enter new markets. Venture capitalists provide not only financial support but also mentorship and expertise to help the company succeed.

Example:

Startup Company PQR receives $2 million in venture capital funding from a venture capital firm to develop its innovative mobile app. In exchange for the investment, the venture capital firm receives an equity stake in Company PQR and provides guidance and support to help the company grow and succeed.

8. Hire Purchase Financing:

Hire purchase is a way for companies to buy things like vehicles or equipment without paying the full amount upfront. Instead, they pay in installments over time. The company can use the asset immediately, but ownership is transferred only after the final payment is made. Hire purchase financing allows businesses to acquire essential assets while spreading the cost over a period, making it more manageable.

Example:

Company STU purchases a piece of heavy machinery through a hire purchase agreement with a manufacturer. The agreement allows Company STU to use the machinery immediately by making monthly installments over a fixed period. Once all installments are paid, ownership of the machinery transfers to Company STU.

9. Debt Securitisation:

Debt securitization is when companies bundle together a bunch of loans or debts and sell them to investors. Investors get regular payments from the loans. This process allows companies to raise funds by turning their existing loans into tradable securities. Debt securitization helps companies free up capital for other uses and spreads the risk of loan default among investors.

Example:

Bank XYZ bundles together a portfolio of mortgage loans and sells them to investors as mortgage-backed securities (MBS). Investors receive regular payments of principal and interest from the underlying mortgages. By securitizing these loans, Bank XYZ can free up capital to originate new loans and manage its balance sheet more efficiently.

10. International Financing:

International financing is when companies get money from sources outside their own country. They might do this to expand their business globally or take advantage of better deals abroad. Companies can raise funds through international banks, investors, or capital markets. International financing introduces additional complexities such as foreign exchange risk and regulatory compliance but can provide access to larger capital pools and diverse funding options.

Example:

Company UVW secures a $20 million loan from an international bank to finance its overseas expansion into emerging markets. The loan is denominated in a foreign currency, and Company UVW uses hedging strategies to manage foreign exchange risk. International financing allows Company UVW to access capital from global markets and pursue its growth objectives internationally.

SHORT TERM SOURCES

Short-term finance is essential for maintaining the liquidity necessary to meet daily operational expenses and ensure the smooth functioning of a business. This type of finance is characterized by its relatively brief repayment period, typically ranging from a few days to up to one year.

Purposes of Short Term Finance:

- Smooth Running of Business Operations:

  Short-term finance ensures that a company has the necessary liquid cash to meet its day-to-day financial obligations, such as purchasing raw materials, paying wages, and covering utility bills. Without adequate short-term funds, a business may struggle to operate efficiently and could face the risk of closure.

- Inventory Management:

  Short-term finance enables businesses to maintain adequate levels of inventory, including both raw materials and finished products. This ensures that production can continue uninterrupted, and goods can be supplied to customers as needed.

- Supporting Credit Sales:

  Short-term finance allows businesses to offer goods or services on credit terms to customers, which can help stimulate sales and attract more clients. However, this also means that there's a time gap between the sale and the receipt of cash, making short-term funds crucial for financing ongoing operations during this period.

- Responding to Increased Production Demands:

  Short-term finance becomes especially vital when there's a need to ramp up production quickly in response to increased demand or unexpected opportunities in the market. Having access to short-term funds allows businesses to seize these opportunities without delay.

- Supporting the Operating Cycle:

  Short-term finance ensures a steady flow of cash throughout the operating cycle, which is the time it takes for a business to convert raw materials into finished goods and then sell those goods to customers. It covers the gap between production costs and the receipt of sales revenue, ensuring the sustainability of business operations.

Factors Determining Short-Term Financial Requirements:

- Seasonal Variations in Demand:

  Businesses experiencing seasonal fluctuations in sales may require additional short-term finance to manage increased production and inventory levels during peak periods.

❖ Credit Policy:

The extent to which a business offers credit to its customers affects its short-term financial requirements. A more lenient credit policy may necessitate higher short-term funds to cover the gap between credit sales and cash collection.

❖ Supplier Terms:

The payment terms negotiated with suppliers can influence short-term financial needs. Longer credit terms from suppliers may reduce the immediate cash outflow but could increase the need for short-term funds to cover other expenses.

Sources of Short term Finance

Following are the major sources of short term finance available to the firm:

- Trade Credit
- Bank Credit
- Customers' Advances
- Installment Credit
- Commercial Paper
- Depreciation Fund
- Provision for Taxation
- Outstanding Expenses

1. Trade Credit:

Trade credit is when a supplier allows a business to buy goods or services now and pay for them later, usually within 30 to 90 days. It's like buying something on store credit, where the supplier trusts the business to pay them back after receiving the goods.

Example:

ABC Company purchases inventory worth $10,000 from its supplier with payment terms of "net 30 days." This means ABC has 30 days to pay the supplier for the goods received. During this time, ABC can sell the inventory to customers and generate revenue before needing to pay the supplier.

2. Bank Credit:

Bank credit refers to short-term loans or lines of credit provided by banks to businesses. These loans help businesses manage cash flow fluctuations, cover operating

expenses, or seize opportunities. The terms of bank credit, such as interest rates and repayment terms, are negotiated between the business and the bank.

Example:

XYZ Corporation obtains a $50,000 line of credit from a bank to cover seasonal fluctuations in cash flow. When XYZ's cash reserves are low due to increased expenses or delayed payments from customers, they can draw funds from the line of credit to meet their short-term financial needs.

3. Customers' Advances:

Customers' advances are payments made by customers in advance of receiving goods or services. It's like when you pay a deposit before getting something delivered or a service performed. Businesses can use these advance payments to fund ongoing operations or fulfill orders.

Example:

DEF Services requires a deposit of $1,000 from customers before scheduling appointments for home renovations. Customers pay the deposit upfront to secure their booking, providing DEF Services with immediate funds to cover initial expenses like materials and labor.

4. Installment Credit:

Installment credit allows businesses to purchase goods or equipment and pay for them over time in fixed installments. It's like buying something on layaway, where you make regular payments until the full amount is paid off. This type of financing helps businesses acquire necessary assets without a large upfront payment.

Example:

LMN Manufacturing purchases new machinery for $20,000 using installment credit. Instead of paying the full amount upfront, LMN agrees to make monthly payments of $1,000 over the next 20 months. This allows LMN to acquire the machinery immediately while spreading the cost over time.

5. Commercial Paper:

Commercial paper is a short-term debt instrument issued by companies to raise funds quickly. It's like a promissory note where the company promises to pay back the

money within a certain period, usually less than one year. Investors buy commercial paper in exchange for a fixed return, providing companies with liquidity for immediate needs.

Example:

PQR Corporation issues $100,000 in commercial paper with a maturity period of 90 days to finance its short-term working capital needs. Investors purchase the commercial paper, providing PQR with immediate funds. After 90 days, PQR repays the investors the principal amount plus interest.

6. Depreciation Fund:

A depreciation fund is money set aside by a business to replace or repair its fixed assets as they depreciate over time. It's like saving up for future expenses related to wear and tear on equipment or machinery. By allocating funds to a depreciation fund, businesses ensure they have the resources to maintain their assets without disrupting operations.

Example:

UVW Company allocates $5,000 annually to its depreciation fund to replace aging equipment. Each year, UVW sets aside funds to ensure they have enough money to purchase new equipment or repair existing assets as they depreciate over time.

7. Provision for Taxation:

Provision for taxation is when a business sets aside funds to pay its taxes at a later date. It's like putting money into a savings account specifically for taxes owed. By making provisions for taxation, businesses avoid financial strain when it's time to settle their tax obligations.

Example:

RST Enterprises sets aside $20,000 each quarter as a provision for taxation. By earmarking funds for future tax liabilities, RST ensures it has the necessary funds available when it's time to pay corporate taxes, avoiding cash flow disruptions.

8. Outstanding Expenses:

Outstanding expenses are costs that a business has incurred but not yet paid. It's like having unpaid bills or invoices that are due in the near future. Businesses may use

outstanding expenses as a form of short-term financing by delaying payment until they have sufficient funds available. However, it's important to manage outstanding expenses carefully to avoid cash flow problems.

Example:

GHI Consulting receives invoices from its vendors totaling $15,000 for services rendered. Instead of paying the invoices immediately, GHI opts to defer payment for 30 days. During this time, GHI can use the funds for other business expenses before settling the outstanding invoices.

1.2.2 Functions of Financial Management:

Financial management involves the strategic planning, organizing, directing, and controlling of financial activities within an organization. Its primary functions are crucial for ensuring the efficient use of resources, maximizing profitability, and enhancing the overall value of the business. Here are the key functions of financial management:

- Financial Planning and Forecasting

  Financial planning involves creating a detailed plan that outlines expected revenues and expenses over a specific period. Forecasting is about estimating future financial outcomes based on past data, current trends, and expected market conditions. Together, these activities help an organization prepare for the future and set financial goals.

- Investment Decisions

  Investment decisions include evaluating and selecting long-term investments that will increase the value of the firm. This process is called capital budgeting and uses techniques like Net Present Value (NPV) and Internal Rate of Return (IRR). Additionally, portfolio management involves managing a collection of investments to achieve specific financial goals while balancing risk and return.

- Financing Decisions

  Financing decisions focus on determining the best mix of debt and equity financing to minimize costs and maximize shareholder value. This includes raising capital through various sources such as issuing stocks, bonds, or taking loans. The goal is to find the most cost-effective way to finance the company's operations and growth.

- **Working Capital Management**

  Working capital management ensures the company has enough cash flow to meet its short-term obligations and operational needs. This includes cash management, which ensures sufficient cash is available; inventory management, which optimizes inventory levels to balance costs and supply; and receivables management, which involves managing credit policies and collections to ensure timely payments from customers.

- **Financial Analysis and Reporting**

  Financial analysis and reporting involve evaluating the financial health of the organization by analyzing key financial statements such as balance sheets, income statements, and cash flow statements. Performance metrics, including financial ratios, are used to assess the efficiency, profitability, and solvency of the business.

- **Risk Management**

  Risk management includes identifying financial risks such as market risk, credit risk, and operational risk. Strategies are then implemented to minimize or transfer these risks through diversification, hedging, insurance, and other tools. The aim is to protect the company from potential financial losses.

- **Dividend Policy Decisions**

  Dividend policy decisions involve determining how much of the earnings should be distributed to shareholders as dividends versus retaining them for reinvestment in the business. This includes establishing a consistent dividend policy, whether it be stable, residual, or a hybrid approach, to provide returns to shareholders while supporting the company's growth.

- **Tax Management**

  Tax management focuses on planning financial activities to minimize tax liabilities within the legal framework. This includes ensuring compliance with all tax laws and regulations to avoid penalties and legal issues. Effective tax planning can significantly impact the overall financial health of the organization.

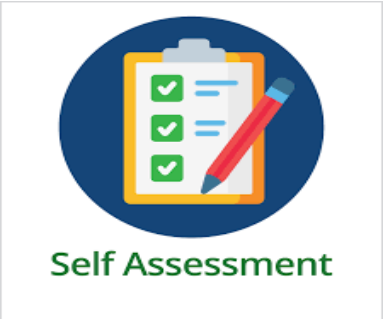
- **Strategic Financial Management**

  Strategic financial management involves developing long-term financial strategies that align with the overall strategic goals of the organization. This includes ensuring

effective corporate governance practices to maintain financial integrity and accountability, which helps in building trust with stakeholders and sustaining long-term growth.

1.2.3 Let's Sum up

Financial management is crucial for businesses to manage funds efficiently and sustain growth. Long-term finance is used for fixed assets and permanent working capital needs, sourced from shares, loans, and venture capital. Short-term finance ensures liquidity for daily operations, sourced from trade credit and bank loans. Functions include planning, investment decisions, and risk management to maximize profitability. Effective financial management involves analyzing, reporting, and strategic planning to achieve long-term goals. It also includes managing working capital, dividends, and taxes for financial stability. Ultimately, financial management ensures prudent resource allocation and enhances shareholder value.



1.2.4 Check Your Progress

1. What is the purpose of long-term finance?
   a) Covering daily operational expenses
   b) Financing fixed assets and permanent working capital
   c) Stimulating credit sales
   d) Managing seasonal variations in demand

2. Which of the following is NOT a source of long-term finance?
   a) Shares
   b) Commercial paper
   c) Lease financing
   d) Debentures

3. What is trade credit?
   a) Short-term loans provided by banks
   b) Payments made by customers in advance
   c) A form of long-term financing
   d) Allowing a business to buy goods or services now and pay for them later

4. What function of financial management involves creating a detailed plan for expected revenues and expenses?

a) Investment decisions

b) Financing decisions

c) Financial planning and forecasting

d) Working capital management

5. Which financial function focuses on determining the best mix of debt and equity financing?

a) Investment decisions

b) Financing decisions

c) Financial analysis and reporting

d) Risk management

1.3.1 Financial Manager:

A financial manager is an individual within an organization who is responsible for overseeing the financial activities and strategies of the company. Their role encompasses a range of duties, including financial planning, investment decision-making, managing budgets, and ensuring compliance with financial regulations.

Financial managers analyze financial data, prepare reports, and provide recommendations to senior management to guide decision-making processes. Financial Manager may hold titles such as Chief Financial Officer (CFO), Finance Director, Treasurer, or Controller, depending on their specific responsibilities and the size and structure of the firm.

1.3.2 Role of Financial Manager in Financial Management:

The finance manager is required to discharge all the functions/activities envisaged by financial management. The important functions of finance manager are as follows:

- Forecasting Financial Requirements

  The first thing a finance manager does is figure out how much money the company will need. Some money is needed for long-term things like buying buildings or

equipment. The manager has to carefully guess how much money will be needed and when. They also need to think about short-term needs, like how much cash the company needs to keep running smoothly. This guessing game involves using tools like budgets and planning for the future. But to guess right, the manager needs to know what the company will be up to in the future. Once they figure that out, they can put a price tag on it.

❖ Financing Decision

Once the finance manager knows how much money is needed, they have to decide where to get it from. They need to find the right mix of different sources. Each source has its own factors to think about. The manager has to look at the current setup of how money is coming into the company and how different ways of getting money will change that setup. They need to keep a good balance between money needed for the long term, like buying stuff that lasts a long time, and money needed for the short term, like day-to-day expenses. They also have to make sure they have enough money from outside sources, like loans, compared to money from the owners. There are different ways to get money from outside sources, and the manager has to decide how much of each to use. They also need to make sure the company can get money at the lowest cost possible and can handle tough times when money is tight. All these decisions are called "Financing Decisions".

❖ Investment Decision

Once the finance manager has gathered money from various sources, they must decide where to invest it. There are many options for investing, but resources are limited. Investment decisions involve choosing which projects or assets to put money into, considering the scarcity of resources. The goal is to find projects that are worth investing in. These decisions determine the total amount of assets the company holds and their types, like fixed assets (long-term) or current assets (short-term). These choices affect the risk the company faces, which is important for investors.

Long-term investment decisions, also known as capital budgeting decisions, involve investing in fixed assets that generate earnings for the company over time. These assets are crucial for both starting new projects and expanding existing ones. These

decisions are often irreversible and need careful evaluation to avoid significant losses.

Short-term investment decisions, often called working capital management, involve managing cash, receivables, and inventory. Although these assets don't directly earn money, they are essential for using fixed assets efficiently.

❖ Dividend Decision

The finance manager also plays a role in deciding whether to pay out dividends to shareholders. They help the top management figure out how much of the company's profits should be given to shareholders and how much should be kept within the company for future growth. Typically, companies distribute some profit as dividends to keep shareholders happy and reinvest the rest for expansion. Not paying dividends can upset shareholders and affect the stock price. The decision on dividends depends on factors like shareholders' preferences and the company's growth opportunities. Paying higher dividends than expected can raise the stock price, but it leaves less money for expansion. It's important to strike a balance between paying dividends and reinvesting for growth. Retaining all profits for expansion without giving any dividends isn't usually a good idea.

There's no fixed answer on how much to distribute and retain. The decision depends on factors like the company's reinvestment opportunities and the returns shareholders could get if they invested the money themselves. The main job of the finance manager involves decisions about getting funds, investing them, and distributing dividends.

❖ Deciding overall objectives

The finance manager must have clear objectives to guide their actions. As the leader of the finance department, they need to establish the overall goals for the department. These goals are essential for effective financial planning and decision-making.

❖ Supply of funds to all parts of the organization

The finance manager must ensure that every part of the organization—branches, factories, departments, and units—has enough funds to operate smoothly. If some

sections have more money than they need, they should contribute to a central pool for use by sections that need more funds. Having enough cash available at all times is crucial for keeping business operations running smoothly. If even one of the retail branches out of the 200 doesn't have enough money, it could put the entire business at risk. Therefore, it's essential for the finance manager to establish policies for managing and disbursing cash to ensure that all parts of the organization have enough funds when needed. It's also important to avoid having too much cash sitting idle.

- Evaluating financial performance

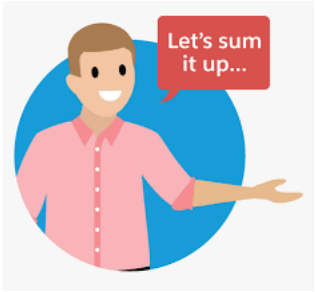
  Management control systems often rely on financial analysis, and a notable example is the ROI (Return on Investment) system used for divisional control. The finance manager needs to regularly assess the financial performance of different units within the organization. The ROI chart is particularly helpful in this regard, providing valuable insights into how funds have been utilized across divisions and highlighting areas for improvement. Analyzing financial performance helps management understand how effectively resources have been used and what actions can be taken to enhance performance.

- Financial negotiation

  A significant part of the finance manager's time is spent negotiating with financial institutions, banks, and public depositors. They need to provide these entities with a considerable amount of information and ensure that raising funds complies with regulations like the Companies Act. Negotiating for external financing often demands specialized skills.

- Staying updated with stock exchange quotations and monitoring the behavior of share prices.

  This includes analyzing significant trends in the stock market and assessing how they might affect the prices of the company's shares.



1.3.3 Lets Sum up

In essence, the financial manager oversees financial activities, forecasting requirements and making financing decisions to meet them. They allocate funds through investment decisions, balancing long-term projects and short-term needs. Dividend decisions guide profit distribution, balancing shareholder returns and reinvestment. Ensuring clear objectives, they manage funds across the organization, evaluate financial performance, and negotiate with financial entities. Staying informed about market trends and stock prices aids in strategic decision-making.

1.3.4 Check Your Progress

1. What is the primary responsibility of a financial manager?
   a) Managing human resources
   b) Overseeing marketing strategies
   c) Analyzing financial activities and strategies
   d) Developing production plans

2. What is the main purpose of forecasting financial requirements?
   a) To determine the company's marketing strategy
   b) To evaluate employee performance
   c) To estimate future financial needs
   d) To assess customer satisfaction

3. What does the financing decision involve?
   a) Deciding on the company's product pricing
   b) Selecting the best investment opportunities
   c) Determining how much money is needed and where to get it from
   d) Setting goals for the financial department

4. What is the purpose of the dividend decision?
   a) To determine employee salaries
   b) To decide whether to distribute profits to shareholders or reinvest them
   c) To evaluate the company's marketing campaigns
   d) To assess production efficiency

5. What is one of the roles of the finance manager in evaluating financial performance?

a) Managing inventory levels

b) Analyzing human resource policies

c) Assessing the effectiveness of marketing strategies

d) Regularly assessing the financial performance of different units within the organization

1.4.1 Unit Summary

- Understanding finance as the management of funds and resources for organizational goals.
- Identifying objectives such as wealth maximization and ensuring liquidity.
- Recognizing the significance of finance in decision-making and sustaining operations.
- Exploring funding sources including equity, debt, and retained earnings.
- Functions of financial management: planning, budgeting, investments, and risk management.
- Financial managers' roles: overseeing activities, analyzing data, and strategic decision-making.
- Developing comprehensive financial plans aligned with organizational goals.
- Importance of budgeting in resource allocation and cost control.
- Techniques for evaluating investment opportunities and maximizing returns.
- Strategies for identifying, assessing, and mitigating financial risks.

1.4.2 Glossary

Finance	The management of funds and resources within an organization to achieve its objectives.
Wealth Maximization	The primary objective of financial management, aiming to increase the long-term value of shareholders' wealth.
Liquidity	The ability of an organization to meet its short-term financial obligations with available assets.
Equity	Ownership interest in a company, represented by shares, which entitles the shareholder to a portion of the company's profits and assets.

Debt	Funds borrowed by an organization that must be repaid over time, typically with interest.
Financial Planning	The process of determining how an organization will afford to achieve its goals and objectives.
Budgeting	Allocating financial resources to various activities and departments within an organization in line with its strategic plan.
Investment Decisions	Evaluating potential opportunities for allocating funds to projects or assets that are expected to generate returns.
Risk Management	Identifying, assessing, and mitigating potential risks that could adversely affect the financial performance or stability of an organization.

1.4.3 Self – Assessment Questions

1. Define finance and list its primary objectives.
2. Recall the sources of finance available to organizations.
3. Identify the key functions of financial management.
4. List the responsibilities of a financial manager in an organization.
5. Recall the importance of budgeting in financial management.
6. Explain the difference between wealth maximization and profit maximization.
7. Describe the relationship between liquidity and the financial health of an organization.
8. Compare and contrast equity and debt as sources of finance.
9. Explain how financial planning contributes to achieving organizational goals.
10. Describe the role of financial analysis in assessing the performance of an organization.
11. Given a scenario, analyze the financial statements of a company to assess its profitability.
12. Develop a financial plan for a start-up company considering its objectives and available resources.
13. Evaluate the investment opportunities available to an organization and recommend the most suitable option.
14. Analyze the risks associated with a proposed business venture and propose risk mitigation strategies.
15. Assess the effectiveness of a company's financial management practices in achieving its long-term goals.

Activities / Exercises / Case Studies

1. Form a small group and assign each group a fictional scenario where they have to manage finances.
2. Select a company in your city and identify what financial practices it adopted to be an effective management.

Answers for check your progress

Module 1

1. A. Maximizing shareholder wealth
2. D. Emphasizes long-term sustainability
3. B. Time value of money concept
4. C. Optimizing fund utilization
5. C. Savings and investment

Module 2

6. B. Financing fixed assets and permanent working capital
7. B. Commercial paper
8. D. Allowing a business to buy goods or services now and pay for them later
9. C. Financial planning and forecasting
10. B. Financing decisions

Module 3

11. C. Analyzing financial activities and strategies
12. C. To estimate future financial needs
13. C. Determining how much money is needed and where to get it from
14. B. To decide whether to distribute profits to shareholders or reinvest them
15. D.Regularly assessing the financial performance of different units within the organization

1.4.4 References & Suggested Readings

1. "Principles of Corporate Finance" by Richard A. Brealey, Stewart C. Myers, and Franklin Allen ISBN: 9781260013900

2. "Financial Management: Theory & Practice" by Eugene F. Brigham and Michael C. Ehrhardt ISBN: 9781337902601

3. "Corporate Finance" by Jonathan Berk and Peter DeMarzo ISBN: 9780134475561

4. "Fundamentals of Financial Management" by James C. Van Horne and John M. Wachowicz Jr. ISBN: 9780273713630

5. "Financial Management: Principles and Applications" by Sheridan Titman, Arthur J. Keown, and John D. Martin ISBN: 9780134417219

UNIT 2 Capital Structure

Capital structures planning - Factors affecting capital structures – Determining Debt and Equity proportion – Theories of capital structures – Leverage concept.

Cost of capital – Cost of equity – Cost of preference share capital – Cost of debt – Cost of retained earnings – Weighted Average (or) Composite Cost of Capital (WACC)

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Hello Learner…. Welcome! Mastering capital structure planning is vital for optimizing a company's financial performance and stability. Explore the Factors Affecting Capital Structures and learn how to Determine the Proportion of Debt and Equity. Delve into the Theories of Capital Structures and understand the concept of Leverage. Additionally, gain comprehensive knowledge about the Cost of Capital, including the Cost of Equity, Cost of Preference Share Capital, Cost of Debt, and Cost of Retained Earnings. Learn how to calculate the Weighted Average Cost of Capital (WACC) for effective financial decision-making. Everything you need to know about Capital Structures and Cost of Capital….!

2.1.1 Introduction of Capital Structure:

Capital structure ordinarily implies the proportion of debt and equity in the total capital of a company. Since company tap any one or more of the different available sources of funds to meet its total financial requirement. The total capital of a company may thus be composed of all such tapped sources.

The term capital structure has been defined by several authors differently. Some of the definitions are as follows

“Capital structure refers to the composition of long term sources of funds such as debentures, long term debt, preference share capital and ordinary share capital including reserves and surpluses (retained earnings)”. – I.M. Pandey

“Capital structure is the permanent financing of the firm, represented primarily by long term debt, preferred stock, and common equity, but excluding all short term credit. Common equity includes common stock, capital surplus and accumulated earnings”. - Weston and Brigham

Meaning:

Capital structure refers to the mix of sources from where the long term funds required in a firm may be raised i.e. what should be the proportions of equity share capital, preference share capital, internal sources, debentures and other sources of funds in the total amount of capital which a firm may raise for establishing its business.

2.1.2 Capital Structures Planning:

Some authors use capital structure and financial structure interchangeably, but, both are different concepts. The financial structure refers to the way in which the total assets of a firm are financed. In other words, financial structure refers to the entire liabilities side of the balance sheet. But, capital structure represents only long - term sources of funds and excludes all short - term liabilities Thus, financial structure is a broader one and capital structure is only a part of it.

Features of Capital structure

It is the duty of the financial manager to design the capital structure which is most advantageous to the company. The capital structure should be planned carefully keeping in view, the interests of the equity shareholders as they are the ultimate owners of the company. The planning and designing of an optimal capital structure is not an easy task. However, it must be seen while designing the capital structure, that a sound or appropriate capital structure should have the following features:

- Profitability:

  The capital structure of the company should be most advantageous to the shareholders. It should maximize the earnings per share while minimizing the cost of financing.

- Solvency:

  The excessive use of debt proportion in the total capital structure threatens the solvency of the company. Therefore, the debt capital should be employed up to such a level that the financial risk is within manageable limits.

- Flexibility:

  The capital structure should be flexible enough to meet the changing conditions of the firm, which will be possible for the company to provide funds whenever needed to finance any profitable activities.

- Conservatism:

  The capital structure of the company should be conservative in the sense that the debt component of the firm should not exceed the debt capacity of the firm. The debt capacity of the firm depends on its ability to generate enough future cash flows for meeting interest obligations and repayment of principal when it becomes due.

❖ Control:

The capital structure should be designed in such a way that it involves a minimum loss of control of the company by the existing shareholders.

2.1.3 Factors affecting Capital Structures:

The capital structure of a firm is influenced by several factors, each varying in importance and impact over time. Below are key factors that should be considered when determining the capital structure of a firm:

(i) Trading on Equity and EBIT-EPS Analysis

Financial leverage, or trading on equity, involves using long-term debt and preference share capital, which are fixed income-bearing securities, alongside equity share capital. This increases earnings per share (EPS) as long as the return on investment (ROI) exceeds the cost of debt.

The leverage effect is particularly significant with debt because:

1. Debt is usually cheaper than other forms of capital.
2. Interest payments on debt are tax-deductible.

High EBIT (Earnings Before Interest and Taxes) allows firms to use leverage to boost returns on shareholders' equity. The EBIT-EPS analysis helps financial managers plan the capital structure by evaluating how changes in EBIT affect EPS under different financing plans. While leverage can increase EPS under favorable conditions, it also raises financial risk for shareholders. Thus, firms should use debt cautiously to avoid excessive financial risk.

(ii) Stability and Growth of Sales

Sales stability influences a firm's ability to meet fixed obligations, such as interest payments and debt repayment, making it possible to raise higher amounts of debt. A higher growth rate in sales supports greater use of debt for financing. Conversely, firms with fluctuating or declining sales should be cautious with debt capital.

(iii) Cost of Capital

The cost of capital is a critical factor in designing a firm's capital structure. Equity capital is the most expensive due to the high risk borne by equity shareholders. Debt capital is the cheapest because its interest payments are tax-deductible. Preference share capital is also cheaper than equity capital due to fixed dividend payments. The

overall cost of capital, an aggregate of all specific capital costs, should be minimized when designing the capital structure.

(iv) Cash Flow Ability

Firms with stable and substantial cash inflows can afford to employ more debt capital. Meeting fixed obligations, such as interest and principal payments, requires adequate cash inflows. Before raising additional funds, firms should estimate future cash inflows to ensure they can cover fixed charges. Calculations of fixed charges coverage and interest coverage ratios are relevant for this purpose.

(v) Control

The desire of existing management to retain control over the firm can influence capital structure decisions. Issuing equity shares dilutes existing shareholders' control, so management may prefer raising funds through fixed charge-bearing debt or preference shares, which do not confer voting rights. However, excessive reliance on debt can lead to a heavy interest burden and potential liquidation.

(vi) Flexibility

A flexible capital structure allows a firm to adapt to changing conditions by substituting one form of financing for another. Preference shares and debentures offer high flexibility as they can be redeemed at the firm's discretion. A flexible capital structure facilitates raising additional funds quickly and cost-effectively.

(vii) Size of the Firm

The size of a firm affects its capital structure. Small firms often struggle to secure long-term debt and may face higher interest rates and inconvenient terms. Consequently, they rely more on equity capital and retained earnings, which can limit business growth.

(viii) Marketability and Timing

Capital market conditions fluctuate, affecting decisions to issue equity or debt. During depressed market conditions, firms should avoid issuing equity and opt for debt capital. Conversely, during boom conditions, issuing equity becomes easier. The firm's internal conditions, such as high leverage, can also impact the marketability of its securities.

(ix) Floatation Costs

Although not a major factor, flotation costs—expenses incurred when raising

external funds, such as issuing prospectuses and paying brokerage commissions—should be considered. Flotation costs are generally lower for debt than for equity, making debt capital more attractive. The size of the issue also affects flotation costs, with larger issues resulting in lower costs as a percentage of funds raised.

(x) Purpose of Funds

The intended use of funds influences capital structure decisions. For productive purposes, debt capital is suitable since interest payments can be covered by profits from the investment. For unproductive purposes, equity is preferred.

(xi) Legal Restrictions

Government guidelines regarding the issuance of shares and debentures must be considered. These legal restrictions provide a framework within which capital structure decisions should be made.

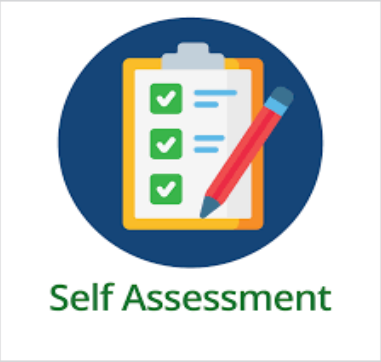
Optimum Capital structure

As it was discussed there are several factors determining the capital structure panning of a firm, the financial manager should aim at achieving an optimum capital structure. An optimum capital structure may be defined as that combination of debt and equity that maximizes the total value of the firm or minimizes the cost of capital. The capital structure of a firm influences its cost of capital and the value of the firm.

According to Ezra Solomon, the optimum capital structure refers to that degree of financial leverage at which the market value of the firm's securities will be higher or the cost of capital will be lower than at other degrees of leverage.

2.1.4 Let's Sum up

Capital structure refers to the mix of long-term debt and equity used to finance a company. It is crucial to plan the capital structure to maximize profitability while minimizing financial risk. Key factors influencing capital structure include trading on equity, sales stability, cost of capital, cash flow ability, control, flexibility, firm size, market conditions, flotation costs, purpose of funds, and legal restrictions. An optimal capital structure balances these factors to minimize the cost of capital and maximize the firm's value.



2.1.5 Check Your Progress

1. What does capital structure primarily refer to?

A. The mix of short-term and long-term liabilities

B. The composition of long-term sources of funds such as debentures, long-term debt, and equity

C. The total assets of a company

D. The way a firm manages its day-to-day operations

2. Which of the following is NOT a feature of an optimal capital structure?

A. Profitability

B. Solvency

C. Rigidity

D. Flexibility

3. According to the content, which factor should be considered when using debt capital to avoid excessive financial risk?

A. Trading on equity

B. Stability and growth of sales

C. Flexibility

D. Cost of capital

4. Which factor refers to the expenses incurred when raising external funds, such as issuing prospectuses and paying brokerage commissions?

A. Floatation costs

B. Legal restrictions

C. Purpose of funds

D. Control

5. What defines the optimum capital structure according to Ezra Solomon?

A. The mix of short-term and long-term liabilities

B. The degree of financial leverage that maximizes the market value of the firm's securities or minimizes the cost of capital

C. The combination of equity and retained earnings that minimizes operational risk

D. The proportion of internal and external funds used for financing daily operations

2.2.1 Debt and Equity Proportion:

The debt-equity proportion, also known as the debt-equity ratio, is a crucial financial metric used to evaluate a company's financial leverage and stability. It reflects the relative proportion of debt and equity in the company's capital structure. Here's a detailed look at the debt-equity proportion in capital structure:

Debt-Equity Ratio = Total Debt / Total Equity

Where,

Total Debt: Includes all short-term and long-term borrowings, such as loans, bonds, and other forms of debt.

Total Equity: Comprises common equity, preferred equity, retained earnings, and other equity instruments.

Significance of Debt-Equity Ratio

Financial Leverage

High Ratio: Indicates that a company is primarily financed by debt. This can amplify returns in good times but also increase the risk of insolvency during downturns.

Low Ratio: Suggests that a company is primarily financed by equity, which may be less risky but could also indicate a lack of growth opportunities or underutilization of financial leverage.

Risk Assessment

Lenders and investors use the debt-equity ratio to assess the risk of lending to or investing in a company. A high ratio may signal higher risk, potentially leading to higher interest rates on loans or lower stock valuations.

Cost of Capital

Debt is typically cheaper than equity due to tax benefits (interest on debt is tax-deductible) but carries fixed obligations. Equity does not have mandatory payments but often requires a higher return to investors.

Types of Debt and Equity

Debt

Short-term Debt: Obligations due within one year, such as commercial paper and short-term loans.

Long-term Debt: Obligations due after one year, including bonds, mortgages, and long-term loans.

Equity

Common Equity: Capital invested by shareholders through the purchase of common stock.

Preferred Equity: Capital from preferred shares, which have fixed dividends and priority over common equity in the event of liquidation.

Retained Earnings: Profits that are reinvested in the business rather than distributed as dividends.

Optimal Capital Structure

Trade-off Theory

Balances the tax benefits of debt with the bankruptcy costs associated with high levels of debt. The optimal capital structure minimizes the overall cost of capital.

Pecking Order Theory

Suggests that companies prefer to finance new investments first with internal funds (retained earnings), then with debt, and finally with equity, to avoid the costs and signaling issues associated with new equity issuance.

Agency Costs

Debt can reduce agency costs by limiting free cash flow and reducing the potential for managerial misbehavior. However, excessive debt can also lead to underinvestment or risk-shifting behaviors.

Industry and Lifecycle Considerations

Industry Norms

Different industries have varying norms for debt-equity ratios. Capital-intensive industries, like utilities or manufacturing, may have higher ratios compared to service-based industries.

Company Lifecycle

Startups and growth companies typically rely more on equity due to the uncertainty and need for reinvestment. Mature companies may use more debt as they have stable cash flows to service debt.

Impact of Economic Conditions

Interest Rates

Rising interest rates increase the cost of debt, potentially leading companies to rely more on equity. Conversely, low interest rates make debt financing more attractive.

Economic Cycles

During economic booms, companies may take on more debt to expand operations. In downturns, they might deleverage to reduce financial risk.

Financial Health Indicators

High Debt-Equity Ratio

Pros: Potential for higher returns due to leverage, tax benefits.

Cons: Higher financial risk, increased bankruptcy probability, potentially higher interest rates.

Low Debt-Equity Ratio

Pros: Lower financial risk, greater financial flexibility.

Cons: Potential underutilization of financial leverage, possibly higher overall cost of capital.

2.2.2 Theories of Capital Structures:

The existence of the optimum capital structure is not accepted by all financial experts. There are two extreme views on the existence of the optimum capital structure. As per one school of thought the capital structure influences the value of the firm and cost of capital and hence there exists an optimum capital structure. On the other hand, the other school of thought advocates that capital structure has no relevance and it does not influence the value of the firm and cost of capital. Reflecting these views, different theories of capital structure have been developed in the theory of business finance. The main contributors to these theories are David Durand, Ezra Solomon, Modigliani and Miller. The following are the important theories on capital structure, which are discussed as under:

- Net Income Approach
- Net Operating Income Approach
- The Traditional view
- Modigliani and Miller hypothesis

In order to have a clear understanding of these theories and the relationship between capital structure and value of the firm or cost of capital, the following assumptions are made:

- ✓ Firms employ only debt and equity capitals.
- ✓ The total assets of the firm are given.
- ✓ The firm's total financing remains constant. The degree of leverage can be changed by selling debt to repurchase shares or selling shares to retire debt.
- ✓ The firm has 100% payout ratio, i.e., it pays 100% of its earnings as dividends.
- ✓ The operating earnings (EBIT) of the firm are not expected to grow.
- ✓ The business risk is assumed to be constant and independent of the capital structure and financial risk.
- ✓ Investors have the same subjective probability distribution of expected future operating earnings for a given firm.
- ✓ There are no corporate and personal taxes. This assumption is relaxed later.

The following definitions are used in order to explain the capital structure theories:

S = market value of equity shares

D = market value of debt

V = S + D = market value of the firm

NOI = X - expected net operating income, i.e., earnings before interest and taxes.

NI = NOI - Interest = Net Income or shareholders earnings.

Net Income Approach:

The net income approach was developed by David Durand, which says capital structure has relevance, and a firm can increase the value of the firm and minimize the cost of capital by employing debt in its capital structure. According to this theory, greater the debt capital employed lower will be the overall cost of capital and more shall be the value of the firm.

This theory is subject to the following assumptions:

- ✓ The cost of debt is less than the cost of equity.
- ✓ The risk perception of investors is not affected by the use of debt, as a result, the equity capitalization rate (ke) and the debt – capitalization rate (kd) don't change with leverage.
- ✓ There are no corporate taxes.

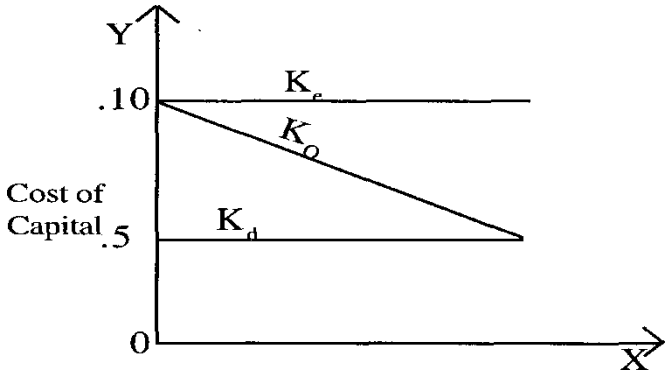
As per the above assumptions, cost of debt is cheaper than the cost of equity and they remain constant irrespective of the degree of leverage. If more debt capital is used because of its relative cheapens, the overall cost of capital declines and the value of the firm increases.

According to this approach: V=S+D

S = market value of equity = $\frac{NI}{\text{Ke}}$

K_o = Overall Cost of Capital = $\frac{EBIT}{V}$

Figure : NI Approach



Degree of Leverage A

It is evident from the Figure 7.1 that when degree of leverage is zero (i.e. no debt capital employed), overall cost of capital is equal to cost of equity (k_o = k_e). When the debt capital is employed further and further, which is relatively cheaper compared to the cost of equity, the overall cost of capital declines, and it becomes equal to cost of debt (k_d) when leverage is one (i.e. the firm is fully debt financed). Thus, according to this approach, the firm's capital structure will be optimum, when degree of leverage is one.

Net Operating Income Approach:

The net operating income (NOI) approach is also suggested by David Durand, which is another extreme view on the capital structure and value of the firm. As per this approach the capital structure of the firm does not influence cost of capital and value of the firm.

The value of the firm (V) is determined as follows:

$$V = S + D = \frac{NOI}{\text{ko}}$$

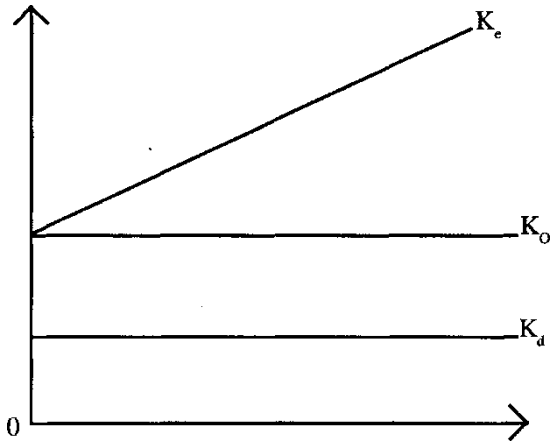
K_o is the overall cost of capital and depends on the business risk of the firm, which is not affected by the capital mix.

The following are the critical assumptions of this theory:

- ✓ The market capitalizes the value of the firm as a whole and the split between debt and equity is not important.
- ✓ The business risk remains constant at every level of debt - equity mix.
- ✓ There are no corporate taxes.
- ✓ The debt capitalization rate (K_d) is constant

According to this view, the use of less costly debt increases the risk to the equity shareholders which causes the equity capitalization rate (K_e) to increase. As a result, the low cost advantage of the debt is exactly offset by the increase in the equity capitalization rate. Thus, the overall capitalization rate (K_o) remains constant and consequently the value of the firm does not change.

Figure: NOI Approach



The above figure depicts that K_o and K_d are constant and K_e increases with leverage continuously. The increase in cost of equity (K_o) exactly offsets the advantage of low cost debt, so that overall cost of capital (K_o) remains constant, at every degree of leverage. This implies that every capital structure is optimum and there is no unique optimum capital structure.

Traditional view

This Traditional approach is also known as intermediate approach, which has been popularized by Ezra Solomon. It is a compromise view between the two extremes of net

income approach and net operating income approach. According to this approach, the cost of capital can be reduced or the value of the firm can be increased with a judicious mix of debt and equity. This theory explains that the cost of capital declines with an increase of debt capital up to a reasonable level, and after that it increases with a further rise in debt capital. Thus, the traditional theory on the relationship between the capital structure and the value of the firm has three stages, which are discussed as under:

First Stage: Increasing Value

In this first stage, the cost of equity (Ke) and the cost of debt (Kd) are constant and cost of debt is less than cost of equity. The employment of debt capital up to a reasonable level will cause the overall cost of capital to decline due to the low cost advantage of debt. As a result, the Ko decreases with increasing leverage, and thus, the total value of the firm, V, also increases.

Second Stage: Optimum Value

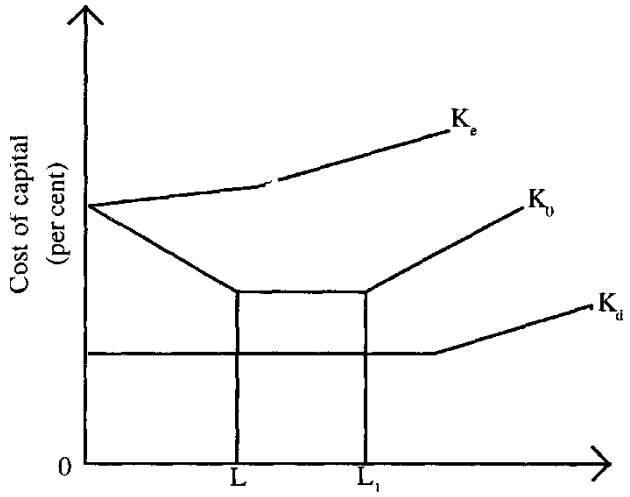
Once the firm has reached a certain degree of leverage, a further increase in debt will have no effect on the value of the firm and the cost of capital. This is because of the fact that a further rise in debt capital increases the risk to equity shareholders that leads to a rise in Ke. This rise in Ke exactly offsets the low - cost advantage of debt capital so that the overall cost of capital(Ko) remains constant, which maximize the value of the firm.

Third Stage: Declining Value

If the firm involves the debt capital beyond an acceptable level, it will cause an increase in risk to both equity shareholders and debt - holders, because of which both cost of equity (Ke) and cost of debt (Kd) start rising in this stage, which will in turn cause an increase in the overall cost of capital (Ko).

It can be inferred from the foregoing discussion that the cost of capital (Ko) is a function of leverage. The cost of capital declines and the value of the firm increases with a rise in debt capital up to a certain level and beyond this level, the overall cost of capital (Ko) tends to rise and as a result the value of the firm will decline, which is shown in Figure.

Figure: Traditional view



It is evident from Figure 7.3 that the overall cost of capital declines with an increase in leverage up to point L and it increases with rise in the leverage after point L1 and hence, the optimum capital structure lies in between L and L1.

Criticism on Traditional view:

The traditional view on capital structure supports that investors value levered firm more than unleveled firm, which means that they pay a premium for the shares of levered firm. Here, there is no sufficient justification for the assumption that investors' perception about risk of leverage is different at different levels of leverage.

Modigliani - Miller (MM) Hypothesis:

The Modigliani - Miller hypothesis do not agree with the traditional view. Modigliani and Miller argued that, in the absence of taxes and transaction costs the cost of capital and the value of the firm are not affected by the changes in capital structure. In other words, capital structure decisions are irrelevant and value of the firm is independent of debt - equity mix. The M and M hypotheses can be best explained in terms of their two propositions.

Assumptions of the M & M Hypothesis:

The M M's Proposition I is based on certain assumptions, which are relate to the behavior of the investors, capital markets and the tax environment of the country. They are:

- ✓ There is a perfect capital market, where in
  - the investors are free to buy and sell securities,
  - they can borrow funds without restriction at the same terms as the firms do,
  - they behave rationally,
  - they are well informed, and
  - there are no transaction costs
- ✓ Firms can be classified into homogeneous risk classes, i.e., the same risk class will have the same degree of financial risk.
- ✓ All investors have the same expectation of a firm's net operating income (EBIT).
- ✓ The dividend payout ratio is 100%, which means there are no retained earnings.
- ✓ There are no corporate taxes. This assumption has been removed later.

Proposition I:

The overall cost of capital (K_o) and the value of the firm are independent of the capital structure. The total market value of the firm is given by capitalizing the expected net operating income by the rate appropriate for that risk class.

According to M - M, for the firms in the same risk class, the total market value is independent of capital structure and is determined by capitalizing the net operating income by the rate appropriate to that risk class. Proposition I can be expressed as follows:

$$V = S + D = \frac{X}{Ko} = \frac{NOI}{Ko}$$

Where, V = the market value of the firm

S = the market value of equity

D = the market value of debt

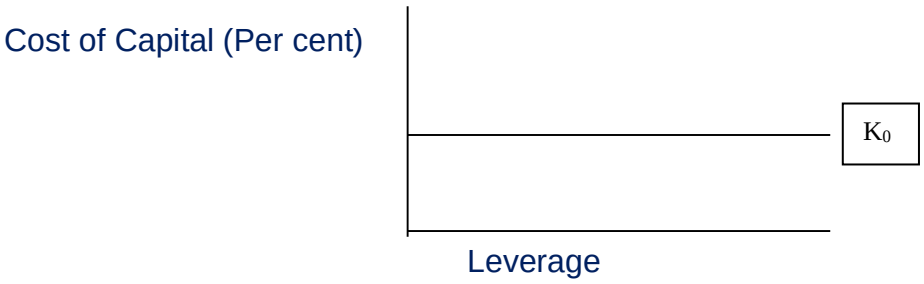
x = the expected net operating income (EBIT)

K = the capitalization rate appropriate to the risk class of the firm.

According to the proposition I, the average cost of capital (K_o) is not affected by the degree of leverage and is determined as:

$$K_o = \frac{X}{V}$$

According to M-M, the average cost of capital is constant as shown in the following Figure: Average Cost of capital



Arbitrage Process:

According to M-M, the simple logic of Proposition I is that two firms with identical in all respects except their capital structure, cannot have different market values or different cost of capitals. In case, if these firms have different market values, the arbitrage will take place and equilibrium in market values is restored in no time. Arbitrage process refers to switching of investment from one firm to another, when the market values are different, so that the investors will try to take an advantage of it by selling their securities with high market price and buying the securities with low market price.

The use of debt by the investors is known as personal leverage or homemade leverage. Because of this arbitrage process, the market price of securities in higher valued market will come down and the market price of securities in the lower valued market will go up, and this switching process is continued until the equilibrium is established in the market values of both the firms. Therefore, the M and M argued that there is no possibility of different market values for identical firms.

The arbitrage process also works in the reverse direction. Leverage has neither advantage nor disadvantage. If the unlevered firm has higher market value than a levered firm, the arbitrage process works in reverse direction, where in the investors will try to switch their investments from unlevered firm to levered firm so that equilibrium is established in no time.

Thus, the M-M proved in terms of their proposition I that the value of the firm is not affected by debt -equity mix in the capital structure.

Proposition II

The financial risk increases with more debt component in the capital structure, as a result the cost of equity (Ke) increases in a manner to offset exactly the low - cost advantage of debt and hence, the overall cost of capital (Ko) remains the same.

M-M's proposition II defines cost of equity as for any firm in a given risk class, it is equal to the constant average cost of capital (Ko) plus a premium for the financial risk, which is equal to debt - equity ratio times the spread between average cost and cost of debt. Thus, cost of equity is explained as:

$$K_e = K_o + (K_o - K_d)D/S$$

Where,

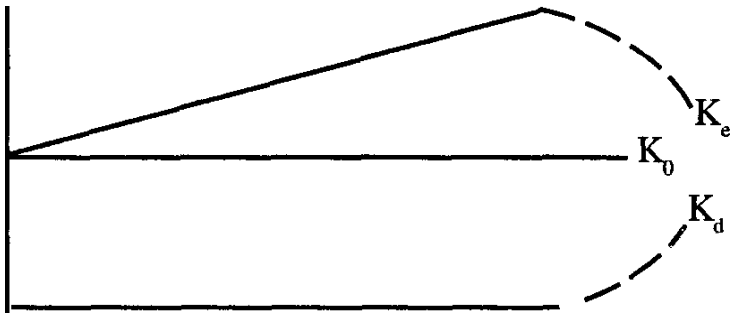
K_e = cost of equity

D/S = debt - equity ratio

M-M argue that K_o will not increase with the increase in the leverage, because the low - cost advantage of debt capital will be exactly offset by the increase in the cost of equity as caused by the increased risk to equity shareholders. The crucial part of the M-M hypotheses is that an excessive use of leverage will increase the risk to the debt holders which results in an increase in cost of debt (K_d). However, this will not lead to a rise in K_o. At this context, the M and M advocates that K_e will increase at a decreasing rate or even it may decline. This is because of the reason that at an increased leverage, the increased risk will be shared by the debt holders and hence, the K_e remains constant. This is illustrated in the figure given below:

Figure : M & M Hypothesis and Cost of capital

Cost of capital (per cent)



0 Leverage

Criticism on M & M Hypothesis:

The arbitrage process is the behavioral and operational foundation for the M & M Hypothesis, which fails to bring the desired equilibrium because of the following limitations.

- Rates of interest are not the same for the individuals and firms. The firms generally have a higher credit standing because of which they can borrow funds at a lower rate of interest as compared to individuals.
- Another criticism is that the home - made leverage is not a perfect substitute for corporate leverage. If the firm borrows, the risk to the shareholder is limited to his shareholding but whereas, if he borrows personally, the liability will be extended to his personal property also. Hence, the assumption of home - made leverage is a perfect substitute for corporate leverage is not valid.
- The assumption of transaction costs do not exist is impracticable because these costs are necessarily involved in buying and selling of securities.
- The working of arbitrage is affected by institutional restrictions, because the institutional investors are not allowed to practice home - made leverage.
- The major limitation of M-M hypothesis is the existence of corporate taxes, which are tax deductible and hence, a levered firm will have a lower cost of debt due to tax advantage when taxes exist.

M-M Hypothesis Corporate Taxes

Modigliani and Miller later recognized the importance of the existence of corporate taxes. Accordingly, they agreed that the value of the firm will increase or the cost of capital will decline with the use of debt capital in the capital structure due to tax deductibility of interest charges. Thus, the optimum capital structure can be obtained by increasing the debt component in the capital structure of the firm. According to this approach, the value of a firm can be calculated as follows:

$$\text{Value of Unlevered firm (Vu)} = \frac{EBIT}{\text{Ko}} (\text{I} - \text{t})$$

$$\text{Value of Levered firm (VL)} = \text{Vu} + \text{Dt}$$

Where,

EBIT = Earnings before Interest and Taxes

K_o= Overall cost of capital

D = Value of debt capital

t = Tax rate

Simple Problems

I.Net Income Approach

Illustration: 1

Jennifer Ltd. is expecting an annual EBIT of Rs. 2,00,000. The company has Rs.2,00,000 in 10% Debentures. The equity capitalisation rate (ke) is 12%. You are required to ascertain the total value of the firm and overall cost of capital. What happens if the company borrows Rs. 2,00,000 at 10% to repay equity capital?

Solution :

Value of firm

under NI approach = Market value of equity + Market value of debt

(i) Calculation of Market value of equity

Earnings before interest & taxes (EBIT)	2,00,000
Less: Interest (2,00,000 x 10%)	20,000
Earnings available to equity shareholders	1,80,000

$$\text{Market value of equity} = \frac{\text{Earnings available to equity shareholders}}{Cost\ of\ equity\ (k_e)}$$

$$= \frac{1,80,000}{12\%}$$

$$= \text{Rs.}15,00,000$$

(ii) Calculation of value of firm

Value of firm =Market value of equity + Market value of debt

=15,00,000 +2,00,000

=Rs. 17,00,000

(iii) Calculation of overall cost of capital (k_o)

$$k_0 = \frac{EBIT}{Value\ of\ firm} \times 100$$

$$= \frac{2,00,000}{17,00,000} \times 100$$

$$= 11.76$$

2. Calculation of value of firm when the company borrows Rs. 2 lakh to pay Off equity capital

(i) Calculation of market value of equity

	Rs.
EBIT	2,00,000
Less: Interest (4,00,000 x 10%)	40,000
Earnings available to equity shareholders	1,60,000

Market value of equity = $\frac{1,60,000}{12\%}$

= Rs.13,33,333

(ii) Calculation of value of firm

Value of firm =Market value of equity + Market value of debt

=13,33,333 +4,00,000

=Rs. 17,33,333

(iii) Calculation of overall cost of capital (k_0)

$k_0 = \frac{EBIT}{Value\ of\ firm} \times 100$

$= \frac{2,00,000}{17,33,333} \times 100$

=11.54%

Analysis: Under Net Income approach, increase in debt content leads & increase in value of firm and decrease in overall cost of capital.

IV. Net Operating Income Approach

Illustration: 2

Dewey Ltd. has an EBIT of Rs. 4,50,000. The cost of debt is 10% and the outstanding debt is Rs. 12,00,000. . The overall capitalisation rate (k_e) is 15%. Calculate the total value of f the firm and equity capitalisation rate under NOI approach.

Solution :

(i)Calculation of Market value of firm

Market value of firm = $\frac{EBIT}{Overall\ cost\ of\ capital(k_0)}$

= $\frac{4,50,000}{15\%}$

=Rs. 30,00,000

(ii) Calculation of Market value of equity

Market value of firm=Market value of equity + Market value of debt

∴Market value of equity =Market value of firm-Market value of debt

=30,00,000 - 12,00,000

=Rs. 18,00,000

(iii) Calculation of earnings available to equity shareholders

	Rs.
EBIT	4,50,000
Less: Interest (12,00,000 × 10%)	120,000
Earnings available to equity shareholders	3,30,000

(i) Calculation of equity capitalization rate (k_e)

k_e = $\frac{\text{Earnings available to equity shareholders}}{Market\ value\ of\ equity}$

= $\frac{3,30,000}{18,00,000} \times 100$

= 18.339%

NI and NO1 Approach

Company A and Company B are in the same risk class and identical. In all respects except that company A uses debt. while company B does not. Levered company has Rs. 20 lakh debentures. Carrying 12% rate of interest. Both Companies earn 20% before interest and taxes on their total assets of Rs. 50 lakh .Assume perfect capital markets, tax rate of 50% and capitalisation rate of 10% for an equity company. Compute the value of both companies under (a) Net Income (NI) approach; and (b) Net operating Income (NOI) approach.

Solution

(a) Value of Company Under NI Approach:

Market Value of Equity + Market Value of Debt.

(i)Computation of market value of equity

	Company A Company B (Geared Co.) (Ungeared Co)
Earnings before interest & Taxes (EBIT)	10,00,000
(50,00,000 × 20%)	10,00,000
Less: Interest on debentures	
(20,00,000 × 12%)	2,40,000
Earnings before tax (EBT)	Nil
Less: Tax @ 50%	
Earnings available to equity shareholders	7,60,000 10,00,000 3,80,000 5,00,000

Market value of Equity = $\frac{Earnings\ available\ to\ equity\ shareholders}{Cost\ of\ Equity(k_e)}$

Company A = $\frac{3,80,000}{10\%}$

= Rs.38,00,000

Company B = $\frac{5,00,000}{10\%}$

= Rs.50,00,000

(ii) Computation of Value of Company

Value of Company = Market value of Equity + Market Value of debt

Company A= 38,00,000 +20,00,000 =Rs. 58,00,000

Company B= 50,00,000 +0=Rs. 50,00,000

(b) (i) Value of Company A(Geared Co.) under NOI Approach

Market Value of Equity + Market Value of debt

EBIT (100% -Tax)

Market value of Equity = $\frac{EBIT\ (100\%-Tax}{Cost\ of Equity\ (K_e\ )}$

$= \frac{10,00,000(100\% : 50\%\ )}{10\%}$

$= \frac{5,00,000}{10\%}$

= Rs. 50,00,000

Market Value of debt =Value of debt x Tax Rate

= 20,00,000 x 50%

= Rs. 10,00,000

∴Value of Company A = Market Value of Equity + Market Value of debt

= 50,00,000 + 10,00,000

= Rs. 60,00,000

(ii) Value of Company B (Ungeared Co.) under NOI Approach = Market Value of Equity Only.

Market Value of Equity = $\frac{EBIT\ (100\%-Tax)}{Cost\ of\ Equity}$

$= \frac{10,00,000\ (\ 100\ \%-50\ \%\ )}{10\%}$

$= \frac{5,00,000}{10\%}$

∴Value of Company B =Rs. 50,00,000

V. Traditional Approach

Illustration: 3

Kincaid Ltd. has a EBIT of Rs. 6,00,000. Presently the company is entirely financed by equity capital of Rs, 40,00,000 with equity capitalisation rate of 16 It is contemplating to redeem a part of its capital by introducing debt financing. It has two options - to raise debt to the tune of 30% or 50% of the total funds.

It is expected that for debt financing upto 30% will cost 10% and equity capitalization rate will rise to 17%. However, if the firm opts for 50% debt, it will cost 12% and equity capitalization rate will be 20%.

Compute the market value of the firm, market value of equity and the overall cost of capital.

Solution :

Statement showing Market value of firm, equity and overall cost of capital

Particulars	0% Debt Rs.	30% Debt (Rs. 12 lakh) Rs.	50% Debt (Rs.20 lakh) Rs.
EBIT	6,00,000 - (12 lakh × 10%)	6,00,000 1,20,000 (20lakh × 12%)	6,00,000 2,40,000
Earnings available to equity shareholders	6,00,000	4,80,000	3,60,000
Equity capital rate (k_e)	16%	17%	20%
Market value of equity	18,00,000 $\left(\frac{6,00,000}{16\%}\right)$	37,50,000 $\left(\frac{4,80,000}{17\%}\right)$	28,23,529 $\left(\frac{3,60,000}{20\%}\right)$
Add: Market value of debt	Nil	1,20,000	20,00,000
Market value of firm	37,50,000	40,23,529	38,00,000
Overall cost of capital (K_0) = $\frac{EBIT}{Market\ value\ of\ firm} \times 100$	$\left(\frac{6,00,000}{37,50,000} \times 100\right)$ 16%	$\left(\frac{6,00,000}{40,23,529} \times 100\right)$14.9%	$\left(\frac{6,00,000}{38,00,000} \times 100\right)$ 15.79%

Analysis: If debt of Rs. 12 lakh is used, the value of firm increases and Overall cost of capital declines. However, if the level of debt is increased to Rs. 20 lakh, the value of firm declines and the overall cost of capital increases. Thus, debt is beneficial only upto a point.

VI. Modigliani Miller Approach

Illustration

Two firms R and S are identical except in the method of financing. Firm R has no debt, while firm S has Rs. 3,00,000 8% Debentures in financing. Both the firms have a Net operating income (EBIT) of Rs. 1,20,000 and equity capitalization rate of 12%. The corporate tax rate is 35%. Calculate the value of the firm using MM approach.

Solution :

(i) Computation of value of Firm R which does not use any debt (unlevered)

Earnings available to equity shareholders

Value of firm = $\frac{Earnings\ available\ to\ equity\ shareholders}{Equity\ capitalisation\ rate}$

= $\frac{EAT}{k_e}$

	Rs.
EBIT	1,20,000
Less: Interest	Nil
EBT	1,20,000
Less: Income tax @ 35%	42,000
EAT	78,000

Value of firm = $\frac{78,000}{12\%}$

=Rs. 6,50,000

(ii) Computation of value of Firm S which uses debt (levered)

Value of Firm S = Value of unlevered firm + (Tax rate x Debt)

(Levered)

=6,50,000 + (0.35 x 3,00,000)

= Rs. 7,55,000

Illustration :

The values for two firms K and L in accordance with the traditional theory are given below:

	K Rs.	L Rs.
EBIT	3,00,000	3,00,000
Interest	40,000	-
Earnings for equity	2,60,000	3,00,000

shareholders	13%	12%
Equity capitalization rate (k_e)		25,00,000
Market value of equity	20,00,000	-
Market value of debt	8,00,000	25,00,000
Total value of firm		
WACC (k_0)	28,00,000	12%
	10.71%	

Compute the value of firms K and L and equity capitalization; rates as per MM approach. Assume that (i) Corporate income taxes do not exist, and (i) the equilibrium value of k_0 is 12.5%.

Solution : (i) Computation of value of firm as per MM approach

Value of firm = $\frac{EBIT}{K_0}$

Firm K = $\frac{3,00,000}{12.5\%}$

= Rs. 24,00,000

Firm L = $\frac{3,00,000}{12.5\%}$

= Rs. 24,00,000

(ii) Computation of market value of equity

	Firm K Rs.	Firm L Rs.
Market value of firm	24,00,000	24,00,000
Less : Market value of debt	8,00,000	-
Market value of equity	16,00,000	24,00,000

(iii) Computation of equity capitalization rate (k_e)

$$k_e = \frac{Earnings\ for\ equity\ shareholders}{Market\ value\ of\ equity} \times 100$$

Firm K = $\frac{2,60,000}{16,00,000} \times 100$

= 16.25%

Firm L = $\frac{3,00,000}{24,00,000} \times 100$

= 12.5%

Illustration:

The following is the data regarding two companies A and B belonging to the same equivalent risk class :

	Company A	Company B
No. of equity shares	60,000	1,00,000
Market price per share	1.80	1.25
(Rs.)	40,000	-
6% Debentures (Rs.)	12,000	12,000
Profits before interest (Rs.)		

All profits after debentures interest are distributed as dividends.

Required: Explain how under Modigliani & Miller (MM) approach, an investor holding 20% of shares in company A will be better off in switching his holding to company B.

Solution:

MM supported the NOI approach. According to NOI approach, the overall capitalization rate and the cost of debt remains constant for all degree of financial leverage. MM argued that "two firms identical in all aspects expect for their capital structure which cannot have two different values". They are brought in the process of arbitrage to support the same.

In the problem given, the arbitrage process will work out as follows:

Step1: Investor will dispose of in the market 20% shares of company A and realise Rs. 21,600 (12,000 x 1.80)

Step 2: He will borrow a sum of Rs. 8,000 (20% of debt) at 6% interest

Step 3: With the total amount of Rs. 29,600, the investor will buy 23,680 shares (23.68% shares) in company `B' at Rs. 1.25 each This action will result in the following income :

Present income in A Ltd Profit before interest = 12,000

Less : Interest (40,000 x 6%) = 2,400

Profit after interest (for 60,000 shares) = 9,600

∴ Profit for 12,000 shares = $\frac{9,600}{60,000} \times 12,000$ = Rs. 1,920

Proposed income in B Ltd

Profit before interest for 1,00,000 shares: 12,000

Profit before interest for 23,680 shares =2,841.60

$\left(\frac{12,000}{1,00,000} \times 23,680\right)$

Less: Interest (8,000x 6%) = 480.00

= 2,361.60

The net income of Rs. 2,361.60 is higher than the net income of Rs.1,920 foregone by selling 20% equity of company A. This shows that the investor will be better off in switching his holding to company B.

It may be noted that when the investor sells equity of company A and buys equity in company B with personal leverage, the market value of equity of company A tends to decline and the market value of equity of company B tends to rise. This process will only end when the market values of both the companies are the same.

2.2.3 Concept of Leverage:

Meaning:

The leverage may be as the employment of an asset of funds for which the firm pays cost or fixed return.

$$\text{Leverage} = \frac{\%\text{ change in dependent variable}}{\%\text{ change in independent variable}}$$

Types of leverage:

- Operating leverage
- Financial leverage
- Combined leverage

Operating leverage:

The leverage associated with investment (asset acquisition) activities is referred to as operating leverage.

$$\text{Operating leverage} = \frac{\%\text{ change in EBIT}}{\%\text{ change in sales revenue}}$$

$$\text{Degree of operating leverage} = \frac{\%\text{ change in EBIT}}{\%\text{ change in sales revenue}}$$

Financial leverage:

Financial leverage is also known as trading on equity. it is defined as the ability of a firm to use fixed financial charge to effects of changes in EBIT on the earnings per share, preference share and debt capital and fixed rate of interest.

$$\text{Degree of financial leverage} = \frac{\%\text{ change in earnings per share}}{\%\text{ change in the operating income}} \text{ (or) } \frac{EBIT}{PBT}$$

Combined leverage:

The combined effect of two leverage can be quite significant for the earnings available to ordinary shareholder. The combined effects of financial and operating leverage known as combined leverage.

Combined leverage = Operating leverage * Financial leverage

Importance of leverage:

- Leverage is an important tool in the hands of financial management to provide the potentials of increasing the shareholders.
- If used carefully it can maximise the return to equity shareholders

- Rate of return on assets are higher than the cost of debt capital leverage improves shareholder.
- Leverage is favourable and if higher the cost of debt.
- Leverage is unfavourable and the higher leverage rate of return on equity shares

Significance of Leverage:

❖ Measurement of operating risk:

Operating risk refers to the risk of the firm not being able to cover its fixed operating cost.

❖ Measurement of financial risk

Financial risk of the firm not being able to cover its fixed financial cost. Since finance leverage depends on fixed financial cost, high fixed financial cost indicates higher degree of operating leverage and thus high financial risk.

❖ Managing risk:

Relationship between operating leverage and financial leverage is multiplicative rather than additive. Operating leverage and financial leverage can be combined in a number of total firm risks.

❖ Increase profitability:

Leverage is an effort or attempt by which a firm tries to show high result or more benefit costs assets and fixed return sources of capital.

Merits of leverage:

- Financial risk of the firm not being able to cover its fixed financial cost.
- Since finance leverage depends on fixed financial cost.
- High fixed financial cost
- Indicates higher degree of operating leverage and thus high financial risk

Simple Problems:

X Ltd. Sells 1,000 units @Rs.20 per unit. The cost of production is Rs.14 per unit. The firm as a fixed cost of Rs.1,000. Assume that the sale of X Ltd. increases by 50%. The present and expected costs and profits would be as follows:

	Present Rs.		Expected Rs.	
Sales	(1,000×20)	20,000	(1,500×20)	30,000
Less: Variables cost	(1,000×14)	14,000	(1,500×14)	21,000
Contribution		6,000		9,000
Less: Fixed cost		1,000		1,000
Operating profit (EBIT)		5,000		8,000

DOL = $\frac{Percentage\ increase\ in\ EBIT}{Percentage\ increase\ in\ sales}$

Percentage increase in EBIT = $\frac{3,000}{5,000} \times 100$

= 60%

Percentage increase in sales = $\frac{10,000}{20,000} \times 100$

= 50%

DOL = $\frac{60\%}{50\%}$

= $\frac{0.6}{0.5}$

= 1.2

A firm will not have an operating leverage if there is no fixed cost and the total cost is variable in nature. In such cases, the operating profit varies in direct proportion to the changes in sales level.

This is illustrated below:

	Present Rs.	Expected Rs.
Sales	20,000	30,000
Less: Variable cost	14,000	21,000
Operating profit (EBIT)	6,000	9,000

$$\text{DOL} = \frac{Percentage\ increase\ in\ EBIT}{Percentage\ increase\ in\ sales}$$

Percentage increase in EBIT = $\frac{3,000}{6,000} \times 100$

= 50%

Percentage increase in sales = $\frac{10,000}{20,000} \times 100$

= 50%

$\therefore$ DOL = $\frac{50\%}{50\%} = \frac{0.5}{0.5} = 1$

The degree of operating leverage of 1 means that increase in profit (50% in this example) is in direct proportion to increase in sales (50% in this example).

ILLUSTRATION:1

A firm sells its only product at Rs. 12 per unit. Its variable cost is Rs.8 per unit. Present sales are 1,000 units. Calculate the operating leverage in each of the following situations:

I. When fixed cost is Rs. 1,000

II. When fixed cost is s Rs. 1,200

III. When fixed cost is Rs. 1,500

Solution:

Profitability Statement

Particular	Situation I Rs.	Situation II Rs.	Situation III Rs.
Sales(1,000 ×12)	12,000	12,000	12,000
Less: Variable cost(1,000× 8)	8,000	8,000	8,000
Contribution	4,000	4,000	4,000
Less: Fixed cost	1,000	1,200	1,500
Operating profit (EBIT)	3,000	2,800	2,500
	$\frac{4,000}{3,000}$	$\frac{4,000}{2,800}$	$\frac{4,000}{2,500}$

Operating leverage = $\frac{contribution}{EBIT}$	=1.33 times	=1.43 times	s=1.6 times

Analysis: From the above statement, it is quite evident that the operating leverage increases with every increase in share of fixed cost in the total cost structure of the firm.

Illustration: 2

From the following information, calculate operating leverage :

No. of units produced and sold:30,000

Selling price per unit: Rs. 20

Variable cost per unit: Rs. 10

Fixed cost per unit at current level of sales is Rs. 5. What will be he knew operating leverage if the variable cost is Rs. 12.

Solution :

Statement of profit	Rs.
Sales (30,000 × 20)	6,00,000
Less: Variable cost (30,000 x 10)	3,00,000
Contribution	3,00,000
Less: Fixed cost (30,000 × 5)	1,50,000
EBIT	1,50,000

Operating leverage = $\frac{Contribution}{EBIT}$

= $\frac{3,00,000}{1,50,000}$

= 2 times

Statement of profit (Variable cost is Rs. 12 per unit)

	Rs.
Sales (30,000 x 20)	6,00,000
Less : Variable cost (30,000 x 12)	3,60,000
Contribution	2,40,000
Less: Fixed cost	1,50,000
EBIT	90,000

New operating leverage = $\frac{Contribution}{EBIT}$

$= \frac{2,40,000}{90,000}$

= 2.67 times.

Illustration: 3

Find out degree of operating leverage from the following data :

	Rs.		
EBIT (2005)	40,000	Sales (2005)	20,000 units
EBIT (2006)	50,000	Sales (2006)	28,000 units

Degree of operating leverage (DOL) = $\frac{\%\ Change\ in\ EBIT}{\%\ Change\ in\ Sales}$

% Change in EBIT = $\frac{10,000}{40,000} \times 100$

= 25%

% Change in Sales = $\frac{8,000}{20,000} \times 100$

= 40%

∴ DOL = $\frac{0.25}{0.40} \times 100$

= 62.5%

Illustration: 4

The capital structure of Tom Gilbert Ltd. consists of the following securities

	Rs.
45,000 10% Preference shares of Rs. 100 each	45,00,000
5,00,000 Equity shares of Rs. 10 each	50,00,000

The company's operating profit is Rs. 12,00,000. The company is in 40% bracket. You are required to find out the financial leverage of the company .What would be the new financial leverage if the operating profit increases to Rs. 18,00,000 and interpret your results.

Solution:

Statement showing Earnings before tax

	Rs.
EBIT	12,00,000
Less: Preference dividend (pre-tax basis) (45,00,000× 10% = 4,50,000× $\frac{100}{60}$)	7,50,000
EBT	4,50,000

∴ Financial leverage = $\frac{EBIT}{EBT}$

= $\frac{12,00,000}{4,50,000}$

= 2.67 times

Statement showing Earnings before tax

(Operating profit : Rs. 18 lakh)

	Rs.
EBIT	18,00,000
Less: Preference dividend (Gross)	7,50,000
EBT	10,50,000

∴ New financial leverage = $\frac{18,00,000}{10,50,000}$ = 1.71 times

Analysis: The present financial leverage is 2.67 times. It means 1% change in ERIT will cause 2.67% change in EBT in the same direction. For example, in the present case EBIT has increased by 50%. (i.e, from Rs. 12 lakh to Rs. 18 lakh). This has resulted in 75% increase in EBT (i.e., from Rs. 4.5 lakh to Rs. 10.5 lakh).

Illustration: 5

The following figures relate to two companies. You are required to (a) calculate the operating, financial and combined leverages of the two companies and (b) comment on their relative risk position.

	X Ltd. Rs.	Y Ltd. Rs.
Sales	4,00,000	8,00,000
Less: Variable cost	1,60,000	2,40,000
Contribution	2,40,000	5,60,000
Less: Fixed cost	1,28,000	2,80,000
Operating profit (EBIT)	1,12,000	2,80,000
Less: Interest	48,000	1,20,000
Profit before tax	64,000	1,60,000

Solution:

(i)Operating leverage = $\frac{Contribution}{EBIT}$

X Ltd = $\frac{2,40,000}{1,12,000}$

= 2.14 times

Y Ltd = $\frac{5,60,000}{2,80,000}$

= 2 times

Analysis: Operating leverage is higher for X Ltd. than Y Ltd. Hence X Ltd. has a greater degree of business risk. In other words, the tendency of net income (EBIT) to vary disproportionately with sales is greater in case of X Ltd than Y Ltd.

(ii)Financial Leverage $= \frac{EBIT}{EBT}$

X Ltd = $\frac{1,12,000}{64,000}$

= 1.75 times

Y Ltd = $\frac{2,80,000}{1,60,000}$

= 1.75 times

Analysis: Both companies have the same degree of financial risk. It means that the tendency of residual net income (EBT) to vary disproportionately with net income (EBIT) is the same in case of both the companies.

(iii)Combined leverage $= \frac{Contribution}{EBT}$

X Ltd $= \frac{2,40,000}{64,000}$

= 3.75 times

Y Ltd = $\frac{5,60,000}{1,60,000}$

= 3.50 times

Analysis: Overall business risk is slightly high for X Ltd. due to high degree of operating leverage even if degree of financial leverage is the same.

Work it Out…

1. Calculate operating leverage for Maruti Ltd., from the following information:

1 No. of units produced	50,000
Selling price per unit	Rs.50
Variable cost per unit	Rs.20

Fixed cost per unit at current level of sales is Rs.15. What will be the new operating leverage, if the variable cost is Rs.30 per unit.

2. Find out degree of operating leverage from the information given below:

EBIT(2008) Rs.50,000:	Sales (2008)	20,000 units
EBIT(2009) Rs.60,000:	Sales (2009)	28,000 units

3.Calculate operating and financial leverages from the following particulars:

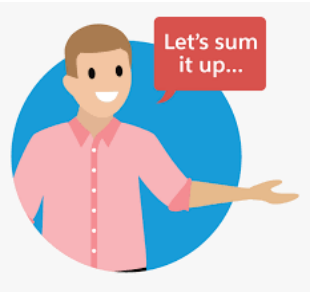
Units sold 5,000 Selling price per unit. Rs.30

Variable cost per unit Rs.20 EBIT Rs.30,000

10% Public debt Rs. 1,00,000

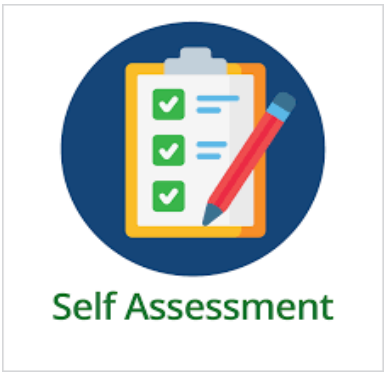
4. From the following particulars, calculate operating leverage, financial leverage and combined leverage:

Sales	Rs.1,20,000	Variable cost	Rs.72,000
Interest	Rs.12,000	Fixed cost	Rs.18,000



2.2.4 Let's Sum up

The debt-equity ratio is a key financial metric indicating a company's leverage and stability, calculated as Total Debt/Total Equity. It impacts financial leverage, risk assessment, and cost of capital. Various theories on capital structure, like the Net Income Approach and Modigliani-Miller Hypothesis, explore its effect on firm value and cost of capital, with mixed views on its relevance. Leverage, encompassing operating, financial, and combined types, affects a firm's risk and profitability. Effective use of leverage can enhance returns but also increases financial risk, necessitating careful management.



2.2.5 Check Your Progress

1. What does a high debt-equity ratio indicate about a company?

A. The company is primarily financed by equity.

B. The company is primarily financed by debt.

C. The company has no leverage.

D. The company's financial stability is guaranteed.

2. According to the Net Income Approach, what happens when a firm increases its debt capital?

A. The overall cost of capital increases.

B. The value of the firm decreases.

C. The overall cost of capital declines.

D. The cost of equity remains constant.

3. Which theory suggests that the capital structure does not influence the cost of capital or the value of the firm?

A. Net Income Approach

B. Traditional View

C. Modigliani Miller Hypothesis

D. Pecking Order Theory

4. In the Modigliani Miller Hypothesis, what role does the arbitrage process play?

A. It eliminates the risk associated with debt.

B. It ensures that two firms with identical operations cannot have different market values.

C. It reduces the overall cost of capital.

D. It increases the firm's value by adjusting the debt-equity mix.

5. What does financial leverage measure in a company?

A. The risk of not covering fixed operating costs.

B. The ability to use fixed financial charges to amplify changes in EBIT on earnings.

C. The firm's total assets.

D. The proportion of short-term debt in the company's capital structure.

2.3.1 Cost of Capital:

The cost of capital is an important financial concept. It links the company's long-term decisions with the wealth of the shareholders as determined in the market place. Whenever, a business organizations raises funds, it has to keep in mind its cost. Hence computation of cost of capital is very important and finance managers must have a close look on it. In this unit, we shall discuss the concept, classification, and importance of cost of capital the process of computing cost of capital of individual components, weighted cost of capital, importance of cost of capital and a few misconceptions.

Meaning:

The term cost of capital refers to the minimum rate of return which a firm must earnon its investments so that the market value of the company's equity shares does not fall.

Definition of Cost of Capital

"The rate of return the firm requires from investment in order to increase the value of the firm in the market place". – Hampton, John

The following are the basic characteristics of cost of capital :

- Cost of capital is a rate of return; it is not a cost as such.
- This return, however, is calculated on the basis of actual cost of different components of capital.
- A firm's cost of capital represents minimum rate of return that will result in at least maintaining (If not increasing) the value of its equity shares.
- It is related to long term capital funds.
- Cost of capital consists of three components :
  a) Return at Zero Risk Level. (r_0)
  b) Premium for Business Risk (b)
  c) Premium for Financial Risk (f)
- The cost of capital may be put in the form of the following equation :

$$K = r_o + b + f$$

Where

K = Cost of Capital

r_o = Return at Zero Risk Level

b = Premium for Business Risk

f = Premium for Financial Risk

A firm's cost of capital has mainly three risks :

- Return at Zero Risk Level: This refers to the expected rate of return when a project involves no risk whether business or financial.

- Premium for Business Risk: Business risk is possibility where in the firm will not be

able to operate successfully in the market. Greater the business risk, the higher will be the cost of capital.

- Premium for Financial Risk: It refers to the risk on account of pattern of capital structure. In other words, a firm having a higher debt content in its capital structure is more risky as compared to a firm which has a comparatively low debt content.

Importance

The determination of the firm's cost of capital is important from the point of view of the following :

- It is the basis of appraising new capital expenditure proposals. This gives the acceptance / rejection criterion for capital expenditure projects.
- The finance manager must raise capital from different sources in a way that it optimizes the risk and cost factors. The sources of funds which have less cost involve high risk. Cost of capital helps the managers in determining the optimal capital structure.
- It is the basis for evaluating the financial performance of top management.
- It helps in formulating appropriate dividend policy.
- It also helps the organization in developing an appropriate working capital policy.

Classification of Cost of Capital

There is no fixed base of classification of cost of capital. It varies according to need, process and purpose. It may be classified as follows:

Explicit Cost and Implicit Cost:

Explicit cost is the discount rate that equates the present value of the funds received by the firm net of underwriting costs, with the present value of expected cash outflows. Thus, it is `the rate of return of the cash flows of financing opportunity'. On the other hand, the implicit cost is the rate of return associated with the best investment opportunity for the firm and its shareholders that will be foregone if the project presently under consideration by the firm were accepted. In the other words, explicit cost relate to raising of funds and implicit costs relate to usage of funds.

Average Cost and Marginal Cost:

The average cost is the weighted average of thecosts of each components of funds. After ascertaining costs of each source of capital, appropriate weights are assigned to each component of capital. Marginal cost of capital is the weighted average cost of new funds raised by the firms.

Future Cost and Historical Cost:

In financial decision making, the relevant costs are future costs. Future cost i.e expected cost of funds to finance the projects is ascertained with the help of historical costs.

Specific Cost and Combined Cost:

The costs of individual components of capital are specific costs of capital. The combined cost of capital is the average cost of capital as it is inclusive of cost of capital from all sources. In capital budgeting decisions, combined cost of capital is used for accepting / rejecting the proposals.

Computing Cost of Capital of Individual components

There are four basic sources of long term funds for a business firm : (i) Long-term Debt and Debentures (ii) Preferences share capital, (iii) Equity share capital, (iv) Retained Earnings. Through all of these sources may not be tapped by the firm for funding its activities, each firm will have some of these sources in its capital structure.

The specific cost of each source of funds is the after-tax cost of financing. It can be before-tax, provided the basis is the same for all the sources of finance being considered for calculating the cost of capital. The procedure for determining the costs of debt, procedure for determining the costs of debt, preferences and equity capital as well as retained earnings is discussed in the following sub-sections.

2.3.2 Cost of Debt

Debt may be issued at par, or at premium or at of discount. It may be perpetual or redeemable. The technique of computation of cost in each case has been explained in the following paragraphs.

- **The formula for computing the Cost of Long Term debt at par is**

$$K_d = (1 - T)\ R$$

Where,

K_d = Cost of long term debt

T = Marginal Tax Rate

R = Debenture Interest Rate

- **In case the debentures are issued at premium or discount,** the cost of debt should be calculated on the basis of net proceeds realised. The formula will be as follows :

$$Kd = \frac{I}{Np}(1 - T)$$

Where,

Kd = Cost of debt after tax

I= Annual Interest Payment

N_P = Net Proceeds of Loans

T= Tax Rate

- **For computing cost of redeemable debts**, the period of redemption is considered. The cost of long term debt is the investor's yield to maturity adjusted by the firm's tax rate plus distribution cost. The question of yield to maturity arises only when the loan is taken either at discount or at premium. The formula for cost of debt will be

$$\frac{I + \frac{\text{Discount}}{mp} \text{ (In case of Premium, } \frac{\text{Premium}}{mp} \text{ will be subtracted)}}{\frac{p + np}{2}} * 100\ (1 - T)$$

Where,

mp = maturity period

p = nominal or par value

np = net proceeds i.e. (Par value – Discount + Premium)

- **In case of underwriting and other issuing costs,** they are adjusted in the same wayas discount is being adjusted in net proceeds and other calculations.

- **Yield to maturity method of computing cost of debt capital** is an approximation method. A better method is that which converts yield to maturity into a discount rate. James C. Van Horne says "the discount rate that equates the present value of the funds received by the firm, net of underwriting and other costs with the present value of expected outflows. These outflows may be interest payments, repayment of principal ordividends". It may symbolically written as:

$$np = \sum_{t=1}^{n} \frac{(\text{cash outflows})^{t}}{(1+K)^{t}}$$

where,

np = net amount available for use

(cash outflows) ^{t} = amount of interest after tax + amount of repayment of principal in different periods

K = discount rate

- **Effective cost of debt** is lower than the interest paid to the creditors because the firm can deduct interest amount from its taxable income. The higher the tax rate, the lower will be the effective interest rate and the cost of debt.

2.3.3 Cost of Preference Capital

The preference share represents a special type of ownership interest in the firm. Preference shareholders must receive their stated dividends prior to the distribution of any earnings to the equity shareholders. In this respect preference shares are very much like bonds or debentures with fixed interest payment. The cost of preference shares can be estimated by dividing the preference dividend per share by the current price per share, as the dividend can be considered a continuous level payment.

$$\text{Cost of Preference Capital} = \frac{Dividend}{Market\ Price - Issue\ Cost}$$

2.3.4 Cost of Equity

"Cost of equity capital is the cost of the estimated stream of net capital outlays desired from equity sources" E.W. Walker.

The cost of equity capital is the most difficult to measure. A few problems in this regard are as follows:

i. The cost of equity is not the out of pocket cost of using equity capital.
ii. The cost of equity is based upon the stream of future dividends as expected by shareholders (very difficult to estimate).
iii. The relationship between market price and earnings is known. Dividends alsoaffect the market value (which one is to be considered).

The following are the approaches to computation of cost of equity capital :

❖ E / P Ratio Method: Cost of equity capital is measured by earning price ratio. Symbolically

$$= \frac{E_0 \text{ (current earnings per share)}}{P_0 \text{ (current market price per share)}} * 100$$

The limitations of this method are :

- Earnings do not represent real expectations of shareholders.
- Earnings per share are not constant.
- Which earnings-current earnings or average earnings (It is not clear).

The method is useful in the following circumstances :

- The firm does not have debt capital.
- All the earnings are paid to the shareholders.
- There is no growth in earnings.

❖ E / P Ratio + Growth Rate Method :

This method considers growth in earnings. A period of 3 years is usually being taken into account for growth. The formula will be as Follows:

$$= \frac{Eo\ (1 + b)\ 3}{P0}$$

Where $(1 + b)^3$ = Growth factor where b is the growth rate as a percentage and estimated for a period of three years.

❖ D / P Ratio Method: Cost of equity capital is measured by dividends price ratio.

Symbolically

$$\frac{D_0 \text{ (Dividend per share)}}{P_0 \text{ (Market price per share)}} * 100$$

The following are the assumptions :

- ✓ The risk remains unchanged.
- ✓ The investors give importance to dividend.
- ✓ The investors purchase the shares at par value.

Under this method, the future dividend streams of a firm as expected by the investors are estimated. The current price of the share is used to determine shareholders' expected rate of return. Thus, if K_e is the risk-adjusted rate of return expected by investors, the present value of future dividends, discounted by K_e would be equal to the price of the share. Thus,

$$P = \frac{D1}{(1 + K_e)^1} + \frac{D2}{(1 + K_e)^2} + \frac{D3}{(1 + K_e)^3} + \frac{D4}{(1 + K_e)^4}$$

where,

P = price of the share

D1 ……. D_n = dividends in periods 1,2,3,….n,

K_e= the risk adjusted rate of return expected by equity investors.

❖ D / P + Growth Rate Method :

The method is comparatively more realistic as

i) It considers future growth in dividends; ii) it considers the capital appreciation.

Thus

$$P_0 = \frac{D1}{K_e - g} \quad \text{or} \quad K_e = \frac{D1}{Po} + g$$

Where,

P_0= the current price of the equity share

D1= the per share dividend expected at the end of year 1.

K_e = the risk adjusted rate of return expected an equity shares.

G = the constant annual rate growth in dividends and earnings.

The equation indicate that the cost of equity share can be found by dividing the dividend expected at the end of the year 1 by the current price of the share and adding the expected growth rate.

❖ Realised Yield Method:

One of the difficulties in using D / P Ratios and E / P Ratios for finding out Ke is to estimate the rate of expected return. Hence, this method depends on the rate of return actually earned by the shareholders. The most recent five to ten years are taken and the rate of return is calculated for the investor who purchased the shares at the beginning of the study period, held it to the present and sold it at the current prices. This is also the realized yield by the investor. This yield is supposed to indicate the cost of equity share on the assumption that the investor earns what he expects to earn. The limiting factors to the usefulness of this method are the additional conditions that the investors expectation do not undergo change during the study period, no significant change in the level of dividend rates occurs, and the attitude of the investors towards the risk remain the same. As these conditions are rarely fulfilled, the yield method has severe limitations. In addition, the yield often differs depending on the time period chosen.

❖ Security's Beta Method :

An investor is concerned with the risk of his entire portfolio, and that the relevant risk of a particular security is the effect that the security has on the entire portfolio. By "diversified portfolio" we mean that each investor's portfolio is representative if the market as a whole and that the portfolio Beta is 1.0. A security's Beta indicate how closely the security's returns move with from a diversified portfolio. A beta of 1.0 for a given security means that, if the total value of securities in the market moves up by 10 percent, the stock's price will also move up, on the average by 10 percent. If security

has a beta of 2.0, its price will, on the whole, rises or falls by 20 percent when the market rises or falls by 10 percent. A share with –0.5 percent beta will rises by 10 percent, when the market falls by 20 percent.

A beta of any portfolio of securities is the weighted average of the betas of the securities, where the weights are the proportions of investments in each security. Adding a high beta (beta greater than 1.0) security to a diversified portfolio increase the portfolio's risk, and adding a low beta (beta less than zero) security to a diversified security reduces the portfolio's risk.

How is beta determined? The beta co-efficient for a security (or asset) can be found by examining security's historical returns relative to the return of the market. As it is, not feasible to take all securities, a sample of securities is used. The Capital Asset Pricing Model (CAPM) uses these beta co-efficients to estimate the required rate of return on the securities. The CAPM specifies that the required rate on the share depends upon its beta. The relationship is :

$$K_e = \text{riskless rate} + \text{risk premium} \times \text{beta}$$

where,

K_e = expected rate of return.

The current rate on government securities can be used as a riskless rate. The difference between the long-run average rate of returns between shares and government securities may represent the risk premium. During 1926-1981, this was estimated in USA to be 6 percent. Beta co-efficient are provided by the published date or can be independently estimated.

The beta for Pan Am's stock was estimated by Value Line to be 0.95 in 1984. Long-term government bond rates were about 12 percent in November 1984. Thus the required rate of return on Pan Am's stock in November 1984 was – Required Rate = 12% + 6% * 0.95 = 17.7 %

The use of beta to measure the cost of equity capital is definitely a better approach. The major reason is that the method incorporates risk analysis, which other methods do not. However, its application remains limited perhaps because it is tedious to calculate Beta value.

2.3.5 Cost of Retained Earnings

Some authors do not consider it necessary to calculate separately cost of retained earnings. They say that the cost of retained earnings is included in the cost of equity sharecapital. They say that the existing share price is used to determine cost of equity capital and this price includes the impact of dividends and retained earnings. There are authorities who also suggest that cost of retained earnings is to be determined separately. Two alternative approaches are there :

i) One is to regard cost of equity capital as the cost of retained earnings.

ii) The concept of external yields as suggested by Ezra Soloman. It assuresinvestment of retained earnings in another firm. Symbolically

$$\text{Cost of Retained Earnings} = \left(\frac{D1}{Po} + G\right)\ (1 - TR)\ (1 - B)$$

$$= K_e\ (1 - TR)\ (1 - B)$$

Where,

K_e = Cost of equity capital based on dividends growth method

TR = Shareholder's Tax Rate

B = Percentage Brokerage Cost

2.3.6 Weighted Average Cost of Capital

Weighted cost of capital is also called as composite cost of capital, overall cost of capital, weighted marginal cost of capital, combined cost of debt and equity etc. It comprises the costs of various components of financing. These components are weighted according to their relative proportions in the total capital.

Historic weights can be book or market weights based on actual data. Such weights however would represent actual rather than desired proportions of various types of capital in the capital structure. Target weights, which can also be based on book or market values, reflect the desired capital structure proportions. If the firm's historic capital structure is not much different from `optimal' or desired capital structure, the cost of capital in both the cases is mostly similar. However, from a strictly theoretical point of view, the target market value weighting scheme should be preferred.

Marginal weights are determined on the basis of financing mix in additional new capital to be raised for investments. The new capital to be raised is marginal capital. The propositions of new capital raised will be the marginal weights.

Simple Problems:

Illustration: 1 (Cost of irredeemable debt)

Sakthi Ltd. issued 20,000 8% debentures of Rs. 100 each on 1st April 2009. The cost of issue was Rs. 50,000. The company's tax rate is 35%. Determine the cost of debentures (before as well as after tax if they were issued, (a) at par; (b) at a premium of 10% and (c) at a discount of 10%.

Solution:

(a) Debentures issued at par

	Rs.
(i)Interest : (20,00,000 × 8%)	1,60,000
Less: Tax (1,60,000 × 35%)	56,000
Interest after tax	1,04,000
	Rs.
(ii) Gross proceeds : (20,000 ×100)	20,00,000
Less: Cost of issue	50,000
Net proceeds	19,50,00

Cost of debentures before tax (k_{db}%) = $\frac{Interest\ before\ tax}{Net\ proceeds} \times 100$

$= \frac{1,60,000}{19,50,000} \times 100$

= 8.21%

Cost of debentures before tax (k_{da}%) = $\frac{Interest\ after\ tax}{Net\ proceeds} \times 100$

$= \frac{1,04,000}{19,50,000} \times 100$

= 5.33%

b) Debentures issued at a premium of 10%

Gross proceeds (20,000 x 110)	22,00,000
Less: Cost of issue	50,000
Net proceeds	21,50,000

Cost of debentures before tax (k_{db}%) = $\frac{Interest\ before\ tax}{Net\ proceeds} \times 100$

$= \frac{1,60,000}{21,50,000} \times 100$

= 7.44%

Cost of debentures before tax (k_{da}%) = $\frac{Interest\ after\ tax}{Net\ proceeds} \times 100$

$= \frac{1,04,000}{21,50,000} \times 100$

= 4.84%

(c)Debentures issued at a discount of 10%

Gross proceeds (20,000 x 90)	18,00,000
Less: Cost of issue	50,000
Net proceeds	17,50,000

Cost of debentures before tax (k_{db}%) = $\frac{1,60,000}{17,50,000} \times 100$

= 9.14%

Cost of debentures before tax (k_{da}%) = $\frac{1,04,000}{17,50,000} \times 100$

= 5.94%

Note:

Whether the debentures are issued at par (or) at premium (or) at discount interest on debentures should be calculated only on the face value of debentures.

Ilustration: 2 (Cost of redeemable debt)

Kinley Ltd. issued 50,000 10% debentures of Rs. 100 each, redeemable in 10 years' time at 10% premium. The cost of issue was 2.5%. The company's income tax rate is 35%. Determine the cost of debt (before as well as after tax) if they were issued (a) at par; (b) at a premium of 5% and (c) at a discount of 10%.

Solution:

(a)Debentures issued at par and Redeemable at a premium of 10%

(i) Calculation of Annual cost	Rs.
Interest : (50,00,000 × 10%)	5,00,000
Add : Cost of issue : 50,00,000 × 2.5% = $1{,}25{,}000/10\ years$	12,500
Premium on redemption 50,00,000 × 10% = $5{,}00{,}000/10\ years$	50,000
Annual cost before tax	5,62,500
Less : Tax (5,62,500 × 35%)	1,96,875
Annual cost after tax	3,65,625
(ii) Calculation of Average value of debt	
Gross proceeds (50,000 × 100)	50,00,000
Less: Cost of issue (50,00,000 × 2.5%)	1,25,000
Net proceeds	48,75,000

Redeemable value = 50,00,000 × 110% = Rs.55,00,000

∴Average value = $\frac{Net\ proceeds+Redeemable\ value}{2}$

$= \frac{48{,}75{,}000+55{,}00{,}000}{2}$

= Rs.51,87,500

∴ Cost of debt before tax (k_{db}) = $\frac{Annual\ cost\ before\ tax}{Average\ value\ of\ debt} \times 100$

$$= \frac{5,62,500}{51,87,500} \times 100$$

= Rs. 10.84 %

∴ Cost of debt before tax (k_{da}) = $\frac{Annual\ cost\ before\ tax}{Average\ value\ of\ debt} \times 100$

$$= \frac{3,65,625}{51,87,500} \times 100$$

= Rs. 7.05 %

Note: The debentures are redeemable after 10 years. Hence, cost of issue and premium on redemption are spread over 10 years to arrive at annual cost.

b) Debentures issued at a premium of 5% and Redeemable at a premium of 10%

(i)Calculation of Annual cost	Rs.
Interest : (50,00,000 × 10%)	5,00,000
Add : Cost of issue : (50,00,000 × 105% = 52,50,000 × 2.5 % = $1,31,250/10\ years$)	13,125
Add : Premium on redemption 50,00,000 × 10% = $5,00,000/10\ years$	50,000
	5,63,125
Less : Premium on issue : (50,00,000 × 10% = $5,00,000/10\ years$)	25,000
Annual cost before tax	5,38,125
Less : Tax (5,38,125 × 35%)	1,88,344
Annual cost after tax	3,49,781
(ii) Calculation of Average value of debt	
	Rs
Gross proceeds (50,000 × 105)	52,50,000
Less: Cost of issue (52,50,000 × 2.5%)	1,31,250
Net proceeds	51,18,750

Redeemable value = 50,00,000 × 110% = Rs.55,00,000

∴Average value of debt = $\frac{51,18,750+55,00,000}{2}$

= Rs.53,09,375

∴ Cost of debt before tax (k_{db}) = $\frac{5,38,125}{53,09,375} \times 100$

= Rs. 10.14%

∴ Cost of debt after tax (k_{da}) = $\frac{3,49,781}{53,09,375} \times 100$

= Rs. 6.59%

(c)Debentures issued at a discount of 10% and redeemable at a premium of 10%

(i)Calculation of Annual cost	Rs.
Interest : (50,00,000 × 10%)	5,00,000
Add : Cost of issue : (50,00,000 × 2.5% = $1,25,000/10\ years$)	12,500
Add : Premium on redemption 50,00,000 × 10% = $5,00,000/10\ years$	50,000
Discount on issue : (50,00,000 × 10% = $5,00,000/10\ years$)	50,000
Annual cost before tax	6,12,500
Less : Tax (5,38,125 × 35%)	2,14,375
Annual cost after tax	3,98,125
(ii) Calculation of Average value of debt	
	Rs
Gross proceeds (50,000 × 90)	45,00,000
Less: Cost of issue (50,50,000 × 2.5%)	1,25,000
Net proceeds	43,75,000

Redeemable value = 50,00,000 × 110%

= Rs.55,00,000

∴Average value of debt = $\frac{43,75,000+55,00,000}{2}$

= Rs.49,37,500

∴ Cost of debt before tax (k_{db}) = $\frac{6,12,500}{49,37,500} \times 100$

= Rs. 12.41%

∴ Cost of debt after tax (k_{da}) = $\frac{3,98,125}{49,37,500} \times 100$

= Rs. 8.06%

Note: (i) Cost of debt will not be equal to the interest rate on debt. This is due to the various reasons such as tax saving effect, issue at premium/discount, expenses of issue and difference between face value and net proceeds, redemption at premium and additional amount payable.

(ii) Cost of issue has been calculated at face value or the issue prices whichever is higher.

Illustration: 3 (Cost of irredeemable preference share capita)

Malaiya Ltd. issued 60,000 15% irredeemable preference shares of Rs, 100 each. The issue expenses were Rs. 60,000. Determine the cost of preference capital if shares are issued (a) at par; (b) at a premium of 10% and (c) at a discount of 5%.

Solution :

Cost of Red. Pref. share capital (k_p) = $\frac{Annual\ pref.Dividend}{Net\ proceeds} \times 100$

(a)Preference shares issued at par

Annual pref. dividend : 60,000 x 100

=60,00,000 × 15%

= Rs. 9,00,000

	Rs.
Gross proceeds : (60,000 × 100)	60,00,000
Less : Issue expenses	60,000
Net proceeds	59,40,000

∴ Cost of pref. share capital (k_p) : = $\frac{9,00,000}{59,40,000} \times 100$

= Rs. 15.15%

(b) Preference shares issued at a premium of 10%

	Rs.
Annual pref. dividend : (60,00,000 × 15%)	9,00,000
Gross proceeds : (60,000 × 110)	66,00,000
Less: Issue expenses	60,000
Net proceeds	65,40,000

∴ Cost of pref. share capital (k_p) : = $\frac{9,00,000}{65,40,000} \times 100$

= Rs. 13.76%

(c) Preference shares issued at a discount of 5%

Annual pref. dividend =60,00,000 x 15%

= Rs. 9.00.000

	Rs.
Gross proceeds : (60,000 × 95)	57,00,000
Less : Issue expenses	60,000
Net proceeds	56,40,000

∴ Cost of preference share capital (k_p) : = $\frac{9,00,000}{56,40,000} \times 100$

= Rs. 15.96%

Note: Preference dividend is not an allowed expense for computation of tax. Hence, cost of preference capital before and after tax is same.

Illustration : 4 (Cost of equity-dividend yield method)

Ajit Ltd. has a stable income and stable dividend policy. The average annual dividend payout is Rs. 25 per share (face value : Rs. 100). You are required ascertain:

(a) Cost of equity capital

(b) Cost of equity capital if the market price of the share is Rs. 150.

(c) Expected market price in year 2 if cost of equity is expected to rise to 20%.

(d) Dividend payout in year 2 if the company were to have an expected market price of Rs. 160 per share, at the existing cost of equity.

Solution :

(a)Computation of cost of equity (k_e)

$k_e = \frac{D_1}{NP}$

D_1 = Expected dividend per share: Rs. 25

NP=Net proceeds =Rs. 100

$\therefore k_e = \frac{25}{100} \times 100$

= 25%

b) Computation of cost of equity if market price of share is Rs. 150

$k_e = \frac{D_1}{MP}$

D_1 =Rs. 25

MP=Market price =Rs. 150

$\therefore k_e = \frac{25}{150} \times 100$

=16.67

(c)Computation of market price if k_e= 20%

$k_e = \frac{D_1}{MP}$

$20\% = \frac{25}{MP} = 0.20 = \frac{25}{MP}$

= 0.20 MP = 25

$MP = \frac{25}{0.20}$

= Rs. 125

∴Expected market price = Rs. 125

(d)Computation of dividend per share if market price is Rs. 160 at the existing k_e of 25%

$k_e = \frac{D_1}{MP}$

$25\% = \frac{D_1}{160}$

D_1=160 x 25%=Rs. 40

∴Expected dividend per share =Rs. 40.

Illustration: 5.(Cost of retained earnings)

The rate of return available to the equity shareholders in the Eva Ltd. is 209% and the personal tax rate applicable to shareholders is 22%. It is expected that the shareholders will have to bear a brokerage cost of 3% when they invest their dividends in alternative securities. Compute the cost of retained earnings.

Solution:

To determine the cost of retained earnings, adjustments for tax and brokerage are to be made as given below:

	%
Cost of equity ($k_{e)}$	20.00
Less: Personal tax rate ($20 \times 22\%$)	4.40
	15.60
Less: Brokerage ($15.6 \times 3\%$)	0.468
Cost of retained earnings (k_r)	15.132

Alternatively

$k_r = k_e$ (1- Tax rate) x (1- Brokerage)

=20 (1-0.22) x (1 -0.03)

=20 (0.78) x (0.97)

=15.132%

Illustration: 6.(WACC)

Following information is available with regards to the capital structure of Edwards Ltd:

	Amount Rs.	After tax cost of capital
Debentures	12,00,000	5%

Preference share capital	4,00,000	10%
Equity share capital	8,00,000	15%
Retained earnings	16,00,000	12%

You are required to calculate weighted average cost of capital (WACC)

Solution:

Statement showing weighted average cost of capital

Source	Amount Rs.	Weights	After tax cost %	Weighted cost
(1)	(2)	(3)	(4)	5 = (3 × 4)
Debentures	12,00,000	$^{12}/_{40}$ = 0.30	5	1.5
Pref. share capital	4,00,000	$^{4}/_{40}$ =0.10	10	1.0
Equity share capital	8,00,000	$^{8}/_{40}$ =0.20	15	3.0
Retained earnings	16,00,000	$^{16}/_{40}$ =0.40	12	4.8
	40,00,000			10.30

∴WACC = 10.30%

Work it out :

Cost of Irredeemable Debt

1. (Issued at par) :Janaki Ltd., issued 12,000 10% Debentures of Rs.100 each a per The tax rate is 50%. Calculate before tax and after tax cost of debt

2. Kalyan Ltd., issued 50,000 12% Debentures of Rs. 100 each at par. The tax rate is 40%. Calculate cost of debt

3. (Issued at premium): Vikram Ltd. issued Rs.3,00,000 8% Debentures at a premium of 10%. The flotation costs (issue expenses) are 2%. The tax rate is 50%. You are required to ascertain cost of debt before tax and after tax.

II.Cost of Redeemable Debt

4.(ssued at par; Redeemable at par); KKL Ltd. issued 10% Debentures of Rs.5.00,000 and realized Rs.4,85,000 after allowing 3% commission to brokers.The debentures are due for maturity at the end of the 10th year. You are required to calculate the effective cost of debt before tax.

5. A firm issues debentures of Rs.1,00,000 and realizes Rs.98,000 after allowing 2% commission to brokers. The debentures carry an interest rate of 10%. The debentures are due for maturity at the end of the 10th year. Calculate the effective cost of debt before tax.

III. Cost of Irredeemable Preference Share Capital

6.. Dinesh Ltd., has issued 9% 10,000 Preference shares of Rs. 100 each. The issue expenses are Rs.3 per share. You are required to ascertain the cost of preference share capital if the shares are issued (a) at a par; (b) at a premium of 10% and (c) at a discount of 5%.

7. Sumo Ltd., has issued 6,000 8% Preference shares of Rs. 1 00 each. The floatation costs are Rs.10,000. Compute the cost of preference share capital if the shares are issued (a) at par;(b) at a premium of 10% and (c) at a discount of 10%.

IV. Cost t of Equity Share Capital

8. (**Dividend yield Method (or) Dividend price Method)**

ARR Ltd., issued 5,00,000 Equity shares of Rs. 10 each at a premium of 10%. The company has been paying a dividend of 27% regularly for the past 5 years. It is expected to maintain the dividend in future also. You are required to calculate:
(a) the cost of equity capital : (b) the cost of equity capital if the market price of the share is Rs.50?

9. A company issues equity shares of Rs. 10 each for public subscription at a premium of 20%. The company pays @5% as underwriting commission on issue price. Expected rate of dividend by equity shareholders is 25%. You are required to compute the cost of equity capital. Will your assumption be different if it is calculated on the basis of present market value of equity share which is only Rs.16?

V. Cost of Retained Earnings

10. A company's cost of equity capital is 12%. The brokerage cost for purchase of securities is 2%. The personal tax rate of shareholders is 50%. Compute the cost of retained earnings.

11. Rajam Ltd. has an annual profit of Rs. 50,000 and the required rate of return of the shareholders is 10%. It is further expected that the shareholders will have to incur 3% brokerage cost of the dividends received and invested by them for making new investments. Find out the cost of retained earnings to the firm given that the tax rate applicable to shareholders is 30%.

VI. Weighted Average Cost of Capital

12.. The capital structure and after tax cost of different sources of funds are given below:

Sources of funds	Amount	Proportion to total	After tax cost %
Equity share capital	7,20,000	.30	15
Retained earnings	6,00,000	.25	14
Preference share capital	4,80,000	.20	10
Debentures	6,00,000	.25	8

You are required to compute the weighted average cost of capital.

13. The following information is available from the Balance Sheet of a Company.

Equity share capital -20,000 shares of Rs. 10 each	Rs.2,00,000
Reserves and surplus	Rs.1,30,000
8% Debentures	Rs.1,70,000

The rate of tax for the company is 50%. Current level of equity dividend is I2%

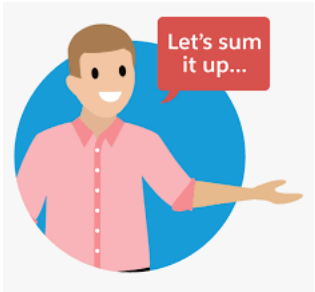
Calculate the weighted average cost of capital using the above figures.

Some Misconceptions about Cost of Capital

The cost of capital is a central concept in financial management linking the investment and financing decisions.

A few misconceptions in this regard are as follows:

- The concept of cost of capital is academic and impractical.
- It is equal to the dividend rate.
- Retained earnings are either cost free or cost significantly less than external equity.
- Depreciation has no cost.
- The cost of capital can be defined in terms of an accounting based manner.
- If a project is heavily financed by debt, its weighted average cost of capital is low.



2.3.7 Let's Sum up

The cost of capital represents the minimum return a firm must earn on its investments to maintain its market value. It's a critical financial concept encompassing return at zero risk, business risk, and financial risk. The cost of capital is crucial for appraising new investments, optimizing capital structure,

evaluating management performance, formulating dividend policy, and developing working capital policy. It can be classified in various ways, such as explicit vs. implicit and average vs. marginal cost. Computation of the cost involves calculating the after-tax cost for different sources like debt, preference capital, and equity capital.

2.3.8 Check Your Progress

1. What is the main goal of digital marketing according to experts like Philip Kotler?

A. To create flashy advertisements

B. To reduce marketing costs

C. To create, communicate, deliver, and sustain value for stakeholders

D. To increase website traffic

1. What does the cost of capital represent for a firm?

A. The maximum return a firm can earn on its investments

B. The minimum return a firm must earn on its investments to maintain its market value

C. The average return a firm earns on all investments

D. The amount of capital a firm needs to raise in the market

2. Which of the following is NOT a component of the cost of capital?

A. Return at zero risk

B. Business risk

C. Financial risk

D. Market share

3. Why is the cost of capital important for a firm?

A. It helps in setting product prices

B. It is essential for appraising new investments and optimizing capital structure

C. It determines employee salaries

D. It is used to calculate annual profits

4. Which of the following is NOT a classification of the cost of capital?

A. Explicit vs. Implicit

B. Average vs. Marginal

C. Internal vs. External

D. Short-term vs. Long-term

5. What does the computation of the cost of capital involve?

A. Calculating the total revenue

B. Estimating the after tax cost for different sources like debt, preference capital, and equity capital

C. Determining the market value of the firm

D. Assessing employee performance

2.4.1 Unit Summary

- Capital structure planning ensures the optimal mix of debt and equity to achieve organizational goals.
- It helps in understanding factors influencing capital structure decisions, such as market conditions and company size.
- Capital structure theories, like Trade-Off Theory and Pecking Order Theory, guide financial decision-making.
- Effective capital structure planning balances financial risk and return.
- Leverage affects an organization's risk profile and return on equity.
- Cost of capital is crucial for evaluating investment opportunities and financial strategy.
- Calculating cost of equity, preference share capital, and debt helps in determining the overall cost of capital.
- The Weighted Average Cost of Capital (WACC) provides a comprehensive measure for investment evaluation.
- Understanding the cost of retained earnings includes opportunity costs in financial planning.
- Capital structure and cost of capital analysis enhance organizational financial efficiency and decision-making.

2.4.2 Glossary

Debt-to-Equity Ratio	A financial ratio indicating the relative proportion of shareholders' equity and debt used to finance a company's assets.
Capital Structure	The mix of debt, equity, and other securities that a company uses to finance its operations and growth.

Weighted Average Cost of Capital (WACC)	The average rate of return a company is expected to pay its security holders to finance its assets, weighted according to the proportion of each source of capital.
Cost of Debt	The effective rate that a company pays on its borrowed funds. This cost is often tax-deductible.
Leverage	The use of borrowed capital (debt) to increase the potential return of an investment. Leverage can also refer to the amount of debt used to finance assets.
Cost of Capital	The cost of funds used for financing a business, which includes the cost of debt and the cost of equity.

2.4.3 Self – Assessment Questions

1. Define capital structure and explain its significance in financial decision-making.
2. How does leverage affect a company's financial risk and return?
3. Calculate the weighted average cost of capital (WACC) for a company given specific proportions of debt, equity, and other securities.
4. Compare and contrast the Modigliani-Miller (M.M.) theorem and the Trade-Off Theory in explaining capital structure decisions.
5. Discuss the factors influencing a company's choice between debt and equity financing.
6. Evaluate the impact of corporate taxes on the cost of debt for a company.
7. Analyze how changes in interest rates can affect a company's cost of debt and overall WACC.
8. Assess the strengths and weaknesses of the Pecking Order Theory of capital structure.
9. Explain how retained earnings contribute to a company's cost of capital and capital structure decisions.
10. Propose a capital structure strategy for a company entering a new market segment.

Activities / Exercises / Case Studies

1. Form a small group and assign each group a different publicly traded company and have them analyze its balance sheet and financial statements to debt-equity ratio.
2. Each student can propose a business plan with the capital structure terms used in it.

Answers for check your progress

Module 1

1. B. The composition of long-term sources of funds such as debentures, long-term debt, and equity
2. C. Rigidity
3. A. Trading on equity
4. A. Floatation costs
5. B. The degree of financial leverage that maximizes the market value of the firm's securities or minimizes the cost of capital

Module 2

1. B. The company is primarily financed by debt.
2. C. The overall cost of capital declines.
3. C. ModiglianiMiller Hypothesis
4. B. It ensures that two firms with identical operations cannot have different market values.
5. B. The ability to use fixed financial charges to amplify changes in EBIT on earnings.

Module 3

1. B. The minimum return a firm must earn on its investments to maintain its market value
2. D. Market share
3. B. It is essential for appraising new investments and optimizing capital structure
4. C. Internal vs. External
5. B. Estimating the after tax cost for different sources like debt, preference capital, and equity capital

2.4.4 References & Suggested Readings

1. "Principles of Corporate Finance" by Richard A. Brealey, Stewart C. Myers, and Franklin Allen – McGraw-Hill.

2. "Financial Management: Text, Problems and Cases" by M.Y. Khan and P.K. Jain – McGraw-Hill.

3. "Capital Structure and Corporate Financing Decisions: Theory, Evidence, and Practice" by H. Kent Baker and Gerald S. Martin ISBN: 9780470569528

4. "Applied Corporate Finance" by AswathDamodaran ISBN: 9781118808931

5. "Cost of Capital in Litigation: Applications and Examples" by Shannon P. Pratt and Roger J. Grabowski ISBN: 9780470609712

UNIT 3 Capital Budgeting

Capital Budgeting: ARR, Payback period, Net present value, IRR, Capital rationing, simple problems on capital budgeting methods.

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Hello Learner…. Welcome to Capital Budgeting! Master the essential concepts and techniques of capital budgeting, a critical aspect of financial decision-making. Explore key methods like Accounting Rate of Return (ARR), Payback Period, Net Present Value (NPV), and Internal Rate of Return (IRR). Understand the principles of capital rationing and solve simple problems using various capital budgeting methods. Get ready to enhance your financial acumen and strategic planning skills!

3.1.1 Introduction to Capital Budgeting:

A Finance manager's role involves securing the necessary funds from various sources and investing these funds into different assets in the most profitable manner. This investment process involves making decisions where funds are allocated with the expectation of long-term benefits. The finance manager must decide on the composition of the firm's assets, which are categorized into fixed assets and current assets. The process of making financial decisions related to fixed assets is referred to as capital budgeting.

Definitions:

Capital budgeting is the long term planning for making and financing proposed capital outlays - Charles T. Horngren

Capital budgeting involves the planning for assets, the returns from which will be realised in future time periods - Milton H. Spencer

Capital budgeting consists in planning for development of available capital for the purpose of maximising the long term profitability (return on investment) of the firm - R.M. Lynch

Meaning:

Capital budgeting involves planning capital expenditures for acquiring fixed assets like land, buildings, and plants, or undertaking new projects. This includes activities such as replacing and modernizing processes, introducing new products, and expanding the

business. It requires the preparation of a Detailed Project Report (DPR) and financial statements that show the project's profitability. The project with the highest return on investment is selected to ensure the firm maximizes its profitability.

Objectives of Capital Budgeting

The objectives of capital budgeting is summarised as given below:

1. Finding the Best Investment Opportunities:

The main aim is to pick the investment projects that will make the most money for the company. This helps ensure that resources are used wisely.

2. Choosing the Best Financing Options:

Another goal is to find the best way to finance these investments, considering what's available in the market. This means deciding whether to use loans, sell shares, or a combination of both, based on what fits the company's needs best.

3. Supporting Growth and Improvement:

Capital budgeting helps the companies grow and modernize. By making smart investment decisions, the company can expand, upgrade its technology, and stay competitive in the market. This ensures the business keeps growing and improving over time.

Need and Importance of Capital Budgeting

Capital budgeting is very important in making financial decisions. It requires special attention for several reasons:

1. Large Investment:

Capital budgeting involves spending a significant amount of money. Companies need to think carefully before making these decisions to use their resources wisely. Making quick or wrong decisions can lead to big losses and even cause the company to fail. These decisions ensure that the company's funds are allocated to projects that will provide the most benefit. Without careful consideration, a large investment can drain the company’s resources with little to no return.

2. Long-term Effects:

Capital budgeting decisions affect the company for a long time. They influence future costs and benefits and determine how the company will grow. The impact of these

decisions lasts for many years. This means that today's capital budgeting choices can shape the future of the company. Long-term planning ensures that the company remains profitable and competitive over time.

3. Hard to Reverse:

Once made, capital budgeting decisions are usually permanent. It's hard to get back the money invested without losing a lot. Selling used capital goods or repurposing them is not easy or cost-effective. This irreversibility means that mistakes in these decisions can have lasting negative impacts. Therefore, it’s critical to make well-informed choices from the start.

4. Complexity:

Capital budgeting relies on predicting future events and cash flows, which is complex. It requires careful analysis and judgment. This process involves detailed forecasting using statistical and probabilistic methods. Because predicting the future is inherently uncertain, it takes significant expertise and diligence. Accurate forecasts are essential for making sound investment decisions.

5. Risk:

The longer it takes to get returns, the higher the risk and uncertainty. Therefore, these decisions should be made after thoroughly reviewing all available information. Minimizing risk involves careful consideration of all potential outcomes. By understanding and preparing for risks, companies can make better decisions that ensure financial stability. Assessing risk helps avoid costly mistakes that could jeopardize the company’s future.

6. Need for Profit:

The funds used for investments come with a cost, known as the Weighted Average Cost of Capital (WACC). Even money generated within the company has an implicit cost. Therefore, it's important to ensure that the returns from investments exceed these costs to make them worthwhile. Achieving a surplus over the cost of funds justifies the investment. This surplus ensures the company can cover its costs and achieve financial growth.

Advantages of Capital Budgeting

The main benefits of capital budgeting are:

- At any given time, a company might have many investment opportunities. Capital budgeting helps evaluate these options and rank them based on their potential benefits, allowing management to choose the best ones to pursue.
- This ensures that the limited funds available are used in the most effective way.
- The timing and execution of each project can be adjusted based on changes in the capital market, giving the company flexibility to adapt its plans as needed.
- Capital budgeting also involves considering different sources of finance and choosing the most suitable ones, which can help reduce the overall cost of capital.
- It helps manage the balance between debt and equity in the company's capital structure, ensuring financial stability.
- In situations where funds are tight, capital rationing can be used to make sure that scarce resources are not wasted and are allocated to the most important projects.

Capital Budgeting Process

Capital investment decisions form an integral part of the capital budgeting process, which revolves around the deliberation of (a) specific project selection, (b) total capital expenditure determination, and (c) general financing modalities. This process unfolds through distinct stages:

1. Identification of Investment Proposals:

Initiating the capital budgeting process involves soliciting potential investment avenues within the organization. This phase encompasses a systematic exploration of project possibilities sourced from various departments and personnel. Each proposal undergoes meticulous assessment to gauge alignment with corporate objectives and viability for further evaluation.

2. Screening Proposals:

Following proposal accumulation, a meticulous screening process ensues to scrutinize each proposal's alignment with organizational objectives and potential interdepartmental implications. The objective is to ensure that selected proposals are strategically aligned and compatible with the company's overarching goals.

3. Evaluation of Proposals:

Selected proposals undergo comprehensive evaluation employing established financial metrics such as payback period, average rate of return, net present value, and internal rate of return. This rigorous assessment enables informed decision-making by estimating financial implications and expected returns for each investment opportunity, thereby guiding project selection.

4. Setting Priorities:

In light of resource constraints, accepted proposals are prioritized based on urgency, financial viability, and strategic alignment. Projects are categorized and ranked according to predetermined criteria, with precedence typically given to existing projects, safety initiatives, efficiency maintenance, income generation, and product line expansion.

5. Final Approval:

Top management assumes the responsibility of granting final approval, following a meticulous review of detailed reports outlining financial requirements and anticipated project outcomes. The decision-making process considers the strategic alignment of investment opportunities with corporate objectives and the availability of financial resources.

6. Implementing Proposals:

Upon approval, selected projects transition into the implementation phase, with allocated funds and dedicated teams entrusted with executing approved initiatives. Management oversees project execution to ensure adherence to budgetary allocations and alignment with strategic objectives.

7. Follow-Up:

Post-implementation, a robust follow-up mechanism is instituted to monitor project performance and compare actual outcomes against projected forecasts. This retrospective analysis enables the organization to derive insights, identify areas for improvement, and refine future capital budgeting decisions for enhanced efficiency and profitability.

Types of Capital Budgeting Decisions:

I. Classification Based on Firm's Existence:

Capital budgeting decisions are made by both newly established firms and existing ones. Newly incorporated firms may need to decide on installing a new plant, while existing firms may need to upgrade their facilities to adapt to new market conditions or competitive challenges. These decisions can be categorized as follows:

(i) Replacement and Modernization Decisions:

Plants and machinery eventually need replacement due to either reaching the end of their economic life or becoming technologically outdated. Replacement decisions involve replacing outdated equipment, while modernization decisions involve upgrading existing equipment to improve efficiency. Both types of decisions aim to reduce costs.

(ii) Expansion Decisions:

Successful existing firms may face increased demand for their products, leading to a need to expand production capacity. Expansion decisions involve adding capacity to existing product lines to meet growing demand and avoid production delays.

(iii) Diversification Decisions:

Firms may consider diversifying into new product lines, markets, or production of spare parts. The finance manager evaluates the costs and benefits of diversification, considering its impact on existing market share and profitability. Both expansion and diversification decisions aim to increase revenue.

II. Classification Based on Decision Situation:

Capital budgeting decisions can also be classified based on the decision situation:

(i) Mutually Exclusive Decisions:

These decisions involve choosing between alternative proposals where accepting one proposal excludes the acceptance of others. For example, a firm may need to decide between purchasing a low-cost economy model or a high-cost super model asset.

(ii) Accept-Reject Decisions:

These decisions occur when proposals are independent and do not compete with each other. The firm evaluates each proposal based on a minimum required return on

investment. Proposals with returns exceeding the desired rate are accepted, while others are rejected.

(iii) Contingent Decisions:

These decisions involve independent proposals where investing in one proposal requires investment in one or more other proposals. For instance, setting up a factory in a remote area may necessitate investment in infrastructure like roads and housing for employees.

Factors Influencing Capital Budgeting Decisions:

Several factors influence capital budgeting decisions:

- Initial Investment:

  This includes the initial cash outflow for new assets, net of salvage value of old assets if any, and investment in working capital.

- Cash Flows After Taxes (CFAT):

  These represent the income generated by the projects after accounting for taxes.

- Terminal Cash Inflows:

  These are cash inflows at the end of the project, such as recovery of working capital investment and salvage value of fixed assets.

- Time Value of Money:

  Future cash inflows are discounted to their present value using an appropriate discount rate to account for the time value of money.

- Discount Rate:

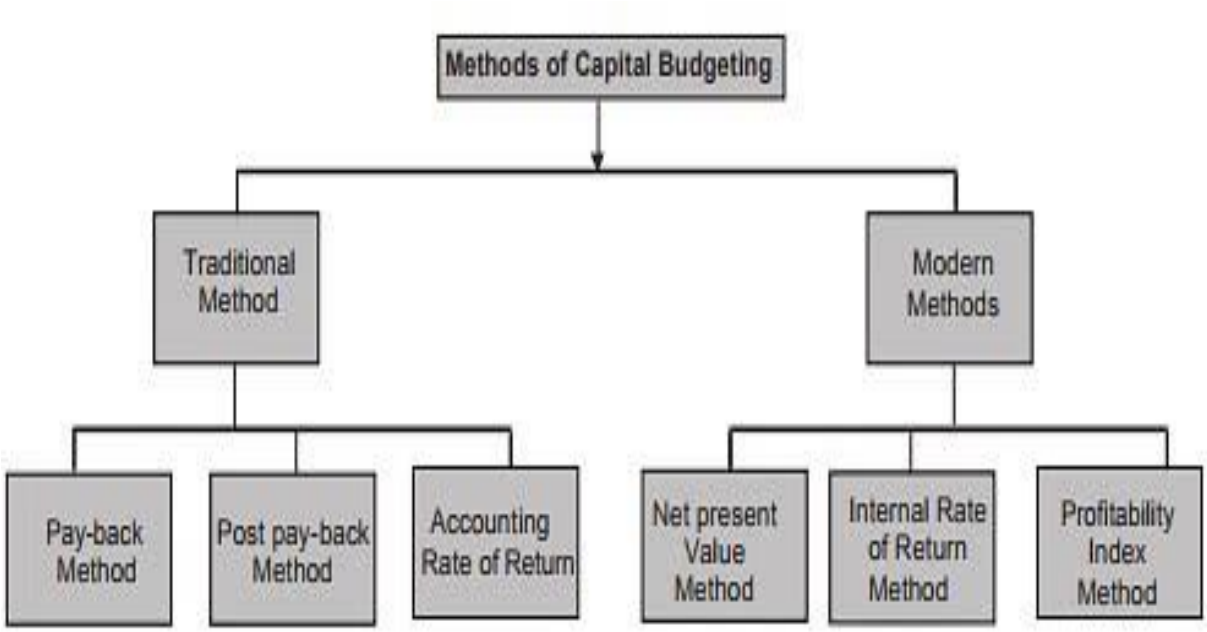
  This is the minimum required rate of return for evaluating capital investments. Projects not meeting this rate are rejected, with the Weighted Average Cost of Capital (WACC) commonly used as the discount rate.

- 4V Factor and Annuity Factor Tables:

  These tables are used to calculate the present value of future cash inflows. The PV annuity factor table is used for uniform cash inflows, while the PV factor table is used for non-uniform cash inflows.

Evaluation of Capital Budgeting Proposals

Capital budgeting decisions involve investing money now with the hope of getting more back in the future, usually over a long time. These decisions are super important because they directly affect how a company grows and competes, which in turn affects how much money it makes later on. So, it's crucial to use good methods to check if each investment idea is worth it economically. In real life, there are lots of ways to do this, and we can group them into two main types, like this:



3.1.2 ARR:

Accounting or Average Rate of Return (ARR) Method

ARR is the annualised net income earned on the average funds invested in a project. It is a measure based on t the accounting profit (profit after depreciation and tax) rather than the cash flows and is very similar to the measure of rate of return on capital employed, which is generally used to measure the overall profitability of the firm. The alternative formula for calculating the ARR is as follows:

(a) Annual return on original investment method

$$\text{ARR} = \frac{Annual\ average\ net\ earning/savings}{Initial\ investment} \times 100$$

Where, Annual average net earnings= Average of the earnings (savings) after depreciation and tax over the whole of the economic life of the project.

Investment = Capital cost of the equipment minus salvage value of the old equipment

(b) Annual return on the average investment method

$$\text{ARR} = \frac{Annual\ average\ net\ earnings}{Average\ investment} \times 100$$

The amount of `Average investment' can be computed in any of the following methods:

(i)Average investment $= \frac{Initial\ investment}{2}$

(ii)Average investment $= \frac{Initial\ investment - Scrap\ value\ of\ the\ asset}{2}$

(iii)Average investment $= \frac{Initial\ investment + Scrap\ value\ of\ the\ asset}{2}$

(iv)Average investment $= \frac{Original\ investment - Scrap\ value}{2}$ +Additional networking capitial + Scrap value

Procedure for the computation of ARR

- Determine the average investment as given above.
- Determine the profit after tax for each year: PAT=CFAT less depreciation.
- Calculate the total PAT for N years, where N=project life.
- Calculate average PAT per annum (Total PAT of all years/ N years)
- ARR= $\frac{Average\ PAT\ p.a}{Average\ investment} \times 100$

Merits of ARR Method

- It is very simple and easy to understand and to use.
- It takes into consideration the total earnings from the project during its life time.
- It places emphasis on the profitability of the project, rather than on liquidity as in the case of payback period method.
- It can be calculated by using the accounting data without another set of workings like cash flow etc.

Demerits of ARR Method

- It ignores the time value of money and considers the profit earned in the 1st year as equal to the profits earned in later years. It does not discount the future profits.
- It does not consider the length of project life
- It ignores salvage value of the proposal. In real sense, the salvage value is also a return from the proposal and should be considered.
- It also fails to recognise the size of investment required for the project particularly, in case of mutually exclusive proposals, the two projects having significantly different initial costs, may have same ARR.

3.1.3 Payback Period:

Traditional (or) Non-discounting Methods

As the name itself suggests, these methods do not discount cash flows to find out their present worth. There are two such methods available i.e.,

(i) Payback period of method, and

(ii) The accounting or average rate of return method.

These are essentially rules of thumb that intuitively grapple with the trade-off between net investment and operating cash inflows. Both these traditional evaluation criteria are discussed below:

Payback Period Method :

This method, sometimes called the payout or payoff or replacement period method, determines the length of time required to recover the initial outlay of a project) In other words, it is the period within which cash inflows from the project equals the cost of investment in the project. The lower the payback period, the better it is since initial investment is recouped faster.

Example:

Support a project with an initial investment of Rs.5 lakh, yields profit of Rs.1 lakh, after writing off depreciation of Rs.25,000 per annum. In this case, the payback period is computed as given below:

Payback period = $\frac{Initial\ investment}{CFAT\ p.a}$

CFAT p.a. = profit after tax + Depreciation

= 1,00,000 + 25,000

= Rs.1,25,000

∴ Payback period = $\frac{5,00,000}{1,25,000}$ = 4 years

Procedure for computation of payback period

- Ascertain the initial investment (cash outflow) of the project.
- Ascertain the cash inflows (CFAT) from the various years.
- Calculate the payback period as under:

(a) In case of uniform CFAT p.a.

Payback period = $\frac{Initial\ investment}{CFAT\ p.a}$

(b) In case of differential CFAT for various years.

- Compute cumulative CFAT at the end of each year.
- Find out the year in which cumulative CFAT exceeds initial investment.
- Payback period= Time at which cumulative CFAT = investment (calculated on time proportion basis).
- Accept if the payback period is less than maximum or bench mark period, else reject the project.

Merits of Payback Period Method

- It is very easy to apply, calculate and interpret.
- It is most useful when cost is not high and the capital project is completed in a short period.
- It focuses on early return heavily and ignores distant returns. It, thus, contains a built-in edge against economic depreciation or obsolescence.
- It is useful in evaluating those projects which involve high uncertainty

- It considers the liquidity as well as solvency of a firm as a 'Guiding principle' in the capital budgeting decisions.
- It gives an indication to a company facing shortage of funds to invest in projects with small payback period. This is particularly useful when funds are difficult to obtain and a quick return is essential for rapid repayment.

Limitations of Payback Period Method

- This method fails to take into account the time value of money. All cash flows are treated and weighed equally regardless of the time period of their occurrence.
- It does not measure the profitability of a project. It ignores the cash
- In flows beyond the payback period. Thus it is a biased indicator of economic value.
- It does not differentiate between projects requiring different cash investments and thus it does not provide a meaningful and comparable criterion.
- It does not indicate any cut-off period for the purpose of investment decision.
- A slight change in operation cost will affect the cash inflows and as such payback period shall also be affected.
- Neither allowance is made for taxation nor is any capital allowance made.

Improvement in traditional approach to payback period

(a) Discounted Payback Period Method :

The payback period method discussed above can be reworked, taking into consideration the time value of money and the firms required rate of return, thereby overcoming one of the limitations of the undiscounted payback period method. When payback period is calculated by taking into account the discount or interest factor, it is known as discounted payback period.

Procedure for calculation of discounted payback period

- Ascertain the initial investment (cash outflow)
- Ascertain CFAT (profit before depreciation and after tax) for each year.
- Ascertain the PV factor for each year and compute discounted CFAT (CFAT x PV factor) for each year.

- Ascertain cumulative discounted CFAT at the end of each year.
- Ascertain the year in which cumulative discounted CFAT exceeds initial investment.
- Calculate discounted payback period at the time at which cumulative discounted CFAT = Initial investment.
- Accept if discounted payback period is less than maximum/benchmark period, else reject the project.

(b) Post pay-back Profitability:

One of the major limitations of payback period method is that it neglects the profitability of investment during the excess of economic life period over the payback period of that investment. Hence, an Improvement over this method can be made by taking into account the returns receivables beyond the payback period. These returns are called post pay-back profits. If other things remain equal, the project which has highest post pay-back profits is to be preferred. The formula for calculating post pay-back profitability index is as follows:

$$\text{Post pay-back profitability index} = \frac{Postpay-backprofit}{Initialinvestment} \times 100$$

(c) Pay back reciprocal:

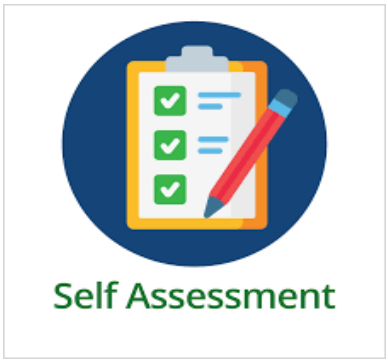
As the name indicates, it is the reciprocal of payback period. A major limitation of payback period method is that it does not indicate any cut off period for the purpose of investment decision. It is, however, argued that the reciprocal of the payback would be a close approximation of the internal rate of return if the life of the project is atleast twice the payback period and the project generates equal amount of the annual cash inflow. In practice, the payback reciprocal is a helpful tool for quickly estimating the rate of return of the project provided its life is atleast twice the payback period. The payback reciprocal can be ascertained by using the formula given below :

$$\text{Payback Reciprocal} = \frac{CFAT}{Initial\ investment} \quad \text{(or)} \quad \frac{1}{Payback\ period}$$

The future cash inflows and outflows from a project are discounted at a of capita.

3.1.4 Let's Sum up

Capital budgeting involves long-term planning for investing in fixed assets to maximize profitability. It includes selecting projects like new facilities or product launches based on financial returns projected over time. Methods like ARR and payback period evaluate profitability and quick returns, respectively, though they may overlook factors like time value of money and project lifespan. These decisions are crucial as they impact company growth, financial stability, and competitiveness. Effective capital budgeting involves detailed financial analysis, considering risks and funding options to ensure optimal resource allocation and strategic alignment with organizational goals.



3.1.5 Check Your Progress

1. What is the primary objective of capital budgeting?
   A. Maximizing short-term profitability
   B. Maximizing long-term profitability and growth
   C. Minimizing operational costs
   D. Enhancing market share

2. Which method of capital budgeting does not consider the time value of money?
   A. Payback Period
   B. Net Present Value (NPV)
   C. Internal Rate of Return (IRR)
   D. Profitability Index

3. Why are capital budgeting decisions considered crucial for companies?
   A. They impact only short-term profitability
   B. They influence long-term growth and competitiveness
   C. They primarily focus on minimizing taxes
   D. They are irrelevant for financial planning

4. What does the Average Rate of Return (ARR) method primarily focus on?
   A. Cash flows and time value of money
   B. Accounting profits and investment profitability
   C. Discounted cash flows and future projections
   D. Market share and revenue generation

5. Which factor is NOT typically considered in capital budgeting decisions?

A. Initial investment

B. Current market trends

C. Expected cash flows

D. Economic conditions

3.2.1 Net Present Value:

Net Present Value (NPV) Method: It is one of DCP methods in which both future cash inflow and outflows from a project are discounted at a cost of capital rate. This gives present value of cash inflows and outflows. The difference between present value of cash inflows and outflows is called Net Present Value (NPV).

Procedure for computation of NPV

- Ascertain the total cash inflows of the project and the time periods in which they arise.
- Calculate the present value of cash inflows i.e., CFAT x PV factor
- Ascertain the total cash outflows of the project and the time periods in which they occur.
- Calculate the present value of cash outflows i.e., cash outflows x PV factor.
- Calculate NPV = Present value of cash inflows - Present value of cash outflows
- Accept project if NPV is positive, else reject. If two projects are mutually exclusive, the project with higher NPV should be preferred.

Merits of NPV Method

- It recognizes the time value of money.
- It uses the discount rate which is the firm's cost of capital.
- It considers all cash flows over the entire life of the project.
- NPV constitutes addition to the wealth of shareholders and thus focuses on the basic objective of financial management.
- Since all cash flows are converted into present value (current rupees), different projects can be compared on NPV basis, thus, each project can be evaluated independent of others on its own merit.

Limitations of NPV Method

- This method assumes that the discount rate i.e., firm's cost of capital is known. But the cost of capital is difficult to understand and measure in practice.
- It may not give reliable answers while dealing with alternative projects under the conditions of unequal lives of projects.
- Decisions arrived at may not be satisfactory when projects being compared involve different amounts of investment.

3.2.2 Internal Rate of Return (IRR) Method

IRR is the rate of return at which the sum of discounted cash inflows equal the sum of discounted cash outflows. It is the rate at which the NPV of the investment is zero. It is called internal rate because it depends mainly on the outlay and proceeds associated with the project and not on any rate determined outside the investment.

This method is also known as marginal rate of return method or time adjusted rate of return method. This method is generally employed when cost of investment and annual cash inflows are known, while the unknown rate of return (i.e., Rate of cost of capital) is to be ascertained.

Procedure for computation of IRR

IRR is calculated according to two methods on the basis tabular values.

(a) When cash inflows are uniform for all the years : In this case, the IRR is determined with the help of annuity able showing the present value of Re.1 received annually over 'n' years by adopting the following two steps:

Step (i): The factors to be located in the relevant annuity table is calculated by using the following simple equation:

$$F = \frac{1}{C}$$

Where, F= Factors to be located

I = Initial investment

C = Cash inflow per year

Step (ii): The factor, thus, calculated is located in annuity table on the line representing number of year corresponding to the estimated useful life of assets and the relevant percentage of the discount which represents IRR.

(b) When cash inflows are not uniform: In this case. IRR is to be ascertained by trial and error process. In this process, cash inflows are to be discounted by of trial a number rate. Just to start, the average cash inflows of different years are to be found. Original investment is to be divided by this average cash inflow. This may be taken as present value factor. The rate can be ascertained from PV Table for this factor and at this rate the PV of cash inflows of several years to be calculated and then total PV of cash inflows are compared with the original investment.

If the calculated PV of cash inflows is less than the original investment, the further interpolation is carried on at lower rate. On the other hand, a higher rate should be tried if the PV of cash inflows is higher than the original investment. This process continues till the PV of cash inflows and the original investment are equal or nearly equal. However, the exact rate of return can be ascertained with the help of the following formula:

$$\text{IRR} = \text{Lower rate} + \frac{Positive\ NPV}{Difference\ in\ calculated\ present\ values} \times \text{Difference in rate}$$

Accept or Reject criterion

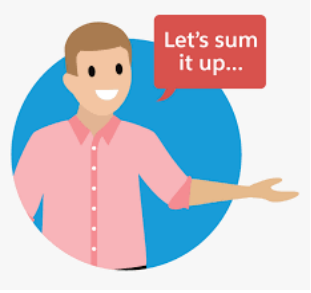
Accept the project if the IRR is higher than or equal to minimum required rate of return. The minimum required rate of return is also known as cut off rate or firm's cost of capital. While evaluating two or more projects, project giving a higher IRR should be preferred.

Merits of IRR Method

- All cash inflows of the project, arising at different points of time are considered.
- Time value of money is taken into account.
- Decisions are immediately taken by comparing IRR with the cost of capital.
- It helps in achieving the basic objective of maximisation of shareholders wealth. All projects having IRR above the cost of capital will be automatically accepted.

Limitations of IRR Method

- Computation of IRR is quite tedious and it is difficult to understand.
- Both NPV and IRR assume that the cash inflows can be reinvested at the discounting rate in the new projects. However, reinvestment of funds at the cut-off rate is more appropriate than at the IRR. Hence, NPV method is more reliable than IRR for ranking two or more projects.
- It may give results inconsistent with NPV method. This is especially true in case of mutually exclusive projects i.e., projects where acceptance of one would result in the rejection of the other. Such conflict of results arise due to the following :
  - Differences in cash outlays
  - Unequal lives of projects
  - Different pattern of cash flows



3.2.3 Let's Sum up

The Net Present Value (NPV) method calculates the difference between the present value of cash inflows and outflows, using a discount rate to consider the time value of money, and recommends accepting projects with positive NPVs. The Internal Rate of Return (IRR) method finds the discount rate that makes the NPV of a project zero, suggesting projects with IRR above the cost of capital. NPV is favored for its reliability and shareholder wealth focus, while IRR is valued for considering all cash inflows and the time value of money, despite being complex and sometimes inconsistent with NPV results.

3.2.4 Check Your Progress

1. Net Present Value (NPV) method primarily considers?

A. Only future cash inflows

B. Only future cash outflows

C. Both future cash inflows and outflows

D. Only the initial investment

2. What is the main criterion for accepting a project using the NPV method?

A. NPV is negative

B. NPV is zero

C. NPV is positive

D. NPV equals the initial investment

3. In the Internal Rate of Return (IRR) method, what does the IRR represent?

A. The firm's cost of capital

B. The rate at which NPV is maximized

C. The rate at which NPV equals zero

D. The initial investment return rate

4. Which method is considered more reliable for ranking two or more projects, especially under conditions of unequal project lives?

A. NPV method

B. IRR method

C. Payback period

D. Profitability index

5. What is a major limitation of the IRR method?

A. It does not consider the time value of money

B. It is easy to compute and understand

C. It assumes reinvestment at the IRR

D. It ignores cash flows occurring after the initial investment

3.3.1 Capital Rationing:

Generally, firms fix up maximum amount that can be invested in capital projects, during a given period of time, say a year. The firm then attempts to select a combination of investment proposals, that will be within the specific limits providing maximum profitability and put them in descending order according to their rate of return, such a situation is then considered to be capital rationing.

A firm should accept all investment projects with positive NPV, with an objective to maximise the wealth of shareholders. However, there may be resource constraints due to which a firm may have to select from among various projects with positive NPVs. Thus there may arise a situation of capital rationing where there may be internal or external constraints on procurement of necessary funds to invest in all investment proposals with positive NPVs.

The capital rationing can be experienced due to external factors, mainly imperfections in capital markets which can be attributed to non-availability of market information, investors attitude etc. Internal capital rationing is due to the self-imposed restrictions imposed by management like not to raise additional debt or laying down a specified minimum rate of return on each project.

There are various ways of resorting to capital rationing. For instance, a firm may affect capital rationing through budgets. It may also put up a ceiling when it has been financing investment proposals only by way of retained earnings (ploughing back of profits). Since the amount of capital expenditure in that situation cannot exceed the amount of retained earnings, it is said to be an example of capital rationing.

Capital rationing may also be introduced by following the concept of "Responsibility Accounting", whereby management may introduce capital rationing by authorising a particular department to make investment only upto a specified limit, beyond which the investment decisions are to be taken by higher ups.

Selection of projects under Capital Rationing

The selection of projects under capital rationing involves two steps:

(i) Identify the projects which can be accepted by using methods of evaluation discussed above.

(ii) To select the combination of projects.

In capital rationing, it may also be more desirable to accept several small investment proposals than a few large investment proposals so that there may be full utilisation of budgeted amount. This may result in accepting relatively less profitable investment proposals if full utilisation of budget is a prime consideration.

Similarly, capital rationing may also mean that the firm foregoes that next most profitable investment following after the budget ceiling even though it is estimated to yield a rate of return much higher than the required rate of return. Thus capital rationing does not always lead to optimum results.

3.3.2 Capital Budgeting Methods: (Simple Problems)

Payback Period

Illustration: 1

A Project has an initial investment of Rs.2,00,000. It will produce cash flows after tax of Rs.50,000 per annum for six years. Compute the payback period for the project.

Solution:

Computation of payback period (uniform CFAT)

$$\text{Payback period} = \frac{Initial\ investment}{CFAT p.a}$$

$$= \frac{2,00,000}{50,000}$$

Payback period =4 years

Illustration: 2

Project Y has an initial investment of Rs.5,00,000.Its cash flows for 5 years are Rs.1,50,000,Rs.1,80,000,Rs.1,50,000,Rs.1,32,000 and Rs.1,20,000.Determine the payback period.

Solution:

Since the cash inflows are not uniform, cumulative cash inflows have to be ascertained to calculate payback period.

Statement showing Cumulative Cash Inflow

Year	CFAT Rs.	Cumulative CFAT Rs.
1	1,50,000	1,50,000
2	1,80,000	3,30,000
3	1,50,000	4,80,000
4	1,32,000	6,12,000
5	1,20,000	7,32,000

Initial investment is Rs.5,00,000 Rs.4,80,000 can be recovered in three years. The remaining amount of Rs. 20,000 is to be recovered in the fourth years.

Time required for earning Rs.1,32,000 in the fourth year=12 months.

Time required to earn Rs.20,000 in the fourth year=$\frac{12}{1,32,000}$ ×20,000

=1.81 months

(or)

2 months

∴ Payback period =3 years, 2 months.

Illustration: 3

A company has to choose one of the following two mutually exclusive projects. Investment required for each project is Rs.1,50,000 .Both the projects have to be depreciated on straight line basis. The tax rate is 50%.

Year	Profit before depreciation	
	Project X Rs.	Project Y Rs.
1	42,000	42,000
2	48,000	45,000
3	70,000	40,000
4	70,000	50,000
5	20,000	1,00,000

Calculate payback period.

Solution:

In this problem, profit before depreciation is given. For calculate of payback period, CFAT (profit before depreciation, after tax) is needed.

Project X

Statement showing CFAT & Cumulative CFAT

Year	Profit before Dep.& tax	Dep. $(1,50,000)/5$	PBT	PAT	CFAT	Cum. CFAT
(1)	(2) Rs.	(3) Rs.	(4) Rs.	(5) Rs.	(6) Rs.	(7) Rs.
1	42,000	30,000	12,000	6,000	36,000	36,000
2	48,000	30,000	18,000	9,000	39,000	75,000
3	70,000	30,000	40,000	20,000	50,000	1,25,000
4	70,000	30,000	40,000	20,000	50,000	1,75,000
5	20,000	30,000	(-)10,000	(-)10,000	20,000	1,95,000

The above table shows that in 3 years, Rs. 1,25,000 has been recovered, Rs.25,000 is left out of initial investment. In the 4 year, the CFAT is Rs.50,000. It means the payback period is between third and fourth years.

∴Payback period for project X=3 years + $(\frac{25,000}{50,000} \times 12)$

= 3 years, 6 months

Project Y

Statement showing CFAT & Cumulative CFAT

Year	Profit before Dep.& Tax	Dep. (1,50,000/ 5)	PBT	PAT	CFAT	Cum. CFAT
(1)	(2) Rs.	(3) Rs.	(4) Rs.	(5) Rs.	(6) Rs.	(7) Rs.
1	42,000	30,000	12,000	6,000	36,000	36,000
2	45,000	30,000	15,000	7,500	37,000	73,000
3	40,000	30,000	10,000	5,000	35,000	1,08,500
4	50,000	30,000	20,000	10,000	40,000	1,48,500
5	1,00,000	30,000	70,000	35,000	65,000	2,13,500

The above statement reveals that Rs.1,48,500 has been recovered in 4 years time. Rs.1,500 is left out of initial investment. In the 5th year, the CFAT is Rs.65,000. It means the payback period is between 4th and 5th years.

∴ Payback period for project Y= 4 years + ($\frac{1,500}{65,000}$ ×365 days)

= 4 years, 9 days

Discounted Payback Period

Illustration:4

Project M has an initial investment of Rs. 3 lakhs. Its cash flows for five years are Rs.90,000, Rs.1,08,000, Rs.90,000,Rs.79,200 and Rs.72,000. Determine the discounted payback period assuming a discount rate of 10% p.a.

Solution:

Statement showing Discounted CFAT &Cumulative Discounted CFAT

Year	CFAT Rs.	P.V factor At 10%	DCFAT Rs.	Cum. DCFAT Rs.
1	90,000	0.909	81,810	81,810
2	1,08,000	0.826	89,208	1,71,018
3	90,000	0.751	67,590	2,38,608
4	79,200	0.683	54,094	2,92,702
5	72,000	0.621	44,712	3,37,414

The above table reveals that in 4 years, Rs.2,92,702 has been recovered, Rs.7,298 is left out of initial investment. In the 5th year, the CFAT is 44,712.It means the payback period is between fourth and fifth years.

∴ Discounted payback period=4 years + ($\frac{7,298}{44,712}$ × 12)

=4 years,2 months

Note: In case of differential CFAT, use P.V.factors.

Work it Out...

I. Pay Back Period Method

1. A project costs Rs. 2,50,000 and yields an annual cash inflow of Rs. 50,000 for 7 years. Calculate its pay- back period.

2. Calculate the pay-back period for a project which requires a cash outlay of Rs. 1,00,000 and generates cash inflows of Rs. 25,000 Rs. 35,000, Rs.30,000, and Rs. 25,000 in the first, second, third and fourth years respectively.

II. Discounted payback period method

1.Calculate discounted payback period from the details given below:

Cost of project: Rs. 6,00,000; Life of the project: 5 years; Annual cash inflow: Rs.2,00,000; Cut-off rate :10%

Year	1	2	3	4	5
Discount factor	0.909	0.826	0.751	0.683	0.621

2. Using the information given below, compute the pay-back period under

(i) Traditional pay back method and

(ii) Discounted pay back method and comment on the results.

Initial outlay	Rs.80,000
Estimated life	5 years
Profits after tax:	Rs
End of year 1	6,000
End of year 2	14,000
End of year 3	24,000
End of year 4	16,000
End of year 5	Nil

Depreciation has been calculated under straight line method. The cost of capital may be taken as 20% and the PV of Re. 1 at 20% p.a is given below.

Year	1	2	3	4	5
Discount factor	0.83	0.69	0.58	0.48	0.40

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

Illustration:1

Compute ARR from the following data:

Cost of asset: Rs.4,00,000

Useful life : 5 years

Cash flow after tax (CFAT) Rs.1,72,000 p.a.

Solution:

Since CFAT (profit before depreciation, after tax) is given in the problem, profit after depreciation and tax has to be found out to calculate ARR.

Rs.

CFAT	1,72,000
Less : Depreciation $(\frac{4,00,000}{5\ years})$	80,000
Profit after dep. & tax	92,000

∴Accounting rate of return (ARR) = $\frac{Profitafterdep.\&tax}{Originalinvestment} \times 100$

$= \frac{92,000}{4,00,000} \times 100 = 23\%$

Illustration : 2

Project K requires an investment of Rs.20 lakh and yields profits after and depreciation as follows :

Year	1	2	3	4	5
Profits after tax & depreciation (Rs.)	1,00,000	1,50,000	2,50,000	2,60,000	1,60,000

At the end of 5th year, the plant can be sold for Rs.1,60,000. You are required to calculate ARR.

Average rate of return (ARR) = $\frac{Average\ profit}{Average\ investment} \times 100$

$= \frac{1,00,000+1,50,000+2,50,000+2,60,000+1,60,000}{5\ years}$

$$= \frac{9,20,000}{5}$$

$$= \text{Rs.}1,84,000$$

$$\text{Average investment} = \frac{Originalinvestment - Scrapvalue}{2}$$

$$= \frac{20,00,000 - 1,60,000}{2}$$

$$= \text{Rs.}9,20,000$$

$$\therefore \text{ARR} = \frac{20,00,000}{9,20,000} \times 100 \quad = 20\%$$

Illustration : 3

Determine the average rate of return from the following data of two machines A & B.

	Machine A Rs.	Machine B Rs.
Cost	56,125	56,125
Annual estimated incomes after Depreciation and income tax:		
First year	3,375	11,375
Second year	5,375	9,375
Third year	7,375	7,375
Fourth year	9,375	5,375
Fifth year	11,375	3,375
	36,875	36,875
Estimated life in years	5	5
Estimated salvage value (Rs.)	3,000	3,000
Average income tax rate	55%	55%
Additional working capital(Rs.)	5,000	6,000

Depreciation has been charged on straight line basis.

Solution:

$$\text{Average rate of return (ARR)} = \frac{Annual\ Average\ Net\ Earnings}{Average\ investment} \times 100$$

(i)Computation of Annual Average Net Earnings

$$\text{Annual average net earnings} = \frac{Totalincome}{No.ofyears}$$

$$\text{Machine A} = \frac{36,875}{5} = \text{Rs. } 7,375$$

$$\text{Machine B} = \frac{36,875}{5} = \text{Rs.}7,375$$

(ii) Computation of Average Investment

$$\text{Average investment} = \frac{Originalinvestment - Scrapvalue}{2} + \text{Add. Working capital} = \text{Scrap value}$$

$$\text{Machine A} = \frac{56,125-3,000}{2} + 5,000 + 3,000 = \text{Rs.}34,526.50$$

$$\text{Machine B} = \frac{56,125-3,000}{2} + 6,000 + 3,000 = \text{Rs.}35,562.50$$

$$\therefore \text{ARR of Machine A} = \frac{7,375}{34,562.50} \times 100 = 21.34\%$$

$$\text{ARR of Machine B} = \frac{7,375}{35,562.50} \times 100 = 20.74\%$$

Work it Out...

III. Accounting or Average Rate of Return Method

1.A project requires an investment of Rs.5,00,000 and has a scrap value of Rs.20,000 after 5 years. It is expected to yield profits after taxes and depreciation during the five years amounting to Rs.40,000, Rs. 60,000, Rs.70,000, Rs.50.000 and Rs. 20,000. Calculate the average rate of return on investment.

2. X Ltd, is considering the purchase of a machine. Two machines are available E

and F. The cost of each machine is Rs.60,000. Each machine has an expected life of 5 years. Net profits before tax during the expected life of the machine are give below:

Year	Machine E Rs.	Machine F Rs.
1	15,000	5,000
2	20,000	15,000
3	25,000	20,000
4	15,000	30,000
5	10,000	20,000
Total	85,000	90,000

Following the method of return on investment, ascertain which of the alternatives will be more profitable. The average rate of tax may be taken as 50%

Net Present Value (NPV) Method

Illustration: 1

An investment of Rs.10,000 (having scarp value of Rs.500) yields the following returns:

Year	1	2	3	4	5
CFAT	4,000	4,000	3,000	3,000	2,500

The cost of capital is 10%. Is the investment desirable? Discuss it according to NPV method assuming the P.V. factors for 1st, 2nd, 3rd, 4th, 5th year. -0.909,0.826, 0.751, 0.683 and 0.620 respectively.

Solution:

Statement showing Net Present Value (NPV)

Year	Profit before Dep.& Tax	Dep. (1,50,000/5)	PBT	PAT	CFAT	Cum. CFAT
(1)	(2) Rs.	(3) Rs.	(4) Rs.	(5) Rs.	(6) Rs.	(7) Rs.
1	42,000	30,000	12,000	6,000	36,000	36,000
2	45,000	30,000	15,000	7,500	37,000	73,000
3	40,000	30,000	10,000	5,000	35,000	1,08,500
4	50,000	30,000	20,000	10,000	40,000	1,48,500
5	1,00,000	30,000	70,000	35,000	65,000	2,13,500

Note: (i) The scrap value is taken as an additional inflow at Fifth year.

(ii) In case of differential CFAT, use P.V. factors

Analysis: Since NPV is positive, the investment is desirable.

Illustration: 2

Lissa Metals Ltd. is considering two different investment proposals, X and Y The details are as under:

	Proposal X Rs.	Proposal Y Rs.
Investment cost	1,90,000	4,00,000
CFAT (cash inflows before dep. And after tax)	80,000	1,60,000
Year 1	80,000	1,60,000
Year 2	90,000	2,40,000
Year 3		

Suggest the most attractive proposal on the basis of NPV method considering that the future incomes are discounted at 12%

Solution:

Statement showing Net Present Value (NPV)

Year	CFAT(Rs.) X	Y	P.V. factor @12%	Present value (Rs.) X	Y
1	80,000	1,60,000	0.893	71,440	1,42.880
2	80,000	1,60,000	0.797	63,760	1,27,520
3	90,000	2,40,000	0.712	64,080	1,70,880
Total present value of cash inflows				1,99,280	4,41,280
Less: Present value of cash outflow (1,90,000× 1) (4,00,000×1)				1,90,000	4,00,000

NPV	9,280	41,280

Analysis: NPV is more in proposal Y and therefore, it should be accepted.

Work it Out...

1. Project 'M' initially costs Rs.50,000. It generates the following cash flows:

Year	Cash inflow Rs.	Present value of Re.1 at 10%
1	18,000	0.909
2	16,000	0.826
3	14,000	0.751
4	12,000	0.683
5	10,000	0.621

Taking the cut -off rate as 10%, suggests whether the project should be accepted or not.

2. A project costing Rs. 10 lakh has a life of 10 years at the end of which its Scrap value is likely to be Rs. 10 lakh. The firm's cut-off rate is 12%. The project is expected to yield an annual profit after tax of Rs. 10 lakh, depreciation being reckoned on straight line basis. At 12% p.a., the present value of the rupee received annually for 10 years is Rs.5.650 and the value of one rupee received at the end of the 10th year is Re. 0.322. Ascertain the net present value of the project.

Internal Rate of Return (IRR) Method

Illustration : 1

Uniform CFAT

Initial outlay	Rs.1,00,000
Life of the asset	6 years
Estimated cash inflow	Rs.20,000

You are required to calculate internal rate of return.

Solution:

Computation of Internal Rate of Return (IRR)

Present value factor = $\frac{Initial\ investment}{CFAT}$

= $\frac{1,00,000}{20,000}$

PVF = 5

The present value factor is to be found out in the present value annuity table in the column of 6 years (life of the asset). The table value (nearer to 5) is found in the row of 6%. Therefore, the IRR is 6%.

Illustration : 2

(Differential CFAT)

Calculate IRR from the following data.

	Rs.
Initial investment	1,20,000
Life of the asset	4 years

Estimated net annual cash flows

Year

1 - Rs.30,000

2 - Rs.40,000

3 – Rs.60,000

4 – Rs.40,000

Solution:

Since the annual cash inflows are not uniform, the P.V factor will have to be located for determining IRR

P.V. factor = $\frac{Initialinvestment}{Averagecashflowperyear}$

Average cash inflow = $\frac{1,70,000}{4\ Years}$

= Rs.42.500

P.V.factor = $\frac{1,20,000}{42,500}$ = 2.8235

Closed present values to 2.8235 from annuity Table II for 4 years are 2.914 at 14% and 2.855 at 15%. So, the IRR can be interpolated by trial and error procedure using discount rate of 14% and 15%.

Statement showing NPV

Year	CFAT	P.V. factor@ 14%	Present value	P.V. factor @ 15%	Present value Rs.
1	30,000	0.877	26,310	0.869	26,070
2	40,000	0.769	30,760	0.756	30,240
3	60,000	0.674	40,440	0.657	39,420
4	40,000	0.592	23,680	0.571	22,840
Total P.V. of cash inflows			1,21,190		1,18,570
Less: P.V. of cash outflow (1,20,000 × 1)			1,20,000		1,20,000
	NPV		1,190		(-) 1,430

At IRR, total present value of each inflow should be equal to present value of cash outflow. Initial investment is Rs.1,20,000.

Hence the IRR must be in between 14% and 15%.

The extract IRR is calculated as flows:

$$\text{IRR} = \text{Lower rate} + \frac{Positive\ NPV}{Difference\ in\ calculated\ present\ values} \times Difference\ in\ rate$$

$$= 14\% + \frac{1,190}{1,21,190-1,18,570} \times (15\% - 14\%)$$

$$= 14\% + \frac{1,190}{2,620} \times 1$$

= 14% + 0.45 × 1%

= 14.45%

Work it Out...

1. A company is contemplating investment in a project which requires an initial investment of Rs. 2,00,000 generating a cash flow of Rs. 80,000 every year for 4 years. Calculate the internal rate of return.

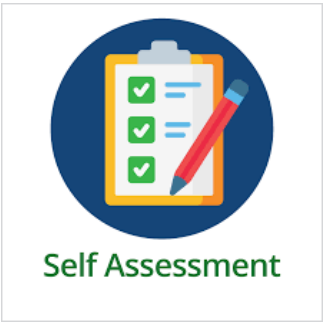
2. Calculate the internal rate of return for the following projects and decide which is the most profitable project:

	A (Rs.)	B (Rs.)	C (Rs.)
Initial cost	60,000	66,000	72,000
Return : End of year 1	3,000	36,000	12,000
2	12,000	24,000	18,000
3	18,000	-	12,000
4	24,000	-	30,000
5	30,000	18,000	12,000
6	(-)6,000	12,000	6,000

3.3.3 Let's Sum up

Capital rationing occurs when a firm imposes constraints on its capital investment projects due to limited available funds or self-imposed restrictions. This can stem from internal factors like management policies or external factors such as market imperfections. The objective is to maximize shareholder wealth by selecting the most profitable projects within the allocated budget. Methods like setting budget ceilings or using responsibility accounting

help in prioritizing projects. In some cases, this may lead to choosing multiple smaller projects over larger ones to fully utilize available funds, even if it means accepting less profitable options.



3.3.4 Check Your Progress

1. What is the primary reason for capital rationing in firms?
   A. To maximize shareholder wealth
   B. To restrict investments in projects with negative NPV
   C. Due to limitations in available funds
   D. To comply with government regulations

2. Internal capital rationing is typically caused by:
   A. Market imperfections
   B. Lack of investor confidence
   C. Self-imposed restrictions by management
   D. Economic downturns

3. How can a firm implement capital rationing through responsibility accounting?
   A. By using ploughing back profits for investments
   B. By setting budget limits for specific departments
   C. By issuing bonds to raise capital
   D. By reducing operating expenses

4. What is a common method used to select projects under capital rationing?
   A. Accepting all projects with positive NPV
   B. Choosing projects with the highest IRR
   C. Prioritizing projects based on their profitability index
   D. Rejecting projects with negative payback periods

5. In capital rationing, why might a firm choose several smaller investment proposals over a few larger ones?
   A. To maximize NPV
   B. To minimize risk
   C. To fully utilize the budgeted amount

D. To achieve higher IRR

3.4.1 Unit Summary

- Capital budgeting involves evaluating and selecting long-term investments to achieve organizational goals.
- Accounting Rate of Return (ARR) measures the profitability of investments.
- Payback period calculates the time needed to recover the initial investment.
- Net Present Value (NPV) assesses the value added by an investment, considering the time value of money.
- Internal Rate of Return (IRR) identifies the discount rate at which the NPV of an investment is zero.
- Capital rationing prioritizes investments when capital resources are limited.
- Simple problems on capital budgeting methods enhance practical understanding.
- Capital budgeting techniques help in making informed investment decisions.
- These methods ensure efficient allocation of resources and maximize returns.
- Capital budgeting supports strategic planning and long-term financial stability.

3.4.2 Glossary

Accounting Rate of Return (ARR)	A method of measuring the return on an investment based on accounting information, calculated by dividing the average annual profit by the initial investment cost.
Payback Period	The amount of time it takes for an investment to generate an amount of cash flows sufficient to recover the initial investment cost.
Capital Rationing	The process of selecting the most profitable projects to invest in when there is a limit on the amount of capital available for investments.
Profitability Index (PI)	A calculation that determines the relative profitability of an investment by dividing the present value of future expected cash flows by the initial investment cost.
Internal Rate of	The discount rate that makes the net present value (NPV) of

Return (IRR)	all cash flows from a particular project equal to zero. It is used to evaluate the attractiveness of a project or investment.

3.4.3 Self – Assessment Questions

1. Define the Accounting Rate of Return (ARR) method and discuss its advantages and limitations in evaluating investment projects.
2. Calculate the payback period for a project with an initial investment and annual cash flows. Discuss the significance of a shorter payback period.
3. Explain the concept of Net Present Value (NPV) and why it is considered a superior method for evaluating investment projects over ARR and payback period.
4. Compare and contrast the Internal Rate of Return (IRR) and NPV methods in capital budgeting. When might IRR be preferred over NPV?
5. Calculate the IRR for a project with given cash flows. Discuss the interpretation of multiple IRRs and how to resolve them.
6. Discuss the concept of capital rationing and its impact on investment decision-making. Provide examples of situations where capital rationing might occur.
7. Solve a simple capital budgeting problem using NPV and IRR methods. Interpret the results and recommend whether to accept or reject the project.
8. Evaluate the limitations of using the payback period method as the sole criterion for selecting investment projects. How can these limitations be overcome?
9. Propose a scenario where a project with a high NPV might be rejected due to capital rationing constraints. How would you justify this decision?
10. Analyze how sensitivity analysis can be used to assess the risk associated with NPV estimates in capital budgeting decisions.

Activities / Exercises / Case Studies

1. Form a small group and create a simulation in which they present different companies considering various investments.
2. Select a company in your city and identify the significant investment project made by the company.

Answers for check your	Module 1 1. B (Maximizing long-term profitability and growth) 2. A (Payback Period)

progress	3. B (They influence long-term growth and competitiveness 4. B (Accounting profits and investment profitability) 5. B (Current market trends) Module 2 1. C. Both future cash inflows and outflows 2. C. NPV is positive 3. C. The rate at which NPV equals zero 4. A. NPV method 5. C. It assumes reinvestment at the IRR Module 3 1. C. Due to limitations in available funds 2. C. Self-imposed restrictions by management 3. B. By setting budget limits for specific departments 4. A. Accepting all projects with positive NPV 5. C. To fully utilize the budgeted amount

3.4.4 References & Suggested Readings

1. "Financial Management" by I.M. Pandey – Vikas Publishing House.
2. "Fundamentals of Financial Management" by James C. Van Horne and John M. Wachowicz Jr. – Pearson.
3. "Principles of Corporate Finance" by Richard A. Brealey, Stewart C. Myers, and Franklin Allen ISBN: 9781260013900
4. "Corporate Finance" by Jonathan Berk and Peter DeMarzo ISBN: 9780134475561
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UNIT 4 Dividend Policies

Dividend policies – Factors affecting dividend payment - Company Law provision on dividend payment –Various Dividend Models(Walter's Gordon's –M.M. Hypothesis)

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Hello Learner…. Welcome! Understanding the principles and strategies behind dividend policies is essential for mastering corporate finance and making informed decisions in the business world. Explore the Factors Affecting Dividend Payment, delve into the Company Law Provisions on Dividend Payment, and examine Various Dividend Models including Walter's Model, Gordon's Model, and the M.M. Hypothesis. Gain insights into the theoretical underpinnings and practical applications of dividend policies for effective financial planning. Everything you need to know about Dividend Policies….!

4.1.1 Introduction of Dividend Policies:

Financial management aims to increase the value of a company's shares in the market, which is important for attracting and keeping investors. One key area of focus is how dividend policy affects the market price of these shares. Dividends are the profits a company gives to its shareholders, and companies have different ways of handling these payments. Some companies pay high dividends regularly, while others prefer to reinvest the profits back into the business instead of paying dividends.

The effect of dividend payments on share prices is a debated topic. Some people believe that high dividends can attract investors who want regular income, thus increasing the share price. Others think that high dividends might indicate the company has no good opportunities to invest its profits, which could lower the share price. Additionally, there are theories suggesting that dividend policy might not impact share prices at all because investors might not care whether they get income from dividends or from selling shares at a higher price.

Definitions:

"Dividends are the distribution of earnings in real assets among the shareholders of the firm in proportion to their ownership." – Weston and Brigham

"A dividend is a payment made to the shareholders of a corporation from earnings or accumulated profits." – James C. Van Horne

Meaning:

A dividend is a portion of a company's profits paid to its shareholders, usually on a regular basis, as a reward for their investment. It can be in the form of cash, additional shares, or other property. Dividends are often paid by stable, mature companies that prefer to share profits with shareholders rather than reinvesting them.

Types of Dividend

1. Regular Dividend

A regular dividend is paid annually after being proposed by the board of directors and approved by shareholders at the general meeting. Often called a final dividend, it is given out after the company's accounts are finalized. These dividends are usually paid in cash and calculated as a percentage of the company's paid-up capital, such as 10% or 15%. Sometimes, they are paid per share. Regular dividends provide shareholders with a steady and predictable income. It's important to note that no dividends are paid on calls-in-advance or calls-in-arrears. These dividends show the company's consistent profitability and strong financial health, making it appealing to investors seeking regular income. They reflect the company's commitment to sharing profits with its shareholders regularly.

2. Interim Dividend

If the company's rules allow, directors can decide to pay dividends at any time between two Annual General Meetings (AGMs), before the accounts are finalized. Interim dividends are declared and paid when the company earns substantial or unexpected profits during the year, and the directors want to share these profits with shareholders. These dividends are extra and do not need approval at the AGM. However, interim dividends cannot be paid unless depreciation for the entire year is accounted for proportionately. This type of dividend allows companies to reward shareholders when unexpected profits occur, providing flexibility in profit distribution. Interim dividends show the company's proactive approach in sharing profits and can positively affect investor sentiment and share price.

3. Stock Dividend

Stock dividends, also known as bonus shares, are given to shareholders instead of cash. This increases the number of shares each shareholder owns without changing the total value of the company's assets and liabilities. Stock dividends result in a permanent

increase in capital and a decrease in reserves, essentially turning earnings or surpluses into additional shares. Although shareholders receive more shares, their ownership percentage in the company remains the same, and the market price of the shares usually drops to account for the increase in the number of shares. Stock dividends are often expressed as a percentage of the existing shares. For example, a 10% stock dividend on 1 million shares would result in 1.1 million shares after the dividend. This type of dividend benefits shareholders by increasing their holdings without immediate tax implications.

4. Bond Dividend

In rare cases, dividends can be paid in the form of bonds for a long-term period. The company generally pays interest on these bonds and repays them at maturity. Bond dividends allow the company to delay cash payments while still rewarding shareholders. This can be advantageous for companies looking to manage their cash flow effectively, especially if they have liquidity constraints. By issuing bond dividends, companies can provide a return to shareholders without affecting their immediate financial position. Bond dividends also offer shareholders a fixed income stream, similar to interest payments, until the bonds mature. This type of dividend is less common but can be a strategic tool in certain financial situations, showing the company's innovative approach to profit distribution.

5. Property Dividend

Sometimes, dividends are paid in the form of assets instead of cash. This often happens when the company no longer needs certain assets, like investments or finished goods. Distributing a property dividend allows the company to use surplus or redundant assets effectively. However, in India, dividends can only be distributed in the form of cash or bonus shares; any other forms are not allowed. Property dividends can benefit shareholders by giving them tangible assets instead of cash. This type of dividend can also help the company reduce holding costs for unneeded assets. Although less common, property dividends show the company's flexible and resourceful approach to rewarding its shareholders.

Dividend Policy

Dividend policy refers to the strategy a firm develops regarding the dividends it will pay to its shareholders. When firms generate profits, they must decide how to allocate these earnings. There are two main options:

1. Retain the profits within the firm for reinvestment.
2. Distribute the profits as dividends to shareholders.

The chosen dividend policy is based on these options. Paying dividends can affect the firm's cash flow but can enhance goodwill among investors, making them more likely to provide additional funding in the future. On the other hand, retaining profits provides an easily accessible source of funds with no explicit costs, which can be used to finance investment plans. However, not paying dividends might erode investor confidence and deviate from industry standards. Therefore, the finance manager must balance distribution and retention. Allocating earnings between dividends and retained earnings should aim to maximize the firm's value and the wealth of shareholders.

Definition of Dividend Policy

"Dividend policy determines the division of earnings between payments to shareholders and retained earnings."- Weston and Brigham

"The firm's dividend policy represents a plan of action to be followed whenever the dividend decision must be made."- Gitman

Meaning

Dividend policy is a company's plan for deciding how much of its profits will be paid out to shareholders as dividends and how much will be retained for reinvestment in the business. This policy aims to balance rewarding shareholders with providing funds for future growth, ultimately maximizing the firm's value.

There are two main options:

1. Retain the profits within the firm for reinvestment.
2. Distribute the profits as dividends to shareholders.

Nature of Dividend Policy

The discussion highlights several key aspects of dividend policy:

- Connection with Retained Earnings:

Dividend policy is closely linked with the retained earnings policy. It decides how the firm's net earnings are split between profits kept in the company (retained earnings) and profits given to shareholders (dividends).

❖ Influence on Financing Decisions:

Dividend policy affects the business's financing decisions. When dividends are paid out, the company's cash reserves decrease, which might mean relying on external financing. External funds often cost more than using retained earnings. Management usually pays dividends when there are no better investment opportunities.

❖ Impact on Share Prices:

The firm's dividend policy has a major effect on share prices, business growth, and shareholder wealth. Due to market imperfections and uncertainties, shareholders often prefer receiving dividends now rather than waiting for future dividends or capital gains. Therefore, paying dividends can influence share prices; higher dividends usually increase share prices and vice versa. High share prices and substantial current dividends enhance shareholder wealth.

❖ Optimal Dividend Policy:

Dividends are an important decision that must be managed carefully by the finance manager. The goal should be to create an optimal dividend policy, which means having few or no fluctuations in dividend payments over time and positively impacting shareholder wealth.

Objectives of Dividend Policy

❖ Providing Adequate Financing:

The primary goal of dividend policy is to ensure that retained earnings are sufficient to finance the firm's investment needs. This means deciding how much profit should be kept within the company for future growth and capital expenditure.

❖ Returning Value to Shareholders:

Another objective is to provide shareholders with a reasonable rate of return through dividends. This satisfies their desire for current income and builds confidence in the firm's ongoing success.

❖ Maximizing Shareholder Wealth:

A key long-term objective is to maximize shareholder wealth. This involves retaining earnings and investing them in profitable projects that enhance the overall value of the company.

These objectives guide the finance manager in balancing the distribution of dividends with the reinvestment of earnings to achieve sustainable growth and maximize shareholder value over time.

4.1.2 Factors affecting Dividend Payment:

- Earnings Stability:

  The nature of a firm's business significantly affects its dividend policy. Businesses with stable earnings are more likely to adopt a consistent dividend policy compared to those with fluctuating incomes. Industries dealing in essential goods tend to experience less volatility in earnings compared to luxury or seasonal goods.

- Age of the Firm:

  The age of a firm plays a crucial role in shaping its dividend policy. Newly established firms often prioritize retaining earnings for expansion and improving infrastructure, leading to a more conservative dividend policy. In contrast, older, more established companies can afford to adopt a clearer and more consistent dividend policy.

- Regularity and Stability in Dividend Payments:

  Investors prefer regular dividend payments. Therefore, firms strive to maintain a steady dividend payout rate. Some firms even set up dividend equalization funds to ensure consistent payments.

- Timing of Dividend Payments:

  Deciding when to pay dividends is crucial as it involves cash outflow. Firms typically prefer to distribute dividends when they have surplus cash and are not in urgent need of funds for expansion or operational needs.

- Liquidity Position:

  The availability of cash and the overall financial health of the firm are critical in dividend decisions. Dividends require cash outflows, so firms with strong liquidity positions can easily afford to pay dividends. Conversely, firms with weaker cash positions might opt for stock dividends or delay cash dividends until their financial situation improves.

❖ Control Policies:

The desire to maintain control over the firm's operations can influence dividend policy. Firms wary of diluting control may opt for lower dividend payouts and rely more on retained earnings to fund growth. In contrast, firms less concerned with control may adopt a more liberal dividend policy to distribute earnings to shareholders.

❖ Debt Repayment Obligations:

Firms with outstanding loans often prioritize retaining earnings to meet debt repayment obligations. Institutional lenders may impose restrictions on dividend distributions until loans are fully repaid. These constraints influence the rate and timing of dividend payments.

Factors Influencing Dividend Policy

❖ Government Policies:

Changes in fiscal, industrial, labour and other government policies can significantly impact a firm's earnings capacity. Governments may impose restrictions on dividend distributions, limiting the percentage of profits that can be paid out, especially during emergencies or in specific industries. Firms must adjust their dividend policies accordingly to comply with such regulations.

❖ Legal Requirements:

Directors also consider legal obligations when deciding on dividends. The Companies Act and other regulatory frameworks dictate guidelines to protect creditors and ensure dividends are not paid out of capital. Preference shares, for example, often require dividends to be paid before ordinary shareholders.

❖ Business Cycles:

Dividend policies are adjusted based on business cycles. During economic booms, firms may set aside reserves for contingencies, while high dividend rates can attract investors during market downturns. Maintaining financial solvency through adequate reserves is crucial during economic downturns.

❖ Need for Additional Capital:

Firms retain profits to strengthen their financial position, meet working capital needs, or fund future expansions. Smaller companies, which struggle to raise

external capital, rely heavily on retained earnings, resulting in lower dividend payouts to shareholders.

❖ Ability to Borrow:

Established firms with better access to capital markets can borrow funds if needed, impacting their dividend payout ratio. In contrast, smaller firms rely more on internal reserves and often maintain lower dividend payout ratios to build reserves for future needs.

❖ Ownership Structure:

Ownership patterns influence dividend decisions. Closely held firms may suspend dividends or adopt conservative policies with shareholder consent. Companies with widely distributed ownership, especially among middle-income shareholders, face pressure to distribute higher dividends.

❖ Historical Dividend Rates:

Directors consider past dividend payments when formulating current policies. The current dividend rate typically aligns with historical averages to avoid speculative reactions from shareholders. New firms may also analyze dividend policies of competitors for benchmarking.

❖ Tax Considerations:

The tax status of major shareholders affects dividend decisions. Shareholders in higher income tax brackets may prefer capital gains over dividends to minimize tax liabilities. This factor influences how dividends are structured to maximize shareholder returns.

Types of Dividend Policy:

Firms adopt various types of dividend policies to manage their distribution of profits to shareholders:

1. Generous Dividend Policy:

Firms following a generous dividend policy prioritize rewarding shareholders with substantial dividend payments over time. These companies typically maintain a consistent dividend rate, often ranging from 15% to 25% of their earnings. When financial reserves and earnings potential allow, they may also issue bonus shares, demonstrating a strong commitment to shareholder interests.

2. Erratic Dividend Policy:

Firms with an erratic dividend policy do not adhere to regular dividend payments and distribute dividends sporadically. Dividends are paid based on management discretion and when the company believes it can afford it without straining its resources. This approach may not prioritize consistent shareholder returns and can lead to uncertainty among investors.

3. Stable Dividend Policy:

Firms adopting a stable dividend policy aim to provide predictability and consistency in dividend payments, regardless of fluctuations in earnings from year to year. This policy ensures a balance between meeting the financial needs of the company and satisfying shareholders. There are three common forms of stable dividend policies:

- Constant Dividend per Share: The firm commits to paying a fixed amount per share as dividends; ensuring shareholders receive a predictable income stream.
- Constant Payout Ratio: The firm pays out a fixed percentage of its earnings as dividends each year. This policy links dividend payments directly to earnings, resulting in fluctuating dividend amounts depending on profitability.
- Constant Dividend per Share plus Extra Dividend: In addition to a base fixed dividend, the firm may distribute extra dividends during years of exceptional profitability. This policy rewards shareholders further when the company performs well financially.

Each type of dividend policy reflects different priorities and strategies of firms in managing their financial resources and shareholder expectations. Choosing the appropriate dividend policy involves balancing the firm's financial stability, growth opportunities, and the interests of shareholders to maintain sustainable and harmonious dividend distributions over time.

Advantages of Stable Dividend Policy

Stable dividend policies offer several benefits to firms and their shareholders:

❖ Regular Income for Investors:

This policy ensures that shareholders receive a predictable and regular income stream from dividends. Investors who rely on dividends for income appreciate the stability and consistency provided by firms with a stable dividend policy.

❖ Maintains Stability in Market Values:

By committing to regular dividend payments, firms help stabilize the market value of their shares. Investors often value predictable income streams, which can reduce volatility in the stock price compared to firms with erratic dividend policies.

❖ Enhanced Investor Confidence:

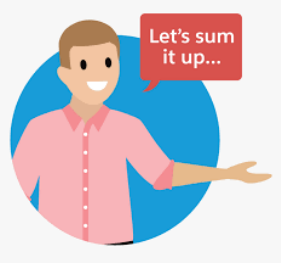
Firms that consistently pay dividends at a stable rate tend to build strong investor confidence. Shareholders perceive these companies as reliable and financially sound, fostering trust and long-term investment relationships.

❖ High Credit Standing and Market Demand:

Companies with a stable dividend policy typically enjoy a favorable credit rating in the market. This strong financial reputation allows them to raise capital easily through equity markets. Investors are attracted to these firms, increasing demand for their shares and facilitating efficient capital raising.

Limitations of Stable Dividend Policy:

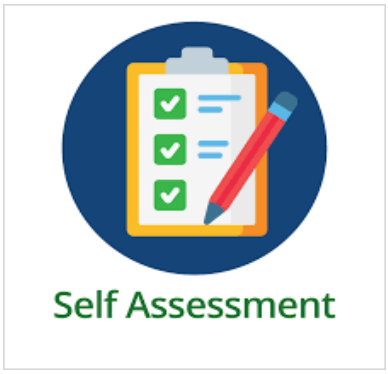
- Once a firm decides on a stable dividend rate, changing it can make shareholders lose trust and affect how trustworthy the company seems to investors.
- The pressure to keep paying high dividends when money is tight can strain the company's finances.
- Promising too much in dividends without enough profits to support it can lead to financial trouble.
- Setting aside money for dividends might mean less money available for growing the business or handling unexpected costs.



4.1.3 Let's Sum up

Dividend policies are crucial in financial management, balancing shareholder rewards and reinvestment for growth. Types of dividends include regular, interim, stock, bond, and property dividends, each with distinct implications for shareholders and the company's financial health. Dividend policies influence share prices and investor confidence, with stable policies offering predictable income and market stability. Factors affecting dividends include earnings stability, liquidity, legal requirements, and tax considerations. Companies adopt different dividend policies—generous, erratic, and stable—each reflecting different strategic

priorities. While stable dividend policies offer regular income and market stability, they can strain finances during low profitability periods.



4.1.4 Check Your Progress

1. What is the primary aim of a firm's dividend policy?

A. To retain all profits for future growth

B. To balance rewarding shareholders with reinvesting in the business

C. To minimize the firm's tax liabilities

D. To increase the number of shareholders

2. Which type of dividend involves distributing additional shares to shareholders instead of cash?

A. Regular Dividend

B. Interim Dividend

C. Stock Dividend

D. Property Dividend

3. What factor is crucial for a firm when deciding the timing of dividend payments?

A. The age of the firm

B. Earnings stability

C. Liquidity position

D. Government policies

4. Which type of dividend policy aims to provide predictability and consistency in dividend payments regardless of earnings fluctuations?

A. Generous Dividend Policy

B. Erratic Dividend Policy

C. Stable Dividend Policy

D. Irregular Dividend Policy

5. What is one of the key advantages of a stable dividend policy?

A. It allows for erratic dividend payments

B. It maintains stability in market values of shares

C. It prioritizes reinvestment over shareholder returns

D. It significantly reduces the firm's tax liabilities

4.2.1 Company Law:

Indian Company Law: An Overview

Indian Company Law provides a legal framework for the establishment, regulation, and dissolution of companies in India. The primary legislation governing companies in India is the Companies Act, 2013, which replaced the earlier Companies Act, 1956. This law aims to improve corporate governance, ensure transparency, and protect the interests of stakeholders.

Key Components of Indian Company Law

1. Formation and Incorporation of Companies:

Types of Companies:

- Private Limited Company: Minimum 2 and maximum 200 members; cannot invite the public to subscribe to its shares.
- Public Limited Company: Minimum 7 members; can invite the public to subscribe to its shares.
- One Person Company (OPC): A company with a single member, introduced to encourage individual entrepreneurs.
- Section 8 Company: Non-profit organizations with charitable objectives.

Incorporation Process:

- Obtain Digital Signature Certificate (DSC) and Director Identification Number (DIN).
- Name Approval from the Registrar of Companies (RoC).
- Filing of incorporation documents (e.g., Memorandum of Association (MoA), Articles of Association (AoA)) with the RoC.
- Issuance of Certificate of Incorporation.

2. Corporate Governance:

Board of Directors:

- Composition, appointment, and qualifications of directors.
- Duties, powers, and liabilities of directors.

Meetings:

- Annual General Meeting (AGM): Mandatory for all companies to be held within six months from the end of the financial year.
- Extraordinary General Meeting (EGM): Called for urgent matters that cannot wait until the AGM.
- Board Meetings: Regular meetings to discuss and decide on company affairs.

Committees:

- Audit Committee, Nomination and Remuneration Committee, Stakeholders Relationship Committee, etc.

3. Share Capital and Members:

Types of Share Capital:

- Equity Shares, Preference Shares, Authorized Capital, Issued Capital, Subscribed Capital, Paid-up Capital.

Rights and Liabilities of Members:

- Voting rights, dividend rights, transfer and transmission of shares, liability limited to unpaid share capital.

4. Accounts and Audit:

Books of Accounts:

- Maintenance of accurate and complete books of accounts at the registered office.

Financial Statements:

- Preparation of balance sheet, profit and loss account, cash flow statement, and notes to accounts.

Audit:

- Mandatory annual audit by a Chartered Accountant.
- Appointment, qualifications, and duties of auditors.

5. Dividends:

- Declaration and payment of dividends.
- Compliance with the provisions regarding transfer to reserves, unpaid dividend accounts, and investor education and protection fund.

6. Winding Up:

Voluntary Winding Up:

- Initiated by the company's members or creditors.

Compulsory Winding Up:

- Ordered by the Tribunal on grounds such as inability to pay debts, just and equitable reasons, etc.

7. Company Law Tribunals:

- National Company Law Tribunal (NCLT):
- Judicial body to adjudicate disputes and matters related to company law.
- National Company Law Appellate Tribunal (NCLAT):
- Appellate authority to hear appeals against NCLT orders.

8. Corporate Social Responsibility (CSR):

- Mandatory CSR activities for companies meeting certain financial criteria.
- CSR policy formulation, implementation, and reporting.

Compliance and Penalties

The Companies Act, 2013, mandates strict compliance with its provisions. Non-compliance can result in penalties, fines, and imprisonment for company officers. Regular audits, filing of returns and adherence to statutory requirements are crucial for legal compliance.

Recent Amendments and Trends

- Amendments to decriminalize minor offenses and improve ease of doing business.
- Introduction of new concepts such as Producer Companies, Small Companies, and Startups.
- Increased focus on transparency, accountability, and corporate governance.

4.2.2 Company Law provision on Dividend Payment:

Company law provisions on dividend payments typically aim to protect the interests of creditors, shareholders, and the company itself. While specific regulations can vary by jurisdiction, here's an overview of common legal provisions regarding dividend payments:

❖ Profits and Reserves:

Most jurisdictions require that dividends be paid only out of profits or distributable reserves. This means a company cannot pay dividends if it would result in negative

retained earnings. The law often distinguishes between realized profits (from completed transactions) and unrealized gains, with stricter rules on distributing the latter.

- Capital Maintenance:

Company law typically includes capital maintenance provisions to protect creditors. These rules prevent companies from returning capital to shareholders in a way that could jeopardize the company's ability to meet its obligations. Dividends that would render a company insolvent or unable to pay its debts as they fall due are generally prohibited.

- Directors' Duties:

Directors have a fiduciary duty to act in the best interests of the company. This includes ensuring that dividend payments are prudent and do not threaten the company's financial stability. Directors can be personally liable for improper dividend payments in some jurisdictions.

- Shareholder Approval:

Many jurisdictions require shareholder approval for dividend payments, often at the annual general meeting. The board of directors typically recommends a dividend, which shareholders then vote to approve.

- Interim Dividends:

Laws often allow for the payment of interim dividends (dividends declared between annual general meetings), but with additional restrictions or requirements to ensure the company's ongoing financial health.

- Preference Shares:

Special rules often apply to dividends on preference shares, ensuring that these are paid before or in priority to dividends on ordinary shares.

- Disclosure Requirements:

Companies are usually required to disclose their dividend policy and any factors affecting dividend payments in their financial reports and other public filings.

❖ Restrictions in Articles of Association:

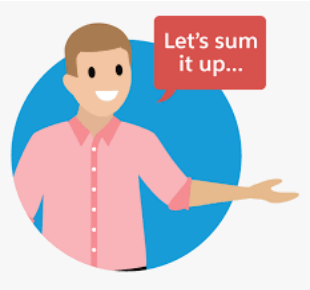
A company's articles of association (or equivalent governing document) may contain additional restrictions or requirements regarding dividend payments.

❖ Regulatory Approval:

In some sectors (e.g., banking), dividend payments may require regulatory approval to ensure the company maintains adequate capital reserves.

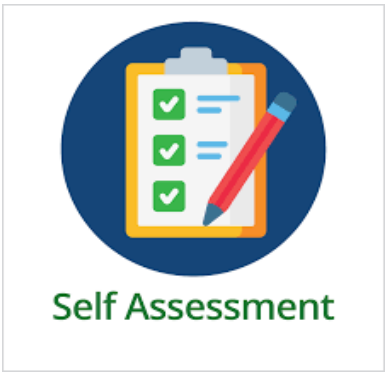
❖ Clawback Provisions:

Some jurisdictions have laws allowing for the recovery of dividends paid improperly, particularly if the company becomes insolvent within a certain period after the payment.



4.2.3 Let's Sum up

Indian Company Law, governed primarily by the Companies Act, 2013, outlines the formation, regulation, and dissolution of companies, ensuring transparency and protecting stakeholder interests. Key components include incorporation processes, corporate governance structures, share capital regulations, and auditing requirements. Dividend policies must comply with provisions ensuring dividends are paid from profits, maintaining capital integrity, and requiring director and shareholder approvals. The law mandates strict compliance, with penalties for non-adherence, and has seen amendments to enhance ease of doing business and corporate governance.



4.2.4 Check Your Progress

1. Which act primarily governs the regulation of companies in India?

A. Companies Act, 1956

B. Companies Act, 2013

C. Securities Act, 1992

D. Financial Companies Act, 2000

2. Which type of company can invite the public to subscribe to its shares?

A. Private Limited Company

B. Public Limited Company

C. One Person Company (OPC)

D. Section 8 Company

3. What is the main purpose of maintaining a stable dividend policy?

A. To ensure the company pays high dividends

B. To stabilize the market value of shares and provide regular income to investors

C. To attract new shareholders

D. To increase the company's retained earnings

4. Who is responsible for the approval of the dividend recommended by the board of directors?

A. Board of Directors

B. Shareholders

C. Registrar of Companies

D. National Company Law Tribunal (NCLT)

5. Under the Companies Act, 2013, what is the primary reason for requiring annual audits by a Chartered Accountant?

A. To increase the company's share price

B. To comply with legal and regulatory requirements

C. To impress potential investors

D. To facilitate mergers and acquisitions

4.3.1 Dividend Models:

There are differing views on how dividend decisions affect a firm's value. Dividend theories are generally divided into two categories:

1. Theories that consider dividends relevant, and
2. Theories that consider dividends irrelevant.

Theories of Relevance (Relevance Concept of Dividend)

These theories, represented by the Walter and Gordon models, suggest that a firm's dividend policy directly impacts its position in the stock market. According to these models, higher dividends can increase the value of a firm's shares, while lower dividends can decrease their value. This is because dividends convey information to investors about the firm's profitability and ability to earn profits.

1. Walter's Model

Professor James E. Walter argues that a firm's dividend policy directly affects its share price and overall value. He views dividend policy and investment policy as interconnected business decisions. Walter emphasizes the relationship between the firm's internal rate of return (r) and its cost of capital (k). If the internal rate of return (r) is greater than the cost of capital (k), the firm should retain earnings to invest in profitable opportunities. Conversely, if r < k, shareholders would benefit more from receiving dividends, indicating the firm lacks profitable investment options. Thus, Walter categorizes firms into growth firms (no dividends for reinvestment), declining firms (high dividends for distribution), and normal firms (indifferent between retention and distribution).

Assumptions

1. Retained earnings are the sole source of financing.
2. Returns on investments remain constant.
3. Cost of capital remains constant.
4. The firm has an infinite life.
5. All earnings are either distributed or reinvested.
6. Earnings per share and dividends are constant in determining value.

Formula

The formula used to determine the market price per share under Walter's model is:

$$P = D + (E - D)\,(r/k)\,/\,k$$

where:

P = Market price per share

D = Dividend per share

r = Rate of return on investments

k = Cost of capital

E = Earnings per share

Walter's model implies:

- Growth firms should have a zero payout ratio.
- Payout ratio is irrelevant for normal firms.
- Declining firms should retain 100% of earnings for optimal value.
- Higher dividends generally decrease firm value, and vice versa.

Critics point out:

- Assumption of no external financing limits optimal investment opportunities.
- Constant rate of return assumption overlooks diminishing returns.
- Constant cost of capital assumption disregards changing firm risk profiles, impacting valuation accuracy.

2. Gordon's Model

Myron J. Gordon's model argues for the relevance of dividend decisions in valuing a firm.

Assumptions

1. The firm is financed solely through equity with no external financing.
2. The internal rate of return (r) and the cost of capital (k) are constant.
3. The firm has perpetual life and its earnings stream is perpetual.
4. The retention ratio (b) is constant, thus the growth rate (g = br) is also constant.
5. Corporate taxes do not exist.
6. (k > g), meaning the cost of capital exceeds the growth rate.

Similar to Walter, Gordon emphasizes that investors prefer current dividends over future dividends due to the certainty and immediate income they provide, reducing risk. This preference for current dividends remains even when the internal rate of return equals the cost of capital (r = k), which contrasts with Walter's view that investors are indifferent between dividends and retention under these circumstances.

Gordon's Formula

The formula to determine the market value of a share under Gordon's model is:

$$P = D/k - g$$

Where:

P = Market price per share

D = Dividend per share

k = Cost of capital

g = Growth rate g = (br)

E = Earnings per share

b = Retention ratio

r = Rate of return

Gordon's model implies:

- Growth firms should have a zero payout ratio.
- Payout ratio is irrelevant for normal firms.
- Declining firms should retain 100% of earnings for optimal value.

Critics highlight:

- Assumption of 100% equity funding limits wealth maximization potential through leverage.
- Constant rate of return and opportunity cost assumptions do not reflect real-world complexities.

Theories of Irrelevance

M.M Hypothesis

The theories associated with Modigliani and Miller argue that dividend policy does not affect a firm's share prices and is therefore inconsequential. Investors view cash dividends and future capital gains equally, focusing primarily on maximizing their investment returns. If a firm has profitable investment opportunities that offer higher returns than the cost of retained earnings, investors prefer the firm to retain earnings for reinvestment. Conversely, if expected project returns are lower than the cost of capital, investors prefer receiving dividends. Ultimately, the dividend decision hinges on whether the firm has lucrative investment prospects or not, making it simply a strategic choice.

Modigliani and Miller argue that a firm's value is determined by its investment decisions rather than its dividend distribution. According to their theory, dividend policy is irrelevant and does not impact the market value because any increase in shareholder wealth due to dividend payments is offset when additional share capital is raised to meet funding requirements. This new capital issuance dilutes existing shares, returning the share value to its original position.

Assumptions:

1. Capital markets are perfect, where investors can freely buy and sell securities, are well-informed about risks and returns, and face no transaction costs.
2. Investors behave rationally and can borrow on the same terms as firms.
3. There are no corporate or personal taxes, or if taxes exist, they are equal for dividends and capital gains.

4. The firm has a fixed investment policy and invests a specific amount as capital expenditure annually.
5. Investors can predict future dividends and market prices, and there is a single discount rate applicable for the entire period.
6. All investments are financed either by equity or retained earnings.

Determination of Market Price of Share:

Under the M.M. Model, the market price of a share at the beginning of the period (P_0) equals the present value of dividends received at the end of the period plus the market price of the share at the end of the period (P_1).

Formula:

$P_1 = P_0(1+K_e) – D_1$

Where,

P = Market price per share at the beginning of the period.

D = Dividend per share at the end of the period.

P = Market price per share at the end of the period.

K = Cost of equity capital.

Determination of Number of New Shares:

The firm's investment needs can be financed through retained earnings, new share issuance, or a combination of both. The number of new shares to be issued can be determined based on funding requirements.

Implications:

1. Higher retention ratios lead to greater capital appreciation enjoyed by shareholders, equal to the amount retained.
2. If dividends are distributed, shareholders benefit from dividends equivalent to the capital appreciation if the firm had retained those earnings.

Criticisms:

1. The assumption of a perfect capital market is theoretical and not practical in real-world scenarios.
2. Several propositions of the M.M. Model regarding dividends are unrealistic, including the complete irrelevance of dividends and their lack of influence on firm value.

3. The assumption of zero taxes and no transaction costs is unrealistic in practical financial markets.

4.3.2 Problems:

Walter's Model

Illustration: 1 (Growth firm) - Walter Model

The cost of capital and the rate of return on investment of Ram Ltd. are 10% and 18% respectively. The company has 5 lakh equity shares of Rs. 10 each outstanding and earnings per share are Rs. 20. Compute the market price per share and value of firm in the following situations. Use Walter Model and comment on the results.
(i) No retention, (ii) 40% retention, (iii) 80% retention.

Solution:

(i) 0% retention : 100 % payout

Market price per share under Walter model = $\frac{D+\frac{r}{k}(E-D)}{K}$

D=Dividend per share = EPS x Payout

= 20 x 100%

= Rs. 20

r = Rate of return = 18%

k = Cost of capital = 10%

E = Earnings per share = Rs. 20

∴ Market price per share share = $\frac{20+\left[\frac{0.18}{0.10}\right](20-20)}{0.10}$

$= \frac{20}{0.10}$

= Rs.200

Value of firm : No. of equity shares x Market price per share

=5,00,000 × 200

=Rs. 10,00,00,000

(ii) 40% retention; 60% payout

D=Dividend per share : 20 x 60%= Rs.12

$$\therefore \text{Market price per share} = \frac{12+\left[\frac{0.18}{0.10}\right](20-12)}{0.10}$$

$$= \frac{26.4}{0.10}$$

$$= \text{Rs.}264$$

Value of firm = 5,00,000 shares x Rs. 264

= Rs, 13,20,00,000

(iii) 80% retention: 20% payout

D= Dividend per share = 20x 20% = Rs. 4

$$\therefore \text{Market price per share} = \frac{4+\left[\frac{0.18}{0.10}\right]\times(20-4)}{0.10}$$

$$= \frac{32.8}{0.10}$$

$$= \text{Rs.}328$$

Value of Firm= 5,00,000 shares x 328

=Rs. 16,40,00,000

Analysis: Rafael Ltd is a growth firm (r>k). As payout increases, the value of firm decreases. Ideal payout is 0%.

Illustration: 2 (Normal firm) - Walter Model

The earnings per share of Nadal Ltd. are Rs. 15 and the rate o of capitalization applicable to the company is 12%. The productivity of earnings (r) is 12%.

Compute the market value of the company's share if the payout is (i) 20%. (ii) 50% (iii) 70%. Which is the optimum payout?

Solution:

Computation of market value per share

(i) Payout = 20%

$$\text{Market value per share} = \frac{D+\frac{r}{k}(E-D)}{k}$$

D=Dividend per share = EPS x Payout ratio

=15 x 20% = Rs. 3

r=Rate of return =12%

k=Cost of capital = 12%

E= Earnings per share Rs. 15

∴ Market value per share $= \frac{3+\left[\frac{0.12}{0.12}\right]\times(15-3)}{0.12}$

$= \frac{15}{0.12}$

= Rs.125

(ii) Payout = 50%

D=Dividend per share = 15 x 50%= Rs. 7.50

∴Market value per share $= \frac{7.50+\left[\frac{0.12}{0.12}\right]\times(15-7.50)}{0.12}$

$= \frac{15}{0.12}$ = Rs.125

(iii)Payout is 70%

D=Dividend per share = 15 ×70% = Rs.10.5

∴Market share per share $= \frac{10.5+\left[\frac{0.12}{0.12}\right]\times(15-10.5)}{0.12}$

$= \frac{15}{0.12}$ = Rs.125

Analysis: Nadal Ltd. is a normal firm (r=k). Market value per share remains the same for all pay outs. Hence there is no optimum payout.

Illustration:3 (Declining firm) – Walter Model

The earnings per share of Wick Mayer Ltd. are Rs. 12. The rate of capitalization is 15% and the rate of return on investment is 9%. Compute the market price per share using Walter's formula if the dividend payout is (a) 25% (b) 50% and (c) 100%. Which is the ideal payout?

Solution :

(i) Computation of market price per share when payout is 25%

Market price per share $= \frac{D+\left(\frac{r}{k}\right)\times(E-D)}{k}$

D=Dividend per share = EPS x Payout ratio

=12 x 25%

= Rs. 3

r=Rate of return =9%

k=Cost of capital = 15%

E=Earnings per share = Rs. 12

∴ Market price per share $= \frac{3+\left(\frac{0.09}{0.15}\right)\times(12-3)}{0.15}$

$= \frac{8.4}{0.15}$

= Rs.56

(ii) Computation of market price per share when payout is 50%

D=Dividend per share = 12x 50%=Rs.6

∴ Market price per share $= \frac{6+\left(\frac{0.09}{0.15}\right)\times(12-6)}{0.15}$

$= \frac{9.6}{0.15}$

= Rs.64

(iii) Computation of market price per share when payout is 100%

D=Dividend per share = 12 x 100%=Rs. 12

∴Market price per share $= \frac{12+\left(\frac{0.09}{0.15}\right)\times(12-12)}{0.15}$

$= \frac{12}{0.15}$

= Rs.80

Analysis: Wick Mayer Ltd. is a declining firm (r<k).. Market price per share is the highest when payout ratio is 100% Hence, the ideal payout ratio for the company is 100%.

Illustration: 4

Details regarding three companies are given below

Nel Ltd.	Mel Ltd.	Gel Ltd.
r=18%	r=20%	r=8%
K=15%	K=20%	K=10%
E=Rs.30	E=Rs.40	E=Rs.20

By using Walter's model, you are required to

(i) Calculate the value of an equity share of each of these companies when dividend payout is (a) 30%, (b) 60%,(c) 100%;

(ii) Comment on the results drawn.

Solution:

I. Nel Ltd

(a) Computation of value of an equity share when payout is 30%

Value of an equity share = $\frac{D+\left(\frac{r}{k}\right)\times(E-D)}{k}$

D= Dividend per share = EPS x Payout ratio

=30 x 30% = Rs. 9

r = Rate of return= 18%

k =Cost of capital = 15%

E = Earnings per share = Rs. 30

∴Value of an Equity share = $\frac{9+\left(\frac{0.18}{0.15}\right)\times(30-9)}{0.15}$

= $\frac{34.2}{0.15}$

= Rs.228

(b) Computation of value of an equity share when payout is 60%

D= Dividend per share =30 x 60%= Rs.18

∴ Value of an equity share = $\frac{18+\left(\frac{0.18}{0.15}\right)\times(30-18)}{0.15}$

= $\frac{32.4}{0.15}$

= Rs.216

(c) Computation of value of an equity share when payout is 100%

D= Dividend per share =30x 100%= Rs.30

∴Value of an equity share = $\frac{30+\left(\frac{0.18}{0.15}\right)\times(30-30)}{0.15}$

= $\frac{30}{0.15}$

= Rs.200

Analysis: Nel Ltd. is a growth firm (r > k). If payout increases, share price declines. It is better to retain the entire profit with the firm So, the ideal payout is 0%.

II. Mel Ltd.

(a) Computation of value of an equity share when payout is 30%

Value of an equity share = $\frac{D+\left(\frac{r}{k}\right)\times(E-D)}{k}$

D= Dividend per share = EPS x Payout ratio

= 40 x 30%

= Rs. 12

r=Rate of return=20%

k= Cost of capital = 20%

E= Earnings per share = Rs. 40.

Value of an equity share = $\frac{12+\left(\frac{0.20}{0.20}\right)\times(40-12)}{0.20}$

= $\frac{40}{0.20}$

= Rs.200

(b) Computation of value of an equity share when payout is 60%

D= Dividend per share = 40 x 60%

= Rs. 24

∴ Value of an equity share = $\frac{24+\left(\frac{0.20}{0.20}\right)\times(40-24)}{0.20}$

= $\frac{40}{0.20}$

= Rs.200

(c) Computation of value of an equity share when payout is 100%

D= Dividend per share =40 x 100% = Rs. 40

∴Value of an equity share = $\frac{40+\left(\frac{0.20}{0.20}\right)\times(40-40)}{0.20}$

= $\frac{40}{0.20}$

= Rs.200

Analysis: Mel Ltd. is a normal firm (r=k). Dividend payout does not affect the value of equity share of the firm.

III. Gel Ltd.

(a) Computation of value of an equity share when payout is 30%

Value of an equity share = $\frac{D+\left(\frac{r}{k}\right)\times(E-D)}{k}$

D=Dividend per share = EPS x Payout ratio

= 20 x 30%

= Rs. 6

r=Rate of return =8%

k=Cost of capital 10%

E=Earnings per share: Rs. 20

∴Value e of an equity share = $\frac{6+\left(\frac{0.08}{0.10}\right)\times(20-6)}{0.10}$

= $\frac{17.2}{0.10}$

= Rs.172

(b) Computation of value of an equity share when payout is 60%

D=D Dividend per share e=20 x 60% = Rs. 12

∴ Value of an equity share = $\frac{12+\left(\frac{0.08}{0.10}\right)\times(20-12)}{0.10}$

= $\frac{18.4}{0.10}$

= Rs.184

(c) Computation of value of an equity share when payout is 100%

D=Dividend per share = 20 x 100% = Rs. 20

∴ Value of an equity share = = $\frac{20+\left(\frac{0.08}{0.10}\right)\times(20-20)}{0.10}$

= $\frac{20}{0.10}$

= Rs.200

Analysis: Gel Ltd. is a declining firm (r < k). If payout ratio increases, the value of equity

increases. It is better to distribute all the profits to the shareholders of the firm. Hence, the ideal payout is 100%.

Ilustration:5

Chetan Ltd. earns Rs. 50 per share.

The capitalisation rate is 15% and the return on investment is 18%.

Under Walter's Model, determine

(a) The optimum payout

(b) The market price of the share at this payout

(C) The market price of the share if payout is 40%

(d) The market price of the share if payout is 80%.

Solution:

(a) If r>k, the value of share will increase with every increase in retention. The price of the share would be maximum when the firm retains all the earnings. Thus, the optimum payout ratio is zero for Chetan Ltd.

(b) Computation of market price of 'share if payout ratio is zero

Market price of share = $\frac{D+\left(\frac{r}{k}\right)\times(E-D)}{k}$

D= Dividend per share =50x 0%=0

r=Rate of return=18%

k=Cost of capital =15%

E = EPS = Rs.50

∴ Market price of share = $\frac{0+\left(\frac{0.18}{0.15}\right)\times(50-0)}{0.15}$

= $\frac{60}{0.15}$

= Rs.400

(c) Computation of market price of share if payout ratio is 40%

D-Dividend per share = 50x 40% = Rs.20

.: Market price of share = $\frac{20+\left(\frac{0.18}{0.15}\right)\times(50-20)}{0.15}$

= $\frac{56}{0.15}$

= Rs.373.33

(d) Computation of market price of share if payout ratio is 80%

D-Dividend per share = 50x 80%=Rs. 40

∴Market price of share = $\frac{40+\left(\frac{0.18}{0.15}\right)\times(50-40)}{0.15}$

=Rs.346.67

Illustration: 6

The following information relates to Somdev Ltd.

Earnings of the company	Rs. 10,00,000
Dividend paid	Rs.6,00,000
No. of shares outstanding	Rs. 1,00,000
Price Earnings ratio EPS	10
Rate of return on investment	15%

Are you satisfied with the current dividend policy of the firm? If not, what should be the optimal dividend payout ratio? Use Walter's model.

Solution:

(i)Calculation of Earnings per share (EPS)

Earnings per share (EPS) = $\frac{Profit\ for\ equity\ shareholders}{No.of\ equity\ shares}$

= $\frac{10,00,000}{1,00,000}$

= Rs. 10

(ii) Calculation off Dividend per share (DPS)

Dividend per share (DPS) = $\frac{Dividend}{No.of\ equity\ shares}$

= $\frac{6,00,000}{1,00,000}$

= Rs. 6

(iii) Calculation of Market price per share

Price earnings ratio = $\frac{Market\ price}{EPS}$

10 = $\frac{Market\ price}{10}$

∴ Market price = 10x 10 = Rs.100

(i) Calculation of Dividend payout ratio

D/P ratio = $\frac{DPS}{EPS}\times 100$

= $\frac{6}{10}\times 100$

= 60%

(v) Calculation of Cost of capital (K)

Cost of capital (K) = $\frac{1}{\frac{P}{E} Ratio}$

= $\frac{1}{10} \times 100$ = 10%

Analysis : As Somdev L.td, is a growth firm (r> k), the firm can maximise is market price if it retains 100%ofprofits. The current market price of Rs. 100 can be increased by reducing the payout ratio. If the firm opts for 100% retention (1.e., 0% payout), the market price of share would be as follows :

Market price = $\frac{D+\left(\frac{r}{k}\right)\times(E-D)}{k}$

D= Dividend per share = EPS x Payout ratio

= 10x 0%

=0

∴ Market price = $\frac{0+\left(\frac{0.15}{0.10}\right)\times(10-0)}{0.10}$

= $\frac{15}{0.10}$

= Rs.150

So, the firm can increase its market price of share up to Rs. 1501 by increasing the retention ratio to 100% or in other words, the optimal dividend payout ratio is 0%.

Illustration: 7

The following information is available in respect of Gill Ltd:

Earnings per share	Rs. 15
Cost of capital	10%

Find out the market price of the share applying Walter Model under different rates of return of 8%, 10% and 15% for different payout ratios of 0%. 408% 100%.

Solution:

(i) Computation of market price of the share if payout is 0%

(a) Rate of return (r) = 8%

Market price of share = $\frac{D+\left(\frac{r}{k}\right)\times(E-D)}{k}$

D=Dividend per share = 15 x 0%=0

k= Cost of capital =10%

E= Earnings per share = Rs.15

∴ Market price of share = $\frac{0+\left(\frac{0.08}{0.10}\right)\times(15-0)}{0.10}$

= $\frac{12}{0.10}$

= Rs.120

(b)Rate of return (r) = 10%

Market price of share = $\frac{0+\left(\frac{0.10}{0.10}\right)\times(15-0)}{0.10}$

= $\frac{15}{0.10}$

= Rs.150

(c) Rate of return (r) = 15%

Market price of share = $\frac{0+\left(\frac{0.15}{0.10}\right)\times(15-0)}{0.10}$

= $\frac{22.5}{0.10}$

= Rs.225

(ii) Computation of market price of share if payout is 40%

(a) Rate of return (r) = 8%

Market price of share = $\frac{D+\left(\frac{r}{k}\right)\times(E-D)}{k}$

D=Dividend per share = 15 x 40% =Rs.6

k=Cost of capital =10%

E= Earnings per share = Rs.15

∴Market price of share = $\frac{6+\left(\frac{0.08}{0.10}\right)\times(15-6)}{0.10}$

= $\frac{13.2}{0.10}$

= Rs.132

(b) Rate of return (r) = 10%

Market price of share = $\frac{6+\left(\frac{0.10}{0.10}\right)\times(15-6)}{0.10}$

= $\frac{15}{0.10}$

= Rs.150

(c) Rate of return(r)=15%

Market price of share = $\frac{6+\left(\frac{0.15}{0.10}\right)\times(15-6)}{0.10}$

= $\frac{19.5}{0.10}$

= Rs.195

(iii) Computation of market price of share if payout is 100%

(a) Rate of return (r) = 8%

Market price of share = $\frac{D+\left(\frac{r}{k}\right)\times(E-D)}{k}$

D=Dividend per share=15 x 100% =Rs.15

k=Cost of capital = 10%

E= Earnings per share = Rs.15

∴ Market price of share = $\frac{15+\left(\frac{0.08}{0.10}\right)\times(15-15)}{0.10}$

=$\frac{15}{0.10}$

= Rs.150

(b) Rate of return (r) = 10%

∴Market price of share = $\frac{15+\left(\frac{0.10}{0.10}\right)\times(15-15)}{0.10}$

=$\frac{15}{0.10}$

= Rs.150

(c) Rate of return (r) = 15%

Market price of share = $\frac{15+\left(\frac{0.15}{0.10}\right)\times(15-15)}{0.10}$

=$\frac{15}{0.10}$

= Rs.150

Work it Out...

1. The cost of capital and rate of return on investment of Bob Ltd. are 20% and 30% respectively. The company has 1,50,000 equity shares of Rs.10 each outstanding and EPS is Rs.10. Calculate the value of the company in the following situation .Use Walter's model and comment on the results: (1). No retention; (ii). 50%o retention:

(iii). 100% retention.

2. The earnings per share of Alexa Ltd. are Rs. 10. The rate of capitalisation is 8% .The productivity of retained earnings is 10%. Compute the market price per share if the payout is 0%, 25%, 50%, 75% and 100%. What inference can be drawn from the above exercise?

3. The earnings per share of Daniel Ltd. are Rs. 10. The rate of capitalisation is 12% and the rate of return on investment is 9%. Compute the market price per share using Walter's formula if the dividend payout is a). 20% b). 60% c). 100%. Which is the ideal payout?

4. Details regarding three companies are given below:

A Ltd.	B Ltd.	C Ltd.
r=15%	r=10%	r=8%
K_e=10%	K_e=10%	K_e=10%
E=Rs.10	E=Rs.10	E=Rs.10

By using Walter's model, you are required to:

(i) Calculate the value of an equity share of each of these companies when dividend pay-out ratio is (a). 20%, (b). 50%, (c). 0% and (d). 100%.

(ii) Comment on the results drawn.

5. Victory Ltd. earns Rs.5 per share. The capitalisation rate is 10% and the return on investment is 12%.

Under Walter's model, determine

(a) the optimum payout

(b) the market price of the share at this payout.

(c) the market price of the share if the payout is 20%

(d) the market price of the share if the payout is 40%.

6. Determine the market value of equity shares of the company from the following information as per Walter's Model:

Earnings of the company	Rs.10,00,000
Dividend paid	Rs. 6,00,000

Number of shares outstanding	Rs. 2,00,000
Price-earnings ratio	8
Rate of return on investment	15%

Are you satisfied with the current dividend policy of the firm? if not, what should be the optimal dividend payout ratio?

Gordon's Model

Illustration : 8 (Growth firm)-Gordon Model

The following data relates to Yanina Ltd.

Earnings per share	Rs.14
Capitalisation rate	15%
Rate of return	20%

Determine the market price per share under Gordon's model if retention is (a) 40%, (b) 60%, (c) 20%.

Solution:

Computation of market price per share under Gordon's Model

(a) Retention ratio = 40%

Market price per share = $\frac{D}{k-g}$

D=Dividend per share = EPS x Payout ratio

=14x 60% = Rs.8.40

k=Cost of capital =15%

g=Growth rate = Retention ratio (b) x Rate of return (r)

= 40% x 20%

=0.4 x 0.2

=0.08 x 100

=8%

Market price per share = $\frac{8.40}{15\%-8\%}$

$=\frac{8.40}{7\%}$

= Rs.120

(b) If Retention ratio =60%

D= Dividend per share=14x 40%= Rs.5.6

g=Growth rate =b x r=60%x 20%

=0.6x 0.2= 0.12x 100%=12%

∴ Market price per share = $\frac{5.6}{15\%-12\%}$

= $\frac{5.6}{3\%}$

= Rs.186.67

(c) If Retention ratio = 20%

D=Dividend per share = 14 x 80% = Rs.11.20

g=Growth rate =b x r=20%x 20%

=0.2 x 0.2 =0.04x 100= 4%

∴ Market price per share =$\frac{11.20}{15\%-4\%}$

= $\frac{11.20}{11\%}$

= Rs.101.82

Analysis: Yanina Ltd is a growth firm (r>k).

Illustration: 9 (Normal firm) -Gordon Model

Du Preez Ltd. gives you the following information:

Earnings per share	Rs.45
Cost of capital	18%
Return on investment	18%

Ascertain the market value per share using Gordon's Model, if the payout is

(a) 30%, (b) 60%, (c) 90%.

Computation of market value per share under Gordon's Model

Solution:

(a) Payout ratio = 30%: Retention ratio = 70%

Market value per share = $\frac{D}{k-g}$

D= Dividend per share = EPS x Payout ratio

= 45 x 30% =Rs.13.50

k=Cost of capital = 18%

g=growth rate = Retention ratio (b) x Rate of return (r)

= 70% x 18%

= 0.7x 0.18

= 0.126x 100

= 12.6%

∴Market value per share $= \frac{13.50}{18\% - 12.6\%}$

$= \frac{13.50}{5.40\%}$

= Rs. 250

(b) Payout ratio = 60%; Retention ratio = 40%

D=Dividend per share =45 x 60%= Rs.27

g=Growth rate = b x r

=40%x 18%

=0.4x 0.18

=0.072 x 100 =7.2%

∴ Market value per share = $\frac{27}{18\% - 7.2\%}$

$= \frac{27}{10.8\%}$ = Rs. 250

Payout ratio = 90%: Retention ratio = 10%

D=Dividend per share =45 x 90%=Rs.40.50

g=growth rate =b x r=10% x 18%

=0.1 x 0.18 = 0.018x 100

=1.8%

∴Market value per share = $\frac{40.50}{18\% - 1.8\%}$

$= \frac{40.50}{16.2\%}$ = Rs. 250

Analysis: Du Preez Ltd is a normal firm (r=k). The share price remains the same for different payout ratios.

Illustration: 10 (Declining firm)-Gordon Model

Perkins Ltd. earns a profit of Rs.35 per share. The rate of capitalisation is 15% and the productivity of retained earnings is 10%. Using Gordon's model, determine the market price per share if the payout is (a) 20%, (b) 40% and (c) 70%

Solution:

Computation of market price per share under Gordon's Model

(a) Payout ratio: 20%: Retention ratio: 80%

Market price per share = $\frac{D}{k-g}$

D=Dividend per share = EPS x Payout ratio

=35 x 20%=Rs.7

k=Cost of capital = 15%

g=Growth rate = Retention ratio (b) x Rate of return (r)

= 80%x 10%

= 0.8x 0.10=0.08x 100=8%

∴ Market price per share = $\frac{7}{15\%-8\%}$

= $\frac{7}{7\%}$

= Rs. 100

(b) Payout ratio = 40% : Retention ratio = 60%

D=Dividend per share = 35x 40% = Rs.14

g=Growth rate =b x r=60% >x 10%

=0.6x 0.10 =0.06 x 100

=6%

∴ Market price per share = $\frac{14}{15\%-6\%}$

= $\frac{14}{9\%}$

= Rs. 155.56

(c) Payout ratio = 70%: Retention ratio = 30%

D=Dividend per share = 35 x 70% = Rs.24.5

g=Growth rate b x r=30%x 10%

=0.3 x 0.10 = 0.03x 100

=3%

∴ Market price per share = $\frac{24.5}{15\%-3\%}$

= $\frac{24.5}{12\%}$

= Rs. 204.17

Analysis : Perkins Ltd. is a declining firm (r < k)

Illustration: 11 (Changes in cost of capital) - Gordon Model

The following data relates to Bailey Ltd.

Rate of return	12%
Earnings per share	Rs.60

Find out the market price per share in the following cases, using Gordon's Model:

Dividend payout	Retention	cost of capital
(i)25	75	20%
(ii)50	50	15%
(iii)80	20	10%

Solution:

Computation of market price per share under Gordon's Model

(i) Payout ratio : 25%; Retention ratio: 75%; Cost of capital: 20%

Market price per share = $\frac{D}{k-g}$

D=Dividend per share=EPS x Payout ratio

= 60 x 25% = Rs.15

k=Cost of capital = 20%

g=Growth rate = Retention ratio (b) x Rate of return (r)

=75%x 12%

= (0.75 x 0.12) x 100 = 9%.

∴ Market price per share = $\frac{15}{20\%-9\%}$

=$\frac{15}{11\%}$ = Rs. 136.36

(ii) Payout ratio 50%; Retention ratio : 50%; Cost of capital : 15%

D= Dividend per share = 60 x 50% = Rs.30

k=Cost of capital = 15%

g=Growth rate = b x r

= 50%x 12%

= (0.5 x 0.12) x 100 =6%

∴ Market price per share = $\frac{30}{15\%-6\%}$

$=\frac{30}{9\%}$ = Rs. 333.33

(iii) Payout ratio: 80%; Retention ratio: 20%; Cost of capital: 10%

D=Dividend per share =60x 80%= Rs.48

k=Cost of capital = 10%

g=Growth rate = b x r

=20% x 12%

= (0.2 x 0.12) x 100 =2.4%

∴Market price per share = $\frac{48}{10\%-2.4\%}$

$=\frac{48}{7.6\%}$ = Rs.631.58

Work it Out...

1. From the data given below relating to Jayant Ltd., determine market price per share under Gordon's model:

EPS	Rs.8
Retention ratio	(b)=25%
Capitalisation	(k)=10%
Rate of return	(r)=15%

2. The information relates to Tilak Ltd. Ascertain the market price per share in the following, cases, using Gordon's model

Rate of return (r) 10%, Earnings per share (E)= Rs.30.

Dividend payout (1-b)%	Retention (b)%	Cost of equity % (k)
1. 50	50	15%
2. 70	30	12%
3. 90	10	10%

3. Rakesh Ltd. earns a profit of Rs.10 per share. The rate of capitalisation is 12% and the productivity of retained earnings (r) is 10%. Using Gordon's model, determine the market price per share if the payout is (a). 30%; (b). 60%: (c) 80%.

Walter & Gordon Model

Illustration: 12 (Walter& Gordon Models)

Calculate the market price of a share of Pollard Ltd. under: (a) Walter's formula, and (b) Dividend Growth model from the following data :

Earnings per share	Rs.75
Dividend per share	Rs.45
Cost of capital	15%
Rate of return on investment	18%
Retention ratio	40%

(a) Computation of market price per share under Walter s Model

Market price per share = $\frac{D+\left(\frac{r}{k}\right)\times(E-D)}{k}$

D= Dividend per share = Rs.45

r=Rate of return= 18%

k=Cost of capital = 15%

E= Earnings per share = 75

∴Market price per share = $\frac{45+\left(\frac{0.18}{0.15}\right)\times(75-45)}{0.15}$

$= \frac{81}{0.15}$

= Rs.540

(b) Computation of market price per share under dividend growth(Gordon) Model

Market price per share = $\frac{D}{k-g}$

D=Dividend per share = Rs.45

k=Cost of capital =15%

g=Growth rate = Retention ratio (b) × Rate of return (r)

=40%x 18% = (0.4x 0.18) x 100 =7.29

∴Market price per share = $\frac{45}{15\%-7.2\%}$

$= \frac{45}{7.8\%}$

= Rs.576.92

Work it Out...
10. Calculate the market price of a share of ABC Ltd. under (i). Walter's s formula,

and (ii). Dividend growth model from the following data:

Earnings per share	Rs.5
Dividend per share	Rs.3
Cost of capital	16%
Internal rate of return on investment	20%
Retention ratio	40%

M.M. Hypothesis

Illustration: 13 (MM Model)

Stewart Ltd. has 40,000 shares outstanding. The current market price of these shares is Rs. 15 each. The Board of directors of the company has recommended Rs. 2 per share as dividend. The rate of capitalisation appropriate to the risk-class to which the company belongs is 20%.

(i) Based on MM approach, calculate the market price of the share of the company when the recommended dividend is (a) distributed and (b) not declared.

(ii) How many new shares to be issued by the company at the end of the accounting year on the assumption that the net income for the year is Rs. 1,20,000 and the investment budget is Rs. 2,80,000 when (a)the above dividends are distributed and (b) dividends are not declared.

(iii)Show that market value of the shares at the end of the accounting year will remain the same whether dividends are distributed d or not declared

(iv) Is the MM approach realistic? What factors might mar its validity

Solution :

(i)Computation of market price of the share under MM model

(a) If dividends are distributed

Market price of share (P_1) = P_0x (1+ k_e)-D_1

P_0-Current market price = Rs.15

k_e-Cost of equity = 20%

D_1=Dividend = Rs. 2

∴Market price per share (P_1) =15 x (1+0.20)-2

=15x (1.20)-2

=18 - 2

= Rs.16

(b) If dividends are not declared

D_1=Dividend = 0

∴Market price per share = 15 x (1 +0.20)-0

=15 x (1.20)-0

= Rs.18

(ii) Computation of no. of shares to be issued to finance the investment proposal

(a) dividends are distributed

	Rs.	Rs.
Investment proposed		2,80,000
Less: Retained earnings available for investment: Net income	1,20,000	
Less: Dividend distributed (40,000 × 2)	80,000	40,000
Fund to raised by issue of shares		2,40,000
Market price (if divided is declared)		16

∴No.of new shares to be issued = $\frac{2,40,000}{16}$

= 15,000 shares

(b) If dividends are not declared

		Rs.
Investment proposed		2,80,000
Less: Retained earnings available for investment: Net income	1,20,000	
Less: Dividend distributed	Nil	1,20,000
Fund to be raised by issue		1,60,000

of shares		
Market price per share (Dividend not declared)		Rs.18

∴No.of shares to be issued

$= \frac{1,60,000}{18}$

= 8,889 shares

(iii) Computation of market value of shares

(a) If Dividends are distributed

No.of existing shares	40,000
Add: New shares	15,000
Total No. of shares	55,000

∴Market value of shares =Total No. of shares x Market price per share

= 55,000x 16

= Rs.8.80,000

(b) If Dividends are not declared

No. of existing shares	40,000
Add: New shares	8,889
Total No. of shares	48,889

∴Market value of shares = Total No. of shares x Market price per share

= 48.889 × 18

= Rs.8,80,000

Analysis: From the above calculations, it is evident that the market value of shares remains the same whether dividends are distributed or not declared.

(iv) The MM approach is unrealistic. Its validity is marred by unrealistic assumptions such as

(a) No corporate taxes

(b) No floatation and transaction costs

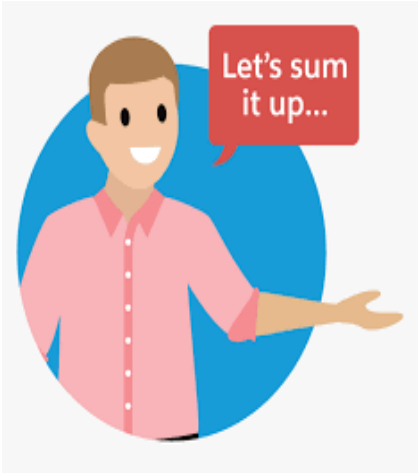
(c) No difference in the tax rates applicable to dividends and capital gains.

Work it Out...

11. X Ltd. has 8 lakh equity shares outstanding at the beginning g of the year 2005. The current market price per share is Rs. 120. The Board of Directors of the company is contemplating Rs. 6.4 per share as dividend. .The rate of capitalisation, appropriate to the risk - class to which the company belongs, is 9.6%

(i) Based on MM Approach, calculate the market price of the share of the company, when the dividend is (a) declared; and (b) Not declared.

(ii) How many new shares are to be issued by the company, if the company desires to fund an investment budget of Rs. 3.20 crore by the end of the year assuming net income for the year will be Rs. 1.60 crore?



4.3.3 Let's Sum up

The study of dividend models in corporate finance explores two main perspectives: relevance and irrelevance. Relevant theories, like Walter's and Gordon's models, argue that dividend policies directly influence firm value by signaling profitability and affecting stock prices. Walter categorizes firms based on their optimal dividend policies relative to internal returns and cost of capital, while Gordon emphasizes the preference for current dividends due to their immediate income benefits. In contrast, the Modigliani-Miller hypothesis posits that, under ideal market conditions, dividend policy has no impact on firm value, as investors prioritize maximizing returns through capital gains or dividends equally. These perspectives highlight differing views on the strategic implications of dividend decisions in corporate finance.

4.3.4 Check Your Progress

1. According to Walter's model, which type of firm would typically have a zero payout ratio?

A. Growth firms
B. Declining firms
C. Normal firms
D. None of the above

2. Gordon's model assumes:

A. No external financing for the firm.
B. Variable retention ratio.
C. Decreasing cost of capital over time.
D. No preference for current dividends.

3. According to Modigliani and Miller's hypothesis, in a perfect capital market:

A. Dividend policy has a significant impact on firm value.
B. Investors prefer dividends over capital gains.
C. New share issuance does not affect shareholder wealth.
D. Retained earnings are always distributed as dividends.

4. What is one criticism of the Modigliani-Miller hypothesis?

A. It assumes perfect capital markets.
B. It neglects the relevance of dividend signaling.
C. It favors declining firms over growth firms.
D. It emphasizes the importance of external financing.

5. Which model suggests that dividend decisions reflect a firm's ability to generate profitable investment opportunities?

A. Walter's model
B. Gordon's model
C. Both A and B
D. Modigliani-Miller hypothesis

4.4.1 Unit Summary

- Dividend policies determine the distribution of profits to shareholders.
- Factors affecting dividend payment include profitability, liquidity, growth opportunities, and market conditions.
- Company law provisions regulate the declaration and payment of dividends to ensure compliance and fairness.
- Walter's Model analyzes the impact of dividend policies on a company's value and shareholder wealth.
- Gordon's Model evaluates the relationship between dividend distribution and market valuation of the firm.
- The Modigliani-Miller (M.M.) Hypothesis suggests that dividend policy is irrelevant in perfect markets, impacting firm value only under certain conditions.
- Dividend policies influence investor perception and market value of the company.
- Analyzing dividend policies supports financial decision-making and long-term planning.

4.4.2 Glossary

Dividend Policies	The guidelines and strategies that a company follows regarding the distribution of dividends to its shareholders.
Dividend Payment	The distribution of a portion of a company's earnings to its shareholders, usually in the form of cash or stock.
Dividend Models	Theoretical frameworks used to determine the optimal dividend policy of a company. Examples include Walter's Model, Gordon's Model, and M.M. Hypothesis.
Dividend Yield	The financial ratio that shows how much a company pays out in dividends each year relative to its stock price. It is calculated as the annual dividend per share divided by the stock's current market price.

4.4.3 Self – Assessment Questions

1. Explain the concept of dividend policies and discuss how they influence shareholder wealth and company valuation.
2. Identify and discuss the key factors that influence a company's decision to pay dividends or retain earnings.
3. Analyze the impact of changes in company earnings and profitability on dividend payment decisions.
4. Describe the provisions of Company Law regarding dividend payment. How do these provisions protect the interests of shareholders?
5. Compare and contrast Walter's and Gordon's dividend models. What are the key assumptions and limitations of each model?
6. Discuss the Modigliani-Miller (M.M.) Hypothesis on dividend irrelevance. Under what conditions is this hypothesis applicable?
7. Evaluate the role of dividend policy in attracting investors and affecting a company's cost of capital.
8. Propose a dividend policy suitable for a mature company with stable earnings versus a growth-oriented company.
9. Explain how stock repurchases (buybacks) can be used as an alternative to dividend payments. What are the advantages and disadvantages of each approach?
10. Assess the impact of dividend policy decisions on shareholder value and market perceptions of a company's financial health.

Activities / Exercises / Case Studies

1. Form a small group and debate on dividend policies in different perspectives.
2. Each student can select a company in your city and apply Walter’s or Gordon’s model on its dividend practice.

Answers for check your progress	Module 1
	1. B. To balance rewarding shareholders with reinvesting in the business 2. C. Stock Dividend 3. C. Liquidity position

	4. C. Stable Dividend Policy 5. B. It maintains stability in market values of shares **Module 2** 1. B. Companies Act, 2013 2. B. Public Limited Company 3. B. To stabilize the market value of shares and provide regular income to investors 4. B. Shareholders 5. B. To comply with legal and regulatory requirements **Module 3** 1. A. Growth firms 2. A. No external financing for the firm. 3. C. New share issuance does not affect shareholder wealth. 4. A. It assumes perfect capital markets. 5. D. Modigliani-Miller hypothesis

4.4.4 References & Suggested Readings

1. "Financial Management: Theory and Practice" by Prasanna Chandra – McGraw-Hill.
2. "Essentials of Corporate Finance" by Stephen A. Ross, Randolph W. Westerfield, and Bradford D. Jordan – McGraw-Hill.
3. "Dividend Policy: Theory and Practice" by A. K. Gupta ISBN: 9788177082722
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5. "Financial Management: Principles and Applications" by Sheridan Titman, Arthur J. Keown, and John D. Martin ISBN: 9780134417219

UNIT 5 Working Capital

Working capital – Components of working capital –Operating cycle – Factors influencing Working Capital – Determining (or) Forecasting of Working Capital requirements.

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Hello Learner…. Welcome! Grasping the essentials of working capital management is key to maintaining a company's liquidity and operational efficiency. Explore the Components of Working Capital and understand the Operating Cycle. Delve into the Factors Influencing Working Capital and learn how to Determine or Forecast Working Capital Requirements for effective financial planning. Everything you need to know about Working Capital Management….!

5.1.1 Introduction of Working Capital:

Working capital management is a crucial aspect of financial management that involves the administration of a company's short-term assets and liabilities to ensure efficient operations and financial stability. It aims to balance liquidity and profitability by maintaining an optimal level of working capital, which includes cash, marketable securities, accounts receivable, and inventories. Effective working capital management ensures that a company can meet its short-term obligations, maintain smooth operations, and minimize the cost of capital. It involves various strategies and techniques, such as inventory management, receivables management, and payables management. Proper working capital management enhances a company's operational efficiency, reduces financial risks, and improves overall profitability. It is essential for sustaining day-to-day business activities and supports long-term growth and financial health. In essence, working capital management is vital for a company's survival and success in a competitive market.

Definitions:

"Working capital refers to a firm's investment in short term assets (cash, marketable securities, accounts receivable, and inventories)." - Lawrence J. Gitman

"Working capital is the amount of a company's current assets minus the amount of its current liabilities. It is a measure of both a company's efficiency and its short term financial health." - James C. Van Horne

Meaning:

The goal of working capital management is to ensure that a firm is able to continue its operations and that it has sufficient ability to satisfy both maturing short-term debt and

upcoming operational expenses. The management of working capital involves managing inventories, accounts receivable and payable, and cash.

Concept of Working Capital:

There are two concepts in respect of working capital:

(i) Gross working capital and

(ii) Networking capital.

Gross Working Capital

Gross working capital refers to the total value of a company's current assets. These assets include cash, bank balances, inventories (stock), accounts receivable (debtors), and other short-term financial assets that are expected to be converted into cash within a year. This concept emphasizes the importance of having enough funds tied up in current assets to finance daily operations. Gross working capital provides an overview of the total amount available for meeting short-term financial needs. However, it does not reveal the true financial position of the company because it does not account for current liabilities. The formula for calculating gross working capital is:

Gross Working Capital = Total Current Assets

Net Working Capital

Net working capital is an accounting concept that represents the difference between current assets and current liabilities. Current assets include items such as cash, bank balances, inventories, accounts receivable, and other assets expected to be liquidated within a year. Current liabilities are obligations that need to be settled within a year, such as accounts payable (creditors), short-term loans, and bills payable. Net working capital indicates the liquid position of a company and shows whether it has enough resources to meet its short-term obligations. A common benchmark for assessing net working capital is a 2:1 ratio of current assets to current liabilities, which indicates a healthy liquidity position. The formula for calculating net working capital is:

Net Working Capital = Current Assets-Current Liabilities

Importance of Working Capital

Working capital is often referred to as the lifeblood of a business because it is essential for running day-to-day activities. Every business needs sufficient funds to

operate smoothly and efficiently. The importance of working capital can be understood through several key points:

1. Measures Profitability

Working capital is crucial for measuring the profitability of an enterprise. Without adequate working capital, a business cannot produce goods or services, leading to a halt in production and no generation of profit. It ensures that there are enough funds to cover operating expenses and support continuous business activities, which directly impacts profitability.

2. Meets Short-term Liabilities

Adequate working capital ensures that an entity can meet its short-term liabilities on time. This includes payments to suppliers, employees, and other creditors. Timely payment of these liabilities is essential to maintain the trust and smooth operations of the business. Without sufficient working capital, a company may struggle to meet these obligations, leading to financial instability and potential insolvency.

3. Facilitates Easy Borrowing

A firm with a healthy working capital position can easily obtain loans from the market due to its high reputation and goodwill. Lenders are more willing to extend credit to businesses that demonstrate good liquidity and the ability to meet short-term obligations. Adequate working capital enhances a company's creditworthiness, making it easier to secure financing for growth and expansion.

4. Ensures Uninterrupted Production

Sufficient working capital helps maintain an uninterrupted flow of production by ensuring the regular supply of raw materials and timely payment of wages. This continuity is critical for meeting customer demand and maintaining operational efficiency. Without adequate working capital, production processes can be disrupted, leading to delays and potential loss of business.

5. Maintains Optimal Investment in Current Assets

Sound working capital management helps maintain an optimal level of investment in current assets. This means that the company can balance its investments in inventories, accounts receivable, and other short-term assets to maximize efficiency and minimize costs. Proper investment in current assets ensures that the company

has enough resources to meet its short-term needs without overinvesting, which can tie up funds unnecessarily.

6. Enhances Financial Health

Adequate working capital enhances the liquidity, solvency, creditworthiness, and overall reputation of the enterprise. Liquidity refers to the ability to quickly convert assets into cash to meet immediate needs. Solvency is the ability to meet long-term obligations. Together, these factors contribute to the financial stability and credibility of the business in the eyes of investors, lenders, and other stakeholders.

7. Provides a Buffer for Unforeseen Contingencies

Working capital provides necessary funds to meet unforeseen contingencies, such as sudden drops in sales, unexpected expenses, or economic downturns. This financial buffer helps the enterprise navigate periods of crisis successfully without compromising its operations. Having sufficient working capital ensures that the business can continue to function and meet its obligations even during challenging times.

Types of Working Capital

Working capital is essential for the smooth operation of a business and can be categorized into various types based on different criteria. Here are the detailed explanations of the different types of working capital:

(a) Gross Working Capital

Gross working capital refers to the total amount of funds invested in a company's current assets. These assets are expected to be converted into cash within a year.

Components:

- Raw Materials: The basic materials used in production processes.
- Work in Progress (WIP): Partially finished goods that are still in the production process.
- Debtors (Accounts Receivable): Money owed to the company by customers who have bought goods or services on credit.
- Finished Goods: Products that are ready for sale.

Gross working capital provides an overall picture of the company's short-term financial health by showing the total amount available for day-to-day operations. It

emphasizes the importance of maintaining adequate current assets to support business activities.

(b) Net Working Capital

Net working capital is the difference between current assets and current liabilities. It reflects the company's ability to meet its short-term obligations with its short-term assets.

Net Working Capital = Current Assets - Current Liabilities

The main goal of net working capital is to determine the composition and magnitude of current assets required to meet current liabilities. It gives a clearer picture of the company's liquidity and short-term financial health.

Positive net working capital indicates that the company has enough assets to cover its liabilities, while negative net working capital suggests potential liquidity issues.

(c) Positive Working Capital

Positive working capital occurs when current assets exceed current liabilities.

It indicates that the company can comfortably cover its short-term obligations and still have surplus resources. Positive working capital is a sign of good financial health and operational efficiency.

Benefits:

- Liquidity: Ensures the company has sufficient cash flow to meet its immediate needs.
- Creditworthiness: Enhances the company's ability to obtain loans or credit from suppliers.
- Operational Stability: Allows for uninterrupted operations and the ability to take advantage of growth opportunities.

(d) Negative Working Capital

Negative working capital occurs when current liabilities exceed current assets.

It indicates that the company may face difficulties in meeting its short-term obligations. Negative working capital can be a warning sign of potential financial distress or liquidity problems.

Risks:

- Liquidity Issues: The company may struggle to pay off its short-term debts.

- Credibility: Reduced trust from creditors and suppliers, potentially leading to stricter credit terms.
- Operational Disruptions: Potential interruptions in production or services due to the inability to finance day-to-day operations.

(e) Permanent Working Capital

Permanent working capital is the minimum amount of working capital required to ensure continuous business operations, even during the dullest season of the year.

Characteristics:

- Stability: It remains relatively constant over time, regardless of seasonal fluctuations in business activity.
- Base Level: Represents the base level of current assets that must be maintained to avoid operational disruptions.

Ensures that the business has sufficient resources to maintain essential operations at all times. It acts as a financial cushion to cover basic expenses and support ongoing activities.

(f) Temporary or Variable Working Capital

Temporary or variable working capital is the additional working capital required to meet the fluctuating needs of the business during different times of the year.

Characteristics:

- Seasonal Variation: Changes based on the seasonality of the business or fluctuations in demand.
- Flexibility: Adjusts according to the company's operational requirements and market conditions.

Components:

- Additional Inventory: Extra stock needed during peak seasons or in anticipation of increased demand.
- Extra Cash: Additional cash reserves to handle seasonal expenses or take advantage of short-term opportunities.

Temporary working capital is crucial for managing seasonal peaks and valleys in business activity. It ensures that the company can respond flexibly to changes in demand and maintain smooth operations throughout the year.

5.1.2 Sources of Working Capital:

After determining the working capital requirements of the firm, the next function of finance manager is to find an assortment of appropriate sources of working capital to finance for its current assets. A firm has various Sources to meet its financial requirements. The sources of working capital are of two types i.e. long term and short term sources. The financing of current assets through long term sources is generally costlier than that of short term sources. However, financing of current assets from long term sources provides stability, reduces risk of repayment and increases liquidity of the firm. The following is a snapshot of various sources of working capital available to a firm.

I. Long term sources

(a) Issue of equity shares:

A firm may raise funds from promoters or from the investing public by way of owner's capital or equity capital by issue of ordinary shares. Ordinary shareholders are owners of the firm. Since equity shares can be paid off only in the event of liquidation, this source has the least risk involved. This is more so due to the fact that equity shareholders can be paid dividends only when there are distributable profits. However, the cost of ordinary shares is Usually the highest. This is due to the fact that such shareholders expect a higher of return on their investments as compared to other suppliers of long term funds. Further, the dividend I payable on shares is an appropriation of profits and not a charge against profits. This means that it has to be paid only out of profits after tax.

Advantages of raising funds by issue of equity shares are:

(i) It is a permanent source of finance

(ii)The issue of new equity shares increases flexibility of the firm.

(iii) The firm can raise further share capital by making a rights issue.

(iv) There is no mandatory payment to shareholders of equity shares.

(b)Issue of preference share:

These are a special kind of shares; the holders Of such shares enjoy priority, both as regards the payment of a fixed amount of dividend and repayment of capital on winding up of the firm.

Preference share capital is a hybrid form of financing which partakes some characteristics of equity capital and some attributes of debt capital. It is similar to equity because preference dividend, like equity dividend is not a tax deductible payment. It resembles debt capital because the rate of preference dividend is fixed. Typically, when preference dividend is skipped, it is payable in future because of the cumulative feature associated with most of preference shares.

Cumulative convertible preference shares may also be offered, under which the shares would carry a cumulative dividend of specified limit for a period of say three years after which the shares are converted into equity shares. These shares are attractive for projects with a long gestation period. For normal preference Shares, the maximum permissible rate of dividend is 14%.

Preference share capital can be redeemed at a pre-decided future date or at an Earlier stage inter alia out of profits of firm. This enables the promoters withdraw their Capital from the firm which is now self-sufficient and the withdrawn capital may be reinvested in other profitable ventures. It may be mentioned that irredeemable preference. Shares cannot be issued by any firm.

Advantages of taking the preference share capital route are :

(i) No dilution in EPS on enlarged capital base-if equity is issued, it reduces EPS, thus affecting the market perception about the firm.

(ii) There is leveraging advantage as it bears a fixed charge.

(iii) There is no risk of takeover.

(iv) There is no dilution of managerial control.

(v) Preference share capital can be redeemed after a specified period.

(c) Issue of debentures or bonds:

Loans can be raised from public by issuing debentures or bonds by the firm. Debentures are normally issued in different denominations ranging from Rs. 100 to Rs. 1,000 and carry different rates of interest. By issuing debentures, a firm can raise long term loans from pubic. Normally, debentures are issued on the basis of a debenture trust deed which lists the terms and conditions on which the debentures are floated. Debentures are normally secured against the assets of the firm.

As compared with preference shares, debentures provide a more Convenient mode of long term funds. The cost of capital raised through debentures is quite low since the interest payable on debentures can be charged as an expense before tax. From the investors' point of view, debentures offer a more attractive interest on debentures is payable prospect than the preference shares since whether or not the firm makes profits.

Advantages of raising finance by issue of debentures are:

(i) The cost of debentures is much lower than the cost of preference equity capital as the interest is tax deductible. Also, investors consider debenture investment safer than equity or preference investment and hence, may require a lower return on debentures investment.

(ii) Debenture financing does not result in dilution of control.

(iii) In a period of rising prices, debenture issue is advantageous. The fixed monetary outgo decrease in real terms as the price level increases.

The disadvantages of debentures financing are:

(i) Debentures interest and capital repayment are obligatory payments

(ii) The protective covenants associated with a debenture issue may be restrictive

(iii) Debentures financing enhances the financial risk associated with the firm.

(d) Retained earnings:

It represents undistributed profits of the in commonly used by the established firms for financing their permanent working capital requirements known as "ploughing back of profits". It is a regular and cheapest source of working capital. It makes the firm financially strong and increases credit worthiness. It can be used not only for the development expansion and modernisation of the firm but also o for redeeming debts and stabilising the rate of dividend.

(e) Loans from financial institutions:

In India, specialised institutions provide long term finance to firms. Thus, IFCI, SFC, LIC of India. ICICI, IDBI etc. provide term loans to firm. Such loans are available at different rates of interest under different schemes of financial institutions and are to be repaid according to a stipulated repayment schedule. The loans in many cases stipulate a number of conditions regarding the management and certain other financial policies of the firm.

II. Short term sources

The temporary working capital requirements can be met through two major short term sources i.e., Internal sources and external sources.

(A) Internal sources

(i)Depreciation fund: The depreciation funds created out of firm's profits provide a reliable source of working capital so long as they are not invested in assets or distributed as dividends.

(ii) Provision for taxation: There remains a time lag between creating provision for taxes and their actual payment. Thus, the funds appropriated for taxation can be used for the short term working capital requirements of the firm during the intermittent period.

(iii) Outstanding expenses: Sometimes, the firm postpones the payment of certain expenses due on the date of finalisation of accounts. Outstanding expenses like unpaid wages, salaries, rent, etc. also constitute an important source of short term working capital.

(B) External sources

(a) Trade credit: It represents credit extended by the suppliers of goods in the normal course of business. The usual duration of credit is 15 to 90 days. It is granted to the firm on open account", without any security except that of the good will and financial standing of purchaser. No interest is expressly charged for this, only the price is a little higher than the cash price. This source of working capital has the following advantages :

(a) Ready availability: There is no need to arrange financing formally.

(b) Flexible means of financing: Trade credit is a more flexible means of financing. The firm does not have to sign a promissory note, pledge collateral or adhere to a strict payment schedule on the note.

(c) Economic means of financing: Generally during periods of tight money, large firms obtain credit more easily than small firms do. However, trade credit as a source of financing is still more accessible by small firms even during the periods of tight money.

(b) Commercial paper (CP): CP is a "usance promissory note" issued by a firm, approved by RBI, negotiable by endorsement and delivery, issued at such discount on the face

value as may be determined by the issuing firm. Each CP will bear a certificate from the banker verifying signature of the executors. These issued by a firm to raise funds for a short period, generally varying from a few days to few months. The CP may be issued in multiples of Rs. 5 lakh.

Eligibility:

The following conditions are to be fulfilled by the firm for issuing CP

(a) The issuing firm should have a tangible net worth of not less thanRs.4 crore as per the latest balance sheet.

(b) The firm should have working capital limit of not less s than Rs. 4 crore.

(c) The current ratio should be minimum 1.33 as per the latest balance sheet.

(d) The firm should have minimum P_2/A_2 rating from CRISIL/ICRA/CARE or any other credit Rating Agency for the purpose. The rating should not be more than two months old from the date of issue of the CP.

(e) The borrowing account of the firm is classified as standard assets by financing banking company /companies.

No CP can be issued for a period less than 15 days from the date of its issue. There is no grace period for payment of CPs. The RBI has increased the maturity period of the CPs from a maximum of 6 months to a maximum of less than 1year Period from the date of its issue.

There is, however, reluctance on the part of investors, especially banks to invest in less than I year CP because of the absence of a secondary market CP may be issued to any person including individuals, banks and other corporate bodies registered/incorporated in India and unincorporated bodies. It cannot, however, be issued to NRI's A firm issuing CP may request the banker to provide standby facility for an amount not exceeding the amount of issue for meeting the liability of CP on maturity. The financing banker shall correspondingly reduce the working capital limits of every firm issuing the CP.

Issuing Norms:

As per the guidelines issued by RBI, a firm will issue CP's through same bank/consortium of banks from which it has a line of credit. In other words, instead of making loans and advances, the bank will deal in the issue.

Another underlying issue is the time dimension. The firms applying for issue of CP to RBI have to obtain credit rating, which should not be more than two months old. This implies that firm intending to issue CP has to obtain a fresh rating if time lapses.

Besides, once the RBI approves a firm's application, it has to make arrangement within 15 days for placing the CP privately.

Advantages: The advantages of commercial paper lie in its simplicity involving Hardly any documentation between the issuer and the investor and its flexibility with regard to, short-term maturity. A well rated firm can diversify its sources of finance from banks to the short term money markets at a somewhat cheaper cost, especially in a situation of easy money market. The CP provides investors with higher returns than they could obtain from the banking system. They have to pay-off their debts semi-annually i.e., for instance eight installments over a period

(c) Advances from customers: Firms engaged in producing or constructing costly goods involving considerable length of manufacturing or construction time usually demand advance money from their customers at the time of accepting their orders for executing their contracts or supplying the goods. This is a cost free source of working capital and really useful.

Bank credit: Commercial banks provide working capital to the firm in the form of cash credit, overdraft, bills discounting, bills acceptance, line of credit, letter of credit and bank guarantee. Banks do not sanction loans on a long term basis beyond a small proportion of their demand and time liabilities. Loans are granted I against tangible securities such as goods, shares, promissory notes, bills, etc. All forms of loans given by the banks are explained briefly as given below:

Cash credit: This facility will be given by the banker to the customers by giving certain amount of credit facility against security of inventory on continuous basis. The borrower will not be allowed to exceed the limits sanctioned by the bank.

Bank overdraft: It is a short term borrowing facility made available to the firms in case of urgent need of funds. The banks will impose limits on the amount they can lend. When the borrowed funds are no longer required, they can quickly and easily be repaid. The banks provide overdrafts with a right to call them in at short notice.

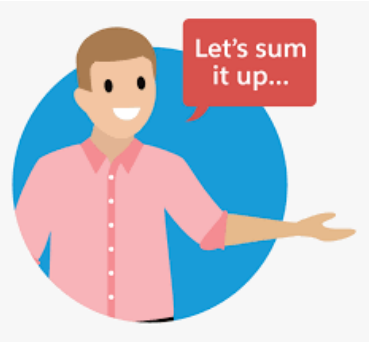
Bills discounting: The firm which sells goods on credit, will normally draw a bill on the buyer who will accept it and send it to the seller of The seller, in turn discounts the bill with his banker. The banker will generally earmarks the discounting bill limit.

Bills acceptance: To obtain finance under this type of arrangement, a firm draws a bill of exchange on bank. The bank accepts the bill thereby promising to pay out the amount of the bill at some specified future

Line of credit: It is a commitment by bank to lend a certain amount of funds on demand specifying the maximum amount.

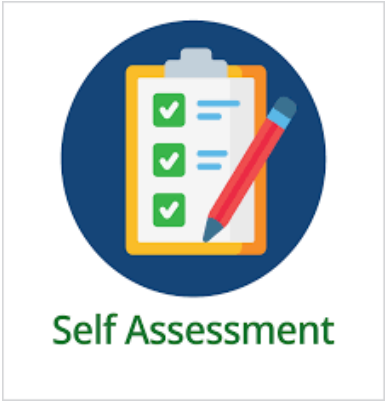
Letter of credit : It is an arrangement by which the on the the issuing bank instructions of a customer or on its own behalf undertakes to pay or accept or negotiate or authorise another bank to do so against stipulated documents subject to compliance with specified terms and conditions.

Bank guarantees: Bank guarantee is one of the facilities that the commercial banks extend on behalf of their clients in favour of third parties who will be the beneficiaries of the guarantees.



5.1.3 Let's Sum up

Working capital management involves administering a company's short-term assets and liabilities to ensure efficient operations and financial stability. It aims to balance liquidity and profitability, ensuring a company can meet its short-term obligations and maintain smooth operations. Effective management involves strategies like inventory, receivables, and payables management, enhancing operational efficiency, reducing financial risks, and improving profitability. Sources of working capital include both long-term (equity shares, preference shares, debentures, retained earnings, loans from financial institutions) and short-term sources (trade credit, commercial paper, advances from customers, and various forms of bank credit). Proper working capital management is essential for a company's survival, growth, and success.



5.1.4 Check Your Progress

1. What is the primary goal of working capital management?

A. Maximizing long-term profits

B. Ensuring a company can meet its short-term obligations

C. Minimizing tax liabilities

D. Reducing operational expenses

2. Which of the following is NOT considered a component of gross working capital?

A. Cash

B. Marketable securities

C. Long-term investments

D. Accounts receivable

3. What does net working capital represent?

A. The total value of a company's current assets

B. The difference between current assets and current liabilities

C. The total amount of a company's long-term debt

D. The total equity of a company

4. Which of the following is an example of a long-term source of working capital?

A. Trade credit

B. Bank overdraft

C. Issue of debentures

D. Commercial paper

5. What type of working capital is required to meet seasonal fluctuations in business activity?

A. Permanent working capital

B. Negative working capital

C. Temporary or variable working capital

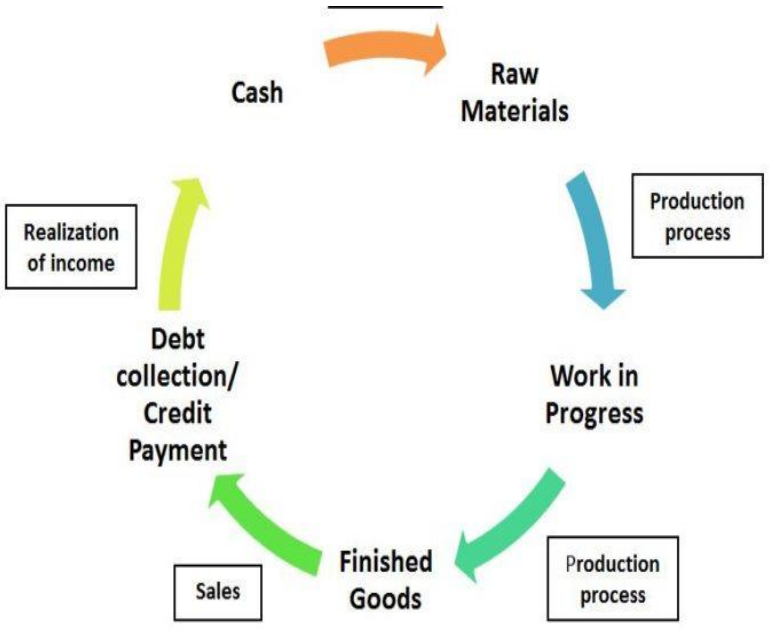
D. Positive working capital

5.2.1 Components of Operating Cycle and Working Capital:

The operating cycle, also known as the cash conversion cycle (CCC), is a key concept in business and finance. It measures the time it takes for a company to purchase inventory, sell the inventory, and collect cash from the sales. Understanding the operating cycle is crucial for managing working capital and ensuring liquidity. Here are detailed notes on the operating cycle:

Importance of the Operating Cycle

1. Liquidity Management: Helps in assessing a company's liquidity and ability to meet short-term obligations.
2. Working Capital Management: Aids in managing the levels of inventory, receivables, and payables to optimize cash flow.
3. Operational Efficiency: Provides insights into how well a company manages its operational processes.
4. Financial Planning: Assists in budgeting and forecasting cash flows to ensure sufficient working capital is available.



Source: https://bbamantra.com/tag/stages-of-operating-cycle/

The operating Cycle can be determined as given below:

	Days
Raw materials storage period	××
Add: Work-in-progress holding period	××
Finished goods storage period	××
Debtors collected period	××
Less: Creditors payment period	××
Operating cycle period	××

The various components of operating cycle can be calculated by using following formula given below:

(i)Raw materials storage period: $\frac{Average\ stock\ of\ raw\ materials}{Average\ cost\ of\ raw\ materials\ consumed\ per\ day} \times 365$

(ii)Work-in-progress holding period: $\frac{Average\ stock\ of\ W.I.P}{Average\ cost\ of\ production\ per\ day} \times 365$

(iii) Finished goods storage period: $\frac{Average\ stock\ of\ finished\ goods}{Average\ cost\ of\ goods\ sold\ per\ day} \times 365$

(iv) Debtors collection period: $\frac{Average\ account\ receivable}{Average\ credit\ sales\ per\ day} \times 365$

(v) Creditors payment period: $\frac{Average\ account\ payable}{Average\ credit\ purchase\ per\ day} \times 365$

Computation of required working capital

After having ascertained the period of one operating cycle, total number of operating cycles that can be completed during a year can be computed by dividing365 days with the number of operating days in a cycle. The total operating expenditure in the year when divided by the number of operating cycles in a year will give the average amount of working capital required.

2. Estimation of components of working capital method

As the working capital is the excess of current assets over current liabilities, the working capital requirements can be determined by estimating the amount of different constituents of working capital e.g., inventories, debtors, cash, accounts payable, outstanding expenses and prepaid expenses etc. The various constituents of working

capital have a direct bearing on the computation of working capital and the operating cycle. The holding period of various constituents of operating cycle may either contract or expand the net operating cycle period. Shorter the operating cycle period, lower will be the requirement of working capital and vice versa.

(A) Estimation of current assets

The estimates of various components of working capital may be made as follows:

(i) Stock of raw materials: Every manufacturing s firm has to maintain some stock of raw materials in stores in order to meet the requirement of the production process. The funds to be invested in stock of raw materials can be determined on the basis of production budget, the estimated cost per unit and average holding period of stock of raw materials by applying the formula.

(ii) Stock of work-in-progress: In any manufacturing firm, the production process is continuous and is generally consisting of several stages. At any particular point of time, there will be different number of units in different stages of production. Some of these units may be 10% complete, some may be 60% and some may be even 99% complete. These units, which can neither be defined as raw materials s nor as finished goods, are known as work-in-progress (or) semi-finished goods. The process time taken to convert materials into finished goods determines the investment needed for the work-in-progress. It includes the materials, labor and overheads incurred for work-in-progress. It may be presumed that the material cost is incurred initially and the labour and overheads content of work-in-progress are spent uniformly. Thus it is customary to take full cost of materials and half the cost of labour and overheads for the processing period as work-in-progress. The funds to be invested in work-in-progress can be estimated by using the formula.

(iii) Stock of finished goods: In most of the cases, some goods remain in stores for sometime before they are sold. Such unsold goods are called stock of finished goods. The cost which is already incurred in purchasing or production of these units is locked up and hence working capital is required for them. The period for which finished goods are expected to be in store determines the amount needed to finance the stock of finished goods. The funds to be invested in stock of finished goods can be estimated with the help of the formula.

(iv) Trade debtors: The term Trade debtors' represents the persons who have purchased goods on credit from the firm and have not paid for the goods sold to them. Goods sold on credit and credit period allowed to debtors are the determinants of the amount needed to finance debtors. The funds to be invested in trade debtors may be estimated with the help of the formula.

(B) Estimation of current liabilities

Current liabilities generally affect computation of working capital. Hence, theamount of working capital is lowered to the extent of current liabilities (other than bank credit) arising in the normal course of business. The important current liabilities like trade creditors and outstanding expenses can be estimated as follows:

(i) Trade creditors: The suppliers of goods on credit to the firm are known as Its trade creditors. Credit extended by suppliers and the period of delay permitted are the determining factors to estimate the liability to creditors. The amount payable to trade creditors can be ascertained by using the formula.

(ii) Outstanding expenses: Expenses like wages and overheads may be delayed by a few weeks in their payment. The cost of each outstanding expense should be separately calculated by using the following formula.

5.2.2 Factors Influencing Working Capital:

Working capital requirements depend on several factors that must be properly assessed to determine the right amount needed. These factors include:

1. Nature of Business:

Public sector undertakings like electricity, water supply, and railways need less working capital as they mostly have cash sales and provide services. They don't have funds tied up in inventories and receivables.

Trading and financial firms need less investment in fixed assets but require substantial working capital along with fixed investments.

2. Length of Production Cycle:

The longer the production process, the more raw materials and supplies need to be maintained over time, increasing labor and service costs until the final product is ready. Hence, longer manufacturing times increase the need for working capital.

3. Rate of Stock Turnover:

There is an inverse relationship between working capital and the speed of sales. A firm with a high stock turnover rate will require less working capital compared to a firm with a low turnover rate.

4. Business Cycle:

During economic booms, businesses need more working capital due to increased sales, higher prices, and business expansion. Conversely, during depressions, businesses contract, sales decline, and collecting from debtors becomes difficult, leading to higher working capital needs.

5. Earning Capacity and Dividend Policy:

Firms with higher earning capacities due to superior product quality or monopoly conditions can generate cash profits that contribute to working capital.

Firms that pay steady high cash dividends need more working capital than those that retain a larger portion of profits and pay lower dividends.

6. Operating Cycle:

The speed at which the operating cycle completes (cash → raw materials → finished product → accounts receivables → cash) significantly influences working capital needs.

7. Operating Efficiency:

Efficient use of resources minimizes the need for working capital. Improved operating efficiency enhances the use of working capital and speeds up the cash cycle, improving profitability and reducing pressure on working capital.

8. Price Level Changes:

Rising prices generally require higher investments in working capital. However, firms that can quickly adjust their product prices may not face severe working capital issues. The impact of price changes can vary depending on individual company conditions.

9. Degree of Mechanization:

Highly mechanized firms with low labor dependence require less working capital.

Conversely, labor intensive industries need more working capital to cover wages and related costs.

10. Growth and Expansion of Business:

Initially, firms have low working capital requirements. As they grow and expand, their need for working capital increases, especially for expansion programs.

11. Seasonal Variations:

Industries that operate seasonally, like sugar, oil, timber, and textiles, have higher working capital needs during certain seasons due to seasonal raw material supplies or sales periods.

12. Capital Structure of the Firm:

If shareholders provide funds for working capital needs, management finds it easier to manage. Firms relying entirely on external sources for both permanent and temporary working capital face difficulties, especially during tight money conditions.

13. Credit Policy:

Firms purchasing on credit and selling for cash need less working capital. Conversely, firms selling on credit without credit facilities need more working capital, influenced by prevailing trade practices and economic conditions.

14. Size of the Business:

Larger businesses with bigger operations need more working capital compared to smaller firms.

15. Production Policy:

Management's production policies affect working capital needs. Inventory levels and decisions on automation or labor intensity influence working capital requirements.

16. Profit Margin:

Firms with high profit margins, due to superior products or marketing, contribute more to working capital. Firms facing intense competition and lower profit margins need more working capital.

17. Liquidity and Profitability:

Firms willing to take more risks for higher gains reduce working capital relative to

sales, improving liquidity but potentially reducing sales and profitability. Firms must balance liquidity and profitability when deciding on working capital requirements.

18. Capacity to Repay:

A firm's ability to repay influences its working capital levels. Firms typically prepare cash flow projections according to repayment plans to determine working capital needs.

19. Value of Current Assets:

A decrease in the real value of current assets reduces working capital. Conversely, an increase in real value increases working capital.

20. Means of Transport and Communication:

Poorly developed transport and communication systems necessitate higher working capital to maintain large stocks of raw materials, spares, and finished goods at production and distribution points.

Advantages of Adequate Working Capital

1. Cash Discount:

Businesses can benefit from cash discounts by paying for raw materials and merchandise in cash, which reduces production costs if proper cash balances are maintained.

2. Sense of Security and Confidence:

Adequate working capital provides a sense of security and confidence to business executives, customers, creditors, and business associates.

3. Creditworthiness:

Prompt payment of dues helps establish the business's creditworthiness, allowing it to secure favorable terms for future borrowings.

4. Continuous Supply of Raw Materials:

With sufficient working capital, a firm can ensure a steady supply of raw materials through prompt payments.

5. Exploitation of Good Opportunities:

Adequate capital allows a business to take advantage of good opportunities, such

as making offseason purchases at reduced prices or accepting large supply orders that can lead to significant profits.

6. Increase in Productivity:

Proper management of current assets allows for the optimal use of fixed assets, which enhances overall productivity.

7. Attractive Dividends:

Sufficient working capital enables a firm to declare and distribute attractive dividends to shareholders, increasing the market value of its shares.

8. Meeting Unforeseen Contingencies:

Adequate working capital helps a firm handle unforeseen contingencies like financial crises, heavy losses, or business fluctuations.

Dangers of Redundant or Excessive Working Capital

1. Inefficient Management:

Excessive working capital indicates poor management, showing a lack of interest in expanding the business. Otherwise, the surplus would be utilized for growth.

2. Increased Capital Expenditure:

Having ample funds may lead to unnecessary spending on plant and machinery to boost production, which might not be justified if sales potential is lacking.

3. Overcapitalization:

Excessive working capital can lead to overcapitalization, which is detrimental to the firm's smooth operation and negatively impacts those associated with it.

4. Lower Return on Capital Employed:

A firm with excessive working capital might not earn an adequate return on its total investments, lowering the dividend rate and market value of its shares, causing capital loss to shareholders.

5. Misapplication of Funds:

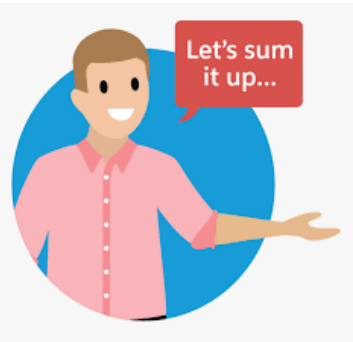
Firms with excess working capital may misuse funds, making unnecessary purchases that do not contribute to profitability and increasing maintenance costs and losses due to theft, waste, and mishandling.

6. Destruction of Turnover Ratios:

Redundant working capital disrupts turnover ratios, which are essential for conducting efficient business operations.

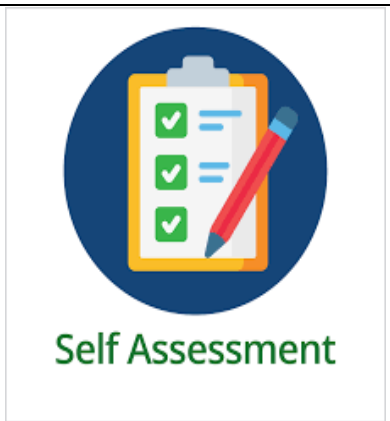
7. Liquidity vs. Profitability:

Excessive working capital may lead to an imbalance between liquidity and profitability, adversely affecting the firm's financial health and operational efficiency.



5.2.3 Let's Sum up

The operating cycle determines the working capital needed by calculating periods for raw materials, work-in-progress, finished goods, and debtor collection, minus creditor payment periods. Estimating working capital involves assessing components like inventories, debtors, and liabilities, which influence the net operating cycle and thus the working capital requirement. Factors such as business nature, production cycle length, stock turnover, economic conditions, and company size significantly impact working capital needs. Adequate working capital ensures benefits like cash discounts, creditworthiness, and handling unforeseen contingencies, while excess working capital can lead to inefficiencies, lower returns, and financial mismanagement. Balancing liquidity and profitability is crucial for optimal working capital management.



5.2.4 Check Your Progress

1. What does the operating cycle primarily measure?

A. The time taken to manufacture a product

B. The time between purchasing raw materials and receiving payment from customers

C. The time required to pay creditors after receiving payments from debtors

D. The time needed to sell finished goods in the market

2. How is the raw materials storage period calculated in the operating cycle?

A. (Average stock of raw materials) / (Average cost of raw materials consumed per day) × 365

B. (Average cost of raw materials consumed per day) / (Average stock of raw materials) × 365

C. (Average cost of raw materials consumed per day) × (Average stock of raw materials) / 365

D. (Average stock of raw materials) × 365 / (Average cost of raw materials consumed per day)

3. Which factor does NOT influence the working capital requirements of a business?

A. Production policy

B. Price level changes

C. Economic conditions

D. Long-term debt repayment schedule

4. What is one advantage of having adequate working capital?

A. Higher profitability due to reduced stock turnover

B. Increased risk of overcapitalization

C. Improved liquidity management

D. Reduced opportunity to exploit favorable market conditions

5. How does the length of the production cycle affect working capital needs?

A. Longer production cycles decrease the need for working capital

B. Shorter production cycles increase the need for working capital

C. Production cycle length has no impact on working capital needs

D. Production cycle length affects fixed assets, not working capital

5.3.1 Working Capital Requirements:

Computation of working capital required

After ascertaining the various constituents of working capital as discussed above, the difference between total current assets and total current liabilities is to be taken as required working capital. It may be prudent to add a certain percentage to contingencies.

The following is the Performa for estimation of working capital requirements:

Statement showing working capital requirements

Particulars	Rs.	Rs.
Current assets :		
(i) Stock :		
Raw materials	X X	
Work-in-progress :		
Raw materials (100%)	X X	
Labour (50%)	X X	
Overheads (50%)	X X	
	X X	
Finished goods	X X	
(ii) Trade debtors		X X
(iii) Cash balance		X X
		X X
		X X
Less: Current liabilities :		
Trade creditors	X X	
Outstanding wages	X X	
Outstanding overheads	X X	
		X X
Net working capital (CA-CL)		X X
Add : Provision for contingencies		X X
Working capital required		X X

5.3.2 Determination of Working Capital Requirements:

Estimation of working capital:

How to calculate or estimate working capital using this method?

For calculating the working capital, we would need 3 important things and they have estimated cost of goods sold, operating cycle time, and desired cash levels. The time of

cycle can be calculated using operating cycle formula.

Formula for calculating working capital requirement directly is as follows:

Working Capital = {Estimated Cost of Goods Sold * (Operating Cycle/ 365)} +Desired Cash and Bank Balance

Raw Material (RM) Stock: The formula for determining the RM stock is mentioned below. RM and many other calculations are based on estimated production units and therefore it should be calculated with utmost accuracy.

Estimated Production Units * Per Unit Cost of RM * (RM Holding Period / 365 Days)

Finished Goods Stock: In Finished Goods workings, we have to know the cost of production with the help of the previous year cost sheets or budgeted cost sheets of the company's products.

Estimated Production * Per Unit Cost of Goods Produced * (Finished Goods Holding Period / 365 Days)

Accounts Receivables: This calculation is simple and we just need to put the estimates and average collection period right.

Estimated Production * Selling Price * (Collection Period / 365 Days)

Illustrations

Illustration: 1

From the following information extracted from the book of the manufacturing company, compute the operating cycle in days:

Period covered: 365 days

Average period of credit allowed by suppliers: 16 days

Rs.		
Average total debtors outstanding	4,80,000	
Raw materials consumption	44,00,000	
Total production cost		1,00,00,000
Total cost of sales		1,05,00,000
Sales for the year		1,60,00,000

Value of Average stock maintained:

Raw materials	3,20,000
Work –in-progress	3,50,000
Finished goods	2,60,000

Solution:

Statement showing operating cycle

Particulars	Days
(a)Raw materials held in stock	
$\frac{Averagestockofrawmaterials}{Rawmaterialsconsumptions} \times 365 = \frac{3,20,000}{44,00,000} \times 365$	=27
(b)Work-in-progress:	
$\frac{AveragestockofW.I.P}{Production} \times 365 = \frac{3,50,000}{1,00,00,000} \times 365$	= 13
(c)Finished goods held in stock:	
$\frac{Averagestockoffinishedgoods}{costofsales} \times 365 = \frac{2,60,000}{1,05,00,000} \times 365$	= 9
(d)Credit period allowed to debtors:	
$\frac{Debtors}{Sales} \times 365 = \frac{4,80,000}{1,60,00,000} \times 365$	= 11
	60
Less: Average credit period allowed by	
Creditors	16
Net operating cycle period	44

Illustration :2

Determine the working capital requirements of a company from the information given below:

Operating cycle components:

Raw materials	=	60 days
W.I.P	=	45 days
Finished goods	=	15days
Debtors	=	30 days
Creditors	=	60 days

Annual turnover=73 lakh; Cost of structure (as % of sale price) is Materials 50%, Labour30%, Overheads 10% and profit =10%. Of the overheads, 30% constitute

depreciation.

Desired cash balance to be held at all times Rs.3 lakh.

Solution:

Working notes:

(i)Calculation of % of WIP cost under total Approach

WIP cost % = Materials+50% of Labour and OH

= 50% + 50% of (30% + 10%)

= 70%

(ii)Calculation of % of WIP cost under cash cost Apporach

WIP cost % = Materials +50% of Labour and OH minus depreciation

=50% +50% of (30% +7%)

= 68.5%

Statement showing calculation of Effective days of operating cycle

Particulars	Gross days	Total Approach		Cash cost Approach	
		Cost%	Effective days	Cost%	Effective days
Current Assets:					
Raw materials	60	50%	30.00	50%	30.00
WIP	45	70%	31.50	68.5%	30.825
Finished goods	15	90%	13.50	87%	13.05
Debtors	30	100%	30.00	87%	26.10
Total	150		105		99.975
Less: Current Liability	60	50%	30	50%	30.000
Creditors	90		75		**69.975**
Operating cycle					

Statement showing Working Capital Requirements

Particulars	Total Approach	Cash cost Approach
Working capital (Based on sales) Add: Minimum cash balance required Required Working Capital	$73,00,000 \times \frac{75}{365}$ =15,00,000 = 3,00,000 18,00,000	$73,00,000 \times \frac{69,975}{365}$ =13,99,500 = 3, 00,000 16,99,500

Note: In order to determine working capital requirements, two conceptual approaches are followed i.e. Total approach and Cash cost approach. Under cash cost approach, all expenses and profit margin are considered. Under cost approach, only cash expenses (excluding depreciation) are considered.

Illustration:3

X Co. desires to purchase a business and has consulted you and one point on which you are asked to advise to advise them is the average amount of working capital which will be required in the first year's working

You are given the following estimates and are instructed to add 10% to your computed figures to allow for contingencies.

Figure for the year

(i) Average amount locked up in stocks:	Rs.
Stock of finished goods	5,000
Stock of stores and materials	8,000
(ii) Average credit given:	
Inland sales -6 weeks	3,12,000
Export sales - $1^1/_2$ weeks	78,000

(iii) Lag in payment of wages and other outgoings:

Wages- $1^1/_2$ weeks.	2,60,000
Stores, materials etc. - $1^1/_2$ months	48,000
Rent, royalties ete. -6 months	10,000
Clerical staff salary - $^1/_2$ month	62,400
Manager salary – $^1/_2$ month	4,800
Miscellaneous expenses - $1^1/_2$ months	48,000

(iv) Payment in advance:

Sundry expenses (paid quarterly in advance) 8,000

(v) Undrawn profits on the average throughout the year. 11,000

Set up your calculations for the average amount of working capital required.

Solution:

Statement of Working Capital Requirements

Particulars	Rs.	Rs.
Current Assets:		
Stock:		
Finished goods	5,000	
Stores, materials, etc.	8,000	13,000
Debtors:		
Inland sales: (3,12,000× $^6/_{52}$)	36,000	
Export sales: (78,000× $^{1.5}/_{52}$)	2,250	38,250
Advance Payment of expenses (8,000× $^3/_{12}$)		2,000
Total Current Assets(A)		53,250
Current Liabilities:		
Outstanding wages (2,60,000× $^{1.5}/_{52}$)		7,500
Outstanding stores, materials etc. (48,000× $^{1.5}/_{12}$)		
Outstanding rent, royalties (10,000× $^6/_{12}$)		6,000
Outstanding clerks' salary (62,400× $^{0.5}/_{12}$)		

Outstanding manager's salary (4,800× $^{0.5}/_{12}$)	5,000
Outstanding mis. Expenses (48,000× $^{1.5}/_{12}$)	2,600
Total Current Liabilities (B)	200
Excess of current assets over current liabilities (A)	6,000
Add: 10% for contingencies (25,950 ×10%)	27,300
Average working capital required	25,950
	2,595
	28,545

Work it Out…

1.Calculate the operating cycle of a company which gives the following details relating to its operations:

	Rs.
Raw materials consumption per annum	8,42,000
Annual cost of production	14,25,000
Annual cost of sales	15,30,000
Annual sales	19,50,000
Average value of current assets held:	
Raw materials	1,24,000
Work-in-progress	72,000
Finished goods	1,22,000
Debtors	2,60,000

The company gets 30 days credit from its suppliers. All sales made by the firm are on credit only. You may take one year as equal to 365 days.

2.From the following details, determine the working capital requirements of the company:

Operating cycle components:

Raw material stock	30 days
WIP	20 days
Finished goods	10 days

Debtors	30 days
Creditors	20 days

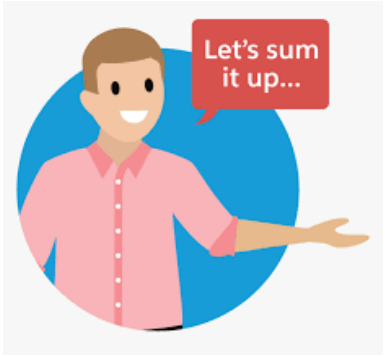
Annual turnover:Rs.36 Lakh, Cost structure (as% of sale price) is: Materials 50%, Labour 30%, Overheads 10% and Profit 10%. Of the overhead, 30% constitute depreciation

Desired cash balance to be held at all times: Rs. 1 lakh.

3.From the following estimates, calculate the average amount of working capital required:

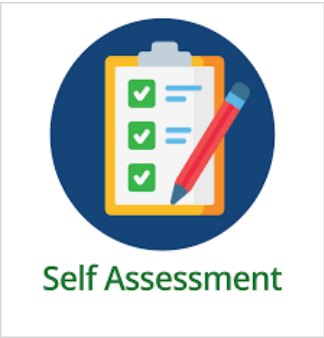
	P. a (Rs.)
(a)Average amount locked- up in stocks:	
Sock of finished goods & W.I.P	10,000
Stock of stores, materials, etc.	8,000
(b)Average credit given:	
Local sales: 2 weeks credit	1,04,000
Sales outside the state: 6 weeks credit	3,12,000
(c)Time available for payment:	
For purchases: 4 weeks	78,000
For wages: 2 weeks	2,60,000

Add 10% to allow for contingencies



5.3.3 Let's Sum up

The process of determining working capital involves calculating the difference between current assets and current liabilities, with a provision for contingencies added for safety. Key components include stock levels of raw materials, work-in-progress, finished goods, trade debtors, and cash balances. Estimating these requires accurate figures for production units, costs, and holding periods, calculated over a typical operating cycle. The formula for working capital combines estimated cost of goods sold with the operating cycle adjusted for daily periods, plus desired cash reserves. This approach ensures businesses have sufficient liquidity to cover operational needs and contingencies efficiently.



5.3.4 Check Your Progress

1. What is the primary purpose of estimating working capital in a business?

A. To determine profitability ratios

B. To assess long-term financing needs

C. To ensure liquidity for daily operations

D. To calculate return on investment

2. What does the term "work-in-progress" typically refer to in the context of working capital?

A. Finished goods ready for sale

B. Raw materials awaiting production

C. Goods being produced but not yet completed

D. Goods sold but not yet paid for

3. Why is it important for businesses to estimate trade debtors when calculating working capital?

A. To assess investment opportunities

B. To determine credit sales effectiveness

C. To negotiate better supplier terms

D. To calculate profit margins

4. How does the provision for contingencies impact the calculation of working capital requirements?

A. It reduces the need for current assets

B. It increases the need for current liabilities

C. It provides a buffer for unexpected expenses

D. It lowers the overall profitability

5. What is the main advantage of maintaining adequate working capital in a business?

A. Higher return on investment

B. Reduced cost of goods sold

C. Improved credit rating

D. Increased fixed asset turnover

5.4.1 Unit Summary

- Working capital refers to the funds required for day-to-day operations.
- Components of working capital include cash, inventory, accounts receivable, and accounts payable.
- The operating cycle measures the time taken to convert inventory into cash through sales.
- Factors influencing working capital include business size, industry type, credit terms, and operational efficiency.
- Determining working capital requirements involves analyzing current assets and liabilities.
- Forecasting working capital needs ensures sufficient liquidity for uninterrupted operations.
- Effective working capital management optimizes cash flow and reduces financial risk.
- Understanding working capital components helps in maintaining operational efficiency.
- The operating cycle analysis aids in identifying areas for improvement in cash conversion.
- Proper working capital planning supports organizational stability and growth.

5.4.2 Glossary

Operating Cycle	The time it takes for a company to purchase raw materials, convert them into finished goods, sell the goods, and collect cash from customers. It represents the period from inventory purchase to cash receipt.
Cash Conversion Cycle	A metric that measures how long it takes for a company to convert its investments in inventory and other resources into cash flows from sales.
Trade Credit	The practice of purchasing goods or services on account, allowing businesses to delay payment to suppliers, thereby influencing working capital requirements.
Net Working Capital	The difference between current assets and current liabilities, indicating the liquidity available to meet short-term obligations.

5.4.3 Self – Assessment Questions

1. Explain the concept of working capital and its significance in a business.
2. Differentiate between gross working capital and net working capital with examples.
3. Identify and describe the primary components of working capital.
4. How does the operating cycle impact the working capital needs of a business?
5. Discuss the various stages of the operating cycle and how each stage affects working capital.
6. List and explain at least five factors that influence the working capital requirements of a business.
7. How do seasonal variations in demand affect working capital requirements?
8. Describe the process of determining or forecasting working capital requirements for a manufacturing company.
9. What role does inventory management play in maintaining an optimal level of working capital?
10. How can a company effectively manage its receivables to improve its working capital position?

Activities / Exercises / Case Studies

1. Form a small group and provide a financial statement to find the bills receivable and payment
2. Select a company in your city and identify the current liabilities & assets of the company.

Answers for check your progress

Module 1

1. B. Ensuring a company can meet its short-term obligations
2. C. Long-term investments
3. B. The difference between current assets and current liabilities
4. C. Issue of debentures
5. C. Temporary or variable working capital

Module 2

1. B. The time between purchasing raw materials and receiving payment from customers.

	2. A. (Average stock of raw materials) / (Average cost of raw materials consumed per day) × 365 3. D. Long-term debt repayment schedule 4. C. Improved liquidity management 5. B. Shorter production cycles increase the need for working capital **Module 3** 1. C. To ensure liquidity for daily operations 2. C. Goods being produced but not yet completed 3. B. To determine credit sales effectiveness 4. C. It provides a buffer for unexpected expenses 5. C. Improved credit ratings

5.4.4 References & Suggested Readings

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