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BUSINESS INSIGHTS AND ANALYSIS



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PESTEL ANALYSIS (I) - POLITICAL, ECONOMIC AND SOCIAL ENVIRONMENT

IN THIS CHAPTER

1. Introduction to external environment
2. Introduction to political environment
3. The spectrum of political ideologies
4. Impact of political ideologies on businesses
5. Managing the government policies by businesses
6. Introduction to economic environment
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1 INTRODUCTION TO EXTERNAL ENVIRONMENT

1.1 Definition of Environment

The environment or external environment of an organisation is a term that describes *anything outside an organisation that affects* what it does or how it acts.

1.2 Environmental scanning

Environmental scanning, or analysing the external environment, is a process to collect and analyse information about an organisation's external environment for improved planning and decision-making. Analysing the external environmental factors is important because these factors can significantly influence the organisation's activities, profitability and overall performance. Therefore, management should continuously monitor developments in external environment and evaluate how the organisation should respond effectively to remain competitive and achieve its objectives.

A famous method of environmental scanning is known as 'PESTEL Analysis'. PESTEL is an abbreviation of:

- P – Political factors which are linked to the government (state) and its policies
- E – Economic factors which are linked to the state of the country's economy
- S – Social factors which are linked to the characteristics of society or people living in the society
- T – Technological factors which are linked to the state of technology, its awareness and adoption
- E – Ecological (Environmental) factors which are linked to the natural environment of the country
- L – Legal factors which are linked to applicable laws and regulations of the country

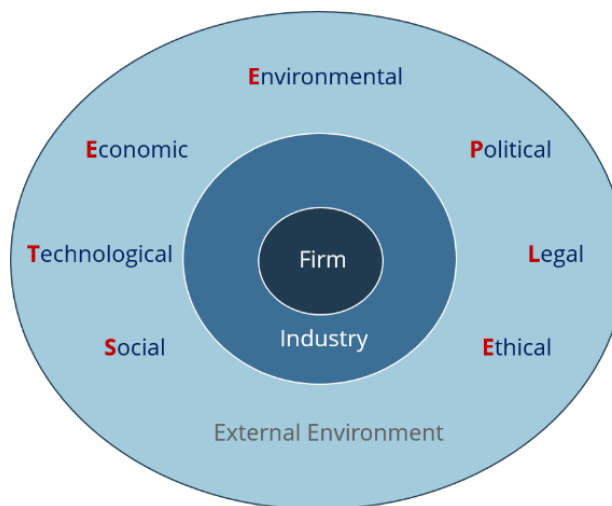


Figure 1.1

1.3 Purpose of PESTEL Analysis

The purpose of PESTEL Analysis is to scan the external environment of a country or a region to assess whether it is suitable to:

- continue the existing products or services of a business in that country (region) or
- launching a new product or service in that country (region) or
- establishing a new business in that country (region).

POLITICAL ENVIRONMENT

2 INTRODUCTION TO POLITICAL ENVIRONMENT

2.1 Evolution of politics

Politics in the world started since the establishment of society after agricultural revolution. The ideas and implementation of politics has been evolving since then according to the experiences of individual society and their needs.

2.2 Definition of politics

Today we cannot find a single definition of politics which can satisfy the intrinsic values held by individual and society.

According to **Vladimir Lenin**, "politics is the most concentrated expression of economics. The definition of politics varies from person to person depending on their concept of society.

According to Sir Bernard Rowland Crick,

Sir Bernard Rowland Crick, prominent British political thinker defines it as, ""politics is a distinctive form of rule whereby people act together through institutionalized procedures to resolve differences, to conciliate diverse interests and values and to make public policies in the pursuit of common purposes."

2.3 Impact of political policy

Politics is focal point of society that has direct or indirect impact on the state, society, individual, economy and government. Business activity is always dependent on the political policy and decision making. It is the prerogative of the government to adopt or discard policies conducive for business.

2.4 Factors determining the political setup of a country

The political setup in any country depends upon various factors such as,

- Political ideology of the ruling political party, and of the people in the society. There are several political ideologies propounded in the previous three centuries that govern the modern world. All of them have their origin in Europe.
- Existing laws and regulations
- Socio-religious norms and constraints.
- Political opposition and their economic agendas.

2.5 Importance of political environment for business executives

In today's world various elements of the society such as business and politics have become integrated, and they are interdependent in various ways on each other. For any business executive it has become imperative to have an understanding of this complex relationship.

The major indicators of the prospective policy making are visible beforehand and business managers must be cognizant of it. To become an effective business manager, one should take into consideration the political environment for business, and then capitalize on the opportunity available and mitigate potential risks.

3 THE SPECTRUM OF POLITICAL IDEOLOGIES

Points of difference	Communism	Socialism	Democracy	Democratic Capitalism	Dictatorial Capitalism
Alternative Names	Extreme left Radicals; (or) Dictatorial socialism	Democratic socialism (or) Left wing liberals	Centre Moderates.	Right Wing Laissez Faire; (or) Conservatism	Fascist Capitalism; (or) Extreme left Reactionaries
Means of production	All means of production must be in hands of state.	The most important means of production must be in hands of state with few exceptions.	Balance of public and private ownership for means of production.	Least ownership of means of production by state	Significant control by state over means of production
Private property	No private property is allowed.	Private property is allowed.	Private property is allowed.	Maximum private property	Private property as prescribed by ruling regime.
Distribution of output	Production and Distribution of output or earnings by the state as per needs of people.	Distribution of output amongst people should be based on their input.	State must play role of guardian for all.	Large corporations can flourish in this system and charge their consumers as much as they want.	N/A
Individual freedom	No individual freedom in making choices for consumption.	No individual freedom	Yes, individual freedom is recognised.	Individual liberties are recognized with few exceptions	No individual freedom
Nature of society	Egalitarian (Equal class-less society) where every has equal material	Everyone is equal in front of law but differentiate people based on their ability and contribution	International cooperation for the benefit of all however they also recognize their national interests.	Elitist and oligarchy (rule by the few rich and powerful) Law favours elite class of society. Maintain status quo	Extreme inequalities Authoritarian Rule
Religion	There is no room for 'organized religion'. However individual religion is supported in some form.	Religion is allowed in this system.	Full religious freedom.	Religious practice in all forms is allowed.	N/A

Points of difference	Communism	Socialism	Democracy	Democratic Capitalism	Dictatorial Capitalism
Attainment of goals/ State ideology	Change through any means possible including violence.	They favour change through peaceful means. Implementation of ideology through social change.	They want change but not at the cost of tradition. Slow social change.	Attainment of national interest over international cooperation.	Implementation of ideology through any means possible, including violence. Protection of national interest at all costs.
Key terms (Features)	N/A	collectivism, economic equality, social service and nationalization.	N/A	Individualism, private ownership, self-interest, Free market, open competition, privatization	N/A
Supporters	Stalin and Lenin	Fabián	J.S. Mill, Keynes and F.D. Roosevelt	Friedman, Hayed, Reagon and Thatcher	Hitler, Mussolini and Franco
Countries	Soviet Union	Sweden	Canada	United States	Spain Germany Italy

4 IMPACT OF POLITICAL IDEOLOGIES ON BUSINESSES

4.1 Importance of political ideologies

Many political decisions taken by ruling party have serious economic and business implications. In the past communists and other leftists favoured state control and were against private capital, particularly foreign investment and international control over local business and property. On the other hand, USA allows and encourages private ownership (for reference see the previous chart). Important economic policies such as industrial policy, policy towards foreign capital and technology, fiscal policy and foreign trade policy are often political decisions. Therefore, a business manager has to be familiar with the ideologies and past approaches of key political parties to analyse possible future policies of existing and forthcoming ruling parties.

The goal of any government is to run the country according to their respective ideology for the attainment of economic prosperity and political stability.

4.2 Five political factors (political decisions) affecting businesses

The following are several ways in which political factors are affecting business in today's world, or can affect, as well as some of the ways to prepare for – and mitigate – the associated risks.

4.2.1 Government spending

The direction of state spending depends on its inherent political ideology and influences the business community. Governments inclined towards left-wing normally spend more on public sphere, free health, education for all, services, and welfare of all which can create opportunities for businesses in these sectors. On the contrary right-wing states spend more on defence, international security, alliances, expansion of influence over other states (neo-imperialism), which leads to increased demand for businesses in such industries.

4.2.2 Taxation policies

Taxation is a key mechanism through which states earn for spending and building public resources. Political ideologies may propose different sorts of taxation which may have a massive effect on a business' overheads and profit margins. For example, left-wing states often advocate and impose higher taxes on companies and high-income individuals to fund its welfare activities. Taxation policies are often used to promote political ideologies of ruling party and may be used:

- Higher taxes may be imposed to reduce disposable income of individuals and companies thereby reducing their private expenditures
- Tax revenue is used by states to develop infrastructure in form of roads, highways, public schools, colleges, hospitals or even parks and playgrounds
- State may use taxation to exercise control over the private sector investment and certain business activities
- Government may offer tax exemption to foreign companies in order to improve country's business competitive position

As an example, the Republican Party in the US and the Conservative Party in the UK are a clear illustration of parties who favour tax cuts as a route to helping businesses grow. A good state is the one which collects tax under its prescribed laws from all taxable individuals and business. Specially for direct taxes that are paid by the citizens of the state directly based on their incomes and wealth, if the state fails to broaden the tax net to all taxable persons and businesses, then it creates disparities and frustration in the hearts of tax payers and the state is ultimately forced to go for indirect tax which is equal on all.

4.2.3 Economic policies

Different political parties or individuals enact different policies to guide national economy based on their own economic ideologies. This means that politics can impact different sectors in varying ways. A pro-agriculture political approach may offer subsidised loans to farmers for procurement of superior quality seeds, fertilizers, pesticides and agricultural machinery but compromising to pay attention to other non-agricultural sectors. An ideology relying on non-agriculture sector for economic growth may manage economy that is not conducive for agriculture sector. Businesses must not only examine the economic policies of the country regularly but also assess the stability of such policies so they can adapt its business strategies to get benefit from prevailing economic framework.

4.2.4 Labour laws

Political parties are often vocal on their stances regarding labour laws including minimum wages, insurance requirements, labour-related taxes and regulation on the terms of employment. Any change in labour laws can mean a change in expenses for a business, and these expenses can be significant for small businesses. Over regulation may adversely impact the ease of doing business. Today local labour laws are also affected by international labour regulations. For example, Western developed economies do not allow imports from such countries who do not ensure labour health and safety policies and child labour. The regulations are so strict that the buyers from such countries send their inspectors on regular basis to exporting partners for inspection and certifications.

4.2.5 International relations and foreign policy

Foreign policy is one of the important parts of political mindset. An ideology that support good international relations and welcomes foreign investments will have direct impact on sustainability of local businesses. On the other hand, a protectionist policy may have different impact. We live in an increasingly interconnected world where even small businesses have global supply chains.

5 MANAGING THE GOVERNMENT POLICIES BY BUSINESSES

5.1 Introduction

In modern democracies, entrepreneurs and businesspeople are not without influence. They often engage in pressure groups and lobbying as means of shaping government decisions and policies. Businesses also play a vital role in contributing to the economy and reducing unemployment. Therefore, a business manager should remain mindful of the impact and activities of pressure groups within the business community.

Businesses may pursue following approaches to protect their interests:

5.2 Financial incentive strategy

Businesses may gain a position where they can pursue a financial incentive strategy to use their economic leverage to influence public policymakers. Economic leverage occurs when a business uses its economic power to threaten to leave a city, state, or country unless a desired political action is taken. Economic leverage also can be used to persuade a government body to act in a certain way that would favour the business.

5.3 Promoting a Constituency-Building Strategy

The businesses may influence the political environment by seeking support from organizations or people who are also affected by the public policy or who are sympathetic to business's political position. Its objective is to shape policy by mobilizing the broad public in support of a business organization's position. Firms use advocacy advertising, public relations, and building coalitions with other affected stakeholders. Some of the influencing approaches are as follows:

Stakeholder Coalitions

Businesses may try to influence politics by mobilizing various organizational stakeholders— employees, stockholders (shareholders), customers, and the local community—to support their political agenda. If a political issue can negatively affect a business, it is likely that it will also negatively affect that business's stakeholders. Often, businesses organize programs to get organizational stakeholders, acting as lobbyists or voters, to influence government officials to vote or act in a favourable way.

Advocacy Advertising

A common method of influencing constituents is advocacy advertising. Advocacy ads focus not on a particular product or service, like most ads, but rather on an organization's or company's views on controversial political issues. Advocacy ads, also called issue advertisements, can appear in newspapers, on television, or in other media outlets.

Trade Associations

Many businesses work through trade associations —coalitions of business organizations in the same or related industries—to coordinate their efforts in promoting common interests of the industry, such as the Federation of Pakistani Chambers of Commerce & Industry. Other examples of trade associations include the Overseas Investors Chambers of Commerce and Industry (OICCI), American Business Council (ABC), the All Pakistan Textile Manufacturers Association (APTMA), or the Pakistan Automotive Manufacturers Association (PAMA).

The associations represent numerous businesses with millions of trade potential and include businesses of all sizes, sectors, and regions. The associations also organize to publish widely circulated magazines and newsletters to broadcast its developments and other messages.

There are various industrial associations that act in unison upon certain political and public policy initiatives. Such as the All Pakistan Textile Mills Association (APTMA) voices its concerns over the load shedding of electricity and hike in industrial tariffs. Moreover, organizations like the Overseas Investors Chambers of Commerce and Industry (OICCI) is a body which is represented by all private companies and businesses to channel its concerns and interests collectively to make an impact and promotion of business-friendly policies so that their investment in the country is put to good use.

Managing the Political Environment through Public Affairs Department

At an operational level, in many organizations, the task of managing political activity falls to the department of public affairs or government relations. The role of the public affairs department is to manage the firm's interactions with governments at all levels and to promote the firm's interests in the political process. The creation of public affairs units is a global trend, with many companies in developed countries initiating sophisticated public affairs operations.

ECONOMIC ENVIRONMENT

6 INTRODUCTION TO ECONOMIC ENVIRONMENT

6.1 Defining the economic environment

The economic environment refers to external factors and the broader economic trends that can impact a business.

6.2 Types of economic environment

Economic environment can be classified into microeconomic and macroeconomic environment.

- Microeconomic environment relates to consumers behaviour, market environment, competition in the market and demand and supply forces prevalent in the marketplace.
- Macroeconomic environment relates to broad economic factors that affect the entire economy and all of its participants, including individual business. The focus of this chapter is macroeconomic factors that are analysed on the basis of economic indicators.

7 ECONOMIC CYCLE

7.1 Defining the economic cycle

The economic cycle is a term used to describe how, in general, the *national income of a country increases or decreases* from one year to the next year.

7.2 Stages of economic cycle

- When national income increases from one year to the next, there is **economic growth**.
- When national income decreases from one year to the next, there is **economic recession** (or in extreme cases, economic decline).

Specifically, economic cycle has four stages mentioned in the following diagram as Boom (peak), recession, depression (trough) and recovery.

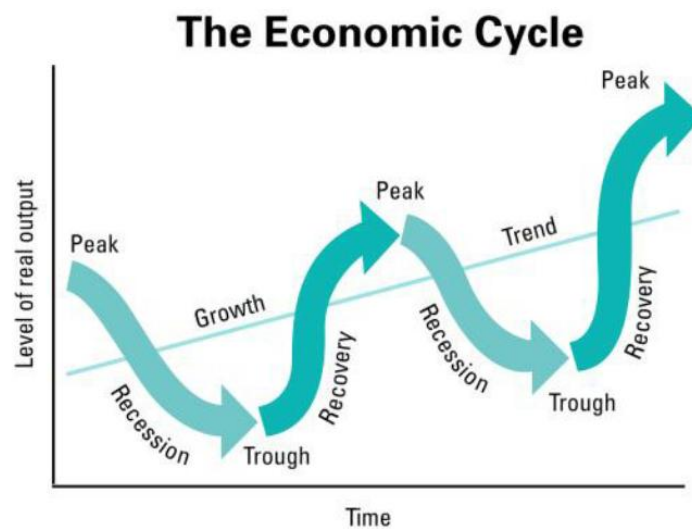


Figure 1.1

7.3 Role of State

An economic cycle consists of several years of economic growth, with national income each year being higher than in the previous year, followed by economic recession, which is a period of years during which national income is falling. Government economic policy usually tries to achieve continued economic growth, but if recession becomes unavoidable, policy is then aimed at making the recession as short and as minor as possible.

7.4 Role of business managers

Business managers need to be cognisant of the stage of economic cycle in order to make and implement effective business strategy. For example, in a period of economic depression, it is probably not a good idea to launch a new product

8 ECONOMIC INDICATORS

8.1 Definition of economic indicator

An economic indicator is a piece of economic information on a macroeconomic level, that helps in evaluating the overall health for economy of a country.

8.2 Types of economic indicators

Economic indicators can be classified as follows:

- Leading economic indicators
- Coincident economic indicators
- Lagging economic indicators

a) Leading economic indicators

These indicators are used to forecast at what stage the economy will be in, at some time in the future. These indicators, in particular give an indication for whether a peak or trough will be reached in the following 3-12 months.

Examples include:

- Stock market index
- Index of business confidence
- Manufacturers' new orders
- New building permits for private housing society
- The money supply

b) Coincident economic indicators

These indicators are events and measures that occur at the same time as a peak or trough occurs. These are used by governments to assess at what stage in the cycle the economy is in.

Examples include:

- Gross Domestic Product (GDP)
- Number of people in employment
- Industrial production
- Personal incomes
- Manufacturing and trade sales

Lagging economic indicators

These indicators are used to assess whether an economy has reached a peak or trough 3-12 months after it would have occurred.

Examples include:

- Consumer Price Index (i.e. level of inflation)
- Unemployment
- Interest rates
- Average income
- Balance of Trade

8.3 Leading indicator - stock market index

8.3.1 Introduction

The stock market is considered as one of the leading indicators of where the economy will be in the near future. The performance of a stock market is measured through stock market index such as KSE 100 index, KSE All share index, KMI all share index and KMI 30 share index. Stock market indices portray investors' confidence in the capital market that provide the basis for flow of capital for businesses. High stock indices therefore reflect potentially positive business prospects. Stock market index is the index of the market capitalisation of a section of the stock market.

8.3.2 Market capitalisation

Market capitalisation is the market value of a publicly traded company's outstanding shares. It is equal to the share price multiplied by the number of shares outstanding. It measures a company's worth on the open market, as well as the market's perception of its future prospects. It reflects what investors are willing to pay for its stock. It is a tool used by investors to describe the market and to compare the return on specific investments.

Market capitalization could be based on:

Methods	Market capitalisation
Full CAP	= Market value per share x Number of all shares issued by the company
Free float	= Market value per share x Number of shares trading actively

Free-Float means proportion of total shares issued by a company that are readily available for trading at the Stock Exchange. It generally excludes the shares held by controlling directors, sponsors, promoters, government and other locked-in shares, not available for trading in the normal course.

Full-cap includes all of the shares issued by a company.

8.3.3 Stock Exchange Indices

Stock exchange indices are leading indicators that group companies in a specific category, sector or performance. Indices are calculated through market capitalization. Some key indexes relevant in the context of the Pakistan Stock Exchange are as follows:

a) KSE-100 index

This is the most recognised index of Pakistan Stock Exchange which includes the largest companies on the basis of market capitalization. The index represents 85% of all the market capitalization of the exchange. It is calculated using Free Float Market Capitalization methodology. The KSE100 has a base value of 1000 as of November, 1991.

b) All Share Index

It consists of all listed companies on PSX based on Full Cap methodology.

8.3.4 Stock Exchanges Indices and Business Decisions

The stock market's movements can impact companies in a number of ways. The rise and fall of share price values affects a company's market capitalization and therefore its market value.

Businesses also consider stock performance in decisions related to issue of shares. If a stock is performing well, a company might be encouraged to issue more shares because they will be able to raise more capital at a higher value with less control dilution.

The higher market value of a company will also discourage other companies while considering mergers and/or acquisitions.

Companies may hold shares as cash equivalents, fall in value of shares can lead to funding problems. On the other hand, increase in the shares value of a company may generate interest for new products or businesses and it will improve liquidity position of the company because company is hold shares as cash equivalents.

8.4 Coincident indicator – Gross Domestic Product (GDP)

8.4.1 GDP and GDP per capita

Gross domestic product is a monetary measure of the total market value of all the final goods and services produced within a country in a specific time period. The GDP figure can be expressed as the GDP per capita (i.e. the GDP per head of population) in order to compare different economies. GDP per capita is often considered an indicator of a country's standard of living, though it is not a measure of personal income.

8.4.2 Computation of GDP

Formula: Gross domestic product $GDP = C + I + G + (X - M)$

Where:

- C = amount of consumption in the economy
- I = amount of investment in the economy
- G = amount of government spending in the economy
- X = amount of exports from the economy
- M = amount of imports into the economy

8.4.3 Inclusion and Exclusions in GDP

GDP is the total output from all of the sectors of an economy:

- Primary sector (agriculture, mining etc.)
- Secondary sector (manufacturing and construction; and
- Tertiary sector (services)

GDP does not include services and products that are produced by the nation in other countries. In other words, GDP measures products only produced inside a country's borders.

8.4.4 Real GDP vs Nominal GDP

The GDP for a particular year is measured by two ways, nominal GDP and real GDP.

- **Nominal GDP** is the value of GDP evaluated at current prices in a specific time period, this includes the impact of inflation and is normally higher than the GDP.
- **Real GDP** is an inflation adjusted value of GDP. It expresses the value of goods and services produced in a country in base-year prices. Since it is an inflation-corrected figure so it is deemed to be an accurate indicator of economic growth.

8.5 Lagging indicator – Inflation

8.5.1 Definition and measurement of inflation

Inflation is the increase in price levels over time. The rate of inflation is measured using one or more price indices or cost indices, such as a Consumer Price Index (CPI) or a Retail Price Index (RPI) or an Index of Wages Costs.

8.5.2 Implications of high inflation for Businesses

Businesses are affected by inflation, because inflation means that they have to pay more for resources, such as materials and labour. They will try to pass on their extra costs to their customers, by raising the prices of their own goods and services. Individuals have to pay higher prices for goods and services, so they need more money to pay for them. If they are employed, they might demand higher wages and salaries.

The 'inflationary spiral' can go on indefinitely, with increases in materials and wages pushing up prices of finished goods, which in turn leads to higher wages and materials costs.

It is also recognised that the rate of inflation is affected by inflationary expectations. This is the rate of inflation that businesses and individuals expect in the future. Inflationary expectations affect demands for wage rises, and decisions by businesses to raise their prices.

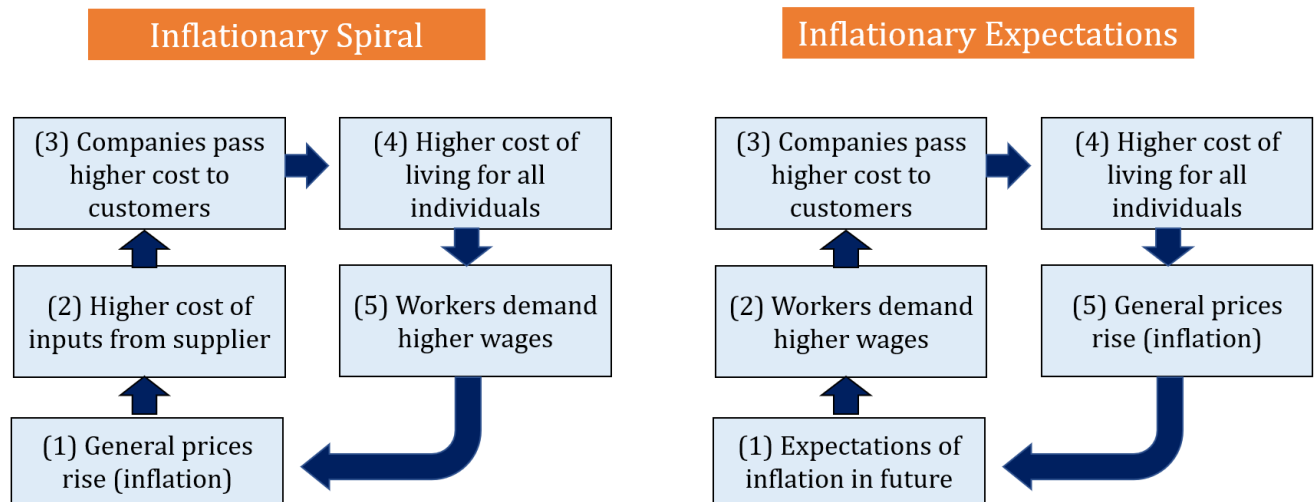


Figure 1.2

8.5.3 Implications of high inflation and inflationary expectations for the national economy

Inflation also has implications for the national economy and economic growth.

Increases in national income are the result of two factors:

- an increase in the 'real' quantity of goods and services produced and the 'real' spending on goods and services, and
- increases due to higher prices and costs.

It is possible for measured national income to increase when the real economy is in recession. For example, suppose that measured national income increases from one year to the next by 3% but inflation during the year was 5%. This indicates that the 'real' economy has gone into recession, and is 2% lower.

Experience has shown that when the rate of inflation is high, and inflationary expectations are high, the 'real' economy is likely to stagnate or go into recession.

Inflation, however, may serve as an *incentive for producers to produce more* seeing higher prices and profits, which results in increasing the real output and income. Economists therefore usually hold that some inflation is necessary to induce economic growth.

A government might therefore take the view that some inflation is unavoidable (although in some countries there has been deflation – a fall in retail prices). However, the rate of inflation and inflationary expectations should be kept under control, to give the 'real economy' an opportunity to grow.

8.5.4 Implications of high inflation for society

Although some inflation might be unavoidable, it has unfortunate social and economic implications, because it results in a shift of economic wealth.

In a time of inflation, debts such as bank loans fall in real value over time. Borrowers gain from the falling real value of debt. At the same time, lenders and savers lose because the value of their loan or savings falls. For example, an individual with cash savings might be earning 3% after tax when inflation is 5%: if so, he is losing 2% in real terms each year. The effect of inflation is therefore to *shift wealth from savers and lenders to borrowers*.

Another effect of inflation is to reduce the real value of households on fixed incomes or incomes that rise by less than the rate of inflation each year, such as many pensioners. The rich might get richer (because their income is often protected against inflation, for example by salary rises) whilst the poor get poorer.

8.6 Lagging indicator – Interest rate

8.6.1 Introduction to interest rate

Interest rate is the amount of interest charged by the lender on the sum borrowed or the amount paid by the bank on the amount deposited. Interest rates are expressed as annual percentages.

Although interest is generally defined as the cost of using money, interest rate as a macroeconomic variable usually refers to the regulated interest rate set by the monetary authorities (The State Bank in Pakistan) to be observed by the commercial banks for all their dealings. This is the base rate on which all other market interest rates like those offered by banks to their depositors and charged from lenders depend. The Karachi Interbank Offered Rate, commonly known as KIBOR, is a daily reference rate based on the interest rates at which banks offer to lend unsecured funds to other banks in the Karachi wholesale (or "interbank") money market

8.6.2 Implications for increase in interest rates

An increase in interest rates will *discourage investment* as it would be more difficult for companies to earn an adequate return on projects. However, it might *encourage people to save*, thus resulting in availability of more funds for investment which would put downward pressure on interest rates some time in future.

Consumption would fall for a number of reasons:

- High interest rates encourage people to save. This would put a downward pressure on consumption.
- High interest rates would result in lower disposable income for those people with loans and mortgages.
- High interest rates make it more expensive to borrow. This would reduce consumption.

For example, the banking sector's profitability increases with an increase in interest rate. Institutions in the banking sector, such as retail banks, commercial banks, investment banks, insurance companies and brokerages have large cash holdings in the form of customer balances and other business activities.

Increases in the interest rate directly *increase the return on this cash deposits* and the proceeds directly add to earnings. The benefit of higher interest rates most significantly impacts brokerage houses, commercial banks and regional banks.

Another example could be taken from the textile sector. An increase in interest rate has increased the *cost of doing business* in the industry which makes it less competitive in the international market especially when compared to countries like Bangladesh and Vietnam which are taking a larger share of textile exports. Due to a fall in demand for exports and domestic sales, the industry could decide to *lay off some of the workforce* which would give rise to unemployment.

Due to high interest rate, financing cost also increases significantly and *hinders investments* in expansion of production facilities or upgradation of technology and equipment. An increase in mark-up rates can also cause *defaults on loans and their servicing* by the textile industry.

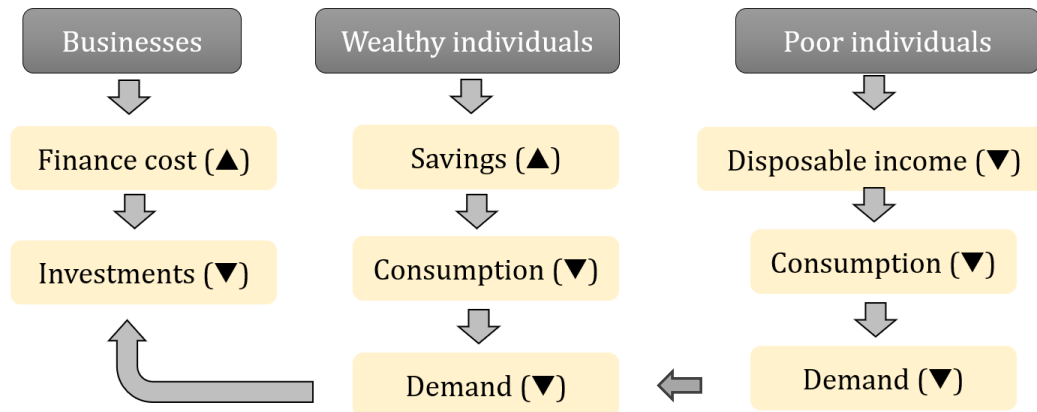


Figure 1.3

8.6.3 Implications for decrease in interest rates

A decrease in interest rates would *encourage investment* as it would be easier for firms to earn an adequate return on projects. However, it might *discourage saving*, thus resulting in a reduction in funds available for investment which would put upward pressure on interest rates.

Consumption would rise for a number of reasons:

- Low interest rates discourage saving.
- Low interest rates result in higher disposable income for those people with loans and mortgages.
- Low interest rates make it less expensive to borrow. This would increase consumption.

Due to the resulting decrease in the overall import bill, a lowered interest rate will allow for greater capital investments, eventual job creation and improvements in technology, research and development.

8.7 Lagging indicator – Unemployment

8.7.1 Definition

When there are many people who are unwillingly out of work, this means that there are not enough jobs for the people who want them. Business organisations could take on more labour if they wanted to, but they choose not to.

8.7.2 Causes of unemployment

When there is economic recession and demand for goods and services is falling, many firms will make some employees redundant because their profits are falling and some aspects of their business are no longer profitable.

Sometimes unemployment is caused by shortage of skilled labour needed by businesses. As the technological complexity of industry increases, the demand for low-skilled jobs might fall and the demand for skilled labour rises.

8.7.3 Managing shortage of workforce skills

Such a shortage of skilled labour can be managed through:

- better standards of education
- more training
- if necessary, moving jobs to other countries where there is a better supply of skilled labour.

8.7.4 Implications of high level of unemployment

a) For economy

High level of unemployment is un-welcome in an economy because:

- individuals who want jobs cannot get them (and high unemployment is damaging to society and the welfare of the people)
- economic growth is less than it could be: if the unemployed individuals could be given work, output in the economy would increase and there would be economic growth.

b) For businesses

Unemployment means that an economy is not making full use of the workers that are available. The economy will not grow as quickly as it could and it may start to slow down. This downturn in economic activity will directly affect businesses.

High unemployment will mean that many households will have less income. For many businesses, this will result in lower sales as *people reduce spending*. However, the demand for some products and services will still increase because consumers would *swap to cheaper alternatives*. For example, supermarkets' own-brand products will be sold more as they are considered lower priced than branded alternatives. Also, people might prefer to *buy locally produced goods* rather than imported ones and local companies might have to increase production due to higher demand.

Businesses that benefit when there is an increase in unemployment will also have *more workforce available to choose from*, if they need more staff in periods of higher sales/demand. Businesses looking to recruit people may also be able to *offer relatively lower pay* and still attract new staff.

8.8. Lagging indicator - Balance of payments (BOP)

8.8.1. Definition

The balance of payments (BOP) measures the financial transactions made between consumers, businesses and the government in one country with others.

8.8.2. Computation of BOP

It is calculated by adding up the value of all the goods that are exported (i.e. sold to other countries) and imported (i.e. bought from other countries).

It is made up by a combination, in a country, of:

- the current account
- the capital account
- official financing account

For every country: **Surplus or deficit on trade in goods and services = Net outflow or inflow of capital**

For example, if a country has a surplus of \$10 billion on its foreign trade in goods and services; it also transfers \$10 billion in capital flows to other countries. Similarly, a country with a deficit of \$25 billion on its trade in exports and imports receives net transfers of \$25 billion in capital.

8.8.3 Implications of BOP

The balance of payments data is an important indicator for investment managers, government policymakers, the central bank, businessmen, etc. Businesses use BOP to examine the market potential of a country, especially in the short term.

A country with a large trade deficit is not as likely to import as much as a country with a trade surplus. If there is a large trade deficit, the government may adopt a policy of trade restrictions, such as quotas or tariffs and manufacturing businesses who are dependent on imports, for example, to *import machinery and equipment would experience an increase in costs*.

Also, businesses that import raw material for their products would also have to *pay higher due to tariffs or experience shortage due to quotas* and hence make adjustments to their pricing and inventory decisions.

For example, if a government faces a negative balance of payments, it would ideally *promote industries focused on export* such as textile and related value-added products. On the other hand, it would *curb imports of luxury items* such as packaged food, chocolates or confectionary.

Moreover, an incentive for the automobile manufacturers to invest in local manufacturing would reduce pressure on imports by reducing the inflow of vehicles manufactured abroad. Some governments may also go to the extent of protection of local manufacturers through import tariffs to support the automobile sector and improve large trade gaps.

SOCIAL ENVIRONMENT

9 SOCIAL ENVIRONMENT AND ITS INFLUENCE ON BUSINESS

9.1. Introduction

Businesses operate within society to serve the needs of its people. The values and culture of a business should align with the social environment in which it operates. The social environment includes the behaviours, attitudes, social tendencies, and demographic characteristics of the population, all of which influence business operations.

Business organizations and their managers should stay well informed about changes in the social environment and respond in a timely manner. Failure to recognize and adapt to these changes can render a company's products and services irrelevant, making it difficult to meet customer needs effectively.

9.2. Social, cultural and demographic factors affecting businesses

Social factors in the environment refer to changes in habits, tastes, values and preferences. In the short-term social attitudes and habits are also affected by fashion.

Cultural factors are the customs, traditions and behaviours of people in a given country it also includes fashion trends and market activities influencing actions and decisions.

Demographic factors are concerned with a specific aspect of society – the size, spread and distribution of society.

Some key factors that have a significant influence on businesses are:

- Attitudes and lifestyles
- Socio-cultural values and ethics
- Demography – age, gender, ethnicity, population, etc.
- Wealth distribution – income and social status
- Health and Education
- Law and order situation

9.2.1. Attitudes and Lifestyle

Attitude is a settled *way of thinking or feeling* about something or someone whereas lifestyle is the *way of living* of the people in society. Consumer lifestyles and attitudes are continually changing. The constant shift of culture due to globalisation and rapid advancements in technology impact consumer's practices of buying certain products, responding to advertisements and venturing out to certain places. These preferences and values influence consumer lifestyles and as a result business must continuously monitor and adapt to these changes to remain competitive.

By gaining an in-depth knowledge about consumer preferences, as well as tracking changing patterns, businesses can create and benefit from opportunities. For example, with the younger generation being more aware of current trends through social media, a lot of parents now rely on their children while making purchases such as a new laptop or television. Also, when all the information is available on the internet with a click, the trend of reading newspapers is almost obsolete. Today people buy products based on the ratings and reviews of previous consumers and this is new trend is increasing day by day which significantly affects business strategies and their performance.

i. Cultural influence on business

Globalization has also enabled companies to produce the same items for different regions as customers all over the world follow similar or popular trends. However, strong differences still remain among the choices that consumers make based on cultural beliefs. Businesses must relate to these differences, especially if they are entering a new region or country as a market.

For example, there is more focus on family values and joint family units in Eastern countries, therefore multinational companies often use family gatherings and occasions as the backdrop of their advertisements.

Similarly, fast food chains in these regions offer multiple family deals to cater to the size and need of family gatherings and these deals are the most revenue generating for these MNCs.

Furthermore, cultural preferences influence product demand. For instance, a tea manufacturer would sell more volume of tea in UK rather than US as consumers in North Americas are predominantly coffee lovers. This is just a cultural preference among the two nations which would affect businesses of both tea and coffee.

Businesses must also adapt their products to align with local tastes. Many international companies initially struggle when entering new markets because the products they offer may not align with cultural preferences. To succeed, they often introduce regionally inspired flavors and product variations that cater to local tastes and consumer expectations.

ii. Social and culture responsiveness

It refers to people's attitude to work and wealth; role of family, marriage, religion and education; ethical issues and social responsiveness of business. The social environment of a given region can have a significant impact on success. For instance, Food companies are highly impacted by this – certain cultures prefer certain types of foods.

9.2.2. Socio-cultural Values and Ethics

Ethics is defined as the “discipline dealing with what is good and bad and with moral duty and obligation”. Business ethics is concerned with truth and justice and has a variety of aspects such as expectations of society, fair competition, advertising, public relations, social responsibilities, consumer autonomy, and corporate behaviour in the home country as well as abroad.

Moral management strives to follow ethical principles and precepts, moral managers strive for success, but never violate the parameters of ethical standards. They seek to succeed only within the ideas of fairness, and justice.

Moral managers follow the law not only in letter but also in spirit. The moral management approach is likely to be in the best interests of the organization in the long run. They practice and portray the following values:

- Honesty
- Integrity
- Trustworthiness
- Loyalty
- Fairness
- Responsibility (Corporate Social Responsibility)
- Obedience to elders
- Respect of others
- Righteous means of earning.

9.2.3 Demography

9.2.3.1 Definition

Demography is the study of key statistics about the society or a certain segment of it such as their age, gender, race and ethnicity, and location.

9.2.3.2 Importance of Demography

Demographic factors are uncontrollable factors in the business environment and extremely important in the business environment. Demographics help the businesses define the markets for their products and services. It also determines the size and composition of the workforce.

Demographics are at the heart of many business decisions. Businesses today must cater to the unique shopping preferences of different generations or age groups, each of which require different marketing approaches and products and services that are targeted to their needs. Today all the brands of all kinds of merchandise open their stores and sales points based on the demographic study of any city or area within a city. Such decisions are often guided by factors like the buying power and lifestyle patterns of the residents in a particular location.

i. Age groups

Such as the consumers born after 2000 are called the millennials. Since they have been exposed to so much change in the world as compared to their parents, they have a changed outlook about everything and therefore demand products and services that are more aligned to their mentality.

Millennials now make up a significant portion of the global population and therefore play an important role in business marketing strategies. They are technologically savvy, financially empowered, and enjoy comparatively higher disposable incomes. With greater access to choices than previous generations, they are open to exploring diverse products and services. Unlike their parents, they tend to embrace a more individualistic lifestyle and prefer spending on experiences and conveniences that enhance their quality of life.

Other consumers such as Generation X – People born between 1965 and 1980 – and the baby boomers – born even before – between 1946 and 64 – have their own spending patterns.

Many boomers are nearing retirement and have money that they would prefer to spend on health and comfort or other leisure activities of their later years. In South Asian countries, these people could also be a good target market for long-term investment prospects as they would like to leave their children in a financially stable position. As the population ages, businesses are offering more products that appeal to middle-aged and senior markets.

ii. Ethnicity and nationality

In addition, minorities represent more than 38 percent of the total population in the US, even greater numbers are present in Canada, Australia and the Middle East, with immigration bringing millions of new residents to different countries over the past several decades. By 2060 the U.S. Census Bureau projects the minority population to increase to 56 percent of the total U.S. population.

Companies recognize the value of increasing diversity in their workforce as a reflection of the society and encourages the experience they bring with them that gives a broader view to a business' overall strategy.

For the economy, the buying power has of minorities has also increased significantly as they bring their life savings to a new country and spend to settle into a new life. Therefore, companies are developing products and marketing campaigns that target different ethnic groups.

The discussion above highlights the role of target markets and the buying power of diverse consumer groups. Ethnic diversity is also an important factor in building prosperous and progressive businesses. Organizations with a multinational workforce and leadership have been shown to create significant value by encouraging inclusivity, innovation, and broader market reach. Such practices also help strengthen consumer trust and identification with the brand across different regions.

iii. Ageing population

For some Western countries, especially countries of Western Europe, there is an ageing indigenous population. The birth rate is historically low, and the number of new babies per woman of child-bearing age has fallen.

Traditional family system is not being appreciated and birth rate has fallen down which is a major cause for the lack of working age groups population.

At the same time, average life expectancy has been increasing. More people are living until an older age than in the past.

As a consequence, there is an ageing population, which means that a larger proportion of the population than in the past will be of an older age – say past normal retirement age.

Governments are aware that the consequence of this demographic change is that in the future, there might be a relatively small working population and a relatively large number of people in retirement. The 'few' in work might be expected to support the 'many' in retirement, for example by paying taxation to fund state hospital services and many thousands of retired civil servants.

iv. Government policy for demographic change

A government might try to develop a policy for social and demographic change. For example, in a country with an ageing population, the government might consider the following measures.

- Permitting immigration of people from other countries, possibly under a controlled immigration scheme, in order to increase the size of the population at working age.
- Increasing the average age at which individuals may retire with entitlement to a state pension.
- Encouraging individuals to work beyond their normal retirement age.
- Providing some form of subsidy or tax-incentive to individuals/couples who have children.

Business organisations are affected by social and demographic change, and by government policy. As a population changes, in age or ethnic origin, the needs and wants of consumers will change. Businesses must respond to those changes.

In addition, the nature of the workforce – its age distribution, availability and skills – will also change. Issues such as education and training take on importance for ageing employees as well as young employees, if companies intend to employ them beyond their normal retirement age.

v. Migrated or immigrant population

In the modern world, international boundaries are becoming less significant due to constant and increasing migration across countries for various reasons. In many Western nations, the number of babies born to the local population has been decreasing in recent years, whereas the number of babies born to migrant populations is comparatively higher.

This is directly affecting the market and businesses in Western world. Where there used to be only Western choices now there is a large market for the Eastern goods and products which are consumed by the migrants and their second generation born there.

9.2.4. Wealth distribution – income and social status

Socio-economic issues affect consumer spending such as poverty and unemployment. These issues demand special attention from business on businesses as they have to develop policies/support systems/ informative programs to address them and also consider these factors while introducing products and services in the market.

Businesses are also expected to create as many job opportunities as possible to contribute to the government's role in addressing these issues. This could add to the financial burden on the business.

Moreover, businesses must define their target markets based on different income groups. For instance, companies offering luxury products are unlikely to promote them through low-visibility advertising channels. In contrast, retailers that cater to middle- and lower-income segments often emphasize affordability and variety, promoting their offerings in ways that ensure broad reach across these groups.

9.2.5 Health

Health and well-being are important for businesses to prosper in a society. Healthy individuals can contribute to economic progress in a country. Social indicators such as life expectancy and birth/death rates direct businesses to formulate an appropriate strategy.

Birth rates and life expectancy are important social indicators related to health that businesses use while doing business planning. For example, a higher birth rate would indicate a greater need for baby products such as formula milk and diapers.

Life expectancy indicators could have vital implications for the health insurance companies as they market their insurance plans and health plans.

Also, a nation with a higher life expectancy is equipped with a larger labour force and has positive implications for businesses such as manufacturing and production industries.

Moreover, for industries related to drugs, pharmaceuticals and medical equipment the health and well-being statistics are an important factor to devise business strategies.

For example, COVID-19 has changed the business scenario for the entire world. Where there have been positive growth opportunities for pharmaceutical companies and communication technology, industries such as travel and tourism have been affected adversely.

Lastly during the Covid-19 business all over the world was affected heavily due to the lockdowns and some countries these lockdowns lasted several months. The businesses learnt how to work around the restrictions and to stay afloat and relevant to the market. For example, we saw in Karachi that after few weeks of total lockdown the shopkeepers, retailers, wholesalers, mobile market, appliances sellers etc. all posted banners on their closed shops with their social media contacts for orders and home delivery. They all were forced to create social media contact with their potential buyers and proved a social media platform as alternate.

9.2.6 Level of Education

Businesses compete in a global economy that requires increasingly higher levels of education and training. Illiteracy among the population threatens the ability of businesses to compete on a global level. If a country falls behind other countries in education and training for its workforce in science, technology, math and engineering, it puts businesses at a disadvantage in competing globally with better educated workers.

Moreover, companies also adapt their advertising and communication according to the literacy and awareness of their target market.

Literacy and education also affect business expansion into other countries where there is a large business potential but setting up operations and transfer of technology becomes difficult if proper human resource is unavailable in the country or region.

There is another side to the education and skill set. Traditionally the directly qualified professionals from educational and training institutions were regarded as hot cakes in the market and they were highly paid. This is the case today as well however a trend has also penetrated in the market, and it has garnered acceptability. According to many reports people with no college degree are also given jobs in many multi-national organisations based on their ability of problem solving and teamwork.

9.2.7. Law and order situation

Any unlawful and harmful act related to loss of goods in a business due to robbery, theft, corruption or hijacking impacts the business and the environment it operates in.

A negative law and order situation in either a specific vicinity, city or entire country would affect the business negatively as well. The following are some negative effects of an unfavourable law and order situation;

- Loss of staff and customers.
- Insurance/security costs become expensive.
- Loss of profits due to stolen goods from businesses.
- Business loses skilled people resulting to a decline in productivity.
- Businesses spend money on installing effective security measures e.g. alarms, burglar proofing.
- Cost of damage to property increases as businesses pay higher insurance premiums to protect themselves.
- Lower profits affect the decision to expand and employ more people/pay higher wages.
- Crime causes increase in health costs of employees due to injuries or stress.
- Discourages foreign investment and reduces tourism which impacts negatively on business

10 SELF-TEST QUESTIONS

1 Spring 2022 (iii):

Free market and open competition are the elements of _____ ideology.

- (a) democratic
- (b) radicals
- (c) dictatorial
- (d) communist

2 Spring 2022 (vi):

Advocacy advertising focuses on:

- (a) a particular product that needs marketing support
- (b) core services offered by an organization
- (c) an organization's CSR activities
- (d) an organization's views on controversial political issues

3 Autumn 2022 (viii):

Which of the following is the coincident economic indicator?

- (a) Industrial production
- (b) New private house building permits
- (c) Unemployment
- (d) Balance of trade

4 Spring 2023 (xiii):

Businesses may try to influence the government policies by mobilizing employees, shareholders, customers, etc. to support their agenda. This method of influencing is called:

- (a) Advocacy Advertising
- (b) Stakeholder Coalition
- (c) Trade association
- (d) Public Relation

5 Spring 2023 (ix): Which TWO of the following options are NOT 'Coincident economic indicators'?

- (a) Industrial production
- (b) Index of business confidence
- (c) Number of people in employment
- (d) Stock market index

6 Autumn 2023 (iv):

Nowadays, consumers increasingly rely on ratings and reviews from previous buyers, especially through online means, when making purchasing decisions. This is an example of which social factor:

- (a) Attitudes and lifestyles
- (b) Demography
- (c) Law and order
- (d) Health

7 Autumn 2022 (Q 2):

WMB is a large multi-national automobile company that has automobile assembly plants in over twenty-four countries including Rawada where it holds the largest market share by reach and revenue. Rawada's government is considering to put a complete ban on imports of all automobiles and their parts in order to promote local automobile manufacturers, which is going to have an adverse impact on WMB's operations in Rawada.

Required:

Explain any four approaches that WMB can use to influence government to re-think its stance of complete ban on imports of all automobiles and their parts. Also provide an example for each approach. **(08)**

8 A multinational company is planning to enter into the electric vehicle (EV) industry and is evaluating potential markets. It has shortlisted three countries each representing a distinct political setup:

- **Ayeland:** The state controls major industries, including energy, transportation, and healthcare, ensuring that essential services prioritise public welfare over private profits. Businesses operate under strict regulations, and social benefits such as free education, healthcare, and housing are funded through high taxation. While the economy remains stable, some argue that excessive state control limits innovation and individual ambition.
- **Beeland:** The economy is market-driven, with minimal government intervention. Private enterprises dominate industries, and competition dictates wages, prices, and technological advancements. While economic freedom allows individuals to accumulate wealth, income inequality is rising. Social benefits are limited, and financial success depends largely on personal effort and market conditions.
- **Ceeland:** The government exercises complete control over the economy, dictating production, distribution, and business operations. Private ownership is restricted, and industries are run in alignment with state policies. Citizens receive state-provided services, but personal freedoms, including dissent against the government, are heavily restricted. Economic decisions prioritize collective welfare, but critics argue that a lack of competition stifles efficiency and innovation.

Required:

- (a)** Identify the political ideology of each country.
- (b)** Recommend which country offers the most favourable political environment for a multinational company seeking to enter the electric vehicle (EV) industry? Provide a well-reasoned recommendation based on the given facts.

ANSWERS

1. Option (a) is correct answer. Free market and open competition are the elements of **democratic** ideology.
2. Option (d) is correct answer.
Advocacy advertising is a form of advertising that focuses on promoting an organization's views or positions on controversial political or social issues, rather than marketing support for a particular product or service. The goal of advocacy advertising is to persuade the audience to support the organisation's stance on the issue, often by creating an emotional connection with the viewer.
3. Option (a) is correct answer. Industrial production is a coincident indicator.
4. Option (b) is correct answer.
5. Option (a) and (d) are correct answers because stock market index and index of business confidence are leading economic indicators rather than coincident indicators
6. Option (a) is correct answer i.e., Attitude and lifestyles.
7. Influencing the Government decision of complete ban on imports

(i) Financial Incentive Strategy

Businesses may gain a position where they can pursue a financial incentive strategy to use their economic leverage to influence public policymakers.

► Example

WMB can offer financial support to government in support of the pressing issues faced by the country e.g., if reducing pollution is a government priority, then WMB can initiate projects and offer financial support in reducing carbon emission and managing its adverse impact to the environment.

(ii) Stakeholder Coalitions

WMB may try to influence politics by mobilizing various organizational stakeholders - employees, stockholders, customers, and the local community - to support their political agenda.

► Example

WMB can organize programs to get organizational stakeholders, acting as lobbyists or voters, to influence government officials to vote or act in a way that would not put a complete ban on imports of automobiles and parts.

(iii) Advocacy Advertising

WMB can influence constituents by using advocacy advertising. Advocacy ads focus not on a particular product or service, like most ads, but rather on an organization's or company's views on controversial political issues.

► Example

WMB can run adverts that would advocate its value addition to the country and society. It can run ads on supporting taxes or generating employment or fostering innovation/growth to advocate import of necessary and relevant goods.

(iv) Trade Associations

WMB can work with trade associations to influence government policy. As trade associations represent numerous businesses, government tend to give greater weight to the views of trade associations than they do to individual businesses.

► Example

WMB can work with trade associations to publish content on widely circulated magazines and newsletters to broadcast and educate how imports help better the automobile industry.

8. (a) Identification of Political Ideologies

- **Ayeland**

The country represents a Socialist ideology because:

- The government controls major industries and ensures public welfare through high taxation and strict regulations.
- While the economy is stable, excessive state control may limit private sector autonomy, innovation, and competition.

- **Beeland**

The country represents a Capitalist ideology because:

- A free-market economy with minimal government intervention.
- Private enterprises drive industries, wages, and prices, leading to economic growth and innovation.

- **Ceeland**

The country represents a Communist ideology because:

- The state maintains full control over economic activities, restricting private ownership and ensuring economic decisions align with government objectives.
- The lack of competition and individual economic freedom can hinder innovation and efficiency.

(b) Recommendation

Beeland (Capitalism) is the most favourable choice for a multinational company entering the EV industry because open market, minimal government intervention, and strong competition provide an environment where private investment and innovation can thrive. While challenges such as income inequality and limited government support exist, the overall economic freedom and market-driven growth outweigh these concerns, making Beeland the ideal location for EV industry expansion.

PESTEL ANALYSIS (II) - TECHNOLOGICAL, ECOLOGICAL, AND LEGAL ENVIRONMENT

IN THIS CHAPTER

1. The impact of technological change on working methods
2. Technological disruption and business environment
3. Case studies on effects of disruption in major industries
4. Ecological (environmental) factors affecting businesses
5. Legal environment affecting businesses
6. Self-test questions

TECHNOLOGICAL ENVIRONMENT

1. THE IMPACT OF TECHNOLOGICAL CHANGE ON WORKING METHODS

1.1. Introduction

Over the years, machines have replaced man for mechanical tasks. Now new and latest machines are replacing the old machines frequently. Computers have replaced man for many mental tasks and intellectual jobs. The impact of computers on business organisations can be summarised as:

Computers have replaced man for many data processing and information analysis tasks. Humans have been used for the 'higher level' intellectual tasks and skills tasks that computers have not been able to perform

Computers are taking over from humans even some high level intellectual and analytical tasks.

1.2. The impact of technological change on products and services

The point should be fairly obvious, but you should also remember that technological change has a huge impact on the nature of products and services that businesses offer to customers.

In order to remain competitive, companies need to maintain technological developments in the design and manufacture of products, and in the provision of services.

► **Example:**

Nokia is a recent example that could not update its technology and could not compete the competitors.

A current example has been the competition between manufacturers of televisions, to achieve a technological lead in the development of televisions with the latest 'flat screen' technology.

Technology has shifted from manual buttons to remote and now to the touch screens.

1.3. The impact of technological change on organisation structure and strategy

Technological change has also had an effect for many businesses on their structure and strategy. Computerisation, communications technology and other aspects of technological change have led to major developments in business such as:

- downsizing
- de-layering
- outsourcing.
- Restructuring of hierarchy of organization

To some extent, these developments in business organisation are inter-related.

1.3.1 Downsizing

Downsizing means the *reduction in size of a business organisation*. It does not (necessarily) mean that the business organisation is selling fewer goods or services. It means that its business activities are conducted by a *smaller number of people*.

Technological change makes downsizing possible, because tasks that were performed previously by humans can now be performed by machine or computer.



Figure 2.1

1.3.2. De-layering

‘De-layering’ means *removing one or more levels of management* in the organisation structure. It could mean removing all layers of middle management entirely, leaving just senior managers and front-line managers and supervisors.

De-layering is made possible by *high-quality communications*, provided that senior management can delegate sufficient authority to junior managers, and expect junior managers to meet their responsibilities.

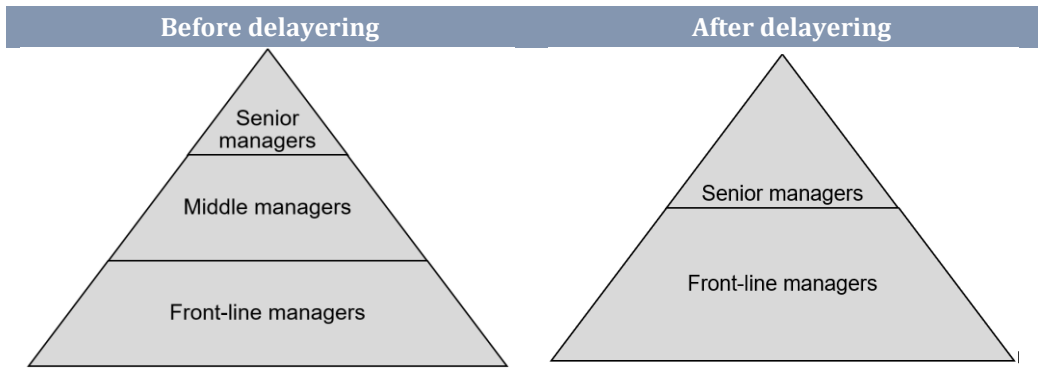


Figure 2.2

When an organisation goes through a de-layering, middle managers are made redundant, and there is consequently some downsizing.

1.3.3. Outsourcing

Definition

Outsourcing means hiring for other business organisations to perform some administrative tasks, or management tasks, instead of having to employ individuals to do the task internally, as part of the organisation’s own activities.

Tasks that might be outsourced

For example, the following tasks might be outsourced.

- A company might arrange for an external accountancy firm to take over the *administration of the payroll*, and administer wages and salaries for the company’s workforce.
- A company might arrange for an external building services company to take over responsibility for *cleaning and security* in all its buildings.
- A company that produces motor cars might outsource the *manufacture of most (or even all) of the component parts*, so that its only ‘in-house tasks’ are product design, assembly, testing and marketing.
- Many companies outsource their *IT requirements* to specialist IT firms.
- Some companies outsource most of their *office administration tasks*, such as record keeping and word processing.

Reasons for outsourcing

The reason why outsourcing is now popular in many countries is that it can take advantage of specialisations. The conceptual argument in favour of outsourcing is as follows:

- A business succeeds in its competitive markets because it is more successful at doing some things better than its competitors. A successful business has some **core competences** that enable it to succeed and do better than rivals.
- A business also has to do other tasks that support its main activities, such as office administration, IT support, building and facilities administration and payroll. It does not have any particular skills in these activities, and there are other companies that can do these tasks just as well, and in some cases much better.

- When a business performs all these noncore activities itself, this diverts management attention away from the core competences. Management should focus on its strengths, not the routine and ordinary.
- It should therefore outsource 'noncore' activities and concentrate on its core activities, to make sure that it maintains or improves its competitive advantage over rivals.

Outsourcing is made much easier by high-quality telecommunications and computer systems, because data and information can flow easily between a business and the other organisations to which it has outsourced activities.

Outsourcing is sometimes advisable because of technological competencies also. For example, many ERP vendors now offer cloud servers which are much higher tech and speedy than native servers.

Problems with outsourcing

Although outsourcing is very popular among companies but it has following problems:

- Initially outsourcing firm offers high quality products or services to capture the business but later on they fail to maintain same quality standards leading to inferior products and services.
- When a company outsources its non-core but critical operations then it loses direct control over functionalities of those functions. This can result in inefficiencies, delays or mismatch with the objectives of the company.
- When a company continuously rely on outsourcing firm then it may weaken its internal capabilities making it becomes very difficult to bring back the function in-house when needed by the firm.
- Sometimes, outsourcing firm may gain sufficient knowledge and expertise of the industry so they become competitors to our business venture.
- When companies share sensitive information with outsourcing firm then there is always a risk of data breaches and misuse of confidential information.

1.3.4 Restructuring

Different organizations *merge functions, sections and departments* according to the technological advancement and continuously restructure the organizational structure. For example, real time, online data availability has shifted the regional decision making into centralized decisions.

Likewise, the process can be other way around as well, i.e. creating more divisions to speed up decision making and delegating authority and responsibility across the organisation. Restructuring may be vertical and horizontal both.

1.4. Other technological tools affecting work methods

1.4.1 Virtual company

A virtual organisation is an organisation that has *no physical hub or centre of operations*. Instead, it is a network of individuals linked by computer and telecommunications network (such as the internet). The individuals need not be employees of the business: they might be part-time workers or self-employed individuals. Taken to an extreme form, a virtual organisation can outsource almost all its activities, leaving just one or two individuals at the centre managing the business.

Each individual in the virtual company or virtual organisation might work from home. Data and information is transferred between them, and each performs particular tasks – with no office, no substantial assets and few (if any) full-time employees.

The virtual company has been made possible by developments in Information technology and communication networks e.g., telephone, internet and email.

1.4.2 Online Social Media

Social media has changed the business models. Personal and business entities now have become the digital identities. Physical interactions, traditional marketing, traditional businesses have affected through digital social media. Social media platforms like Facebook, Instagram, YouTube, Twitter, LinkedIn, TikTok, Snapchat, WhatsApp, Telegram and Pinterest allow businesses with different marketing opportunities including ads, analytics, marketplace features and multiple ways to engage their audiences.

1.4.3 Big Data

Extremely large data sets are being gathered, analysed computationally to reveal patterns, fashions, trends, associations and preferences, particularly in human behaviour and interactions. These big data insights are being used to take strategic business decisions (e.g., market expansion, product development or investment opportunities) and day-to day operational decisions (e.g., inventory management, supply chain optimisation and customer service improvement).

1.4.4 Artificial Intelligence

Artificial intelligence has shifted the paradigm. Different business segments are using artificial intelligence; various services are being provided with the help of artificial intelligence.

► *For example:*

- Online assistance to the customers is being provided through the artificial intelligence.
- Frequently occurring problems are being solved using artificial intelligence.
- Routine decision making is also being done with the help of artificial intelligence.

2. TECHNOLOGICAL DISRUPTION AND BUSINESS ENVIRONMENT

2.1. Definition of Disruptive Technology

Disruptive technology is *an innovation that significantly alters* the way consumers, industries, or businesses operate. A disruptive technology sweeps away the systems or habits it replaces, because it has attributes that are recognisably superior.

2.2. Examples of Disruptive Technologies

In their own times, the automobile, electricity service, and television were disruptive technologies but recent disruptive technology examples include:

- e-commerce stores such as Amazon, Alibaba, Walmart, Shopify and eBay,
- online news sites such as BBC News, CNN, The New York Times and Reuters,
- ride-sharing apps such as Uber and Careem and GPS systems,
- online media streaming platforms such as Netflix, Disney plus, Amazon Prime video, HBO Max, etc.

2.3. Adoption of Disruptive Technologies

Risk-taking companies may recognize the potential of disruptive technology in their own operations and target new markets that can incorporate it into their business processes. These are the "innovators" of the technology adoption lifecycle.

Risk-averse companies may take a more conservative position and adopt an innovation only after seeing how it performs for others.

Companies that fail to account for the effects of disruptive technology may find themselves losing market share to competitors that have discovered ways to integrate the technology.

2.4. Disruptive Technologies of the digital age

The human mind is trained to visualise linear developments and finds it difficult to estimate exponential possibilities which emanate from technology. Such disruptions are always resisted by humans at first, but once accepted and fully deployed, they are capable of changing the way we live. Think about fire, the wheel and breaking the horse in ancient times to the aeroplane and the automobile in the early 20th century followed by the internet and smartphones in recent times.

In particular, these days information technology is moving faster than ever, driven by developments in 3 basic areas;

- processing power,
- communication speed
- storage capacity.

IT is combining with improvements in specific industry technology in almost every sector to bring disruptive changes to the market. With technology growing exponentially and businesses developing linearly, a big gap opens up between current organisations and the capability which technology can offer. This gap is usually filled by innovative start-ups that disrupt the existing business models by offering value in terms of both enhanced usage of a product or service and/or reduced cost.

2.4.1 The Internet

More people have more access to technology than ever before. Residents of developing countries increasingly enjoy energy-powered appliances, entertainment devices, and communications equipment. Individuals and businesses in developed countries in North America, Europe, and Asia are more than ever dependent on electronic communication devices for access to information and for conducting business transactions. In today's workplace environment, nearly every manager has a desktop or laptop computer, voice mail, mobile phone, Personal digital assistant (PDA), and a host of other electronic devices to connect the other employees, customers, suppliers, and information touch points.

One of the most visible and widely used technological innovations over the past decade has been the Internet. The Internet is a global network of interconnected computers, enabling users to share information along multiple channels linking individuals and organizations. Internet has revolutionized how business are conducted, education is imparted and households operate.

New ways of going online are contributing to the growing use of the Internet. Companies such as Apple, Microsoft, Sony and Samsung have introduced innovations across all their product lines to include the access of internet connectivity and Wi-Fi. All smartphones, including Apple iPhones and Androids, among others, include Wi-Fi connectivity to provide users with faster data transfer speeds than mobile phone carriers can provide.

As a result, the Internet has been a force that has changed the direction of businesses to create new products, infrastructure and opportunities.

2.4.2 E-Business

During the various phases of technological development, electronic business exchanges between businesses and between businesses and their customers emerged. During the past few years, these electronic exchanges, generally referred to as e-business has increased e-business revenue at a faster pace than that of traditional business and the trend continues.

E-business has grown dramatically and become a way of life, from large companies and smaller start-up businesses to individuals interested in shopping online. As technology became more affordable and easier to use, small and medium-sized businesses have invested in e-business and technology systems because they discovered that the adoption of technology was a money-saver rather than an expense in the long run. It gave the businesses a competitive edge over rivals by enabling them to add new services and operate more efficiently. E-business is undoubtedly here to stay and new applications appear inevitable.

Now even older businesses are more open to modify their business models and budgets to include technology infrastructure and create online channels for alternative sales.

2.4.3 M-Commerce

The first generation of cell phones, introduced in the 1980s, were clumsy analogue devices; today's digital "smartphones" provide a range of applications, including e-mail and Internet access, in addition to voice communications.

Given the significant increase in smartphone users, businesses have looked for ways to reach out to these potential customers.

Initially, cell phones were used mainly as a communications tool. But cell phone users all over the world have embraced mobile phone as a way of conducting commerce. M-commerce is the commerce conducted via mobile or cell phones and provides consumers with an electronic wallet when using their mobile phones. People can trade stocks or make consumer purchases of everything from hot dogs to washing machines and countless other products.

Today, so many companies provide the option to customers to turn their smartphones into devices for making purchases.

2.4.4 Social networking

Social networking, a system using technology to enable people to connect, explore interests and share activities around the world, exploded on to the technology scene in the early 2000s, altering many social and human interactions.

Many businesses use social media tools to reach out to their customers. It has now become a major marketing channel forcing advertising companies and media houses to rethink the focus on the traditional print and TV advertising. This is an example of major disruption due to technology in the world of advertising and marketing.

Major online advertising tools include:

- Search Engine Optimization
- Facebook Ads
- Google Ads and clicks
- Website banners

2.4.5. Blogs and Vlogs

A blog is a web-based journal or log maintained by an individual with regular entries of commentary, descriptions, or accounts of events or other material such as graphics or video. The blogging revolution began in the early 2000s and just a few years later, it was widely popular.

As blogging spread into all areas of our lives, ethical questions about blogs emerged. Critics argue that this blurred the ethical line between what was honest opinion or helpful information and what was an advertisement paid for by companies to influence individuals' purchasing decisions.

Medical professionals also claimed that patients were posting unfounded and damaging reports on a doctor's performance. While some doctors admitted that blogs provided many patients with useful information, medical misinformation from uncensored blogs was far more harmful.

Nevertheless, a lot of businesses, including but not limited to, apparel, cosmetics, electronics and hospitality use the medium of bloggers to push their products in the market and compete with other brands. This is done through free products, invitations to brand launch events and live unboxing of new products by influencers.

A new generation of blogs appeared in the first decade of the 21st century, called vlogs, or video web logs. All that was needed was access to a digital camera that could capture moving images and high-speed Internet access.

2.4.6 Blockchain Technology

Definitions

A *block* is a digital record that contains a group of transactions, data, or information.

The *chain* refers to a continuous sequence of transactions, data or information that are linked together. This ensures a secure, unalterable history of all transactions.

Blockchain is a decentralized, distributed ledger that records transactions in a secure, transparent, and tamper-proof manner. It is maintained by a network of computers (nodes) without needing a central authority.

Features

- i. Decentralization – No single entity controls the data, information or transactions.
- ii. Transparency – Transactions are visible to every participant and verifiable by every participant
- iii. Security – Data is encrypted and cannot be altered by anyone once approved
- iv. Immutability – Once a block is added, it cannot be changed.
- v. Smart Contracts – Automated agreements that execute when conditions are met.

Application of blockchain technology

- Blockchain technology is the foundation of digital currencies, enabling secure, transparent, and decentralized financial transactions. It eliminates the need for intermediaries like banks, allowing peer-to-peer transfers with lower fees and faster processing times.
- Blockchain technology has transformed banking and finance industry by enabling them secure, instant, and transparent transactions. It eliminates intermediaries, reducing fraud and allowing faster settlements.
- In education and training industry, blockchain ensures the authenticity of academic records and degrees. Universities may issue blockchain-based diplomas, degrees, transcripts that cannot be forged, making verification easier for employers.

- The supply chain industry benefits from blockchain by enabling real-time tracking of goods and reducing fraud. Companies like Walmart and IBM use blockchain to monitor product origins, ensuring food safety and preventing counterfeiting.
- In healthcare sector, blockchain secures patient records and ensures drug authenticity. With blockchain-based medical records, patients gain control over their data, while pharmaceutical companies can track medicines to eliminate counterfeit drugs, as seen in IBM's Pharma Trust.
- Governments may utilise blockchain for issuing national identity cards and can manage secure voting systems.
- Accounting and auditing have been revolutionised through blockchain, providing real-time financial record-keeping and automated audits. Leading firms leverage blockchain to reduce risks of fraud and enhance the accuracy of financial reporting.

3. CASE STUDIES ON EFFECTS OF DISRUPTION IN MAJOR INDUSTRIES

Technology and internet-based companies are accelerating the pace of disruption at an alarming rate.

- Google has completely disrupted the Yellow Pages business which was once valued at \$60 billion and is now below one billion dollars.
- Airbnb, worth over \$25 billion has disrupted the hotel industry by accumulating the largest inventory of rooms without owning a single property.
- Uber, worth over \$50 billion, has completely disrupted the local travel and taxi business without owning a single car.

Disruption is also changing the auto industry globally as well as in Pakistan.

3.1. Textile Industry

The fibre and textile production and the manufacture of clothing lead to the industrialization in the developing world. The technology made the machines to be ease and speed and process technology to new modes of clothing production based on the systems cost and productivity. The application of these new technologies made a profound social impact not only on the employees but also the location of those employees in clothing production. The skills, management and training need of the organizations are also affected. The technology such as CAD, CAM, manufacturing management and information technology systems facilitate many changes in the women's fashion and textile industry. By improving the labour productivity and reducing overall manufacturing costs, the clothing industry perceived the need of industrialized countries.

The technological changes promote the automation of clothing production. In sewing machine industry, technology provides a flexible method of adapting to changing styles, fabrics and sizes. Some important results are emerged as the development in fabric evaluation. But still there are major obstacles present in the automation of the stitching fabrics. The search for improved competitiveness increases the raise of new methods in designing, quick response, quality and service and provide greater flexibility by motivation the employees.

Apart from the cost and greater accessibility, there is an overall impact on the clothing technology strengthens the competitiveness of larger companies at the expense of small and medium scale firms. New technologies brought the significant change and enhanced economies of scales in clothing manufacture and organization. Design, cutting and marker making can be handled with the use of the most modern equipment. In case of woollen goods, cutting can be integrated directly into the fabric quality control process. Sewing and related operations are framed into small units known as satellite units wherever the availability and cost of labour are more favourable.

Market drivers of clothing industry technology include the greater importance on the design, innovative fabrics, quick response, quality and flexibility. Retailing is more concentrated in the global fashion market. Mass merchandisers extend their involvement and relationships with supplier's right back to fabric, fibres and yarns. The trading house system binds the number of stages of textile and clothing manufacturing together with retailing. Such companies use electronic data interchange as a core technology for building and managing their supply chains. The requirement for qualities such as sizing and fit, coloration, patterning establishes the interest in new fabric and garment styles.

Sportswear

Athletes are under a lot of stress, both on and off the field. They must train hard and play even harder. When they're uncomfortable, it becomes difficult for them to perform at the best of their ability. As such, many prominent athletic wear companies have created fabrics and technologies that improve overall comfort.

The First Glimpse of Today's Athletic Wear

Although much of today's athletic wear is incredibly high-tech, it all started with the Olympics. The first ever Olympic Games were held back in 1896, and this represented the first time that people wore clothing specifically designed to improve range of motion and performance. However, the fabrics of the time were quite heavy, and they did very little to keep athletes comfortable as they performed their events. Over the years, things began to change, and coaches saw that the more comfortable an athlete was, the better he or she could perform. Since that time, athletic wear has been evolving.

The 1970s

Back in the 1970s, the fitness revolution really began to take hold. This was the decade in which televised workout programs made their debut, and more people than ever sought comfortable clothing to wear as they exercised.

Changes in the 1990s

By the 1990s, fashion and athletic wear had shifted significantly. The previous decade's brightly colored stretch fabrics and leotards gave way to new performance-focused apparel. Tops became shorter and were made from breathable fabric blends designed to wick moisture away from the body and keep athletes cool.

Development of Moisture-Wicking Fabric

The development of moisture-wicking fabrics in the early 2000s marked a major shift in sportswear. These microfiber polyester materials were engineered to draw moisture away from the skin to the outer layer of the fabric, where it could evaporate more quickly. This innovation helped athletes stay dry and comfortable even in hot conditions. Initially used in shirts, the technology later expanded into a wide range of apparel and accessories, including gloves, hats, pants, socks, and sleeves.

Today

These days, athletic wear designed to keep people comfortable isn't limited to just athletes. In fact, a number of companies offer professional business wear that makes use of many of the same technologies that keep athletes dry and comfortable both on and off the field.

With dress shirts and slacks that breathe, stretch, and wick moisture, it's now possible to look sharp and feel great at the same time, both in and out of the office.

Performance shirts in sports have been around for decades, but the technologies used to create fabrics and fabric blends continue to evolve. After all, the more comfortable you are either in the gym, in the office, or on the field, the better you can perform in everything you do.

3.2. Solar and renewable energy

In the next 10-15 years, the electricity grid as we know it will be almost extinct or at least much less pertinent to our lives. As a result of investments in solar and renewable technologies coupled with the global focus on improving battery life and user-friendliness, we will see the need for grid-connected power reduce substantially. Already households that have a solar system installed at rooftops, the reliance on the grid is probably less than 50% of the energy demand. The next 50% will come much faster thanks to the expected technology improvements.

This will require a major change in business models of large-scale power producers and utilities. Some naysayers make the case of the western world where grids are still alive and note that Pakistan only has a small fraction of consumer load on solar. That may be true at present, but remember that technology will grow exponentially once it passes through its initial phase.

3.3. The Internet of Things (IoT) and operations of Power generation

The internet of things (IoT), billed as the next industrial revolution or Industry 4.0, has the potential to significantly transform the power sector by optimising operations, managing asset performance, and engaging customers to lower energy cost. The power sector is already reaping benefits from early consumer-oriented IoT applications: smart meters and smart thermostats.

The rapid growth in IoT is forcing traditional power utilities and industry participants to adapt, or be outpaced by strong new entrants possessing the benefits by these technological advancements. IoT and robotics have already found widespread applications in utilities, especially in demand-side management (DSM).

The advent of smart meters and IoT connected power appliances has enabled consumers to track and monitor their energy consumption and save money in energy bills.

Similar technology is expected to make aggressive headway in the power generation and transmission segments.

The other great thing about technology is that it does not differentiate between the developed and developing world. The dwindling number of new landlines and their demand is enough of how rapidly disruption causes change. It is the consumers who act fast to ensure they benefit from technology when it becomes affordable and available.

For example, IoT-connected smart glass could help a maintenance engineer to draw up the schematics of a boiler and other service procedures. In case of a massive fault, the engineer can access collaboration software to get help from an expert from a remote location and ask for additional information if needed; saving both time and money as there is no need for additional personnel to be sent on site.

IoT will be increasingly important in resource allocation and process optimisation in distributed power generation.

The increasing need for monitoring of renewable energy assets in remote locations for scheduled maintenance and reduced downtime is also likely to make IoT popular in the utility industry. Smart grid and GIS (Geographic Information System) connected with IoT will also facilitate improved operational efficiency and grid reliability for the consumers in power distribution.

Once connected with IoT, the system can perform effective load balancing, load flow analysis, identify faulty transformers, and alert the nearby maintenance team for quick response.

In addition, increasing adoption of cloud-based platforms in government-backed grid modernisation initiatives in the US and China provide strong growth opportunities in utility-based IoT market. Moreover, because of the online or cloud nature of the technology, security, particularly cybersecurity are subjects of immense importance to power utilities involved in the transformation.

3.4. Education

Technology has democratised education by enabling students in some of the poorest and most remote communities to access the world's best libraries, instructors, and courses available through the Internet. A digital learning environment provides students with skills to rapidly discover and access information needed to solve complex problems.

The trends in online education are an eye opener for the thousands of bricks and mortar education institutions. Underpinned by higher broadband speeds and WIFI capabilities, the world is already witnessing tremendous growth in digital classrooms, online learning material, eBooks and video content.

The penetration of online education has been provided a boost by the pandemic of COVID-19. All the world's top universities shutting down have forced them to look at digital channels of providing education and that too at a lower cost.

Online education has not only replaced the physical classroom in some cases, but it is also challenging the entire education system as it exists today. In many schools, lectures are available for download anytime from anywhere.

This should enable schools to rethink and prepare themselves for the sort of learning which is required and how will they change their business model and secure the employment of teachers and staff.

3.5. Retail and ecommerce

It is amazing to see the retail space being built these days. It is all the more puzzling since the trends are quite clear if you follow the evolution of the retail sector in the developed world. The retail space is losing ground to online shopping in a big way with large malls and stores being consistently forced to reduce the number of locations. In Pakistan, the trend of online shopping is visible in every household with trips to the malls often serving more as entertainment than for shopping.

There have been incidents of stores at a certain mall protesting successfully against high rents. This trend will only pick up and will hurt the retail business model of malls and retail stores making it a challenge for them to remain relevant.

3.6. Electronic media

The growth of paid streaming services has taken away the consumer from the advertising-based business model of our normal cable tv channels to a greater extent. As a result, such content will be pushed away by the consumers once they are able to control what they wish to watch without being exposed to the bombardment of irrelevant advertisements.

The rise of paid streaming platforms has created a disruption which can potentially eliminate cable TV altogether and cannot be ignored any longer.

In addition to the cable channel business, this change will disrupt the advertising industry as they will have to switch to other vehicles, with social media potentially replacing mainstream advertising.

3.7. Banking

It is already clear that the traditional retail banking business model is on its way out. Financial technology (Fintech) and virtual banking are the future with physical banks playing a much-reduced role in our daily lives.

Fintech facilitates in money transfers, investment management, personal finance, and banking. Using Fintech, one can send and receive money via mobiles.

In the last five years, Pakistan has witnessed a drastic increase in e-payments, more so because of the coronavirus pandemic.

3.8. Automobile and transport Sector

We are already seeing a huge amount of disruption in the automotive industry as electric vehicles, ride hailing and self-driving cars take off.

For a century, automotive companies have built their franchises on designing internal combustion engines and operating massively complicated production plants. They are now having to adapt to a not too distant future of much more simplified cars built around electric motors and a battery, as well as having to learn to programme algorithms to drive the car and designing apps to hail a ride.

The technology of Tesla is so innovative that unlike traditional cars, the functionality of Tesla cars keeps changing through software updates. For example, Tesla recently enabled the (partial) self-driving feature by simply pushing a software update over the internet; in another update they improved the mileage of their electric cars.

In another development, the world's first commercial robotaxi platform is expected to be launched soon by a leading autonomous driving company.

The impact of the revolutionizing technology on automotive companies will need them to become technology companies along with their existing business setups to compete with new disruptive entrants like Tesla, Uber and Careem.

Tesla has also disrupted the traditional process of new car sales by ditching the dealership-based sales model in favour of direct consumer sales using the internet. Anyone can go to the Tesla website, configure their car (including paint job, seat materials and configuration, roof type, interiors, tires, mileage) and then place the order.

Use of Technology in Car Trading

Smartphones with internet connectivity are deployed to solve some of the inherent problems related to the conventional auto trade. For example, buying a used car from a dealer meant several visits to find the right car or sifting through hundreds of newspaper classifieds, with limited information and no pictures. With online portals, people can sift through tens of thousands of cars listed for sale across Pakistan, look at pictures and then decide which ones they want to investigate further.

Similarly, sellers faced challenges with the traditional system because they either had to leave their car at the dealers for a long period of time or sell it to the dealer instantly at a price lower than the market value. With online services, they can now list their cars and wait until they find a buyer willing to offer the right price. This has eliminated the middleman, the dealer, in the whole transaction which has not only cut costs but also brought more transparency to the dealing.

The above are just a few of the technology disruptions. In this chapter we have covered only few examples, but healthcare, transport, courier services, publishing, restaurants and delivery and numerous others business segments are on their way to being disrupted. What is required is an understanding by governments and companies who need to play their role as enablers and promoters of disruption in the interest of the consumer. Traditionally, it is the concerned industry which has been more resistant to change and does not wish to move into unknown territory. It is only natural that your core reason for success also becomes your core reason for rigidity. In addition, our companies remain in survival and firefighting mode most of the time and management does not have the vision to create self-disrupting business models. Other similar disruptions will bring improved service and/or cost reductions for the consumer.

ECOLOGICAL ENVIRONMENT

4. ECOLOGICAL (ENVIRONMENTAL) FACTORS AFFECTING BUSINESSES

4.1 Introduction

Ecological or environmental factors are the elements of the natural world that are used to analyse the macro-environmental forces affecting an organization or industry. Due to growing concerns about climate change, resource scarcity, pollution, waste management and rise of sustainability movements, ecological factors have become critical to strategic decision-making in recent years. These factors influence how businesses operate, what products they offer, and how they position themselves in the market. With global focus shifting towards green growth, understanding these factors is now a business necessity.

To remain competitive and compliant, businesses strive to understand and respond to various ecological factors to mitigate the risk of penalties, supply chain disruptions and reputational damage. Moreover, companies that engage in eco-friendly operations, product or services can gain a competitive advantage through increased customer trust, market share and strong brand loyalty.

4.2 Key Ecological Factors affecting Businesses

4.2.1 Pollution Levels

Air pollution, water pollution, noise pollution, and soil pollution levels vary significantly across regions, and in highly polluted countries, businesses may face several challenges. These include increased operating costs due to installation of pollution-control equipment such as air filters and water purification systems, regulatory restrictions on production processes, and health concerns for both employees and customers.

For example, industries operating in major urban centers often face pressure from environmental regulators due to issues such as high smog levels and industrial waste. In several industrial hubs, the discharge of untreated effluents, particularly from sectors like tanneries and textiles, into local water bodies has led to severe contamination. This has caused significant health problems among nearby communities and raised public concern, prompting stricter environmental monitoring.

However, these challenges may also bring some opportunities for some other businesses, such as the development and marketing of pollution-control products and services such as air purifiers or sustainable construction materials, and water filtration systems. Moreover, businesses can position their offerings as environmentally safe to attract eco-conscious customers. On the other hand, businesses that contribute to pollution, may face a negative brand image, along with increased compliance and production costs, making it essential to manage environmental impact proactively.

4.2.2 Environmental Awareness among Customers

In many countries, customers are well aware of the environmental issues caused by business activities. These well-informed customers prefer eco-friendly products and actively oppose all such brands that deplete natural resources, generate excessive environmental waste and contribute to greenhouse gas emissions. Businesses can gain capitalise on this opportunity by launching green products, adopting sustainable packaging, charging premium prices for products with eco-certification.

On the other hand, environmental negligence committed by a business organisation may result in customer boycotts, loss of market share, negative publicity through the press, print media and criticism from environmentally responsible competitors.

For instance, some companies have built a positive reputation among customers by promoting sustainable paper and packaging solutions, while others have faced criticism on social media for excessive plastic use or irresponsible waste disposal practices. Certain organizations have also taken active measures to address ecological concerns such as water pollution and scarcity by implementing water stewardship initiatives. These efforts focus on reducing water usage in production facilities and ensuring responsible water sourcing within communities. Such practices not only help lower environmental impact but also strengthen relationships with local stakeholders, positioning businesses as environmentally responsible.

4.2.3 Environmental Laws

Governments enforce various laws to control environmental damage, particularly in regions with high pollution levels.. Businesses must adhere to these environmental regulations to avoid the risk of heavy fines or legal actions for violations, and they may also face restrictions on expansion of their business activities. In some cases, governments offers incentives or subsidies to businesses that invest in renewal energy or waste recycling.

For example, the Alternate Energy Development Board (AEDB) in Pakistan provides incentives to businesses that adopt solar energy systems, helping them reduce their carbon footprint while benefiting from financial support.

4.2.4 Environmental Protection Initiatives by Existing Players

To remain competitive in the industry, new businesses must have to adopt environment friendly initiatives similar to those already implemented by established existing players in the market. Existing player may run environmental awareness campaigns or CSR initiatives, environmental reporting, reduced water consumption process, sustainable sourcing, green finance to promote environment friendly stance. New players may benchmark best industry practices for environmental protection, may form partnerships for green projects and may obtain necessary certification to avoid competitive disadvantage.

Investments in renewable energy projects, commitments to reducing carbon emissions, and initiatives promoting sustainable sourcing are examples of such efforts.

LEGAL ENVIRONMENT

5. LEGAL ENVIRONMENT AFFECTING BUSINESSES

5.1. The Role of Legislation in Business

The legal system of a country is very important to businesses. A country's law regulates business practices, defines business policies, rights and obligations involved in business transactions. For example, business laws may:

- make a business or a transaction legal or illegal
- impose conditions on certain businesses
- regulate the rights and duties of people carrying out business in order to ensure fairness
- protect people dealing with business from harm caused by defective services
- ensure the fair and non-discriminatory treatment with employees
- protect investors, creditors and consumers
- regulate dealings between business and its suppliers
- ensure a level playing field for competing businesses

It is also important to know that the government can change the rules and regulations concerning businesses from time to time. Therefore, to be on the good side of the law, managers should ensure that they are up to date with laws.

Here are some illustrative examples of how business can be affected by government policy and the law:

- In 1970s private sector was nationalized in Pakistan, through Nationalization Act 1970.
- In 2007, oil companies operating in the Orinoco region of Venezuela were required by the government to hand over majority ownership in their businesses to the state.
- In 2007, a large shipment of corn to Europe from the United States was found to include genetically-modified corn. Although this was legal in the US, it was illegal in the European Union. The shipment had to be returned to the US.

5.2. Different types of laws affecting businesses

5.2.1 Business Formation Laws

In Pakistan, businesses can be established in various legal forms such as sole proprietorship, partnership, company (e.g., private limited or public limited company or single member company or foreign company), non-profit organisation, and cooperative society. Each of the legal form is governed by specific laws and regulations to establish, operate and close the business operations.

Following are the main laws prevailing in Pakistan for the formation of businesses:

i. Companies law

In Pakistan, if a business set-up intends to form a public company, private company, single member company or a foreign company, it is required to complete the requirements for incorporation, management, operations and winding up of companies, provided in the Companies Act, 2017 (the Act), issued by the Securities and Exchange Commission of Pakistan (SECP).

The Act regulates companies for protecting interests of shareholders, creditors, other stakeholders and general public and inculcate principles of good governance.

Companies are required to comply with the requirements of the Act, for which they will be required to incur certain cost, with respect to incorporation, human resources, audit of financial statements, holding of annual general meetings, record keeping etc. The companies which do non-compliance with the requirements of the Act will be subject to penalties imposed for the relevant offence.

ii. Partnership law

In Pakistan, partnership businesses are normally formed with registrar of firm under the Partnership Act, 1932 but limited liability partnership businesses can be registered with SECP under Limited Liability Partnership Act 2017. The Partnership Act 1932 includes the procedure of registration and dissolution of a firms, rights and duties of partners etc.

In comparison to companies, partnership firms have ease of doing business as the requirements applicable on companies for annual filing of returns, audit of financial statements, holding of annual general meeting etc are not applicable on partnership firms.

5.2.2 Employment Law

Each country has employment laws. The purpose of employment law is mainly to provide protection to employees, against unfair treatment or exploitation by employers. Business organisations, as employers, are directly affected by employment laws. They need to be aware of the employment law in each country in which they operate, and understand the consequences of breaking the law or failing to comply with regulations.

Here are some of the aspects of employment law.

- **Minimum wage:** A country might have a minimum wage, which is the minimum hourly rate of pay that may be paid to any employee.
- **Working conditions:** A variety of laws and regulations might specify minimum acceptable working conditions, such as maximum hours of work per week or month. There might also be laws relating to a maximum retirement age and the employment of children. Working conditions are also covered by health and safety law.
- **Unfair dismissal:** Employment law might give employees certain rights against unfair dismissal by an employer. An employee who is dismissed from work might bring a legal claim for unfair dismissal. The employer must then demonstrate that although the employee has been dismissed, the dismissal was not for a reason or under circumstances that the law would consider 'unfair'. When an employer is found guilty of unfair dismissal, it might be required to reemploy the individual who has been dismissed or (more likely) pay him or her substantial compensation.
- **Redundancy:** In some countries, dismissal of employees on the grounds of redundancy is not unfair dismissal, provided that discrimination is not shown in the selection of which individual employees should be made redundant. However, a country's laws may require an employer to consider transferring an employee to another job before deciding that redundancy is unavoidable. (Failure to consider transferring employees to other work would mean that the dismissals for redundancy are unfair.)
- **Discrimination:** Some countries have extensive laws against discrimination, including discrimination at work. For example, employers might be held legally liable for showing discrimination against various categories of employee (or customer) and also for discrimination shown by employees against colleagues. There are laws against discrimination on the grounds of physical disability, gender, race, religion, sexual orientation and age.
- **Gender Equality:** Many countries including Pakistan have laws for anti-harassment to eliminate the gender biasness, women protection at workplace, gender sensitization and gender equality in the society.

5.2.3 Health and safety law

Health and safety law provide rules and regulations about minimum health and safety requirements that employers must provide in their place of business and for their employees. Standards of health and safety law vary substantially between countries, although in countries with well-developed economies, health and safety standards are usually high.

It is also important to recognise that health and safety regulations can impose significant requirements on employers, and the legal consequences of failure to comply with the regulations could be serious for the company or the directors, managers or employees responsible.

In some countries, employers are required by law to provide a safe workplace for their employees. For instance, Factories Act 1934 regulates the working conditions in factories of Pakistan. A safe workplace is one where employees are not exposed to unreasonable physical dangers or unreasonable risks to health. In some countries, this also means a place of work where employees are not subjected to discrimination or bullying. Risks to health and safety should be reviewed regularly, by means of formal risk assessments.

5.2.4 Data protection law

Some countries have fairly strict data protection laws. The purpose of data protection law is *to protect individuals with regard to personal data* about them that is held and used by other persons. Data protection legislation is designed to protect the private individuals against others who collect, hold and use their personal information without their permission.

It might be considered illegal, for example, that any organisation should be able to:

- gather and hold personal data about individuals without a justifiable reason, and
- make use of that personal data without the individual's permission.
- Someone holding and using personal data about individuals should also be under a legal obligation to:
 - make sure that the personal data is accurate, and
 - ensure the security of the data, so that it is not made available to or accessed by any other person who does not have any right to have it.

5.2.5 Cyber laws

It is the newest area of legal system. It applies to *online transactions* conducted through internet. This law was enforced to safeguard the individual's information and confidentiality of clients where transactions are made over some network, collecting, storing, retrieving and disseminating of individual's data.

5.2.6 Competition law

Some countries have laws to encourage fair competition in markets and avoid anti-competitive practices. For instance, in Pakistan, Competition Act 2010 prevents monopolies, and anti-competitive practices.

a) Monopolies

There might be a law to prevent a company from acquiring monopoly control over a market. A 'monopoly' of a market is theoretically 100% control of a market, where only one entity supplies a product or service to the entire market. In practice, 'monopoly' is usually defined as a significant influence on the market.

When a company has a monopoly of a market, it might engage in unfair business practices, such as charging higher prices than they would be able to charge in a more competitive market. The serious risk of anti-competitive behaviour from monopolies is the main reason for laws restricting them.

When a company grows to the point where it becomes a monopoly, a government organisation might carry out an investigation, with a view to deciding whether measures should be taken to protect the public.

Similarly, when two companies propose a merger that would create a new monopoly, a government organisation might investigate the proposed merger with a view to recommending whether it should be allowed to happen, and if so whether any conditions should be placed on the merger in order to protect the public.

b) Anti-collusion regulations

Collusion occurs when two or more *business entities secretly agree to do something for their mutual benefit* that is against the public interest. Typically, it is a secret agreement to raise prices, and avoid competition on process. In many countries, collusion is a criminal offence.

c) Price controls

In some countries, the government might impose price controls on certain key products or services, such as the price of *essential services to consumers* – water, electricity or gas. Official bodies might be established to monitor the activities of 'utility companies' (providers of water, sewage, electricity and gas services) and might have powers to restrict their activities. Official approval might also be required for any increase in prices.

5.2.7 Consumer Protection regulations

Most countries have legislation in place that aims to protect consumers of goods and services. These measures include contract law and sale of goods legislation.

Sale of goods legislation

Such legislation usually specifies that in contracts for the purchase of goods (or services) there are certain terms in the contract that a consumer may rely on. For example:

- **Title** – The buyer is entitled to assume that the seller of goods actually owns them (i.e. has title to them).
- **Description of goods** – The buyer is entitled to assume that any good they purchase correspond to a seller's description of those goods.
- **Quality** – All goods supplied in the course of a business must be of satisfactory quality. This means that they must be satisfactory for the purpose intended. If a person buys a washing machine that does not work the seller must repair it, replace it or pay a refund to the customer.

5.2.8 Copyrights, Patents and Licenses

Copyright and Patent laws are necessary to protect intellectual property of individuals and businesses.

Copyrights safeguard “original creations” such as writings, art, architecture and music from being copied or reproduced. For as long as the copyright is in effect, the owner has the exclusive right to display, share, perform, or license the copyrighted work.

A **Patent** is a registered right that gives the owner exclusive right to features and processes of inventions.

A **License** is a permission to carry out certain business activities or practice under specific government regulation or certification body.

5.2.9 Banking, Insurance and Other Financial Laws

Banking laws play a vital role in maintaining the stability of a country's banking system. These laws regulate banking and non-banking financial institutions that serve as intermediaries between lenders (depositors) and borrowers, facilitating the flow of funds to those in need of capital for business expansion or investment projects. By enabling efficient financial intermediation, banking laws contribute significantly to economic growth. Moreover, these laws help to prevent financial scams, ensure transparency, and enhance public trust in the financial sector by promoting accountability and safeguarding the interests of all stakeholders.

In Pakistan, the State Bank of Pakistan Act 1956 empowers the central bank to supervise and regulate the financial sector. Additionally, Banking Companies Ordinance 1962 governs the operations of commercial banks and sets prudential regulations to ensure their sound and efficient functioning.

Businesses must also consider the prevailing insurance laws of a country before commencing its operations, as these laws protect them against potential losses arising from unforeseen events such as fire, theft, accidents, or natural disasters. This legal protection ensures business continuity and financial stability. Moreover, insurance laws also safeguard the interests of employees and customers by requiring certain types of coverage, such as life, health, and liability insurance.

Other financial laws may include regulations related to prevention of money laundering, terrorist financing and foreign exchange regulations to monitor international payments, remittances and currency conversions. Anti-Money Laundering Act 2010 and Foreign exchange Regulation Act 1947 are the examples of such other financial regulations in Pakistan.

5.3. Legal Environment and World Bank 's B-Ready Ranking

5.3.1 Role of a Solid Legal System

Economic activity requires a sensible legal system that encourages growth and avoids creating distortions in the marketplace. These laws include rules that establish and clarify property rights, minimise the cost of resolving disputes, increase the predictability of economic interactions and provide contractual partners with core protections against abuse. All these measures identify the prospects for success in business activity in relation to the legal environment. Moreover, a business would consider these measures to judge the level of risk involved in terms of time and money when setting up.

5.3.2 Strategic Analysis of Regulatory and Business Environment

Businesses conduct a strategic analysis to understand the dynamics of the business environment and adopt strategies to achieve their objectives. A business manager examines many factors, such as the overall quality of an economy's business environment, the financial system, market size, rule of law, and the quality of the labour force before investing. There are now generally accepted business indices to rank countries in terms of their regulatory environment.

5.3.3 World Bank's Business Ready (B-Ready) Ranking 2024

The Ease of Doing Business (EODB) ranking was launched in 2003 and the World Bank decided to discontinue the EODB report in September 2021. The ranking evaluated 190 economies based on the openness of their business environments and regulatory frameworks. Economies were ranked from 1 to 190, reflecting how conducive their regulatory environments were for doing business. It was regarded as the most cited and authentic indicator of a country's regulatory support for business operations. The ranking was determined by aggregating scores across 10 topics, each comprising multiple indicators. Equal weight was assigned to each topic.

The World Bank's Business Ready (B-READY) ranking was introduced by the World Bank as the successor to discontinued Ease of Doing Business (EODB) index 2003. The first B-READY report was published in September 2024 covering the 50 economies as part of its pilot phase. It aims to offer a more comprehensive, transparent, and objective assessment of the business environment globally. The data is collected on 10 topics structured under three pillars:

- i. Regulatory framework
- ii. Public service; and
- iii. Operational Efficiency

Each topic is assigned weight based on its economic impact. To gather data, B-READY uses 21 questionnaires and data is collected from businesses, government officials, legal experts, and financial institutions in the participating countries by using a mix of quantitative indicators and expert analysis.

The B-READY ranking evaluates 10 key topics affecting businesses, focusing on regulatory quality, legal systems, and economic governance. These topics are:

- i. Business Entry – Ease of starting a new business.
- ii. Business Location – Access to commercial property and infrastructure.
- iii. Utility Services – Availability and reliability of electricity, water, and telecom services.
- iv. Labour Regulations – Hiring, wages, working hours, and worker protections.
- v. Financial Services – Access to credit, financial inclusion, and banking regulations.
- vi. International Trade – Efficiency of cross-border trade, including customs and logistics.
- vii. Taxation – Corporate tax burden, ease of tax compliance, and transparency.
- viii. Dispute Resolution – Efficiency of legal systems in enforcing contracts and resolving business disputes.
- ix. Market Competition – Anti-monopoly policies and regulatory support for fair competition.
- x. Business Insolvency – Efficiency of bankruptcy laws and restructuring mechanisms.

6. SELF-TEST QUESTIONS

1. Autumn 2022 (viii):

Which of the following is the coincident economic indicator?

- (a) Industrial production
- (b) New private house building permits
- (c) Unemployment
- (d) Balance of trade

2. Spring 2023 (ix):

Which **TWO** of the following options are **NOT** 'Coincident economic indicators'?

- (a) Industrial production
- (b) Index of business confidence
- (c) Number of people in employment
- (d) Stock market index

3. Spring 2022 (v):

Which of the following is **NOT** an example of 'disruptive technology' at its inception in the market?

- a) A mobile application through which customers can order food from a choice of large number of restaurants
- b) A media streaming platform allowing customers to watch movies of their choice
- c) Smartphone with improved users' interface and camera resolution
- d) An online social networking website where people can connect and share information with each other

4. Autumn 2022 (ix):

Due to easy availability of internet, businesses are using M-Commerce as an effective tool for increasing their revenue. Which of the following sales is **NOT** related to M-Commerce?

- a) Purchasing cell phone credit directly from the vendor application
- b) Mobile banking application
- c) Ordering food by calling the restaurant
- d) Purchasing digital content on a mobile device

5. Autumn 2023 (ii):

Which of the following statements correctly defines disruptive technology?

- a) An innovation that has a minimal impact on existing systems or habits
- b) An innovation that significantly alters the way consumers operate but doesn't affect industries or businesses
- c) An innovation that significantly alters the way consumers, industries, or businesses operate and sweeps away the systems or habits it replaces due to its superior attributes
- d) An innovation that affects only industries and businesses but not consumers

6. Spring 2024 (iii):

Which of the following technologies best exemplifies a disruptive innovation?

- a) Incremental software update enhancing existing features
- b) Introduction of a faster processor in a laptop
- c) Emergence of electric cars replacing traditional combustion engine vehicles
- d) Addition of new automatic machine in the existing product line

7. OUTSOURCING & DISRUPTIVE TECHNOLOGIES – SPRING 2023 (Q3)

- (a) FabTabz (FT) designs, assembles, packages and distributes high-end tablets. FT is known for its unique designs and recognizes it as their core product offering. Due to a recent surge in demand, FT is facing challenges in meeting customer orders in a timely manner without compromising on product quality. FT is considering outsourcing some of its activities to meet the demand.

Required: Explain outsourcing and provide reasons why FT should opt for outsourcing to meet the demand. Also, explain which activities should FT outsource.

- (b) Explain what disruptive technology means. Also, state two examples of disruptive technology.

8. DOWNSIZING, OUTSOURCING, RESTRUCTURING & DELAYERING – SPRING 2024 (Q2)

Presented below are scenarios of three entities, each confronting unique challenges necessitating

- (i) Easy Foods (EF), a long-standing frozen food items producer with a large workforce, has started using automatic production and packaging machinery, which has greatly reduced manual work and production time. As a result, 45% of the workforce now faces reduced hours or no work.
- (ii) Spicy Foods (SF), structured with multiple management levels, faces decision-making challenges and delays in addressing issues. In a recent presentation to the CEO, human resource department highlighted that technological advancements in SF has resulted in 40% overlapping duties across many levels of management.
- (iii) Shiza Autos (SA), a growing automobile assembly plant, initially hired security staff through personal contacts and has been managing them manually, leading to operational challenges. SA recognises its lack of expertise in this domain and acknowledges the absence of technological tools necessary for efficient security process management.

Required:

- a) Briefly explain the strategies of outsourcing, restructuring, downsizing and de-layering in the context of the impact of technological changes and the need for organizational adjustments.
- b) Suggest the right strategy for each of the mentioned entities, based on the strategies explained in part (a) above. Provide reasons for your answer.

9. DISRUPTIVE TECHNOLOGIES – AUTUMN 2024 (Q5)

Examples of technological advancements include Blockchain technology, the 5G network, Intel's new generation of Core i7 processors, 3TB USB drive, Windows 11, Social media platforms, and e-Commerce.

Required: Define disruptive technology and discuss whether each example of technological advancements listed above is disruptive or non-disruptive.

ANSWERS

1. Option (a) is correct answer. Industrial production is a coincident indicator.
2. Option (a) and (d) are correct answers because stock market returns and index of business confidence
3. Option (c) is correct answer i.e., smartphone with improved users' interface and camera resolution
4. Option (c) is correct answer i.e., ordering food by calling the restaurant.
5. Option (c) is correct answer.
6. Option (c) is correct answer i.e., emergence of electric cars replacing traditional combustion engine vehicles.

7. OUTSOURCING & DISRUPTIVE TECHNOLOGIES

- (a) Outsourcing means arranging for other business organisations to perform some administrative tasks, or management tasks, instead of having to employ individuals to do the task internally, as part of the organisation's own activities.

When a business performs all these non-core activities itself, this diverts management attention away from the core competences. The management should focus on its strengths, not the routine and ordinary. It should therefore outsource 'noncore' activities and concentrate on its core activities, to make sure that it maintains or improves its competitive advantage over rivals.

Therefore, FabTabz should outsource its non-core activities i.e. product assembly, packaging and distribution to specialized vendors to meet the demand.

- (b) Disruptive technology is an innovation that significantly alters the way consumers, industries, or businesses operate.

The examples are: 3D printing, Blockchain Technology and Biotechnology.

8. DOWNSIZING, OUTSOURCING, RESTRUCTURING & DELAYERING - SPRING 2024 (Q2)

- (a) **Outsourcing** - means arranging for other business entities to perform some administrative tasks, or management tasks, instead of having to employ individuals to do the task internally, as part of the entity's own activities.

Restructuring - Restructuring may be vertical and horizontal both. Different organizations merge functions, sections and departments according to the technological advancement and continuously restructure the organizational structure. Like real time, online data availability has shifted the regional decision making into centralized decisions.

Downsizing - means the reduction in size of a business entity. It does not (necessarily) mean that the business entity is selling fewer goods or services. It means that its business activities are conducted by a smaller number of people.

De-layering - means removing one or more levels of management in the entity's organisational structure.

- (b) **Easy Foods (EF):** Solution: Downsizing

Reasoning: With the introduction of automatic production and packaging machinery leading to a reduced need for manual labour, downsizing is a suitable solution. This allows EF to align its workforce with the new technological landscape, ensuring cost-effectiveness and improved efficiency.

Spicy Foods (SF): Solution: Delaying

Reasoning: The issue of overlapping duties across multiple management levels indicates a need for simplifying the organizational structure. De-layering would streamline decision-making processes, enhance communication, and eliminate redundancy, ultimately improving the overall efficiency of SF.

Shiza Autos (SA): Solution: Outsourcing

Reasoning: SA's security staff challenges stem from lack of expertise in this domain and absence of technological tool for its efficient process management. Outsourcing security services to specialized agencies can enhance operational efficiency, ensure professional security management, and allow SA to focus on its core business activities.

9. DISRUPTIVE TECHNOLOGIES**Definition**

Disruptive technology is an innovation that significantly alters the way consumers, industries, or businesses operate. A disruptive technology sweeps away the systems or habits it replaces, because it has attributes that are recognizably superior.

Examples of technologies

Examples	Classification	Explanation
Blockchain Technology	Disruptive	Blockchain has the potential to revolutionize various industries by enabling secure, transparent, and decentralized transactions. It challenges traditional financial systems and can transform industries such as banking, supply chain management, and even voting systems.
5G Network	Disruptive	The 5G network is considered disruptive because it dramatically increases speed and reduce latency, enabling new technologies like autonomous vehicles and IoT. It also transforms industries by supporting new business models and applications. Additionally, it requires substantial changes to existing infrastructure, driving a shift in telecommunications and related sectors
Intel's New Generation of i7 Core Processors	Non-disruptive	The Intel Core i7 processors represent incremental improvements in processing power and efficiency. While they enhance performance, they do not fundamentally change the market or disrupt existing business models.
3TB USB Drive	Non-disruptive	Higher capacity USB drives offer greater storage solutions but do not disrupt the existing market. They provide incremental improvements in data storage without changing how storage solutions are fundamentally used.
Windows 11	Non-disruptive	Windows 11 is an updated version of Microsoft's operating system, offering new features and improvements. While it enhances user experience and productivity, it does not disrupt the operating system market.
Social Media Platforms	Disruptive	Social networking platforms like Facebook, Twitter, and LinkedIn have transformed how people interact and communicate. They have disrupted traditional media, advertising, and even job recruitment by providing new ways to connect and share information
E-Commerce	Disruptive	E-Commerce has revolutionized traditional business models by enabling online transactions and digital interactions. It has disrupted retail, finance, and various service industries by providing more efficient, accessible, and scalable business solutions.

PESTEL ANALYSIS (III) – CASE STUDY QUESTIONS

IN THIS CHAPTER

1. Self-test questions

1. SELF-TEST QUESTIONS

1. InfoTech

InfoTech is a manufacturer of spare parts of information and communication technology products such as smart phones, computers and network devices.

InfoTech is exploring new markets to diversify and expand its business. Some planning experts have identified People's Republic of Highland.

Highland is also one of the fastest growing countries in relation to technological advancement and adoption since it has a literacy rate of 70% and most of the workforce are university graduates.

Highland remained under the shadows of its neighbor for a long time and remained more inclined towards a communist political ideology. Only recently the country has started encouraging foreign companies to invest in business and commercial infrastructure.

The government of Highland wants to promote the booming IT industry and therefore is keen to find out more about InfoTech and its business.

Required: Before the management of InfoTech makes a decision, they want to analyse the business environment it will operate in. What are the elements of the business environment that InfoTech should focus on?

2. Flavorsome

Flavorsome, a US-based fast food chain has gained worldwide recognition due to unique taste, exemplary ambiance and economy meals. It is considering to exploit an opportunity to expand its business in major cities of Xanata.

Xanata is a developing country where demand for fast food is ever increasing and during the last decade, local as well as international fast food chains have enjoyed substantial profits. Despite widening wealth gap, fast food has gained immense popularity among lower and middle class. However, social awareness groups are pressurizing health ministry to revise public health policy by introducing stringent regulations on food industry.

The government is offering tax holiday to encourage foreign investment. This incentive is strongly being opposed by local business community. In the past few years, Xanata has seen high inflation rate and the government is considering to raise the minimum wage rate by 25%.

Burger Buddy, a leading local fast food chain is gaining popularity because of its social contributions, advanced technologies, use of social media/mobile application for promotional activities, etc.

Required: Identify the environmental factors relevant to the above situation and group them for the purpose of PEST analysis.

3. Star Business School (SBS) – Spring 2023 (Q6)

Star Business School (SBS), a renowned world-class education provider, is offering a range of degree courses in business, accounting, finance, human resource, hospitality management, marketing, and supply chain management. The school boasts a strong faculty, high-quality research, state-of-the-art infrastructure, and a zero-tolerance policy for quality education.

SBS has been receiving grants from the government to support its futuristic educational activities. However, due to political instability and a deteriorating economic situation in the country, the educational sector has experienced a decline in grants over the past year. Further, it has been under consideration that the grant shall be given to a university only on the recommendation of the Higher Education Commission and its related bill has recently been placed before the National Assembly.

In order to remain competitive, SBS has invested heavily in the latest software and technology for its education program, to ensure smooth delivery of lectures both online and in-person. It is also reserving seats and offering scholarships for international students, and is working on student and faculty exchange programs with world-

class universities. SBS's long-term plans include launching various online programs for international students and opening facilitation offices in countries with a high potential for collaborations and international students.

Required: Conduct PESTEL Analysis on the information provided for SBS.

4. Elektrik Automobile (EA) – Spring 2024 (Q6)

Elektrik Automobile (EA), a renowned multinational company is currently considering the establishment of an electric car assembly plant in Paland. With manufacturing and assembly plants spread across various countries, EA aims to capture the growing market for electric vehicles. The proposal includes selling a specific number of electric cars locally in Paland and exporting the remaining production to various parts of the world. EA's strategic move is driven by the absence of electric car assembly facilities in Paland, presenting an opportunity to cater to the evolving preferences in the automotive industry.

With the evolution of the automotive industry, electric cars are positioned not only as efficient means of transportation but also as lifestyle choices and status symbols across the world. EA's target demographic in Paland consists of individuals seeking eco-friendly alternatives amid rising petrol prices. Despite the somewhat unstable political and economic conditions in Paland, the government is actively working to instill confidence among foreign investors by providing tax exemptions and strengthening emission regulations, aligning with EA's expansion plans. This venture not only promises economic benefits and job opportunities for the local population but also addresses the increasing environmental concerns by introducing electric vehicles to the market.

Required: Perform PESTEL Analysis of electric automobile industry in Paland.

5. Hike

Hike is globally renowned brand that manufactures and distributes world class apparel and equipment used in hiking and mountaineering sports. The company is headquartered in Italy serving all of Europe and North America.

Recently the GM Marketing of Hike visited the northern areas of Pakistan and saw that the country has tremendous potential for adventure-based tourism in Gilgit Baltistan. He also observed that a lot of local as well as foreign tourists visit the northern areas for hiking expeditions and adventure sports. Upon his return to Italy, he has suggested to his CEO that the company should enter the Pakistani market to sell their products.

The CEO has asked for a proposal before a final decision can be made. You are required to develop an external analysis as part of his proposal to launch in Pakistan. You may quote examples to support your findings.

6. Ryde

Ryde is a rapidly growing transportation service provider. It is an app that connects users who are interested in car pooling their way to work or around the city. People like its features such as easy accessibility through the mobile app and sharing of commute. The company believes that it will provide easy commute to people and also help address traffic congestion issues.

However, there are controversies such as minimum wage laws for drivers and bans by some authorities that make it difficult to compete. Drivers have questions about its insurance policy in case of an accident, will the company:

- hold the driver as accountable or,
- take the blame on itself.

Moreover, businesses like Ryde have given rise to a 'shared' economy where there is no need to invest in physical assets or hire a large workforce for the provision of service.

A lot of factors come into play considering the environment of Ryde's business model.

It is important to analyze the environmental factors of business. Suppose you are hired as a consultant to plan the launch of Ryde in Pakistan and are asked to study the external business environment of Ryde? You may quote examples to support your findings.

7. FROOT

FROOT is a leading brand of fruit juice concentrates operating in local and international markets such as the United States, Canada, UAE and Europe. Senior Management of FROOT is due to start working on their next 5-year plan. The business environment of the beverages market keeps changing and the management is of the view that a fresh environmental analysis should be carried out before embarking the next five-year plan.

The company has faced a lot of business issues and survived a difficult time during the recent COVID-19 pandemic. What factors in the business environment should be considered for a company like FROOT?

ANSWERS

1. Answer of InfoTech

Political Factors

InfoTech would have to consider the political ideology and state policies of the Highland to assess its effects on the foreign companies entering into the market.

- The government of Highland is planning to promote IT industry which could bring some favourable government support for IT companies like InfoTech.
- The government has communist ideology which means state will control the businesses:
 - Companies may face lot of state intervention which could affect smooth operations of the company.
 - Businesses would not be allowed to own assets independently and the government may impose higher taxes to curb certain business activities and achieve their political agendas.

Economic Factors

InfoTech should monitor key economic indicators of Highland in recent years before making investment in the country. These economic indicators may include:

- Gross domestic product (GDP) and its growth in order to determine level of economic growth and level of demand for tech products
- Inflation rate should be observed to determine cost of doing business and impacting profitability of business
- Unemployment rate and availability of reasonable human resource should be assessed
- Interest rate and availability of borrowing
- Level of international trade and balance of payment to assess trade and exchange restrictions

Social Factors

To assess the market potential for technology related products, company should consider attitudes, life style, level of education and demographics (in terms of age, gender, social class and prevalent languages) of the people living in Highland.

- People in Highland are adopting technology at faster rate than other countries and demonstrates openness to innovative products and services, making it an attractive market.
- Youth, as a key demographic, represents a primary target audience for technology products. The larger the market, the more beneficial it will be for InfoTech.
- Moreover, with a 70% literacy rate and a workforce largely comprising university graduates, Highland offers a skilled labour pool suitable for manufacturing spare parts. This high literacy level also supports the adoption of advanced technology across industrial and consumer markets.

Technological Factors

Although Highland has an advanced technological base but Info Tech should evaluate usage and transfer of technology before making investment in the country.

- Assess whether the technologies it is working to launch are aligned with market demand in Highland.
- Evaluate the ease of technology transfer when entering into a new country
- Analyse the extent to which existing businesses in Highland use technology to advertise their products and services through social media, blogs and vlogs. Additionally, assess whether they sell their products through M-commerce and e-business platforms.

Environmental/Ecological Factors

Although environmental situation of the country is not clearly stated in above scenario but Info Tech should analyse the following ecological factors prior to enter into Highland:

- The extent of pollution caused by technological waste and environmental policies of the country regarding the disposal of electronic components
- The availability of renewable energy sources, electricity costs, and carbon footprint reduction initiatives, as these factors could influence operational efficiency and overall costs of the businesses.

Legal Factors

Like any other country Highland would have laws and regulations that foreign companies must be expected to adhere to. Some specific laws that would need attention would be:

- Laws of incorporating a business
- Labour and Employment laws
- Copyright, patents and licenses
- Insurance and Regulatory costs

2. Answer of Flavorsome

Political Factors

Flavorsome should have to consider the state policies of Xanata to understand their impact on the foreign companies entering into the market.

- The government of Xanata is offering tax holiday which could reduce tax burden on the foreign companies like Flavorsome.
- Local business community of Xanata is opposing tax exemption which may pressurize the government to reconsider its policy and consequently exemption may be withdrawn.
- Government of Xanata is also planning to increase minimum wages rate which could increase the cost of labour and may adversely affect profitability of the business.

Economic Factors

Flavorsome should monitor key economic indicators and economic position of Xanata in recent years before making investment in the country.

- Xanata is facing high inflation rate which may have adverse impact on:
 - economic growth of the country,
 - cost of doing business and
 - ability of customers to buy
- Xanata is a developing country so Flavorsome should also monitor other economic indicators such as interest rate, unemployment rate and balance of payments. ▪
- Demand for fast food is growing and fast food chains are enjoying substantial profits which could also be favourable sign for expected profitability of Flavorsome.

Social Factors

- There is an increased trend on habits of eating fast food among middle and lower classes that may comprise of major proportion of population of Xanata.
- Existence of social pressure groups in the society may impact prospects of food businesses

- Trend of social contributions by existing players is appreciated by consumers and may be beneficial for Flavorsome as well.

Technological Factors

- There is a trend of using advanced technologies among fast food chains as reflected in the success of Burger Buddy.
- Use of social media and mobile application for promotional activities is also on rise.

3. Star Business School (SBS) – Spring 2023 (Q6)

A PESTEL analysis for Star Business School (SBS) would consider the following factors:

Political

SBS is facing political instability in the country and a decline in grants from the government, which could impact its future plans and activities.

Economic

The overall deteriorating economic conditions of the country are affecting the education sector and causing a decrease in grants. However, SBS is trying to stay competitive by offering scholarships and launching online programs for international students.

Social

SBS is working on student and faculty exchange programs to collaborate with world-class universities, which could help improve its reputation and attract international students.

Technological

SBS has invested in the latest software and technology to ensure smooth online and face to-face lectures, which will ensure smooth delivery of lectures both online and in-person.

Environmental/Ecological

The impact of the school's activities on the environment is not addressed in the given situation.

Legal

A bill has recently been placed in the National Assembly to issue grant to a university only on the recommendation of Higher Education Commission. If the bill is passed it could impact SBS's ability to achieve its goals.

4. Elektrik Automobile (EA) – Spring 2024 (Q6)**Political Factors**

- Paland is somewhat politically unstable, which could pose risks for a multinational company like EA.
- The government is actively working to attract foreign investors, offering support to companies like EA.

Economic Factors

- The economic instability in Paland may be a concern for EA.
- Rising petrol prices could work in favor of electric vehicles, making them an attractive option for consumers seeking cost-effective and eco-friendly alternatives.

Social Factors

- The shift towards eco-friendly alternatives indicates a positive trend for electric vehicles.
- Electric cars are seen as lifestyle choices and status symbols.

Technological Factors

- There is an absence of electric car manufacturing technology/plant within Paland by bringing the technology, EA can achieve first mover advantage.

Environmental Factors

- The increasing awareness of environmental issues in Paland presents an opportunity for EA. Marketing the eco-friendly aspects of electric cars could attract environmentally conscious consumers.

Legal Factors

- Paland government is actively working to instill confidence among foreign investors by providing tax exemptions.
- Paland government is also strengthening emission regulations.
- Exporting electric cars to various parts of the world involves navigating trade regulations and tariffs.

5. Answer of Hike**Political Factors**

Hike should consider the political environment of Pakistan because it could impact the operations and business strategy of a multinational companies like Hike.

- Historically, Pakistan has experienced political instability which may pose challenge for foreign entrants. Although the security situation has improved but regional tensions and political uncertainty remain areas of concern.
- Successive governments in Pakistan have shown a commitment to promote tourism which is an encouraging for planned venture of Hike.
- The government has initiated policies to attract both local and international tourists, such as easing visa requirements, promoting adventure tourism, and enhancing infrastructure in northern areas. These efforts align well with Hike's intended business activities.

Economic Factors

Hike should also examine the key economic indicators of Pakistan to assess its present economic situation and market viability.

- GDP of Pakistan has been growing at a modest rate. Despite facing macroeconomic challenges, the country continues to show potential for economic resilience.
- Inflation rate in Pakistan is generally high which can affect the purchasing power of consumers, limiting their affordability to buy premium hiking gear and could also increase the cost of doing business in Pakistan. Due to this uncertainty, a large investment in hiking business in Pakistan could be a high-risk venture.

Social Factors

The company should monitor the social factors such as population demography, lifestyles and law order situation especially in northern areas of Pakistan.

- A large and growing youth population is entering the workforce, contributing to the gradual emergence of a stronger middle class.
- Pakistan also has the advantage of abundant cost-effective workforce with fairly good English-speaking skills therefore Hike could tap on this potential advantage.
- Moreover, for last few years, with the improved tourism site in Pakistan, locals are visiting northern areas. This could be an attractive segment for Hike, though hiking would be a new sporting activity for Pakistanis.
- A very critical analysis of law and order situation, current and in near future, would be important to take decision.

Technological Factors

- As Hike is not going to manufacture in Pakistan, the advanced equipment and assembly lines would not be a concern for now but the company would have to make provisions for the technology it needs to sell and distribute its products.
- In Pakistan, top social networking sites are Facebook, Twitter, Pinterest, Instagram, YouTube, and LinkedIn have a substantial following that is good tool for Hike to use for promotional campaigns and advertisements.
- The success of other global technology-based platforms like Careem and Uber have paved the way for brands like Hike to utilize a market that is willing to accept technological change.

Legal Factors

- In terms of legal environment, Hike should keep an eye on the copyright of designs of its apparel and equipment plans to sell in Pakistan.
- Other laws that Hike may want to study closely are laws relating to corporate taxes, employment, minimum wages and incorporation of business and the ease of doing business in Pakistan.

6. Answer of Ryde**Political Factors**

Ryde should examine the political landscape of Pakistan because it presents both opportunities and challenges for the multinational companies.

- Governments across different political ideologies are dealing with issues such as unemployment and inadequate civic infrastructure therefore a technology-driven transport solution like Ryde may gain support from policymakers due to its potential to generate income opportunities and improve urban mobility.
- However, regulatory challenges such as city-level bans, pressure from traditional taxi unions, and political lobbying by existing transport providers may pose operational hurdles. Ryde must actively engage with local governments and regulatory bodies to align its operations with evolving policies.

Economic Factors

Ryde operates within the broader domain of the sharing economy, which focuses on the collaborative use of physical or intellectual resources.

- In this model, individuals register on the platform to provide transport services, often at a lower cost than conventional taxis, making it attractive for price-sensitive consumers.
- Although Ryde creates employment opportunities for some people but it can also disrupt existing transportation services, leading to high unemployment rate in the traditional taxi and public transport sectors.
- Economic uncertainty, high inflation, and fuel price volatility in Pakistan may affect both the affordability of rides for consumers and earnings for drivers. Therefore, Ryde must develop a flexible pricing model and cost-sharing mechanisms to sustain its service.

Social Factors

Ryde should investigate demographic distribution of Pakistan which is predominantly composed of young, urban, and tech-savvy individuals seeking convenience and affordability.

- The youth population in Pakistan is expanding, with a growing number of individuals entering the workforce. This group favours digital platforms and could serve as Ryde's primary user base.
- Another significant customer segment includes working women and female students who seek safe, reliable commuting options. The increasing participation of women in universities and workplaces highlights the demand for app-based carpooling services.

- Social acceptance of the gig economy is also growing, particularly among those who prefer flexible employment arrangements. However, Ryde must address concerns related to driver accountability, safety, and service reliability to maintain trust among users.

Technological Factors

The business model of Ryde is dependent upon technology, which mainly relies on a robust and user-friendly mobile application.

- The app allows users to schedule rides, view fare estimates based on location, traffic, and weather, and make digital payments via debit/credit cards or e-wallets.
- Ryde can leverage Pakistan's growing mobile internet penetration and the popularity of platforms such as Facebook, Instagram, and YouTube to run targeted marketing campaigns.
- However, technological disruptions such as app crashes, network outages, or cybersecurity threats can severely impact service delivery. Ryde must invest in reliable infrastructure, system backups, and secure data management to ensure seamless operations.
- Drivers, many of whom rely on 4G networks to remain connected, need consistent access to high-speed internet, which is a critical enabler of Ryde's functionality.

Ecological (Environmental) Factors

- Major urban centers of Pakistan like Lahore and Karachi face alarming levels of air pollution due to excessive vehicle emissions and poor public transport infrastructure. Ryde's carpooling model could help reduce the number of vehicles on roads and contribute to easing this environmental burden.
- With growing public awareness about climate change and sustainability, especially among the educated youth and urban population, customers are increasingly inclined toward eco-friendly services. Ryde can attract this segment by promoting its contribution to reducing carbon emissions through shared rides.

Legal Factors

Ryde must understand and comply with the regulations governing ride-hailing services in Pakistan.

- Legal ambiguity exists around whether Ryde drivers require commercial licenses and whether vehicles used on the platform must meet certain safety and documentation standards.
- The company must comply with labour laws, including driver rights, safety protocols, and minimum wage regulations, which are currently a topic of concern in similar global markets.
- Furthermore, laws relating to anti-competition practices, road traffic regulations, vehicle ownership, and tax compliance must be observed.
- It is essential for Ryde to maintain accurate records of driver qualifications, vehicle inspections, and insurance policies to safeguard both passengers and drivers in case of accidents or disputes.

7. Answer of FROOT

Political Factors

FROOT is a multinational and exports to multiple countries therefore it should monitor state ideology, state policies and political stability of the different countries because it could influence its operating business accordingly.

- Governments with a pro- agricultural economic policy may introduce initiatives that prioritise local farmers and agricultural sustainability. This can impact FROOT's supply chain, especially in sourcing fruit concentrates and dealing with price controls or subsidies.
- Political stability in countries where FROOT operates ensures consistency in trade and regulatory frameworks but political instability may result in sudden policy shifts, trade restrictions, or disruptions in supply chains.

Economic Factors

- The COVID-19 pandemic led to a decrease in consumer spending, with lockdowns disrupting supply chains and closing retail stores and restaurants, causing a drop in FROOT's sales.
- As the situation improves and businesses reopen, consumer spending is recovering, creating an opportunity for FROOT to increase its market share, especially in segments like carbonated drinks with high fruit juice content.

Social Factors

- Pakistan's large young population and the growing trend of dining out and urbanization present a strong market opportunity for FROOT to target its competitive strategies.
- Consumer choices are heavily influenced by lifestyle, culture, age, and income, with young people and children particularly inclined towards beverages both at home and in restaurants.

Technological Factors

- With the shift to e-commerce platforms, FROOT should explore unconventional distribution channels to reach a wider customer base beyond traditional stores.
- Technological advancements in manufacturing and operations require FROOT to invest in modern equipment and assembly lines for greater efficiency, while online digital marketing can boost sales as internet penetration rises.

Ecological Factors

- FROOT should consider environmental sustainability practices, including waste management, eco-friendly packaging, and reducing carbon emissions during production and distribution.
- The company must stay updated on global environmental regulations and consumer trends towards eco-conscious products, which may impact its operations and brand image.

Legal Factors

- FROOT must comply with regulations on licensing, packaging, labeling, and other permits required by authorities in the beverage industry.
- Legal factors, including health and safety laws, environmental regulations, and consumer protection laws, must be considered when formulating strategies.

COMPETITIVE FORCES

IN THIS CHAPTER

1. Understanding markets and industries
2. Industry competition: five forces model
3. Life cycle model
4. Strategic groups and market segmentation
5. Boston consulting group matrix (BCG matrix)
6. Self-test questions

1. UNDERSTANDING MARKETS AND INDUSTRIES

1.1 Definition of market

A market is a place where buying and selling takes place. A market can be defined in different ways.

- It can be defined by the **products or services** that are sold, such as the fashion clothes market, the banking market or the market for air travel.
- It can be defined by the **customers or potential customers** for products or services, such as the consumer market or the 'youth market'.
- Customer markets might also be defined by **geographical area**, such as the North American market or European market. Markets can be global or localised.

An important aspect of business strategy for companies is concerned with understanding how to sell goods or services successfully to specific target markets. These strategies are known as **product-market strategies** and help companies to decide which markets to enter, which products or services to offer and how to position themselves in those markets.

The idea of markets and customers is not just limited to profit making businesses. A similar concept of 'markets' and 'customers' can also be applied to the provision of public services, such as state-owned schools and hospitals. For example, there are 'markets' for education services in which customers are pupils (or their parents).

1.2 Industries and segments

1.2.1. Definition of industry

An industry consists of suppliers who produce similar goods and services. For example, there is an aerospace industry, an automobile manufacturing industry, a construction industry, a travel industry, a leisure industry, an insurance industry, and so on.

1.2.2. Industry segments

Within an industry, there may be different segments. An industry segment is a *separately-identifiable part* of a larger industry. For example, the automobile industry can be divided into segments for the assembly of automobiles and the manufacture of parts. Similarly, the insurance industry has several sectors, including general insurance, life assurance and pensions.

1.2.3. Strategic Decisions

Companies need to make strategic decisions about:

- the industry and industrial segment (or segments) they intend to operate in, and
- the market or markets in which they will sell their goods or services.

A distinction should be made between products and markets.

- Companies in different industries might sell their goods or services to the same market. For example, small building companies (who sell their services in performing minor construction and maintenance work such as repairs and decorating in people's private homes) compete with retailers of do-it-yourself tools and other products (which enable home-owners to perform those minor construction and maintenance jobs themselves).

Another example is where laundry services compete with manufacturers of domestic washing machines.

- Companies in the same industry might not compete because they operate in different markets. For example, a ferry company operating passenger services between the UK and France is in the same industry as a ferry company operating passenger services between the Greek islands, but they are in the same industry.

In their analysis of strategic position, management need to recognise which industries and segments they operate in, and also which markets they are selling to. They also need to recognise changing conditions in industries, segments and markets, in order to decide what their product-market strategies should be in the future.

1.2.4. Generic types of industry

Porter suggested that there are five generic types of industry. The strategic position of a company depends to some extent on the type of industry it is operating in. The five industry types are as follows:

- **Fragmented industries.** In a fragmented industry, firms are small and each sell to a small portion of the total market. Examples are dry cleaning services, hairdressing services, and shoe repairs.
- **Emerging industries.** These are industries that have only just started to develop, and are likely to become much bigger and much more significant in the future. Examples are the global space travel industry and the telecommunication industry in Africa.
- **Mature industries.** These are industries where products have reached the mature phase of their life cycle. (The product life cycle is described later.) Examples are automobile manufacture and soft drinks manufacture.
- **Declining industries.** These are industries that are going into decline: total sales are falling and the number of competitors in the market is also falling. An example is coal mining in Europe.
- **Global industries.** Some industries operate on a global scale, such as the microprocessor industry and the professional football industry.

1.3 Convergence

Occasionally, two or more industries or industrial segments converge, and become part of the same industry, with the same customer markets. When convergence is happening, or might happen in the future, this can have a major impact on business strategy.

► Example: Communications services

In the past, there were three separate communications industries providing services to consumer households.

- Television broadcasters (such as the BBC) delivered terrestrial television services to households.
- Telephone service companies delivered voice communications to households through the telephone network.
- More recently, data communications have been provided to households through internet service providers.

A separate mobile telephone industry also developed.

These industries or industrial segments are now converging into a single industry, serving the same customers. Voice, data and entertainment services can be delivered over the same network. They can also be delivered to mobile telephones as well as to households.

As a consequence, these industries have undergone, and continue to undergo, major strategic changes.

- Technology is continuing to develop. It should soon be possible to download high-quality TV pictures over the internet. Customers will be able to receive voice, data and entertainment services through the same hardware, anywhere and at any time.
- New products and new services will emerge and markets for these products will grow – examples are on-demand TV programmes, video conferencing, and narrowcasting (delivering programmes to a targeted audience). Direct advertising services will also be affected.

Inevitably, some companies will be 'winners' and some will be 'losers'. The companies that survive in the converging industries will be those that are most successful with their strategic management.

Demand-led and supply-led convergence

Convergence can be either demand-led or supply-led.

- With demand-led convergence, the pressure for industry convergence *comes from customers*. Customers begin to think of two or more products as interchangeable or closely complementary.
- With supply-led convergence, *suppliers see a link between different industries and decide to bridge the gap* between the industries. The convergence of the entertainment, voice communication and data communication industries, discussed in the previous example, is probably supply-led, because suppliers became aware of the technological possibilities before consumers became aware of the convenience.

2. INDUSTRY COMPETITION: FIVE FORCES MODEL

2.1 Competition analysis

Analysing competition is an important part of strategic position analysis.

- It is also important to assess the strength of competition in a market, and try to understand what makes the competition weak or strong.
- A company should also monitor each of its major competitors, because in order to obtain a competitive advantage, it is essential to know about what competitors are doing.

Porter's Five Forces model provides a framework for *analysing the strength of competition* in a market.

It is not a model for analysing individual competitors, or even what differentiates the performance of different firms in the same market. In other words, it is not used to assess why some firms perform better than others.

2.2 Profitability and competition

The Five Forces model can also be used to explain why some industries are more profitable than others, so that companies operating in one industry are able to make bigger profits than companies operating in another industry.

Profitability is affected by the strength of competition: the stronger the competition, the lower the profits.

Note: Porter argued that *two factors affect the profitability* of a company:

- Industry structure and *competition in the industry*, and also
- Sustainable competitive advantage

2.3 The Five Forces

Michael Porter ('Competitive Strategy') identified five factors or 'forces' that determine the strength and nature of competition in an industry or market.

These are:

- threats from potential (new) entrants
- threats from substitute products or services
- the bargaining power of suppliers
- the bargaining power of customers
- competitive rivalry within the industry or market.

The Five Forces model is set out in the following diagram.

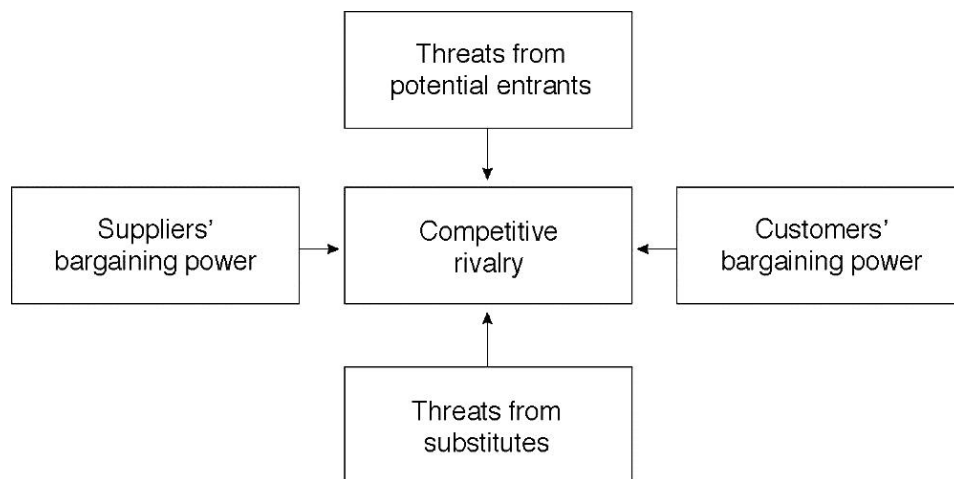


Figure 4.1

When competition in an industry or market is strong, firms must supply their products or services at a competitive price, and cannot charge excessive prices and make 'supernormal' profits. If they do not charge the lowest prices, firms must compete by offering products that provide extra value to customers, such as higher quality or faster delivery.

When any of the five forces are strong, competition in the market is likely to be strong and profitability will therefore be low. Analysing the five forces in a market might therefore help strategic managers to choose the markets and industries for their firm to operate in.

2.3.1. Threat from potential (new) entrants

One of the Five Forces is the threat that new competitors will enter the market and add to the competition. New entrants might be attracted by the high profits earned by existing competitors into the market, or by the potential for making high profits. When they enter the market, new entrants will try to establish a share of the market that is large enough to be profitable. One way of gaining market share would be to compete on price and charge lower prices than existing competitors.

The significance of this threat depends on how easy or how difficult it would be for new competitors to enter the market. In some markets, the cost of entering a new market can be high, with new entrants having to invest in assets and establish production facilities and distribution facilities. In other markets, the cost of entering the market can be fairly low.

The costs and practical difficulties of entering a market are called 'barriers to entry'.

- **When barriers to entry are low.** If new entrants are able to come into the market without much difficulty, firms already in the market are likely to keep prices low and to meet customer needs as effectively as possible. As a result, competition in the market will be strong and there will be no opportunities for high profit margins.
- **When barriers to entry are high.** When it is difficult for new competitors to enter a market, existing competitors are under less pressure to cut their costs and sell their products at low prices.

Factors serve as a high barrier to entry

A number of factors might help to create high barriers to entry:

- **Economies of scale.** Economies of scale are reductions in average cost per unit that is achieved by producing and selling an item in larger quantities. In an industry where economies of scale are large, and the biggest firms can achieve substantially lower cost per unit than smaller producers, it is much more difficult for a new firm to enter the market. This is because it will not be big enough at first to achieve the economies of scale, and its average cost per unit will therefore be higher than those of the existing large-scale producers.
- **Capital investment requirements.** If a new entrant to the market will have to make a large investment in assets, this will act as a barrier to entry, and deter firms from entering the market when they do not want the investment risk.
- **Access to distribution channels.** In some markets, there are only a limited number of distribution outlets or distribution channels. If a new entrant will have difficulty in gaining access to any of these distribution channels, the barriers to entry will be high.
- **Time to become established.** In industries where customers attach great importance to branding, such as the fashion industry, it can take a long time for a new entrant to become well established in the market. When it takes time to become established, the costs of entry are high.
- **Technical Know-how.** This can be time-consuming and expensive for a new entrant to acquire technical knowledge to enter and to survive in the market.
- **Switching costs of buyer.** Switching costs are the costs that a buyer has to incur in switching from one supplier to a new supplier. In some industries, switching costs might be high. For example, the costs for a company of switching from one audit firm to another might be quite high, and deter a company from wanting to change its auditors. When switching costs are high, it can be difficult for new entrants to break into a market.

- **Government regulations.** Regulations within an industry, or the granting of rights, can make it difficult for new entrants to break into a market. For example, it might be necessary to obtain a license to operate, or to become registered in order to operate within an industry.

2.3.2 Threat from substitute products

Substitutes are those alternative products or services which can satisfy the same needs of customers. There is a threat from substitute products when customers can switch fairly easily to buying alternative products (substitute products).

The threat from substitutes varies between markets and industries, but a few examples of substitutes are listed below:

- Domestic heating systems in the cold climates: In the northern regions of Pakistan, consumers may switch between electric heaters, gas-fuelled heaters and oil-fuelled heaters.
- Transport: Customers might switch between air, rail and road transport services.
- Food and drink products: Consumers might switch between water, juice, soft drink, or lassi to satisfy need of thirst.

When there are substitute products that customers might buy, firms must make their products more attractive than the substitutes. Competition within a market or industry will therefore be higher when the threat from substitute products is high.

Threats from substitute products may vary over time. There are many examples in the past of industries that have been significantly affected by the emergence of new substitute products.

- Plastic containers and bottles became a significant substitute for glass containers and bottles.
- Synthetic fibres became a substitute for natural fibres such as wool and cotton.
- Word processors and personal computers became a substitute for typewriters, and the market for typewriters was destroyed.

2.3.3 Bargaining power of suppliers

In some industries, suppliers have considerable power. When this occurs, they might charge high prices that firms buying from them are unable to pass on to their own customers. As a result, profitability in the industry is low, and the market is competitive.

Porter wrote: 'Suppliers can exert bargaining power over participants in an industry by threatening to raise prices or reduce the quality of purchased goods or services. Powerful suppliers can thereby squeeze profitability out of an industry unable to recover cost increases in its own prices.'

► Example: Bargaining power of suppliers

An example of supplier power is possibly evident in the industry for personal computers. Software companies supplying the computer manufacturers (such as Microsoft) have considerable power over the market and seem able to obtain good prices for their products. Computer manufacturers are unable to pass on all the high costs to their own customers for PCs, and as a consequence, profit margins in the market for PC manufacture are fairly low.

Porter suggested that the bargaining power of suppliers might be strong in any of the following situations:

- When there are only a small number of suppliers to the market
- When there are no substitutes for the products that are supplied
- When the products of a supplier are differentiated, and so distinctly 'better' or more suitable than the products of rival suppliers
- When the supplier's product is an important component in the end-products that are made with it

- When the industry supplied is not an important customer for the suppliers
- When the suppliers could easily integrate forward, and enter the market as competitors of their existing customers.

The bargaining power of suppliers also depends on the importance of the product they supply. For example, for a firm that manufactures cars the bargaining power of engine suppliers will be greater than the bargaining power of suppliers of car mirrors.

2.3.4 Bargaining power of customers (buyers)

Buyers (customers) can reduce the profitability of an industry when they have considerable buying power. Powerful buyers (customers) are able to demand lower prices, or improved product specifications, as a condition of buying. Strong buyers (customers) also make rival firms compete to supply them with their products.

In the UK, a notable example of buyer power is the power of supermarkets as buyers in the market for many consumer goods. They are able to force down the prices from suppliers of products for re-sale, using the threat of refusing to buy and switching to other suppliers. As a result, profit margins in the manufacturing industries for many consumer goods are very low.

Porter suggested that buyers (customers) might be particularly powerful in the following situations:

- when the volume of their purchases is high relative to the size of the supplier
- when the products of rival suppliers are largely the same ('undifferentiated')
- when the costs of switching from one supplier to another are low
- when the cost of a purchased item is a significant proportion of the buyer's total costs (as the buyer is more likely to be motivated to switch to a lower-cost supplier)
- when the profits of the buyer are low (once again, as the buyer is more likely to be motivated to switch to a lower-cost supplier)
- when the buyer's product is not affected significantly by the quality of the goods that it buys
- when the buyer has full information about suppliers and their prices.

2.3.5 Competitive rivalry among Existing players

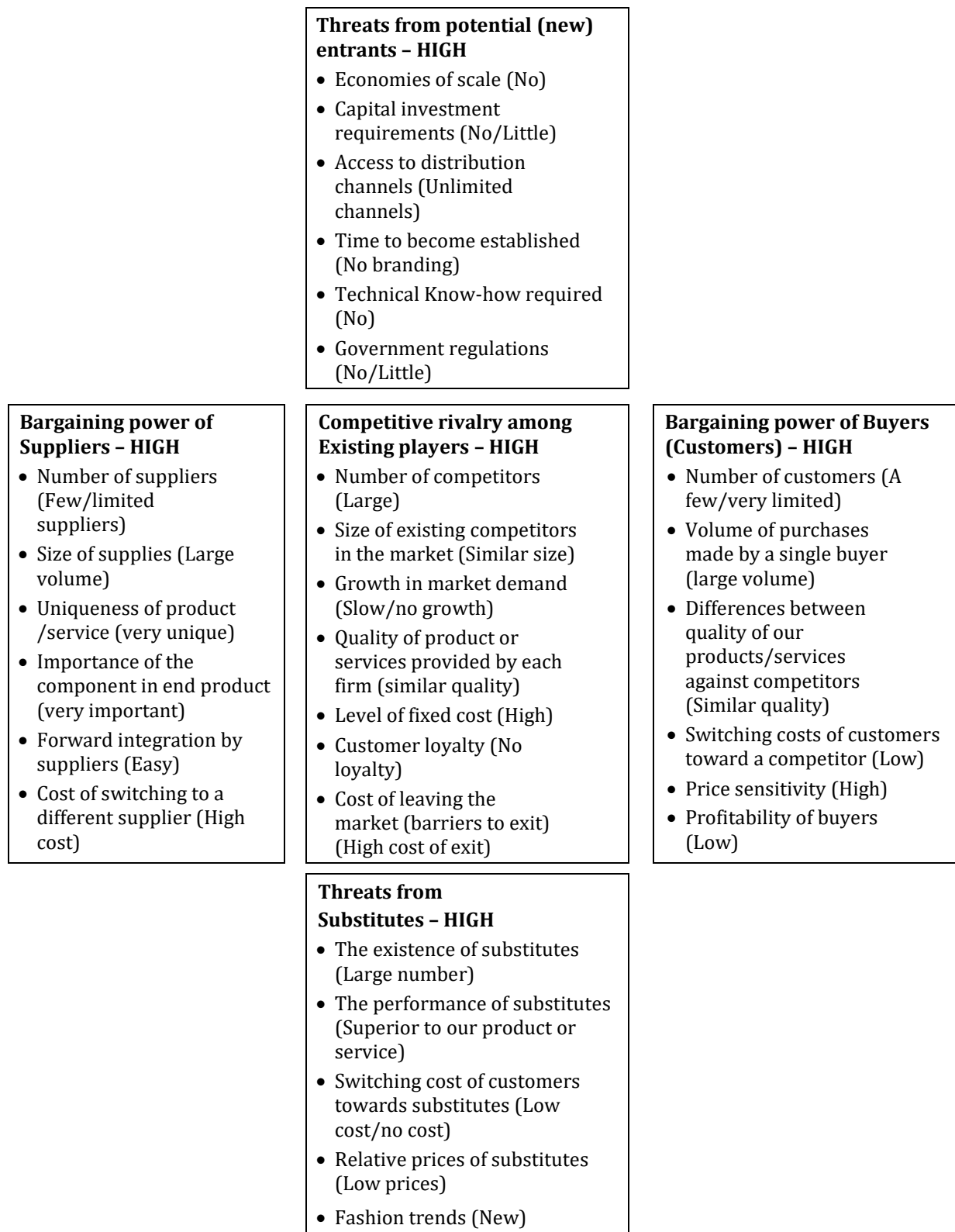
Competition within an industry is obviously also determined by the rivalry between the existing players. Strong competition forces rival firms to offer their products to customers at a low price (relative to the product quality) and this keeps profitability fairly low.

Porter suggested that competitor rivalry might be strong in any of the following circumstances:

- when the rival firms are of roughly the same size and economic strength
- when there are many competitors (large number of players in market)
- when there is only slow growth in sales demand in the market
- when the products of rival firms are largely the same ('undifferentiated')
- when fixed costs in the industry are high, so that firms still make some contribution to profit even when they cut prices
- when supply capacity can only be increased in large incremental amounts (for example, in electricity supply industry, where increasing total supply to the market might only be possible by opening another power generation unit)
- when the costs of withdrawing from the industry are high, so that even unprofitable companies are reluctant to leave the market.

2.4 Summary of The Five Forces Model

The Five Forces model is summarised below, showing some of the key factors that help to determine the strength of each of the forces in a highly competitive industry or highly competitive market.



2.5 Using the Five Forces model

In your examination, you might be required to use the Five Forces model to analyse the strength of competition in a market or an industry, in a question containing a case study or scenario. To do this, you should take each of the Five Forces in turn and consider how it might apply to the particular case study or scenario.

Here are two simple examples, with suggestions about the strength of competition. Your own views might differ.

► *Example: Five forces – legal services*

The Five Forces model can be used to analyse the market for legal services (the services of firms of solicitors) in a local area, where competition is between small and medium-sized firms.

- **Threat from potential entrants.** This is likely to be fairly low. New entrants must be qualified solicitors, and it could take time to establish a sufficiently large client base.
- **Suppliers' bargaining power.** Solicitors have no significant suppliers; therefore, the bargaining power of suppliers is non-existent.
- **Customers' bargaining power.** Most firms of solicitors have a fairly large number of customers. Customers need legal services. The bargaining power of customers is probably low.
- **Threat from substitutes.** There are no substitutes for legal services, except perhaps for some 'do-it-yourself' legal work.
- **Competitive rivalry.** This is likely to be very weak. Firms of competitors will not usually seek to compete with other firms by offering lower fees.

The conclusion is that competition in the market for legal services in a local region is very weak.

► *Example: Five forces – CDs and DVDs*

The Five Forces model can be used to analyse the competition for Amazon, the company that supplies books, CDs and DVDs through online ordering on its website. It has no direct competitor.

- **Threat from potential entrants.** This is likely to be fairly low, because of the costs of establishing a selling and distribution system and the time it might take a new competitor to create 'brand awareness'.
- **Suppliers' bargaining power.** Amazon obtains its books and other products from a large number of different suppliers. The bargaining power of most suppliers is therefore likely to be weak, with suppliers needing Amazon more than Amazon needs individual suppliers.
- **Customers' bargaining power.** Amazon has a very large customer base, and the bargaining power of customers is non-existent.
- **Threat from substitutes.** Substitutes are bookshops, shops selling CDs and DVDs, internet downloads of films and music, and online auction sites as a channel for selling second-hand books. In the longer-term electronic books might be another substitute.
- **Competitive rivalry.** Amazon has no direct competitor.

In conclusion, the major competition in the market served by Amazon is probably the threat from substitutes.

3. LIFE CYCLE MODEL

3.1 The 'classical' product life cycle

A 'life cycle' is the period from birth or creation of an item to the end of its life. Products, companies and industries all have life cycles. A product life cycle begins with its initial development and ends at the time that it is eventually withdrawn from the market at the end of its life.

A life cycle is said to go through several stages. The 'classical' life cycle for a product, or even an entire industry, goes through four stages or phases:

- Introduction
- Growth
- Maturity
- Decline.

Introduction phase. During this stage of a product life cycle, there is some sales demand but total sales are low. Firms that make and sell the product incur high cost per unit due to heavy investment costs, and start-up costs and running costs. The product is not yet profitable therefore no or a few players enter in the market.

Examples of products in introductory phase may include:

- Smart Glasses
- Iris-based identity cards
- 3-D printers
- Driverless cars

Growth phase. During the growth phase, total sales demand in the market grows at a faster rate which results in reduction in cost per unit. New entrants are attracted into the market by the prospect of high sales and profits. At an early stage during the growth phase, companies in the market begin to earn profits.

Examples of products in growth phase may include:

- E-conferencing
- Tabs & Smartphones
- Smart Cards used for banking transactions

Maturity phase. During the maturity phase, total annual sales remain fairly stable. Prices and profits stabilise. The opportunity for more growth no longer exists, although the life of the product might be extended, through product updates. New competitors may be reluctant to enter in maturity phase therefore existing companies might seek to improve profits by differentiating their products more from those of competitors, and selling to a 'niche' market segment.

Examples of products in maturity phase may include:

- Laptops
- Emails
- Credit Cards

Decline phase. Eventually, total annual sales in the market will start to fall. As sales fall, so do profits. This leads to companies leaving the market, which continues until it is no longer possible for any company to turn a profit from the product. When the last supplier exits the market the product lifecycle is complete.

Examples of products in decline phase may include:

- Personal Computers (Desktop)
- Fax messaging
- Handwritten letter and Eid cards
- Cheque books
- Portable CD/DVD players
- VCRs

A 'classical' product life cycle is shown in the following diagram.

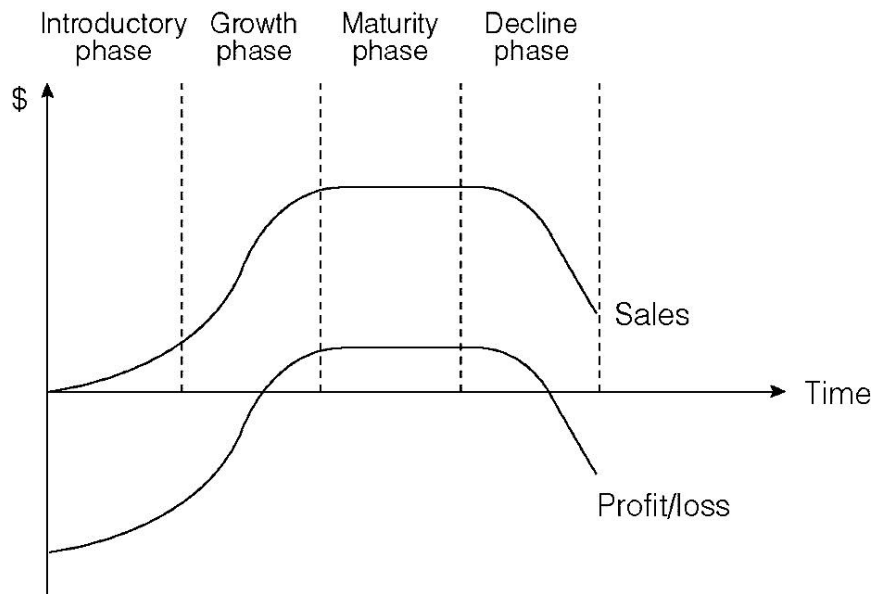


Figure 4.2

Not all products have a classical life cycle. Unsuccessful products never become profitable. A business entity might be able to 'revitalise' and redesign a product, so that when it enters a decline phase, its sales can be increased again, and it goes into another period of growth and maturity.

The length of a product life cycle can be long or short. A broad type of product, such as a motor car, has a longer life cycle than particular types of the product, such as a Volkswagen Beetle or a Ford Escort.

At each phase of a product's life cycle:

- selling prices will be altered
- costs may differ
- the amount invested (capital investment) may vary
- spending on advertising and other marketing activities may change.

► *Example: Life cycle of a smartphone*

The lifecycle of a smart-phone is relatively short and, in some cases, even less than a year due to the rapid developments in modern technology.

Soon after announcing the imminent launch of a new model in their smart-phone range, companies discount the price of their existing models in order to maximise sales and clear inventory. This attracts 'bargain hunters' who are happy to purchase 'old models' for a lower price and avoid paying the premium required for the new models.

3.2 Cost implications of the product life cycle

Life cycle costing can be important in new product launches as a company will of course want to make a profit from the new product and the technique considers the total costs that must be recovered. These will include:

- Research and development costs (decisions made at the development phase impact later costs)
- Training costs
- Machinery costs
- Production costs
- Distribution and selling costs

- Marketing costs
- Working capital costs
- Retirement and disposal costs

Stage	Costs
Product development	• R&D costs • Capital expenditure decisions
Introduction to the market	• Manufacturing costs • Operating costs including marketing and advertisement costs • Set up and expansion of distribution channels
Growth	• Costs of increasing capacity • Increased costs of working capital
Maturity	• Maintenance and operating costs • Marketing and promotion cost • Product enhancement costs to extend maturity
Decline	• Maintenance and operating costs • Costs to keep sales
Withdrawal	• Asset decommissioning costs • Possible restructuring costs such as layoffs, facility closure • Cost of remaining warranties to be supported

Benefits of Life cycle costing

Life cycle costing compares the revenues and costs of the product over its entire life. This has many benefits:

- The potential profitability of products can be assessed before major development of the product is carried out and costs incurred. Non-profit-making products can be abandoned at an early stage before costs are committed.
- Techniques can be used to reduce costs over the life of the product.
- Pricing strategy can be determined before the product enters production. This may lead to better control of marketing and distribution costs.
- Attention can be focused on reducing the research and development phase to get the product to market as quickly as possible. The longer the company can operate without competitors entering the market the more revenue can be earned and the sooner the product will reach the breakeven point.
- By monitoring the actual performance of products against plans, lessons can be learnt to improve the performance of future products. It may also be possible to improve the estimating techniques used.

3.3 Relevance of the product life cycle to strategic management

Strategic management should consider the cash flows and profitability of a product over its entire life cycle.

When a decision is being made about whether or not to develop a new product, management should consider the likely sales and returns over the entire life cycle. For existing products, management need to assess the position of a product in its life cycle, and what the future prospects for the product, in terms of profits and cash returns, might be.

3.4 Timing market entry

The product life cycle concept might help companies to make strategic decisions about when to enter a market and when to leave it.

- Entrepreneurial companies might look for opportunities to enter a new market during the introductory phase, in the expectation that the product will become successful and the company will win a large share of the market by being one of the first companies to enter it.
- More cautious companies, looking for growth opportunities, might delay their entry into the market until the growth phase, when the product is already making a profit for its producers.

Companies are unlikely to enter a market during the maturity phase unless they see growth opportunities in a particular part of the market, or unless the costs of entry into the market are low.

3.5 Timing market exit

A company might need to make a strategic decision about leaving a market, when the product is in its decline phase. It should be possible to make profits in a declining market, but better growth opportunities might exist in other markets and a company might benefit from a change in its strategic direction.

3.6 Cycle of competition

Life cycle analysis is also useful for assessing strategic position and the nature of competition in a market. The number of competitors in the market 'now', and the number of competitors that might exist in the future, will be influenced by the phase that the product has reached during its life cycle.

A cycle of competition is another concept for understanding the behaviour of competitors in a market.

When one company achieves some success in a market, competitors might try to do something even better in order to gain a competitive advantage. A new initiative by one company will result in a counter-measure from another company. Each company in the market tries to do something different and better.

A typical cycle of competition affects prices and quality. If one company has a large share of a profitable market, a rival company might start to sell its product at a lower price. Another rival company might improve the quality of its product, but sell it at the same price as rivals in the market. The first company might respond to these initiatives by its rivals by improving its product quality and reducing the selling price.

The effect of a cycle of competition in a growing market is that prices fall and quality might improve.

In the maturity phase of a product's life cycle, or in the decline phase, it becomes more difficult to lower prices without reducing quality. Competitors might try to gain a bigger share of the market by selling at a lower price, but the product quality might be reduced. This can lead to a 'spiral' of falling prices and falling quality, to the point where the product is no longer profitable, and it is less attractive to customers.

The concept of the cycle of competition is useful for strategic analysis, because it can help to explain the strategies of companies in a market, and to assess what future initiatives by competitors might be.

► Example

Glory is a series of high-end smartphones and tablets designed, manufactured and marketed by Marvel Group (MG). MG is highly regarded for innovative product designs and aggressive marketing campaigns. The mobile phone industry is one of the fastest growing sectors of economy where a number of competitors attempt to outperform each other in terms of product designs, features and pricing.

MG is in the process of introducing new series of foldable smartphones (Glory Ultimate) that could be a vital breakthrough in mobile phone industry. The management of MG intends to adopt life cycle costing for Glory Ultimate.

Required:

- Discuss the benefits that MG may enjoy by adopting life cycle costing.
- List the costs that MG might have to incur in each phase of the life cycle of Glory Ultimate.
- Suggest the strategies that MG may adopt to extend the maturity phase of Glory Ultimate.

► *Solution*

- a) MG may enjoy the following benefits by adopting life cycle costing:
- The potential profitability of Glory Ultimate would be assessed before major development is carried out and further costs are committed. It may assist management in deciding whether to introduce new series at all or not.
 - It may assist in identifying various types of costs over the life of Ultimate Glory. Strategies may then be devised to reduce / control these costs.
 - It may assist in developing a pricing strategy that would cover the costs and achieve desired level of profits.
- b) MG might have to incur following costs in each phase of the life cycle of Glory Ultimate:
- i. Introductory phase
 - Manufacturing costs (costs of operations)
 - Marketing and advertising costs to raise product awareness
 - Costs of setting up and expansion of distribution channels
 - ii. Growth phase
 - Increased costs of working capital
 - Costs of increasing capacity
 - Marketing and advertising costs to raise customer base
 - iii. Maturity phase
 - Costs to maintain manufacturing capacity
 - Marketing and product enhancement costs to extend maturity
 - iv. Decline phase
 - Costs of withdrawals (costs of remaining warranties)
 - Discounts to attract customers
- c) MG may adopt any or combination of the following strategies to extend the maturity phase of Glory Ultimate:
- Differentiate by modifying design, features, packaging, etc. to extend product life.
 - Sell to untapped markets in terms of geographical area, gender, type of customer, life style etc.
 - Revisit pricing strategy by offering discounts or promotional schemes to attract customers who are happy to purchase 'old models' for a lower price and avoid paying the premium required for the new models.

4. STRATEGIC GROUPS AND MARKET SEGMENTATION

4.1 Strategic groups

Another approach to analysing and understanding the competitors in a market is to group them into strategic groups.

A strategic group is a number of entities that operate in the same industry and that have similar strategies or that are competing in their markets in a similar way. Strategic groups have been defined as: 'Clusters of firms within an industry that have common specific assets and thus follow common strategies in key decision variables' (Oster).

► Example: Bottled soft-drinks

There are many companies in the industry for making and selling bottled soft- drinks. To facilitate competitor analysis, they can be grouped into the following strategic groups. (All the companies in each group promote their brand image, so all the products are branded.)

- Companies that operate globally and make and sell a broad range of different bottled soft-drinks
- Companies that operate regionally, for example in Asia only, and make and sell a broad range of different bottled soft-drinks.
- Companies that operate in a national market, and make and sell a broad range of different bottled soft-drinks.
- Companies that operate internationally, but offer a relatively limited range of soft-drinks.
- Local specialists that make a small range of products for a local market.

The strategies of all the companies in a strategic group will be similar. When there are only a few competitors in the same industry, the concept of strategic groups has no practical value, because each competitor can be analysed individually. However, when there are many competitors in the industry, it can simplify the analysis to put them into strategic groups of entities with similar resources and similar strategies. For the purpose of competitor analysis, all the entities in the same strategic group can then be treated as if they are a single competitor. Instead of analysing each competitor individually, they can be analysed collectively, in groups.

► Example: Manufacturing industry

Companies in a manufacturing industry might be grouped according to their strategic priorities.

Three strategic groups might be identified:

- Companies that seek to maintain their position in the market
- Companies that seek to innovate and develop new products
- Companies that consider marketing to be the key to strategic success. The strategic priorities of the companies in each group might differ as follows.

Priority	Maintain market position	Innovators	Marketing-based strategies
1	Cost reduction	Consistent quality	Consistent quality
2	Short lead time for delivery	Rapid product design/change	Dependable delivery
3	Consistent quality	Dependable delivery	Cost reduction
4	Dependable delivery	Improved product performance	Short lead time for delivery

Note: A lead time is the time between a customer placing an order and delivering the product to the customer. When the strategic objective is a short lead time, the aim is to deliver the product as quickly as possible after a customer has ordered it.

Dependable delivery means being able to state when and where a product will be delivered to the customer and meeting this promise.

The main concerns of all manufacturing companies are broadly similar, but their priorities differ. This means that their strategies are likely to be different, as companies in each strategic group pursue their own priorities.

4.2 Strategic space

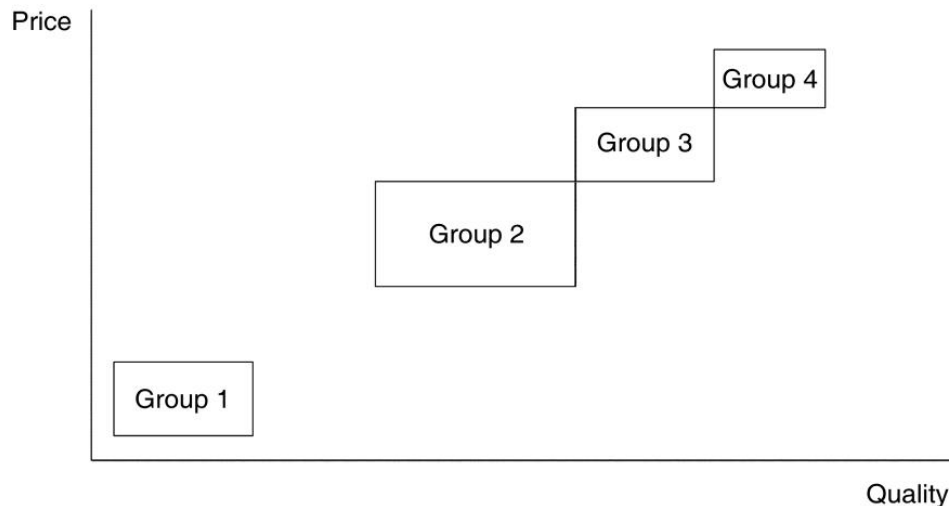
When all the companies in an industry are put into strategic groups, and these groupings are analysed, a strategic space might become apparent.

A strategic space is a gap in the market that is not currently filled by any strategic group. The existence of strategic space might provide an opportunity for a company to make a strategic initiative, and attempt to fill the space that no other rivals occupy.

► Example: Price v. quantity

One way of identifying strategic groups within an entire market is to classify market position in terms of price and quality. Some firms will offer lower-priced products, but their quality is probably not as good. Other firms might offer higher-quality products for a higher price.

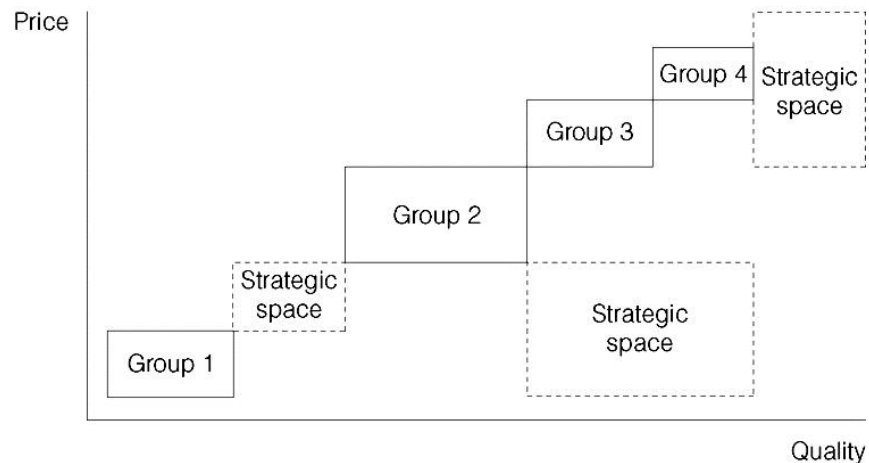
The strategic groups in a market might be mapped according to price and quality as follows:



This map indicates that there are four strategic groups, each in a different market position in relation to price and quality. The largest group, Group 2, sells products with a middle-range price and middle-range quality.

This method of analysis can help an entity to identify possible gaps in the market – strategic space. When there is a perceived gap in the market, an entity might decide on a strategy of filling the empty space by offering a product with the characteristics that are needed to fill the gap.

If the positioning of entities in a market is analysed by price and quality, as above, possible strategic spaces might be identified as follows:



In this example, an entity might decide to target a position in the market where it sells a high-quality product for a low price, because there are no firms yet in this part of the market. Alternatively, there might be a market for even higher-quality products at an even higher price. The entity might even decide to fill the gap between Group 1 and Group 2.

4.3 Product differentiation

A market can be identified as a group of customers or potential customers for a particular product or range of related products.

In a very small number of markets, all suppliers provide an identical product that is the same in every respect to the product supplied by its competitors. An example is foreign exchange. Banks selling US dollars in exchange for euros are all trading exactly the same product.

Business entities often use differentiation to make their products attractive to customers in the market, so that customers will buy their products rather than those of competitors.

4.3.1 Definition

Product differentiation is defined as 'the process of distinguishing a product from rivals to make it more appealing to a specific target market

4.3.2 Ways of product differentiation

In most markets, products are differentiated in various ways. They are similar, but there are also noticeable differences. Differences in products include differences in:

- product design
- pricing
- branding.

Products might also be differentiated by the way in which they are delivered to customers. For example, banking services might be delivered through a branch network or as an internet service. Similarly, consumers can buy products in shops or through the internet; or they can buy a hot meal by going to a cafeteria or restaurant, or by ordering a home-delivery meal.

4.4 Market segmentation

A business entity might try to sell its products to all customers in the market. For example, manufacturers of sugar might try to sell their product or products to all customers in the market who buy sugar. Similarly, distributors of petrol (car fuel) might try to sell their products to all car drivers/buyers of petrol.

However, a business entity might choose instead to target its products at a particular section or segment of the market. A **market segment** is a section of the total market in which the potential customers have certain unique and identifiable characteristics and needs.

Instead of trying to sell to all customers in the entire market, an entity might develop products or services that are designed to appeal to customers in a specific market segment.

Market segmentation is the process of dividing the market into separate segments, for the purpose of developing differing products for each segment.

► *Example: Cars*

The market for motor cars might be segmented according to the design of the car, for example:

- four-door or two-door family saloon car (with or without hatchback) – and with differing engine sizes
- two-seater sports cars
- estate cars
- people carriers
- 4 × 4 vehicles
- electric-powered cars
- cars that can be powered by ethanol (bio-fuel).

For car dealers, the market for cars can also be segmented into the new cars market and the used cars market.

Each type of car design is intended to appeal to the needs of a different segment of car buyers.

4.5 Methods of segmenting the market

Market segmentation is important for strategic management for two main reasons:

- It provides a basis for analysing competition in a market or industry.
- It provides a basis or framework for making strategic choices.

There are various ways of segmenting the market, and identifying different groups of customers. Methods of segmenting the market include segmentation by:

- geographical area
- quality and performance
- function (for example, within the market for footwear, there are market segments for running shoes, football boots, hiking boots, riding boots, snow boots, and so on)
- type of customer: for example, consumers and commercial customers
- social status or social group
- age: adults, teenagers and younger children might all buy different types of similar products, such as computer games or music downloaded from the internet
- life style.

► *Example: Socio-demographic*

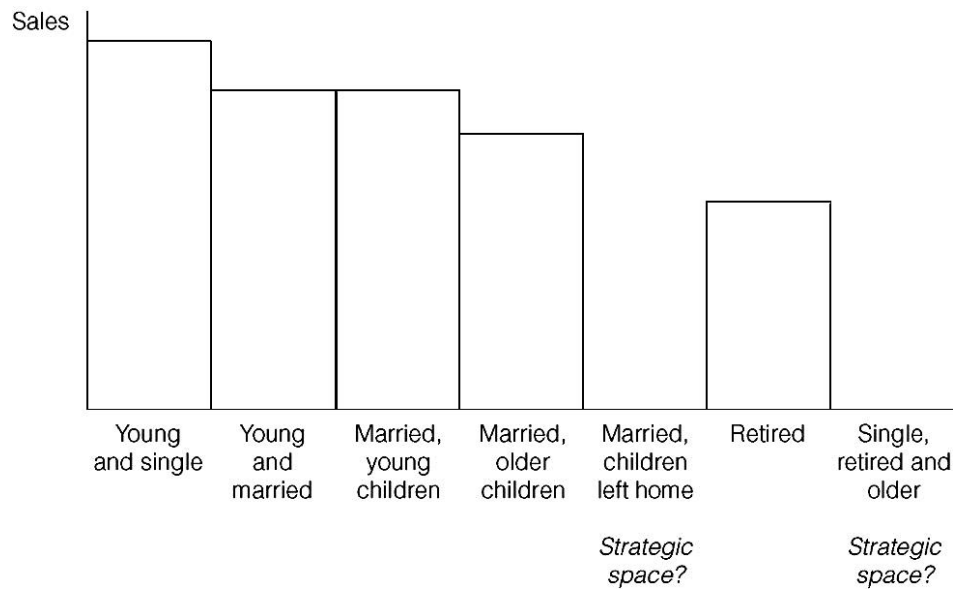
An entity might decide to segment a market according to the life style of customers. Possible life style segments include single people under 30 years of age, newly-married couples with no children, married couples with young children, married couples with teenage children, married couples whose children are grown up and have left home, retired couples, and retired single people.

This form of market segmentation can be useful for certain products and services such as:

- holidays
- motor cars
- some food and drink products
- entertainment products.

4.6 Market segmentation and strategic space

A similar analysis of strategic groups can be made to identify possible target market segments. In the example below, the strategic groups are analysed by life style of customers.



This analysis suggests that there are possibly **gaps in the market** for a product, and that a product is not currently being made and sold that might appeal specifically to individuals whose children have left home or to individuals who have retired from working.

Having analysed the market and identified these strategic spaces, management can go on to assess whether a strategy based on developing an amended product specifically for these gaps in the market might be strategically desirable and financially worthwhile.

Identifying gaps in a market can be a particularly useful method of competition analysis for companies that are considering whether or not to enter into a market for the first time.

5. BOSTON CONSULTING GROUP MATRIX (BCG MATRIX)

5.1 Introduction to BCG matrix

The BCG Matrix, also known as the Boston Consulting Group Matrix, is a strategic tool used to analyse a company's portfolio of products or services. It was developed by Bruce D. Henderson in the early 1970s and is based on the concept that a company's products or services can be classified into four categories:

- Star
- Cash cows
- Question mark (also called Problem child or Wildcats)
- Dogs

The BCG matrix is a 2×2 matrix.

- One side of the matrix represents the *rate of market growth* for a particular product or business unit.
 - The other side of the matrix represents the *relative market share* that is held by the product or business unit.
- The BCG matrix is shown below in figure 4.2:

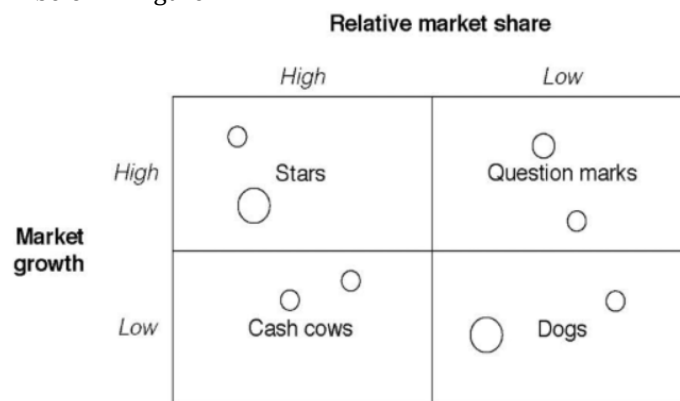


Figure 4.2

Explanation

The individual products or business units of the firm can be plotted on the matrix as a circle. The size of the circle shows the *relative money value of sales* for the product. A large circle therefore represents a product with large annual sales.

5.2 Purpose of BCG Matrix

The purpose of BCG matrix is to classify products or business units into four categories (i.e., star or cash cow or dog or question mark), to select optimal strategy for each individual product or business unit and to assist with the allocation of funds to different products or business units.

5.3 Approach for applying BCG Matrix

5.3.1 Determine the market growth rate for each product

Market growth is the percentage increase in total market sale of all firms operating in the market (also known as market size) as compared to prior periods. It can be calculated by using following formula:

$$\text{Market growth rate} = [(Total\ market\ sale\ of\ recent\ year \div Total\ market\ sale\ of\ the\ oldest\ year) - 1] \times 100$$

For example, total market of sale of product A for all companies in a market ranging from year 2018 to year 2022 is as follows:

	2018	2019	2020	2021	2022
Total market sale (Rs. in million)	20	23	28	30	35

Annual market growth rate from year 2018 – 22 can be estimated as:

$$\text{Market growth rate from } 2018 - 22 = [(Rs. 35\ m \div Rs. 20\ m) - 1] \times 100 = 75\%$$

5.3.2 Determine the market share for each product

Market share is usually measured as the annual sales for a particular product or business unit in proportion of the total annual market sales. Annual market share for each product can be estimated by using following formula:

$$\text{Market share} = [\text{Sale of our company for a particular year} \div \text{Total market sales for that particular year}] \times 100$$

For example, total market sale of product A for all other company and our company from year 2018 to 2022 is as follows:

	2018	2019	2020	2021	2022
Sale of our company (Rs. in million)	5	6.44	7.5	8	10
Total market sale (Rs. in million)	20	23	28	30	35

So, market share of each year will be as follows:

	2018	2019	2020	2021	2022
Sale of our company ÷ Total market sale	25%	28%	27%	26.7%	28.6%

5.3.3 Identification of high/low rates

Market growth: The mid-point of the growth side of the matrix is often set at 10% per year. If market growth is higher than this, it is 'high market growth' and if annual growth is lower than 10%, it is 'low'. It should be said that 10% is an arbitrary figure.

Market share: The mid-point of this side of the matrix represents the sales for the firm's product or business unit relative to total market sales commonly referred to as a market share. If the firm's product or business unit holds a greater market share than its biggest competitors, it is considered as a 'high' relative market share; otherwise it is classified as a relatively 'low' market share.

High market growth is also known as substantial market growth, dominant market growth or emerging market growth. Low market growth is also known as weak market growth, mature market growth or declining market growth.

High market share is also known as substantial market share, dominants market share or emerging market share. Low market share is also known as weak market share, mature market share or declining market share.

5.3.4 Classify the products into four categories

Star

A star has a **high relative market share** in a **high-growth market**. It is the market leader. However, a considerable investment of cash is still required to maintain its leading position. Initially, they probably use up more cash than they earn, and at best are cash-neutral. Over time, stars should gradually become self-financing. At some stage in the future, they should start to earn high returns.

Cash cow

A cash cow is a product in a market where **market growth is lower**, and possibly even negative. It has a **high relative market share**, and is the market leader. It should be earning substantial net cash inflows, because it has high economies of scale and will have become efficient through experience. Other companies will not mount an attack as they perceive that the market is old and near decline.

Cash cows should be providing the business entity with the cash that it needs to invest in question marks and stars.

Question mark

A question mark is a product with a **relatively low market share** in a **high-growth market**. Since the market is growing quickly, there is an opportunity to increase market share, but initially it will require a substantial investment of cash to increase or even maintain market share.

A strategic decision that needs to be taken is whether to invest more heavily to increase market share in a growing market, whether to seek a profitable position in the market, but not as market leader, or whether to withdraw from the market because the cash flows from the product are negative.

The BCG analysis states that a firm cannot last long with a small market share, as bigger companies will be able to apply great cost and price pressure as they enjoy economies of scale.

Dog

A dog is a product in a **low-growth market** with a relatively **low market share**. It is unlikely that the product will gain a larger market share, because the market leader will defend the position of its cash cow. A dog might be losing money, and using up more cash than it earns. If so, it should be evaluated for potential closure.

However, a dog may be providing positive cash flows. Although the entity has a relatively small market share in a low-growth market (or declining market), the product may be profitable. A strategic decision for the entity may be to choose between immediate withdrawal from the market (and perhaps selling the business to a buyer, for example in a management buyout) or enjoying the cash flows for a few more years before eventually withdrawing from the market.

It would be an unwise decision, however, to invest more capital in 'dogs', in the hope of increasing market share and improving cash flows, because gaining market share in a low-growth market is very difficult to achieve.

5.3.5 Apply suitable strategies for each type of product

Companies must invest in products and business units for the future. They need to invest in some question marks as well as in stars, and this uses up cash. Much of the cash for investing in other products will come from cash cows. The BCG matrix model can help management to decide on a portfolio of products or business units, for both short-term and longer-term returns.

Market growth rate	Relative Market share	Product/Business unit	Investment Required	Position of Cash Flows	Strategies (Managing Different Products)
High	High	Star	Heavy	Cash Deficit	- Stars are the cash cows of the future. - An entity should market a star product aggressively, to maintain or increase market share. - A large continuing investment in new equipment and R&D will probably be needed. - Stars should at some stage generate enough cash to be self-sustaining. Until then, the cash from cash cows can finance their development.
Low	High	Cash Cow	Little	Cash Surplus	- Defend and maintain market share. - Spending on innovation (R&D) should be limited. - The cash generated by a cash cow can be used to develop other products in the portfolio or finance can be used for star products.

Market growth rate	Relative Market share	Product/ Business unit	Investment Required	Position of Cash Flows	Strategies (Managing Different Products)
High	Low	Question mark	Significant	Cash Deficit	- The product will need a lot of new investment to increase market share. - The strategic choice for the company is to decide between - investing a lot of cash to boost market share or - to disinvest/ abandon the product
Low	Low	Dog	Rarely worth	Cash Surplus/ Cash Deficit	- These might generate some cash for the business, and if they do, it might be too early to abandon the product. The product has a limited future, and strategic decisions should focus on its short-term future. - There is a danger that the product will use up cash if the firm chooses to spend money to preserve its market share. - The firm should avoid risky investment aimed at trying to 'turn the business round'.

► *Example: BCG Matrix*

A company produces five different products, and sells each product in a different market. The following information is available about market size and market share for each product. It consists of actual data for each of the last three years and forecasts for the next two years.

(Rs. million)	2022	2023	Current year (2024)	2025	2026
	Actual	Actual	Actual	Forecast	Forecast
Product 1					
Total market size	50	58	65	75	84
Product 1 sales	2	2	2.5	3	3.5
Product 2					
Total market size	150	152	149	153	154
Product 2 sales	78	77	80	82	82
Product 3					
Total market size	40	50	60	70	80
Product 3 sales	3	5	8	10	12
Product 4					
Total market size	60	61	61	61	60
Product 4 sales	2	2	2	2	2

(Rs. million)	2022	2023	Current year (2024)	2025	2026
	Actual	Actual	Actual	Forecast	Forecast
Product 5					
Total market size	100	112	125	140	150
Product 5 sales	4	5	5.5	6	6.5
In the current year, the market share of the market leader, or the nearest competitor to the company, has been estimated as follows:					
Market share of market leader or the company's nearest competitor					
Market for:	%				
Product 1	37				
Product 2	26				
Product 3	12				
Product 4	29				
Product 5	20				

Required:

- Using the Boston Consulting Group model, how should each of these products be classified?
- How might this analysis help the management of the company to make strategic decisions about its future products and markets ('product-market strategy')?

► *Answer***a) Classification of products by using BCG Matrix****Product 1**

A **question mark** is a product with a fairly low market share in a market that is growing fairly quickly. **Product 1** appears to be a question mark. The total market is growing quite quickly, but the market share of Product 1 is about 4% and this is not expected to change.

Product 2

A **cash cow** is a product in a market that has little or no growth. The market share, however, is normally quite high, and the product is therefore able to contribute substantially to operational cash flows. **Product 2** appears to be a cash cow. In the current year its market share was over 53%, and it is the market leader.

Product 3

A **star** is a product in a market that is growing quickly, where the company's product has a large market share or where the market share is increasing. **Product 3** appears to be a star. The total market is expected to double in size between Year – 2 and Year + 2. The expected market share in two years' time is 15%, compared with 7.5% in Year – 2. Its market share in the current year is over 13%, which makes it the current market leader.

Product 4

A **dog** is a product in a market with no growth, and where the product has a low share of the market. Dogs are likely to be loss-making and its cash flows are probably negative. **Product 4** appears to be a dog. The total market size is not changing, and the market share for Product 4 is only about 3%. This is much less than the 29% market share of the market leader.

Product 5

A **question mark** is a product with a fairly low market share in a market that is growing fairly quickly. **Product 5** also appears to be a question mark because the total market is growing quite quickly (i.e., 50% market growth), but the market share of Product 5 is about 4.40% and this is not expected to change significantly in future.

b) Strategies for each product

The company should decide on its strategy for the products it will sell.

- It should benefit from the cash flows generated by its only cash cow, Product 2.
- It should invest in its star, Product 3, with the objective that this will eventually become a cash cow.
- It should give serious consideration to abandoning its dog, Product 4, and withdrawing from the market.
- It has to make a decision about its two question marks, Product 1 and Product 5. The main question is whether either of these products can become a star and cash cow. Additional investment and a change of strategy for these products might be necessary, in order to increase market share.

For all the products (with the exception of Product 4, if this is abandoned) the company should also consider ways of making the products more profitable. Techniques such as **value chain analysis** might help to identify cost savings.

5.4 Weaknesses in BCG model analysis

There are several criticisms of the BCG model.

- The BCG model assumes that the competitive strength of a product in its market depends on its market share, and the attractiveness of a market for new investment depends only on the rate of sales growth in the market. Unless a product can achieve a large share of the market, it is not sufficiently competitive. Unless a market is growing quickly enough, it is not worthwhile to invest more money in it. It can be argued that these assumptions are incorrect.
 - A product can have a strong competitive position in its market, even with a low market share. Competitive strength can be provided by factors such as product quality, brand name or brand reputation, or low costs. Porsche earns very high profits but its market share is small compared to bigger car manufacturers such as General Motors, Ford and Toyota.
 - A company might benefit from investing in an industry or market where sales growth is low.
- Other factors, apart from market share and market size will influence what a company should do with a product: strength of competition, cost base and brand strength are all important considerations.
- It might be difficult to define the market.
 - There might be problems with defining the geographical area of the market. A market might be defined in terms of a single country, a region of a country or as an international or global market.
 - It might also be difficult to identify which products are competing with each other. For example, the total market for cars may be divided into different categories of car, but there may be problems in deciding which models of car belong to each category.
- It might be the BCG matrix is better for analysing the performance of strategic business units (SBUs) and market segments. It is not so useful for analysing entire markets, which might consist of many different market segments.
- It might be difficult to define what is meant by 'high rate' and 'low rate' of growth in the market. Similarly, it might be difficult to define what is meant by 'high' market share and 'low' market share.
- BCG analysis should be carefully interpreted. For example, there are major differences in suggested R&D and marketing spending depending on whether a product is a star or a cash cow. It would be wrong to dramatically reduce marketing and R&D simply because the market growth rate fell from 10.1 to 9.9 (if 10 is taken as the low/high cut-off).

► *Example: BCG*

Fashionista by Agha Ansari is considering growth opportunities for its organisation which has the following divisions:

Salon:

This division was a brainchild of Agha Ansari. It was established in early 1990s and got immediate recognition and appreciation because of state-of-the-art design and highly qualified stylists. This division has a dominant position having substantial market share. Although overall market is maturing and has low growth rate, this division has been earning high returns on investment.

Cosmetics:

This division was established six years ago. The cosmetic industry has been emerging; however, presently this division has low market share.

Required:

According to the Boston Consulting Group Matrix:

- a) Identify and discuss the quadrants in which above divisions fall.
- b) Discuss any two strategies that Fashionista may adopt for each of its divisions.

► *Answer:*

a) Salon:

According to the BCG matrix, this division is a 'Cash Cow'. It has relatively high market share in an otherwise low growing market. This division might have attained high economies of scale and/or have become efficient through experience. New entrants would be reluctant to enter as they may perceive that market is old and near decline. This division would be cash rich having high return on investment.

Cosmetics:

According to the BCG matrix, this division is a 'Question Mark'. This division has relatively low market share in an otherwise high growing market. Since the market is growing quickly, there is an opportunity to increase market share but initially it would require substantial investments to increase or even maintain the existing market share.

b) Salon:

It may adopt any of the following strategies:

- i. Since the market is maturing with low prospects of growth, spending on innovation (R&D) should be limited. Reinvestment should be restricted to the extent of maintaining the existing level of market share.
- ii. The ROI of this division is high and it might be earning substantial net cash inflows. The excess cash may be used to develop cosmetics division which is in 'question mark' quadrant or in any other viable investment opportunity.

Cosmetics:

It may adopt any of the following strategies:

- i. The market is emerging with probable opportunity of increasing market share. Fashionista may opt to invest substantially (like marketing activities) to increase its market share to become a Star and finally a Cash Cow, if the growth prospects are good.
- ii. Fashionista may opt to disinvest/abandon the division and formulate an exit strategy if:
 - It cannot last long with a small market share and competitors are in a position to apply cost and / or price pressures; or
 - There is a considerable doubt as regards the prospects of increasing market share.

► *Example*

SinoPharma (SP), is engaged in manufacturing and selling of pharmaceutical products. The following information pertains to two of its products:

InstaB

It is a mature branded product whose patent expired at the end of 2015. Thereafter, two competitors launched their generic products i.e. GenA and RapidA in 2016 and 2017 respectively. The table below shows sales volume of InstaB, GenA and RapidA over the years:

Year	2014	2015	2016	2017	2018	2019	2020*	2021	2022
Sales volume in '000'									
InstaB	220	220	115	90	80	70	60	50	45
GenA	-	-	110	108	90	94	100	112	116
RapidA	-	-	-	26	55	60	63	62	63
Total market size	220	220	225	224	225	224	223	224	224

*indicates current year

Azkaard

Azkaard was launched in 2012 in the market and its patent is expiring in 2022. It continues to enjoy great returns in a mature low growth market. However, SP is concerned that Azkaard too will meet the fate of InstaB unless proper competitive strategies are planned before its patent expires. One of the suggestions is to discontinue Azkaard as soon as the patent expires and utilize the resources on other products which have potential in the existing market.

Required:

By using the information provided above, analyse and recommend the strategies for InstaB and Azkaard from the perspective of Boston Consulting Group (BCG) Matrix.

► *Solution***InstaB**

It is a 'Dog' as it has a low market share in a low growth market. Its market share has continuously been declining from the year its patent expired. Its market share in the current year is about 27%, which is much less than the share of the market leader (45%). Further, it is forecasted to continue to decline to 20% by 2022.

Recommended Strategies

- If it is no more generating positive cash flows, then the appropriate strategy would be to withdraw it and invest the resources in other products which have potential in the existing market.
- If it is generating positive cash flows, then SP may continue to enjoy the cash flows as long as these are positive before eventually withdrawing from the market.
- If SP decides to continue it, then it is recommended to not to invest heavily as gaining market share in a low-growth market is highly unlikely to achieve.

Azkaard

It is a 'Cash cow' as it has a high market share in a low growth market. It is a patent product and enjoying 100% market share which would continue at least till the patent expires. It is more likely earning substantial net cash inflows due to the benefit of having a patent in place.

Recommended Strategies

If SP decides to continue Azkaard when patent expires:

- Defend and maintain market share which might be possible by achieving economies of scale and/or become efficient through experience.
- Try to extend the patent validity as long as possible.
- Do nothing and keep reaping the profits as long as it enjoys positive cash flows and then eventually withdraw from the market.
- Use the cash from the sales of Azkaard for R&D or to further develop other drugs which are in 'Question mark' and or 'Star' quadrants.
- If SP decides to discontinue Azkaard when patent expires:
- Use the sale proceeds of Azkaard for R&D or to further develop drugs that are in 'Question mark' and or 'Star' quadrants.
- For the last year before the patent expires, raise the prices further, if feasible, to gain maximum benefit before competition kicks in that would reduce revenue and market share.

6. SELF-TEST QUESTIONS

1. Spring 2023 Q1 (iv):

Which **TWO** of the following options are considered when determining the threats from potential entrants?

- (a) Specialist knowledge required
- (b) Importance of the product to the firm
- (c) Differences between products/services of competitors
- (d) Technology protection for existing firms

2. COMPETITIVE FORCES

- a) Identify and explain briefly **SIX** factors which have contributed to the significant increase in importance of International Trade in the preceding 3-4 decades.
- b) According to Michael Porter the nature of competitiveness in any industry is a composite of Five Forces. The Competitive Analysis model developed by Porter is widely followed for formulating business strategies in many industries. List the **FIVE** Competitive Forces stated by Michael Porter.

3. EXIT BARRIERS

List and explain briefly **four** factors which in your opinion create **Exit Barriers** and prevent existing participants from quitting a loss-incurring industry.

4. PORTER'S FIVE FORCES MODEL

- a) Explain the purpose of using Porter's five forces model.
- b) List the five forces in the model.
- c) For each of these five forces, list **four factors** that could affect the strength of the force.

5. FIVE FORCES MODEL OF COMPETITION

Identify the force of competition which is relevant in the context of Michael Porter's **Five Forces Model of Competition** in each of the scenarios presented below. Substantiate your answer by highlighting the salient features of the Model of Competition selected by you in each of these scenarios.

- i. Four companies of similar size and strength are engaged in the manufacture of detergent powder for washing clothes. These companies are key market players and jointly share 95% of the aggregate market which is not expected to witness any significant growth in the foreseeable future.
- ii. Sound health Pharmaceuticals and Goodcare Pharmaceuticals are manufacturers of two new medicines for treatment of cancer. The medicines have been developed after a long period of research at a very substantial R&D cost and are highly effective.
- iii. Both the existing manufacturers are earning exceptionally high profits in a market which is expected to witness growth in the future.
- iv. Lucky Coal Mines Limited is the sole supplier of coal to a cement plant located in close proximity to the mines. The cement plant requires substantial quantities of coal for firing of its kilns. Quality of this coal is most suitable for the cement plant and also cost-effective due to low transportation costs. Lucky Coal Mines has several buyers who are willing to purchase the coal because of its high calorific value.

6. Spring 2022 (Q5):

Saldia, a country in Asia, does not allow import of automobiles as a national policy. It is now considering to dissolve this policy. Discuss the impact of allowing the import of automobiles on each of the Porter's five competitive forces on Saldia's automobile industry. Your answer should also clearly mention whether the changed policy would strengthen or weaken each of these forces.

7. Autumn 2023 (Q4):

In the bustling city of Urbana, the micro-mobility industry is a fierce battleground for major players: SpeedyScoot, CityRiders, and GoGreenBike. Newcomers face significant challenges with high start-up costs and strict government rules. However, customers enjoy a diverse range of micro-mobility options from the existing players, making it easy to switch between them. To stay ahead, companies use competitive pricing, enticing loyalty programs, and unique features. As the industry matures, speculations of mergers and acquisitions raise the stakes in this micro-mobility showdown.

The thriving micro-mobility sector owes its success in Urbana to its convenience for short distance commutes. Established players compete through innovation in technology, pricing, coverage area, and fleet quality. There are numerous suppliers, primarily small to medium sized firms offering innovative products. Urbana's well-planned infrastructure, with dedicated bike lanes and convenient parking, nurtures a culture of embracing micro-mobility for short commutes. Meanwhile, an efficient public transport system caters seamlessly to longer journeys, providing a comprehensive transportation solution for residents. The race for the ultimate winner in this dynamic micro-mobility market remains uncertain, making it an exciting and intriguing market to observe.

Required: Perform a Porter's five forces analysis of Urbana's micro-mobility industry. Include the strength of each force and provide supporting arguments.

8. Autumn 2024 Q4:

Khalid Masroor (Khalid), an entrepreneur with a strong background in engineering and business, is keen to enter the Electric Vehicle (EV) industry. Although the EV industry is rapidly growing, Khalid is aware of the increasing competition, with established companies leading the industry. To assess the potential of various segments in the EV industry, Khalid, with his risk averse nature, conducts a Porter's Five Forces analysis and constructs the following table:

Segment	Force 1	Force 2	Force 3	Force 4	Force 5
	Threat of new entrants	Threat of substitutes	Bargaining power of suppliers	Bargaining power of buyers	Competitive rivalry
Charging Infrastructure	Low	Low	Low	High	High
Battery Recycling	High	Low	Low	Low	Low
Specialized Commercial EVs	High	High	Low	High	High
Affordable Personal EVs	High	High	High	High	High

Required:

- Advise which segment presents the most viable business opportunity for Khalid. Also, provide reasons for your answer.
- For each force, list three factors that influence its strength. Also, explain how each of these factors might have impacted the strength of that particular force in your recommended segment in (a).

9. FIVE FORCES MODEL OF COMPETITION

Muntaha Group (MG) is considering to introduce airline services in a developing country. The management of MG is in the process of analysing the airline industry to determine the intensity of competition.

Required: Explain the competitive forces that may have shaped the airline industry, considering Porter's Five Forces Model. Your answer should clearly mention the strength of each force with related arguments. You may assume necessary details.

10. LIFECYCLE I

It is widely realised that companies pass through various stages of growth during the different periods of their existence.

Required: State four dominant characteristics which would be apparent in a company which is in:

- a) the start-up or initial stage of its business;
- b) the rapid and dynamic growth stage of its existing business.

11. Autumn 2022 (Q5):

Barganza Limited (BL) manufactures and markets four consumer durable products. Presented below are the main costs incurred on each of the products:

Required:

- a) Identify and explain the stage of product life cycle for each product.
- b) From your answer to (a) above, for each product:
 - (i) provide one more cost, other than marketing and advertising cost, that is likely incurred.
 - (ii) suggest a promotion strategy BL may pursue.

12. RAIL SEGMENTS

The purpose of market segmentation is to divide a market into different sections, each with a distinctive group of potential customers. A segmentation strategy is then developed, and a different marketing mix is used to market a product to each segment.

Typically, a different price is charged for the product in each segment, but it may be necessary to vary the product offered to each segment of the market, in order to meet the needs of customers in that segment.

Required: Suggest ways in which a railway company might segment its market for rail travel.

13. MARKET SEGMENTATION

A tuition company provides a range of tuition services and educational publications to students preparing for professional accountancy examinations.

Required: Suggest ways in which the tuition company might segment its market for teaching services and products.

14. Autumn 2023 (Q6):

Suave, a renowned premium clothing brand known for offering formal office attire for men, caters to unique styles targeting adults aged 18 to 40 years. However, in the face of intensifying competition and ever-evolving consumer preferences, Suave is contemplating narrowing its focus to a specific age group within their target market. This shift will better utilize its limited budget and penetrate the market segment for higher revenues. During an open discussion forum with the employees, Suave received the following options for segments to target:

- (i) **Senior Executives:** This segment consists of adults aged 45 to 60 years. They have a high disposable income and an appreciation of stylish clothes.
- (ii) **Savvy Entrepreneurs:** This segment consists of cost-conscious entrepreneurs aged 30 to 40 years, who are seeking stylish yet affordable attire.
- (iii) **College Fashionistas:** This segment consists of fashion-forward college students aged 18 to 25 years. They aim to make a stylish statement on campus, despite potentially having limited disposable income.

Required:

- (a) Briefly discuss the suitability of each option.
- (b) Recommend a new suitable segment for Sluave to consider. Provide reason(s) for your recommendation.

15. BOSTON CONSULTING GROUP MATRIX I

According to the Boston Consulting Group Matrix, business organisations which have multi-divisions and compete in different industries pursue separate strategies for their various business divisions. The BCG Matrix describes the characteristics of the markets and the relative competitive position of the various business divisions as Stars, Cash Cows and Dogs.

Required: Explain the distinctive characteristics of each of these types of business divisions in terms of their relative market positions. Also mention the types of business strategies which should be pursued by each of these types of business divisions.

16. BOSTON CONSULTING GROUP MATRIX II**Required**

- Describe the Boston Consulting Group (BCG) matrix.
- Explain the product-market strategy that might be chosen for products in each quadrant of the matrix.
- Identify two weaknesses of the BCG matrix as a model for strategic analysis.

17. Spring 2023 (v):

The individual products or business units of the firm can be plotted on the BCG matrix as a circle. The size of the circle shows the relative:

- time taken for the product to reach that stage
- money value of sales for the product
- brand value of the product
- market growth of the product

18. Spring 2022 (Q 2):

AUM manufactures and sells two products. Presented below is the information available on each of the two products:

Product 1:

This product is the first product AUM introduced in the market and carries strong brand value. Its reputation carries positive influence on many other AUM business activities. When the product was introduced, its market share quickly grew to 4% and has remained steady for a long time now. Its market share is 7% less than the market leader. The overall market is growing by 2.5% year on year basis.

Product 2:

This product has been consistently selling and enjoying high profits in the same market for quite some time now. The annual market growth for this product is 5% and market share is merely 1.5% less than the only competitor in the market.

Required: For each of the products presented above:

- Identify the quadrant and explain the corresponding strategies from the perspective of Boston Consulting Group (BCG) Model.
- Highlight the relevant criticism of BCG Model and recommend future strategies accordingly.

(Note: 10% is taken as a low/high cut-off for market growth under BCG model)

19. BCG MATRIX

Etihad Limited manufactures and sells three products. The following information is available in this regard:

Year	Product 1 (See note-1)		Product 2 (See note-2)		Product 3 (See note-3)	
	Sale	Total Market Size	Sale	Total Market Size	Sale	Total Market Size
	----- Rs. millions -----					
Actual						
2017	74	132	3	70	10	100
2018	72	134	2	71	14	120
2019	74	133	2	69	16	140
Forecasted						
2020	73	135	2	68	18	160
2021	74	134	1	62	22	190

- Note 1: Product 1 is a long-standing product that has been consistently selling in the same market.
- Note 2: Product 2 has been consistently selling in the same market for quite some time.
- Note 3: Product 3 was introduced in 2017 and is still considered new in the market.

In the current year, 2019, the market share of the biggest competitor for Product 1 is 20%, Product 2 is 44% and Product 3 is 37%.

Required: Analyse the information provided above and devise strategies for each of three products.

ANSWERS

1. Option (a) and (d) are correct answers. Specialist knowledge required and Technology protection for existing firms

2. COMPETITIVE FORCES

- a) The factors which have contributed to the increase in importance of International Trade in the preceding 3-4 decades are:
- (i) Reduction in tariffs, quotas, exchange controls and liberalization of trade and investments have resulted in making the imported products competitive in local markets.
 - (ii) Phenomenal improvement in communication and transportation technologies has resulted in rapid movement of goods and consequent reduction in transportation costs.
 - (iii) Development of free-trade zones such as European Union and North American Free Trade Agreement have resulted in increase in international trade owing to preferential movement of goods and dismantling of high tariff regimes.
 - (iv) Global standardization and worldwide brand building with local adaption have created significant market opportunities in different countries.
 - (v) Substantial expenditures have been incurred on R&D and standardization of manufacturing and marketing techniques by global companies in industries such as manufacturing of pharmaceutical products, energy development, telecommunications, fast food, etc. and such companies seek opportunities to apportion these costs to markets in different countries.
 - (vi) Important raw material exporting countries now have a growing class of affluent citizens and foreign residents which have resulted in the creation of substantial markets for import of vehicles, construction materials, equipment, edible products and luxury goods.
- b) The Competitive Forces stated by Michael Porter are:
- (i) Potential threat of entry of new competitors
 - (ii) Potential threat of substitutes
 - (iii) Bargaining power of buyers
 - (iv) Bargaining power of suppliers
 - (v) Rivalry among existing competitors

3. EXIT BARRIERS

The factors which create Exit Barriers and prevent existing participants from quitting a loss- incurring industry are:

Substantial Investment in Highly Specialised Fixed Assets:

This is particularly relevant in capital-intensive industries which require very large investments in specific-purpose building and machinery. These assets do not have alternative uses and their salvation value is usually low. The substantial initial capital costs and low salvation value of the assets would result in heavy losses and create exit barriers.

High Redundancy Costs:

Organizations having a large workforce with high salaries or contracts that stipulate high redundancy payments have to incur substantial costs by way of severance payments to its employees to exit from the industry. These payments require heavy cash outflows and act as exit barriers.

Ancillary Costs of Closure of Business:

The organization may have entered into long-term contractual agreements with important suppliers or buyers and tenancy agreements carrying substantial penalties in the event of premature termination of these agreements. The high costs of premature termination of agreements are exit barriers as the closure of business would cause huge losses.

High Fixed Operating Costs:

An organization which has very high fixed operating costs and is faced with unfavourable business conditions may continue operations if it is able to recover its variable costs fully and a portion of its fixed costs. This is particularly relevant if the unfavourable conditions are considered to be of a temporary nature and the firm is optimistic about the prospects of an upturn and recovery from its current difficulties. This type of composition of preponderance of fixed costs acts as an exit barrier.

4. PORTER'S FIVE FORCES MODEL

- (a) The five forces model provides a framework for the analysis of an industry in which an entity operates. It is an aid to the development of strategies for the future.
- (b) (i) Threat from new market entrants
 (ii) Competitive rivalry
 (iii) Bargaining power of suppliers
 (iv) Bargaining power of customers
 (v) Threat of substitutes (also described as threats from product and technology development)
- (c) Some suggestions are given below:

Force	Factor affecting its strength
Threat from new market entrants	• Ease of entry into the market/strength of barriers to entry • The cost of investing in the industry • The cost of acquiring the knowledge needed to compete successfully • The availability of routes to market • Geographical factors
Competitive rivalry	• The number and size of firms in the industry • The size of the industry and growth trends • The fixed and variable cost structures of firms in the industry • The range of products/services offered • The existence/absence of effective product differentiation strategies
Bargaining power of suppliers	• The number of available suppliers • The brand reputation of suppliers • The geographical area covered by a supplier • The importance of product quality/service level quality • The bidding capabilities of suppliers and the bidding processes used • Relationships with suppliers
Bargaining power of customers	• The number and size of customers • The frequency of changing suppliers

Force	Factor affecting its strength
	• The cost to a buyer of changing supplier • The importance of product quality/service level quality • Relationships with suppliers; for example, just-in-time supply arrangements
Threat of substitutes	• The existence of substitute products and their price/quality • Fashions and trends in customer demand • The strength of patents • Changes in market distribution • Possible consequences of legislation

5. FIVE FORCES MODEL OF COMPETITION

(a) (i) Rivalry among Existing Firms

Since companies of equal size and strength are involved in competition in a market which is not expected to show any growth, the strategies pursued by any one company can be successful to the extent that it has competitive advantage over the strategies of its rivals.

Price competition, campaigns for creation of perceptions of quality differentiation, more convenient and attractive packaging features and aggressive promotion would be observed among the competing firms.

(ii) Potential Threat of Entry of New Competitors

Since the market has significant growth prospects and present firms are earning lucrative profits, there would be a strong attraction for other resourceful companies to enter this market. Although a new entrant would have to incur huge research and development costs to develop the specialised products, yet threats from successful and experienced companies would always be present.

(iii) Bargaining Power of the Supplier

Lucky Coal Mines is in a strong bargaining position. It can sell its coal to many other buyers whereas the cement plant would have to incur high transportation costs - switching costs - if it were to procure coal from other mines which are located at a considerable distance.

Furthermore, the quality of coal from other sources may not be as suitable for the cement plant. Lucky Coal Mines can therefore dictate its terms e.g. price, advance payments on placement of orders and recovery of transportation costs from the cement plant.

(iv) Unique Textile Mills should include the following objectives in its strategic planning process:

- (i) Maintain and consolidate its leadership status as designers and manufacturers of high fashion fabrics.
- (ii) Innovate; Bring new designs in the market well in advance of the competitors.
- (iii) Minimise the time involved in the stages of designing, manufacturing and marketing of the products.
- (iv) Play a pioneering role in introducing the latest technologies and textile machinery in the country.
- (v) New distribution channels: Create a network of company-owned retail outlets for distribution of exclusive high-value fabrics.
- (vi) Reduce the cost of manufacturing and venture into vertical integration.

6. FIVE FORCES MODEL – SPRING 2022 (Q 5)**SALDIA**

The impact of Saldia allowing import of automobiles on each of the Porter's five competitive forces is discussed hereunder:

(i) Threat from potential entrants

It will be strengthened as it will give access to foreign automakers to enter the Saldia's automobile market.

(ii) Threat of substitute products

It will be weakened as influx of foreign automobiles in the market would increase the competition which is likely going to reduce prices of automobiles. This means more people will be able to afford automobiles and might move from substitute products (such as motor bike, public transport, etc).

(iii) Bargaining power of suppliers

It will be strengthened at least initially as new automakers will enter the market and their demand for components of automobile would likely increase thereby suppliers of those components would be in a better position to bargain.

(iv) Bargaining power of customers

It will be strengthened as availability of more automobile suppliers would allow customers to have greater options to choose from and customers would likely easily switch from one supplier to another.

(v) Competitive rivalry

It will be strengthened as ease of entry would allow foreign automakers to enter the market and compete with local automakers to gain the Saldia's automobile market share.

7. FIVE FORECES MODEL – AUTUMN 2023 (Q 4)**Urbana**

Porter's five forces analysis of Urbana's micro-mobility industry:

(i) Threat of New Entrants

- Strength: Low
- Substantial initial investments act as a significant barrier, making it difficult for new players to enter the market and compete with established players.
- Strict government regulations further deter new entrants from entering the micro mobility industry, as compliance with these regulations requires additional resources and expertise.
- Existing companies have already built customer trust and loyalty through their services and enticing loyalty programs, making it challenging for new entrants to attract and retain customers.

(ii) Bargaining Power of Suppliers

- Strength: Low
- The micro-mobility industry in Urbana relies on numerous suppliers, primarily small to medium-sized firms, offering innovative products. The abundance of suppliers may limit their individual bargaining power.

(iii) Bargaining Power of Buyers (Customers):

- Strength: High
- Customers in Urbana enjoy a diverse range of micro-mobility options from existing players, providing them with multiple choices and fostering easy switching between providers. This high level of choice empowers customers and increases their bargaining power.

(iv) Threat of Substitutes:

- Strength: Low
- Micro-mobility options are highly convenient for short-distance commutes in Urbana. This is due to the well-planned infrastructure with dedicated bike lanes and convenient parking. This convenience and infrastructure support create a low threat of substitutes for these short trips.

(v) Competitive Rivalry:

- Strength: High
- The micro-mobility industry in Urbana is fiercely competitive among key players. As there are various micro-mobility options available to the customers, which makes it easy to switch between them.
- Speculations of mergers and acquisitions indicate the high stakes and desire for market dominance, further supporting the high strength of competitive rivalry in the micro-mobility industry.

8. KHALID MASROOR (KHALID)

a) Based on the Porter Five Forces analysis, the segment that presents the most viable business opportunity for Khalid, being risk averse, is Battery Recycling. The reasons are:

- **Threat of New Entrants:** High

The high threat of new entrants indicates potential competition in the future. However, it also suggests a growing market with increasing opportunities. Being an early entrant can help Khalid establish brand loyalty and market share before the market becomes saturated.

- **Threat of Substitutes:** Low

The low threat of substitutes implies that battery recycling is a critical need with few alternatives, ensuring a steady demand for the services provided by Khalid.

- **Bargaining Power of Suppliers:** Low

With a low bargaining power of suppliers, Khalid can source raw materials or necessary inputs at more favourable terms, reducing costs and enhancing profitability.

- **Bargaining Power of Buyers:** Low

The low bargaining power of buyers means that Khalid can set prices more advantageously, leading to potentially higher profit margins.

- **Competitive Rivalry:** Low

Fewer players currently dominate the battery recycling industry compared to other segments, indicating less intense competition and a greater opportunity for Khalid to establish a presence.

b)

(i) Threats from Potential Entrants (High)

- **Time and Cost of Entry:** Initial investment in recycling technology is likely lower which can attract new entrants thereby increasing the threat.
- **Building a Brand:** Standardized products with limited differentiation would make brand building a difficult and expensive project.
- **Specialist Knowledge Required:** Technical knowledge in recycling processes is necessary but could be easily acquired, lowering barriers to entry and increasing the threat.

- **Economies of Scale:** Larger firms may have some advantages, but new smaller entrants can still compete as the market is expanding and the product is standardized.
- **Technology Protection for Existing Firms (Patents, Design Rights):** Limited patents or proprietary technology in battery recycling make it easier for new entrants to enter the market.

(ii) Threats from Substitutes (Low)

- **Existence of Substitutes:** Few viable substitutes for battery recycling ensure sustained demand for recycling services.
- **Costs of Switching to a Substitute Product:** High costs associated with regulatory fines and environmental damage make switching to substitutes less appealing.
- **Relative Prices:** Recycling is often more cost-effective than alternatives (like new batteries) when considering long-term environmental and regulatory costs.
- **Fashion Trends:** Growing environmental consciousness and regulatory support for recycling over alternatives reinforce the demand for battery recycling.

(iii) Suppliers' Bargaining Power (Low)

- **Number of Suppliers:** Multiple suppliers for recycling technology and materials reduce the power of any single supplier.
- **Size of Suppliers:** Smaller suppliers have less power compared to the recycling firms means better negotiation terms for Khalid.
- **Uniqueness of Service:** Standardized recycling services mean less uniqueness and hence lower supplier power.
- **Cost of Switching to a Different Supplier:** Low switching costs due to standardized materials and processes reduce supplier power.

(iv) Customers' Bargaining Power (Low)

- **Number of Customers:** A growing market with many potential customers (e.g., EV manufacturers, government bodies) reduces individual customer power.
- **Size of Each Order:** Smaller, fragmented orders mean less bargaining power for each customer.
- **Price Differences and Price Sensitivity:** Environmental regulations and sustainability goals make customers less price-sensitive.

(v) Competitive Rivalry (Low)

- **Number of Competitors:** There are fewer competitors in the battery recycling market, reducing competitive pressure.
- **Size of Competitors:** Existing competitors may be smaller or fragmented, which makes the recycling market less aggressive.
- **Quality Differences:** Battery recycling services are often standardized, meaning less differentiation and hence less competition.
- **Customer Loyalty:** Strong customer relationships and long-term contracts contribute to lower rivalry.

9. MUNTAHA GROUP

(i) Threat of new entrants

The threat of new entrants in an airline industry is low because of the following probable reasons:

- The new entrants in an airline industry would have to make large capital investment (acquisition of airplanes, extensive marketing campaigns, acquisition of license, etc.).
- The airline service would require particular set of skills, knowledge and experience that could be time consuming and cost bound.
- The new entrant might find difficult to develop customer base as customers usually have high concerns of safety and trust in an airline industry.
- Airline industry is highly regulated (stringent aviation and other regulations) in terms of entry, operations and exit.

(ii) Threat of substitutes

The threat of substitute services in an airline industry is low to moderate because of the following probable reasons:

- The threat may be considered as moderate for domestic travelling because of the presence of number of substitutes such as trains, cars, boats, etc.
- The threat may be considered as low for international travelling as air travel usually remains the first choice of customers.

(iii) Bargaining power of suppliers

The bargaining power of suppliers in an airline industry is high because of the following probable reasons:

- The airline industry mainly relies on aircraft and related parts manufacturers and fuel suppliers. Given the small number of suppliers, they can exert high bargaining powers.
- There are no or may be very few substitutes to aircrafts and fuel, therefore, airline industry has to heavily rely on suppliers.

(iv) Bargaining power of customers

The bargaining power of customers in an airline industry is high because of the following probable reasons:

- The costs of switching from one airline to another are low thereby empowering buyers to exert high bargaining power.
- In a developing country, the customer groups are likely to comprise of people who may be price sensitive than brand sensitive.
- Customers have easy access to pricing information offered by other airlines to make comparison.

(v) Competitive rivalry

The competitive rivalry in an airline industry is high because of the following probable reasons:

- The airline industry involves high fixed costs that might be identical for each airline company; thereby the companies compete by means of differentiation or costs leadership by attempting to attain economies of scale.
- The demand for airline services often remains constant or has low growth rate, thereby, airline companies compete for a fairly fixed amount of sales and customers.
- The costs of entry and exit are high in an airline industry thereby companies may be reluctant to leave the industry and attempt to survive by means of competing with each other.

10. LIFECYCLE I

- a) The dominant characteristics of a company which is in the start-up stage of its business are:
- (i) High financial costs.
 - (ii) Limited cohesiveness in the senior management team.
 - (iii) Organization's systems and procedures are not in place.
 - (iv) Extremely high workload for key personnel with conflicting and multiple priorities.
 - (v) Resources are not sufficient to meet multiple demands.
 - (vi) Relationships with suppliers, customers and other stakeholders are in the developing stage.
- b) The dominant characteristics of a company which is witnessing rapid and dynamic growth of its existing business are:
- (i) New markets, products and technology are being introduced.
 - (ii) Multiple and conflicting demands for allocation of management, technical and financial resources.
 - (iii) Rapidly expanding organizational structure.
 - (iv) Unequal growth in various sectors within the organization.
 - (v) Shift in power structures as the organization witness's expansion in business.
 - (vi) Constant dilemma between doing current work and building support systems for the future.

11. BARGANZA LIMITED – AUTUMN 2022 (Q 5)**(a) Product A - Introduction phase**

During this stage of a product life cycle, there is some sales demand but total sales are low and the product is not yet profitable.

BL needs to make and sell the product which would incur high investment costs, start-up costs, running costs, setting up and expansion of distribution channels, etc.

Product B - Decline phase

At this stage, total annual sales start to fall and so do profits.

It will lead BL to leave the market for the product, and incur cost of withdrawals. This continues until it is no longer possible for any company in the market to turn a profit from the product. When the last supplier exits the market, the product lifecycle is complete.

Product C - Maturity phase

During the maturity phase, total annual sales remain fairly stable. Prices and profits stabilize.

Although the opportunity for more growth no longer exists, BL can extend the life of the product through product enhancement and marketing. BL and other companies might seek to improve profits by differentiating their products more from those of competitors, and selling to a 'niche' market segment.

Product D - Growth phase

During the growth phase, total sales demand in the market grows at a faster rate and new entrants are attracted into the market at this stage by the prospect of high sales and profits.

Hence, the requirement of working capital grows as is the case of BL.

b (i)**Product A - Introduction phase**

- Manufacturing costs (costs of operations)

Product B - Decline phase

- Discounts to attract customers

Product C - Maturity phase

- Costs to maintain manufacturing capacity

Product D - Growth phase

- Costs of increasing capacity

b (ii)**Product A - Introduction phase**

- (i) Inform and educate the potential customers of the existence and benefits of the product.
- (ii) Secure distribution in leading retail outlets.
- (iii) Place heavy emphasis on personal selling and promotion in trade shows and exhibitions.

Product B - Decline phase

- (i) As the size of the market is shrinking reduce overall promotion expenses and focus efforts towards reminding remaining customers.
- (ii) Rejuvenate old products to make them look new.

Product C - Maturity phase

- (i) Focus on promotion and advertising to persuade the customers to purchase the particular brand rather than to provide information about the product
- (ii) Selective promotion only as intense competition and increase in promotion expenditures would result in lower profits

Product D - Growth phase

- (i) Stimulate demand in selected market segments and promote the particular brand as competition increases
- (ii) Enter new markets and expand coverage
- (iii) Identify new distribution channels
- (iv) Shift emphasis from product awareness to the individual firm's brand preference through aggressive advertising.
- (v) Promote differentiation

12. RAIL SEGMENTS

Possible methods of market segmentation.

- (a) Passenger facilities: first class and second-class travel
- (b) Time: peak time travel, off-peak travel, week-end travel
- (c) Freight transport and passenger transport
- (d) Commuter travel, business travel, holiday travel
- (e) Long-distance travel, short journeys, international journeys

13. MARKET SEGMENTATION

Possible methods of market segmentation.

- (a) By professional accountancy body
- (b) By level or stage in the examinations
- (c) By examination paper
- (d) Full time student, revision course student, evening class student, weekend course student

14. SUAVE – AUTUMN 2023 (Q 6)

a) **Senior Executives (Aged 45 to 60):**

This option is not suitable for the brand because senior executives, who are aged 45 to 60, fall outside Suave's traditional target age range of 18 to 40.

Savvy Entrepreneurs (Aged 30 to 40):

This option is not suitable for the brand because the primary characteristic of this group being cost-conscious may not align well with Suave's premium brand image. The emphasis on affordability might contradict the premium image Suave aims to maintain.

College Fashionistas (Aged 18 to 25):

This option is not suitable for the brand because college students often have limited disposable income, which may pose challenges in terms of pricing and overall revenue generation.

- b) Any option that caters to customer segment that can afford premium clothing brand who likes to wear stylish clothes and is between the age of 18 to 40. Examples of such options include:
- **Urban Professionals:** This segment is an ideal fit for Suave as it falls within the brand's target age group and aligns with its premium image. Urban professionals have the financial capacity to afford Suave's stylish offerings and often seek high quality, fashionable clothing for work and social engagements.
 - **Luxury Enthusiasts:** This segment comprises individuals aged 30 to 40 who have a strong affinity for luxury brands and are willing to invest in high-end, stylish clothing. Suave's premium image would resonate with this group, offering them a unique alternative to established luxury labels.
 - **Style-Conscious Professionals:** This segment consists of working professionals aged 25 to 40 who prioritize style in their daily lives. They appreciate well-tailored, fashionable clothing suitable for both work and social events.

15. BOSTON CONSULTING GROUP MATRIX I

The distinctive characteristics of the different types of business divisions in terms of their relative market positions and pursuit of business strategies are as follows:

(i) **Stars**

Star business divisions have a relatively large share of the market in high- growth industries and offer lucrative opportunities for growth and profitability in the long-run. Substantial investment should be made in Star business divisions to maintain and strengthen their dominant positions.

Strategies of vertical and horizontal integration, market penetration and product development may be considered to further consolidate the well- entrenched position of the Star business divisions and to compete aggressively in the market.

(ii) Cash Cows

Cash Cows are business divisions which have a relatively large market share but compete in a low-growth industry. The Cash Cows are in a position to generate substantial funds because of their strong competitive position. However, their requirements of funds for expansion are minimal and they are therefore in a position to generate funds which are in excess of their requirements. The Cash Cows are 'milked' as a source of corporate resources for utilization of funds in other business divisions which offer long-term growth prospects and in which competitive advantages can be achieved. Quite often the Star divisions with the passage of time are relegated to the position of Cash Cows.

(iii) Dogs

Dogs are those business divisions which have a relatively small share of the market and compete in a slow or no-growth industry. Dog business divisions are not able to earn fair profits and generally incur losses.

Therefore, such divisions are often liquidated or divested or subjected to policies of retrenchment to curtail expenditures on salaries and other associated costs. It may not always be advisable to liquidate or divest the Dog divisions as their assets can be disposed of only at throw-away prices because of the company's weak bargaining position. This strategy may pay off if there is a business turnaround at a later stage.

16. BOSTON CONSULTING GROUP MATRIX II

- (a) The BCG matrix is a 2×2 matrix, with one side of the matrix representing the rate of growth in the market (high or low) and the other side representing the relative share of the market enjoyed by a firm's product/service.

(b)

		Strategy
Low market growth, high market share	Cash cow	- Defend and maintain market share. - Possibly low spend on R&D. - Use cash from this product to invest in other business units/products.
High market growth, low market share	Question mark	The product will need a lot of cash to increase market share. The strategic choice is between investing a lot of cash to boost market share or to disinvest/ abandon the product.
High market growth, high market share	Star	- Promote aggressively. - Invest in R&D. - Stars should generate enough cash to be self-sustaining.
Low market growth, low market share	Dog	- These might generate some cash for the business, and if they do, it might be too early to abandon the product. The product has a limited future, and strategic decisions should focus on its short-term future. - There is a danger that the product will use up cash if the firm chooses to spend money to preserve its market share. - The firm should avoid risky investment aimed at trying to 'turn the business round'.

(c)

- (i) A high market share is not the only factor that determines the success of a product.
- (ii) The growth rate in the market is not the only indicator of the attractiveness of a market.

(There is an assumption in the BCG matrix that these are the two key factors for making strategic decisions about products.)

17. Option (b) is correct answer.

18. AUM – Spring 2022 (Q2)

- (a)** Product 1 and Product 2 both fall under the quadrant of 'Dog' as neither of the product is market leader nor is the market growing above cut-off of 10%.

For 'Dog' products, BCG matrix recommends the following strategies:

- Immediate withdrawal from the market as it is unlikely that the products will gain a larger market share because the market leader will defend the position of its cash cow.
- Keep selling the products till they generate profit / positive cash flows before eventually withdrawing it from the market. However, a dog product may generate positive cash flows only temporarily and would ultimately be a loss-making product.
- Do not invest more capital in 'dog', in the hope of increasing market share and improving cash flows, because gaining market share in a low-growth market is very difficult to achieve.

(b) Product 1:

BCG matrix focuses on market share and market size only. There may be other factors that can also influence the overall performance of a business. For example, strength of competition, cost base, brand strength, etc.

Although Product 1 is a Dog product according to BCG Matrix, it has strong brand value and repute for AUM. Immediate withdrawal or withdrawal after some time of this product may have adverse impact on other business activities of AUM. The recommended strategies could be as follows:

- Continue this product until the costs of this product (even if the cash flows are negative or temporarily positive) exceed the benefits (influence on other business activities of AUM).
- If possible, make further investment in this product to defend its brand value, repute and its positive influence on other business activities of AUM.

Product 2:

According to BCG matrix, if an organization is not a market leader then it is considered as having low market share. These might practically not hold true particularly if difference of market share between market leader and next to market leader is minimal. Therefore, it may not be wise to shut down or stop making investments in this product altogether.

- Product 2's market share is merely 1.5% less than the only competitor in the market. The recommended strategies could be as follows:
- This product is enjoying high profits and it could possibly be considered as (or be converted into) a cash cow for AUM. This means it can generate necessary cash to sustain the other products, or new products. Therefore, AUM should not change strategy or stop investments in the product as recommended by BCG model.
- It would be wise to defend and maintain its position in the market. Since, there is only one competitor in market, it may be fruitful to invest in efforts to increase the market share of the company to get the leading position.

19. ETIHAD LIMITED

Products	Analysis of information	Strategies
Product 1	- It is a product in a market with low growth. - Its market share is consistently very high and is forecasted to remain high. - Its market share in the current year, 2019, is 56% (55.6%), which makes it the market leader. - It is a long-standing product in the existing market. - It displays the characteristics of a mature product with dominant position. - This is a Cash Cow product.	- It should be dealt with consistently to keep reaping profits. - The cash generated by product 1 can be used to invest in other products. - Market penetration, although difficult to implement in a low growth market, should be used when expansion is required as it is the least risky approach. For example, this can be obtained through cost leadership and acquisition of competitors, etc.
Product 2	- It is a product in a market with declining growth. - Its market share is consistently very low and is forecasted to dip lower. - Its market share in the current year is about 3% (2.9%) which is much less than the 44% market share of the market leader. - It is an existing product in the existing market. - It has weak position and seems to be in the decline phase. - This is a Dog product.	- If the product is generating required ROIs or positive NPV, EM can choose to keep the product till it is feasible. - Divest the product as it is projected to decline and may incur losses. - If EM decides to keep this product for any reason (e.g. profit, brand value, product synergy, etc.), market penetration strategy may be used for expansion, however, EM should avoid risky investments on this product.
Product 3	- It is a product in a market that is showing high growth. - It has low market share. - Its market share in the current year is about 11% (11.4%) which is less than the 37% market share of the market leader. - It is considered a new product in the new market. - It resembles an entrepreneurial venture in a high growth market. - This is a Question Mark product.	- The market is growing quickly, there is an opportunity to increase market share, but initially it will require a substantial investment of cash to increase or even maintain market share. EM should keep investing in the growth of this product. - EM can invest cash generated from product 1 into Product 3. - Differentiation or focus strategy may be used to gain a larger market share.

INTERNAL ANALYSIS

IN THIS CHAPTER

1. Strategic capability
2. Resources and competences
3. Capabilities and competitive advantage
4. Customer needs
5. Critical success factors for products and services
6. Value chain by porter
7. SWOT analysis
8. Self-test questions

1. STRATEGIC CAPABILITY

1.1 The meaning of strategic capability

Strategic capability means the *ability of an entity to perform and prosper*, by achieving strategic objectives. It can also be described as the ability of an organisation to use its core competences to create **competitive advantage**.

We have described the environment of an entity and how an entity can succeed by exploiting opportunities and dealing with threats that emerge in the environment.

However, monitoring the environment for opportunities and threats is not sufficient to provide an entity with competitive advantage. Strategic capability comes from competitive advantage. Competitive advantage comes from the successful management of resources, competences and capabilities.

Definition of strategic capability

‘Strategic capability reflects the ability of an entity to use and exploit the resources available to it, through the competences developed in the activities and processes it performs, the ways in which these activities are linked internally and externally and the overall balance of core competences (capability) across the [entity]. Above all the capability of the [entity] depends upon its ability to exploit and sustain its sources of competitive advantage over time.’

1.2 Achieving strategic capability

A **resource-based view of the firm** is based on the view that strategic capability comes from competitive advantage, which comes in turn from the resources of the firm and the use of those resources (competences and capabilities).

This is illustrated in the following hierarchy of requirements for strategic capability.

Achieving strategic capability

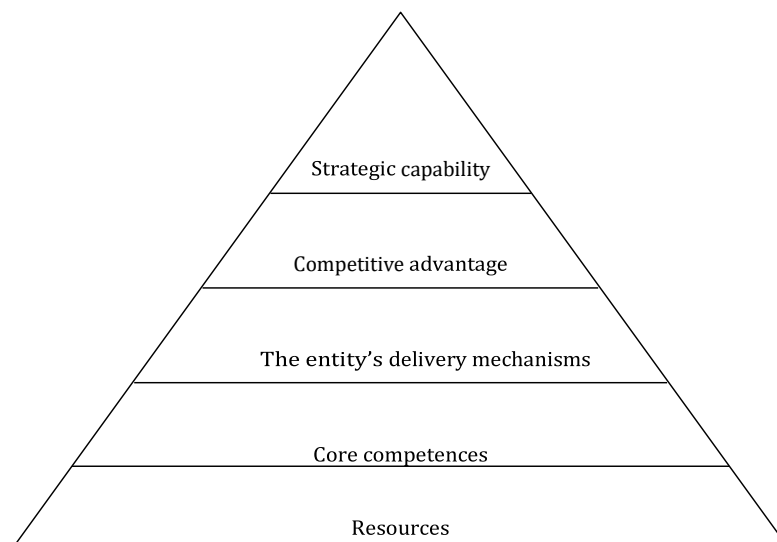


Figure 5.1

Understanding customer needs is fundamental to understanding and achieving competitive advantage.

2. RESOURCES AND COMPETENCES

2.1 Resources

2.1.1 Definition of Resources

An entity uses resources to provide products or services to its customers. A resource is any asset, process, skill or item of knowledge that is controlled by the entity.

2.1.2 Categories of Resources

Resources can be grouped into categories:

- **Human resources.** These are the leaders, managers and other employees of an entity and their skills.
- **Physical resources.** These are the tangible assets of an entity and include property, plant and equipment and also access to sources of raw materials.
- **Financial resources.** These are the financial assets of the entity and the ability to acquire additional finance if this is required.
- **Intellectual capital.** This includes resources such as patents, trademarks, brand names and copyrights. It also includes the acquired knowledge and 'know-how' of the entity.

2.1.3 Difference between Threshold resources and unique resources

A distinction can be made between threshold resources and unique resources.

- **Threshold resources** are the *basic or minimum resources* that an entity needs in order to participate in the industry and compete in the market. Without these essential resources, an entity cannot survive in its industry and markets.
- **Unique resources** are *resources controlled by the entity that competitors do not have* and would have difficulty in acquiring. A unique resource is a resource that competitors would have difficulty in acquiring. It might be obtained from:
 - ownership of scarce raw materials, such as ownership of exploration rights or mines
 - location: for example, a hydroelectric power generating company benefits from being located close to a large waterfall or dam and a bank might benefit from a city centre location
 - a special privilege, such as the ownership of patents or a unique franchise.

Unique resources are a *source of competitive advantage*, but they can change over time. They can lose their uniqueness. For example:

- An investment bank might benefit from employing an exceptionally talented specialist; however, a rival bank might 'poach' him and persuade him to join them.
- A company might have patent rights that prevent competitors from copying a unique feature of a product that the company produces. However, competitors might find an alternative method of making a similar product, without infringing the patent rights.

2.2 Competences

2.2.1 Definition of competences

A competence can be defined as an ability to do something well. Competences are *activities or processes* in which an entity uses its resources. They are created by bringing resources together and using them effectively. Competences are used to provide products or services, which offer value to customers.

A business entity must have competences in key areas in order to compete effectively.

2.2.2 Difference between Threshold competencies and core competencies

A distinction can be made between threshold competences and core competences.

- **Threshold competences** are the *minimum or basic activities, processes* which are essential for survival and entry into a particular industry. These activities and processes provide an entity with the capability to provide a product or service with features that are sufficient to meet customer needs (the ability to provide 'threshold' product features).

These are easy to imitate (copy) by others and can be performed by competitors as well.

- **Core competences** are the *unique activities, processes and abilities* that give the entity a capability of meeting the critical success factors for products or services and achieving competitive advantage. Core competences are distinctive and not easily imitated or obtained by competitors.

The statement highlights that competitors cannot replicate these competences easily. This inimitability is a key factor in creating a sustainable competitive advantage.

The concept of core competence was first suggested in the 1990s by Hamel and Prahalad, who defined core competence as: 'Activities and processes through which resources are deployed in such a way as to achieve competitive advantage in ways that others cannot imitate or obtain.'

2.3 Sustainable core competences

Core competences might last for a very short time, in which case they do not provide much competitive advantage.

Competitive advantage is provided by sustainable core competences. These are core competences that can be sustained over a fairly long period of time, over a period of time that is long enough to achieve strategic objectives.

Sustainable competences should be durable and/or difficult to imitate.

- **Durability.** Durability refers to the length of time that a core competence will continue in existence, or the rate at which a competence depreciates or becomes obsolete.
- **Difficulty to imitate.** A sustainable core competence is one that is difficult for competitors to imitate, or that it will take competitors a long time to imitate or copy.

► Example of core competences

Sustainable core competences come from unique resources and a unique ability to use resources. The core competences that give firms a competitive advantage vary enormously. Here are just a few examples:

- Providing a good service to customers. Some entities have a particular competence in providing good service that other entities find difficult to imitate.
- Embedded operational routines. Some entities use processes and procedures as part of their normal way of operating, as a result of which they are able to 'make things happen'. This competence is sometimes described in general terms as 'operating efficiency'.
- Management skills. The core competence of an entity might come from the ability of its management team.
- Knowledge. Knowledge can be a key resource and a core competence is the ability to make use of the knowledge and 'know how' within the entity, to create competitive advantage.

It is a **useful exercise** to think of any company that you would consider successful and list the unique resources and core competences that you consider to be the main reasons why the company has achieved its success. (You should also think about why the company has been more successful than its main competitors.

What makes your chosen company so much better than other companies in the same industry or the same market?)

2.4 Core competences and the selection of markets

A core competence gives a business entity a competitive advantage in a particular market or industry.

Some strategists have taken the idea of core competence further. They argue that if an entity has a particular core competence, the same competence can be extended to other markets and other industries, where they will be just as effective in creating competitive advantage.

► Example: A Hotel Group

A well-known international hotel group developed a range of different services based on the core competencies it acquired from operating a chain of hotels. It extended these competencies successfully into markets such as conference organization, hospitality arrangements at events, and facilities management.

An entity should therefore look for opportunities to expand into other markets where it sees an opportunity to exploit its core competences.

2.5 Summary: resources and competences

Resources and competences are necessary to compete in a market and deliver value to the customer. Unique resources and core competences are needed to create competitive advantage.

Resources	Competences
Threshold	Threshold
Resources needed to participate in an industry	Activities, processes and abilities needed to meet threshold product or service requirements
Unique	Core
Resources providing a foundation for competitive advantage	Activities, processes and abilities that give competitive advantage

Threshold resources and competences are necessary, but are not sufficient for achieving strategic success (strategic capability).

3. CAPABILITIES AND COMPETITIVE ADVANTAGE

3.1 Competitive advantage

Competitive advantage is any *advantage that an entity gains over its competitors*, that enables it to deliver more value to customers than its competitors.

Competitive advantage is essential for sustained strategic success. The result of competitive advantage should be an ability to:

- create added value in products or services, that customers will **pay more** to obtain, or
- create the same value for customers, but at a **reduced cost**.

3.2 Capabilities

Capabilities are the ability to do something. An entity should have capabilities for gaining competitive advantage. These come from using and *co-ordinating the resources and competences* of the entity to create competitive advantage.

Capabilities arise from a complex combination of resources and core competences and they are unique to each business entity. Capabilities must have four qualities:

- a) **Value to buyers:** Valuable to customers in terms of products/services
- b) **Rarity:** Unique or rare resources or competences are needed
- c) **Robustness:** difficult for competitors to imitate
- d) **Non-substitutability:** No substitute product and no substitute competence

Each business entity should have capabilities that rivals cannot copy exactly, because the capabilities are embedded in the entity and its processes and systems.

A resource-based view of the firm is based on the idea that strategic capability comes from the distinctive capability of the entity to use its resources and competences to provide a platform for achieving long-term strategic success.

3.3 Dynamic capabilities

'Dynamic capabilities' is a term used to describe the ability of an entity to create new capabilities by adapting to its changing business environment and:

- renewing its resource base: getting rid of resources that have lost value and acquiring new resources, particularly unique resources
- developing new and improved core competences.

Two definitions of dynamic capabilities are follows:

- Dynamic capabilities are abilities to create, extend and modify ways in which an entity operates and uses its resources and its ability to develop its resource base, in response to changes in the business environment.
- Dynamic capabilities are the abilities of an entity to adapt and innovate continually in the face of business and environmental change.

Business entities operate in a continually-changing environment. Strategic success is achieved by reacting to changes in the environment more successfully than competitors.

Dynamic capabilities refer to the ability of an entity to respond to environmental change successfully and recognise the need for change and the **opportunities for innovation**, through new products, processes and services.

3.4 Cost efficiency and strategic capability

Porter has argued that in order to achieve strategic capability, an entity must gain competitive advantage over its rivals and competitive advantage can be achieved by adding value or by reducing costs.

Cost efficiency (for an accountant) means minimising costs through control over spending and the efficient use of resources. A firm must achieve a certain level of cost efficiency if it is to be able to compete and survive in the industry. In strategic management, **cost efficiency** refers to the ability not only to minimise costs in current conditions, but to **continually reduce costs over time**.

The ability to reduce costs continually is often a key requirement for strategic success. Cost efficiency has been described as a '**threshold strategic capability**'. A cost efficiency capability is the result of both:

- making better use of resources or obtaining lower-cost resources; and
- improving competencies and capabilities (for example, improving the systems of inventory management).

Ways of achieving cost efficiency

There are various ways in which cost efficiency can be achieved, to gain a competitive advantage over rival companies.

- **Economies of scale.** Reductions in cost can be achieved through economies of scale. Economies of scale refer to ways in which the average costs of production can be reduced by producing or operating at a higher volume of output. In simplified terms, operating at a higher volume of output enables a firm to spread its fixed costs over a larger volume of output units, so the average cost per unit falls. Cost efficiency often goes hand-in-hand with size because large entities can make use of economies of scale.

Many businesses are therefore very keen on continuous growth as this is one way to keep improving cost efficiency and, therefore, of keeping ahead of the competition.

- **Economies of scope.** In some industries, reductions in costs might be achieved by producing two or more products, so that an entity that makes all the products achieves lower costs per unit than competitors that produce only one of the products.

► Example: Economies of scale and scope Economies of scale

Company A and Company B are building construction companies. Both companies construct residential homes. Company A is much smaller than Company B. Company B has been able to acquire a large share of the housing construction market because it is able to build lower-cost houses than companies such as Company A.

Economies of Scale

Company B achieves lower costs by exploiting **economies of scale**. It can buy raw materials (such as bricks and windows) at lower prices by purchasing in bulk. It can make better use of the time of its specialised workers. It can also reduce costs by buying its own construction equipment, instead of having to hire equipment from equipment suppliers at a higher cost (which is what Company A must do).

Economies of scope

Company C produces curtains and carpets for both commercial customers and the retail market. It competes with Company D, which produces curtains only and Company E, which produces carpets only.

Company C might be able to achieve greater cost efficiencies than either Company D or Company E because it produces both curtains and carpets and not just one product.

Cost efficiency and strategic capability

Cost efficiency can become a strategic capability, which will give the organisation competitive advantage, for example by achieving 'cost leadership'.

3.5 Corporate knowledge and strategic capability

Corporate knowledge or organisational knowledge is the knowledge and 'know-how' that is acquired by the entity as a whole. It is created through the interaction between technologies, techniques and people. Within organisations, knowledge comes from a combination of:

- collaboration between people, who share their knowledge and create new knowledge together
- technology, which makes it possible to store and communicate knowledge
- information systems that make use of the technology system; and
- information analysis techniques.

Knowledge gives a company a competitive advantage. Another important characteristic of corporate knowledge is therefore that it cannot be easily replicated by a competitor. It is something unique to the company that owns it.

Another way of making this point is to say that the premium value of knowledge comes from the fact that it cannot be digitised, codified and easily distributed or easily acquired.

A capability in knowledge management comes from a combination of unique resources and core competences:

- experience in an industry or market and acquiring knowledge through experience
- the knowledge that employees have or acquire, for example through training
- the management of people and success in encouraging creativity and new ideas
- the management of IS/IT systems.

4. CUSTOMER NEEDS

4.1 The marketing approach

Markets can be defined by their customers and potential customers. Companies and other business entities compete with each other in a market to sell goods and services to the customers. The most profitable entities are likely to be those that sell their goods or services most successfully.

- Business success is achieved by providing goods or services to customers in a way that meets customer needs successfully.
- Customers will buy from the business entities that meet their needs most successfully.

Many business strategies are based (at least partly) on the marketing approach or the marketing concept, which is that the aim of a business entity is to deliver products or services to customers in a way that meets customer needs better than competitors. To do this, the business entity must have a competitive advantage over its competitors and a strategic aim is to achieve a competitive advantage and then keep it.

4.2 What are customer needs?

Customers buy products or services for a reason. When they can choose between two or more competing products, there is a reason why they choose one product instead of another.

A major factor in the decision to buy a product is usually price. Many customers choose the product that is the cheapest on offer, particularly when they cannot see any significant difference between the competing products.

If the buying decision is not based entirely on price, the customer must have other needs that the product or service provides. These could be:

- a better-quality product
- better design features
- availability: not having to wait to obtain the product
- convenience of purchase
- the influence of advertising or sales promotions.

There are many different types of customer, each with their own particular needs. A product that meets the needs of one customer successfully might not meet the needs of another customer nearly as well.

Customers may be grouped into three broad types:

- consumers: these buy products and services for their personal benefit or use
- industrial and commercial customers: customers might include other business entities
- government organisations and agencies

In some markets, most customers are consumers. In industrial markets, all customers are industrial and commercial customers and possibly some government customers. In some markets, such as the markets for military weapons, the only customers are governments.

As a general rule, the needs of different types of customer vary. Industrial and commercial customers are more likely than consumers to be influenced by price. Consumers will often pay more for a branded product (due to the influence of advertising) or for convenience.

4.3 The Marketing mix (4Ps)

The marketing approach is to identify customer needs and try to meet customer needs more successfully than competitors. To do this, business entities need to offer a 'mix' of the four Ps that will appeal to customers.

According to Philip Kotler, 'Marketing mix is the *set of controllable marketing tools* (4Ps such as product, price, place, and promotion) that firm blends to produce the response it wants from target market.'

Product refers to the design features of the product and the product quality. In addition to the product itself, features such as short lead time for delivery and reliable delivery could be important. Product features also

include after-sales service and warranties. For services, the quality of service might depend partly on the technical skills and inter-personal skills of the service provider.

Price is the selling price for the product: some customers might be persuaded to purchase by a low price or by the offer of an attractive discount.

Place refers to the way in which the customer obtains the product or service, or the 'channel of distribution'. Products might be bought in a shop or supermarket, from a specialist supplier, by means of direct delivery to the customer's premises or through the internet.

Promotion refers to the way in which product is advertised and promoted. It also includes direct selling by a sales force (including telesales).

Marketing can be analysed at a tactical level and decisions about the marketing mix might be included within the annual marketing budget. However, marketing issues can also be analysed at a strategic level.

It is important in strategic analysis to understand what customers will want to buy and why some products or services will be more successful than others.

Marketing Mix and Life Cycle Model

Marketing mix	Introduction	Growth	Maturity	Decline
Price	Cost plus pricing: Pricing strategy where the product is priced based on its cost of production plus a markup for profit. For example, the initial pricing of the iPhone was set high to cover the production costs and include a profit margin.	Penetration pricing Setting a lower price to attract customers and gain market share quickly during the growth stage. For example, Apple adjusted pricing strategies to appeal to a broader audience, including introducing lower-cost models like the iPhone SE.	Competitive pricing: Adjusting prices to remain competitive in the market during the maturity stage. For example, Apple adjusted its pricing strategy to stay competitive with other smartphone manufacturers like Samsung and Huawei.	Reduced price: Lowering prices to clear out remaining inventory and attract price-sensitive customers during the decline stage. For example, Prices of older iPhone models were reduced to clear out inventory and attract price-sensitive customers.
Product	Basic product: The core product without any additional features or services, usually introduced to the market to attract early adopters. For example, the first iPhone (iPhone 2G) launched in 2007 with fundamental smartphone features such as a touchscreen, internet connectivity, and basic apps.	Product extension, after-sales service, and warranties: Enhancements and additional services provided to improve the product's value, such as extended features, customer support, and warranty coverage. For example, Apple introduced new features and services, such as the App Store, improved camera capabilities, along with extended warranties.	Diversification of products: Offering a wider range of products or variations to cater to different market segments and sustain interest. For example, Apple diversified the iPhone product line with multiple models catering to different market segments, such as the iPhone XR, iPhone 11 Pro, and iPhone 12 Mini.	Phasing out of weak products: Gradual discontinuation of products that are no longer profitable or in demand. For example, Apple phased out older iPhone models, like the iPhone 6 and 6s, to streamline its product line and focus on newer models.

Marketing mix	Introduction	Growth	Maturity	Decline
Promotion	Heavy Sales Promotion: Investing significantly in marketing and promotional activities to create awareness and encourage trial purchases during the introduction stage. For example, Apple conducted significant promotional activities, including TV commercials, online ads, and high-profile launch events to create buzz and awareness.	Reduce Effort Due to Increase in Consumer Demand: Scaling back on promotional efforts as consumer demand grows and the product gains market traction during the growth stage. For example, with growing consumer demand, Apple focused on targeted promotions and relied on word-of-mouth and media coverage to drive sales.	Increase Efforts to Promote Brand: Intensifying promotional activities to reinforce brand loyalty and fend off competition during the maturity stage. Apple intensified promotional activities, emphasizing brand loyalty and ecosystem integration (e.g., iCloud, Apple Music, and Apple Watch).	Reduce Cost to Minimum Level: Cutting back on promotional expenditures to conserve resources as the product enters the decline stage. For example, Marketing efforts for older iPhone models were minimized, with a focus on promoting the latest models instead.
Place	Build Selected Distribution Channels: Establishing a few key distribution channels to carefully manage product availability and brand image during the introduction stage. For example, Initially, the iPhone was available only through Apple Stores and exclusive partnerships with certain carriers (e.g., AT&T in the U.S.).	Expand Distribution Channels intensively: Expanding the number of distribution channels to make the product widely available and accessible during the growth stage. For example, The iPhone became available through multiple carriers and retail partners worldwide, significantly increasing its accessibility.	Strengthen Distribution Network: Enhancing the efficiency and effectiveness of existing distribution channels to maintain market position during the maturity stage. For example, Apple continued to enhance its distribution network, including improving online sales channels and expanding retail presence in emerging markets.	Eliminate Unprofitable Outlets: Closing down distribution channels that are not generating enough profit during the decline stage. For example, Apple focused on optimizing its distribution channels, possibly discontinuing partnerships with underperforming retailers.

5. CRITICAL SUCCESS FACTORS FOR PRODUCTS AND SERVICES

5.1 Definition of a critical success factor

Critical success factors (CSFs) are factors that are essential to the strategic success of a business entity. They have been defined as: 'those components of strategy in which the organisation must excel to out-perform competition' (Johnson and Scholes).

► *Example: CSF*

A firm of accountants has an office in a major Pakistani city. The partners are considering an expansion of the business, by opening another office in another city 50 miles away.

The partners want to expand their business, but they are cautious about investing in a project that might not succeed and might cost them a lot of money. They have a meeting to discuss the factors that would be critical to the success of a new office. They prepare the following list of factors:

- Employing top-quality accountants for the new office.
- Obtaining a minimum number of corporate clients.
- Obtaining a minimum number of private (individual) clients.
- Offering a full range of audit and accountancy services.
- Locating the new office in attractive city-centre premises.

All these factors could be important and might help the new office to be a success. However, not all of them might be **critical** to the success of the venture.

If the partners can agree which factor or factors are critical to success, they can concentrate on setting reasonable targets for each key factor and making every effort to ensure that those targets are achieved.

When management are analysing a market and customers in the market, they should try to understand which factors are essential to succeed in business in the market and which factors are not so important. Strategic success is achieved by identifying the CSFs and setting targets for performance linked to those critical factors.

5.2 Marketing and CSFs for products and services

The previous example considers the CSFs for a new business venture (a new office for an accounting firm). Strategic planners might want to identify the CSFs for a particular product or service.

These are the features that the product must have if it is to be a success with customers.

► *Example: Sports cars*

The senior management of a company that manufactures sports cars, competing with producers such as Ferrari and Maserati, need to understand the critical factors that enable their products to compete successfully in the market.

After an analysis of the market and competition, they might decide that the CSFs are:

- building cars that match competitors in performance (top speeds, acceleration, engine capacity) and also
- sell at prices that are about 10% less than those of the main competitors.

The CSFs of a product or service must be related to customer needs. They are the features of a product or service that will have the main influence on the decisions by customers to buy it.

► *Example: Parcels*

A parcel delivery service might identify critical success factors as:

- collecting parcels from customers quickly, as soon as possible after the customer has asked for a parcel to be delivered
- providing rapid and reliable delivery.

5.3 CSFs and key performance indicators (KPIs)

Critical success factors should be identified at several stages in the strategic planning process.

- CSFs should be identified during the process of assessing strategic position. Management need to understand the main reasons why particular products or services are successful.
- CSFs are important in the process of making strategic choices. A business entity should select strategies that will enable it to achieve a competitive advantage over its competitors. These are strategies where the entity has the ability to achieve the critical success factors for its products or services.
- CSFs are also important for strategy implementation. Performance targets should be set for each CSF. This involves deciding on a measurement of performance, that can be used to assess each CSF and then setting a quantified target for achievement within a given period of time.

Measured targets for CSFs are called **Key Performance Indicators (KPIs)**.

5.4 Johnson and Scholes: a six-step approach to using CSFs

Johnson and Scholes have suggested a six-step approach to achieving competitive advantage through the use of CSFs.

Step 1: Identify the success factors that are critical for profitability (long-term as well as short-term). These might include 'low selling price' and also aspects of service and quality such as 'prompt delivery after receipt of orders' or 'low level of sales returns'. It is useful to think about customer needs and the 4Ps of the marketing mix when trying to identify the CSFs for products or services.

Step 2: Identify what is necessary (the 'critical competencies') in order to achieve a superior performance in the critical success factors.

This means identifying what the entity must do to achieve success. For example:

- If a critical success factor is 'low sales price', a critical competence might be 'strict control over costs'.
- If a critical success factor is 'prompt delivery after receipt of orders', a critical competence might be either 'fast production cycle' or 'maintaining adequate inventories'.
- If a critical success factor is 'low level of sales returns', a critical competence might be either 'zero defects in production' or 'identifying 100% of defects on inspection'.

Step 3: The entity should develop the level of critical competence so that it acquires the ability to gain a competitive advantage in the CSF.

Step 4: Identify appropriate key performance indicators for each critical competence.

The target KPIs, if achieved, should ensure that the level of critical competence that creates a competitive advantage is obtained in the CSF.

Step 5: Give emphasis to developing critical competencies for each aspect of performance, so that competitors will find it difficult to achieve a matching level of competence.

Step 6: Monitor the firm's achievement of its target KPIs and also monitor the comparative performance of competitors.

5.5 Benchmarking

5.5.1 Definition of benchmarking

Benchmarking is a process of comparing one's own performance against the performance of someone else, preferably the performance of 'the best'.

5.5.2 Purpose of benchmarking

The purpose of benchmarking is to identify differences between one's performance and the performance of the selected benchmark. Where these differences are significant, methods of closing the gap and raising performance can be considered. One way of improving performance might be to copy the practices of the 'ideal' or benchmark.

In strategic position analysis, benchmarking is useful because it provides an assessment of how well or badly an entity is performing in comparison with competitors.

5.5.3 Methods of benchmarking

There are several methods of benchmarking:

- **Internal benchmarking.** An entity might compare the performance of units within the organisation with the best-performing unit. For example, an organisation with 30 branch offices might compare the performance of 29 of the branches with the best-performing branch.
- **Operational benchmarking.** An entity might compare the performance of a particular operation with the performance of a similar operation in a different business entity in a different industry. For example, a book publishing company might compare its order handling, warehousing and dispatch systems with the similar systems of a company in a different industry that has a reputation for excellence – for example a company in the clothing manufacturing industry.
- Operational benchmarking arrangements might be negotiated with another business entity.
- **Competitive benchmarking.** An entity might compare its own performance and its own products with those of its most successful competitors. Unlike internal benchmarking and operational benchmarking, competitive benchmarking must be carried out without the knowledge and co-operation of the selected benchmark.
- **Customer benchmarking.** This is a different type of benchmark. The benchmark is a specification of what customers expect. An entity compares its performance against what its customers expect the performance to be.

► Example: Xerox

Competitive benchmarking originated with the Xerox Corporation in the US in 1982. The company manufactured photocopier machines, but had lost a large part of its market share to Japanese competitors. The corporation set up a team to compare Xerox against its competitors.

The team identified critical success factors and performance indicators in several different areas of operations, such as order fulfilment, the distribution of products to customers, production costs, selling prices and product features. It then compared its own performance in each area with the performance of the competitors.

The comparison showed that Xerox was seriously under performing in comparison with the competition. Its management therefore went on to consider measures that it should take to improve its performance.

As a result of the measures it took, Xerox was able to reduce its costs, improve customer satisfaction and regain some of its lost market share. In other words, competitive benchmarking helped the corporation to regain competitiveness.

5.6 Methods of competitor benchmarking

There are no 'standard' methods of competitor benchmarking. In most circumstances, competitors will not provide more information about themselves than they are required to by law or regulations. **Published financial statements** might therefore be an important source of comparative material, particularly where the competitor is required to publish a full set of financial statements each year that comply with international accounting standards.

Some of the methods that might be used by a company to compare performance with its competitors are suggested below.

- The published financial statements of competitors should be studied. These should be analysed to assess the financial performance of the competitor. Segment analysis, showing the performance of business and geographical segments, might be particularly useful.
- Financial ratios obtained from the financial statements of the competitor should be compared with similar ratios for the company. In addition, trends in performance and in the ratios over time should also be monitored. Key performance measures might include:
 - annual sales (by business segment or geographical segment)
 - growth in annual sales (as a percentage increase on the previous year)
 - return on capital employed
 - net profit/sales ratio
 - gross profit/sales ratio.
- Where there are significant differences in performance, the possible reasons for the differences should be considered.
- The products or services of competitors should be analysed in detail. In the case of products, units of the competitor's product might be purchased and taken to a laboratory for scientific or technical analysis.
- Information about competitors can be gathered by talking to customers and potential customers who have had dealings with a competitor and who are willing to discuss what the competitor is offering as an incentive to make the customer buy its products.
- Sales prices should be compared. Some competitors might sell at higher prices and some at lower prices. Some competitors might sell a variety of similar products across a range of different prices. When there are significant price differences, management should consider whether the price differences are justified by the differences between the products or services.

Competitor analysis should also include an assessment of the critical success factors of all the firms in the market. The CSFs of companies in the same market might differ and individual companies might succeed in their market for different reasons, particularly when the market is segmented.

6. VALUE CHAIN BY PORTER

6.1 Definition of value

Value relates to the *benefit that a customer obtains* from a product or service. Value is provided by the attributes of the product or service. Customers are willing to pay money to obtain goods or services because of the benefits they receive. The price they are willing to pay puts a value on those benefits.

Business entities *create added value* when they make goods and provide services. For example, if a business entity buys a quantity of leather for Rs. 1,000 and converts this into leather jackets, which it sells for Rs. 10,000, it has created value of Rs. 9,000. In a competitive market, the most successful business entities are those that are most successful in creating value.

Porter has suggested that:

- if a firm pursues a cost leadership strategy, its aim is to create the same value as its competitors, but at a lower cost
- if a firm pursues a differentiation strategy, it aims to create more value than its competitors.

The only reason why a customer should be willing to pay a higher price than the lowest price in the market is that he sees additional value in the higher-priced product and is willing to pay more to obtain the value.

- This extra value might be real or perceived. For example, a customer might be willing to pay more for a product with a well-known brand name, assuming that a similar non-branded product is lower in quality. This difference in quality might be imagined rather than real; even so, the customer will pay the extra amount to get the branded product.
- The extra value might relate to the quality or design features of the product. However, other factors in the marketing mix might persuade a customer that a product offers more value. For example, a customer might pay more to buy one product than a lower-priced alternative because it is available immediately (convenience) or because the customer has been attracted to the product by advertising.

6.2 The concept of the value chain

A framework for analysing how value can be added to a product or service has been provided by Porter.

Porter ('Competitive Strategy') grouped the activities of a business entity into a value chain. A value chain is a series of activities, each of which adds value. The total value added by the entity is the sum of the value created by each stage along the chain.

Johnson and Scholes have defined the value chain as: 'the activities within and around an organisation which together create a product or service.'

Strategic success depends on the way that an entity as a whole performs, but **competitive advantage**, which is a key to strategic success, comes from each of the individual and specific activities that make up the value chain.

Within an entity:

- there is a primary value chain; and
- there are support activities (also called secondary value chain activities).

► Illustration: Porter's value chain

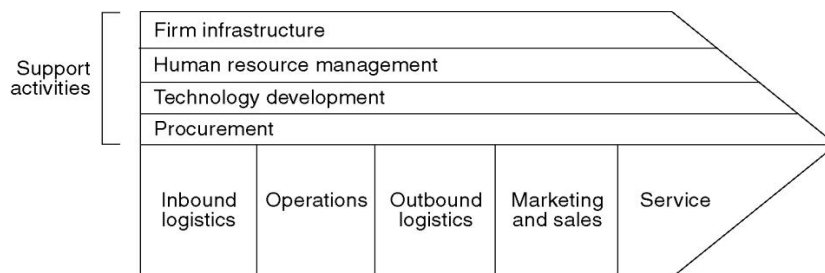


Figure 5.2

6.3 Primary value chain activities

Porter identified the chain of activities in the primary value chain as follows.

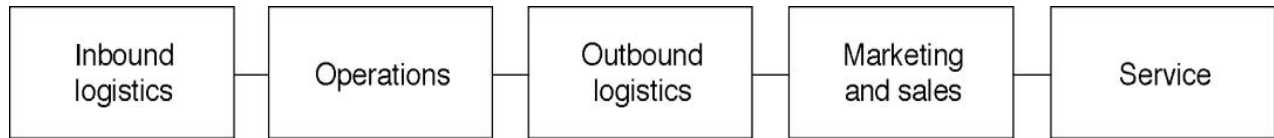


Figure 5.3

This value chain applies to manufacturing and retailing companies, but can be adapted for companies that sell services rather than products.

Most value is usually created in the primary value chain.

- **Inbound logistics.** These are the activities concerned with receiving and handling purchased inputs such as materials and components and storing them until needed. In a manufacturing company, inbound logistics therefore include activities such as materials handling, transport from suppliers and inventory management and inventory control.
- **Operations.** These are the activities concerned with converting the inputs (purchased materials) into output (an item that customers will buy). In a manufacturing company, operations might include machining, assembly, packing, testing and equipment maintenance.
- **Outbound logistics.** These are activities concerned with the storage of finished goods before sale and the distribution and delivery of goods (or services) to the customers. For services, outbound logistics relate to the delivery of a service at the customer's own premises.
- **Marketing and sales.** Marketing involves identifying, informing and attracting customers within the target market(s) in which an organisation competes. Marketing involves coordinating the 4 P's of the marketing mix in order to satisfy customer needs. 'Sales' describes the transactional process of customers placing orders for goods or services and organisations fulfilling those orders.
- **Service.** These are all the activities that occur after the point of sale, such as installation, warranties, repairs and maintenance, providing training to the employees of customers and after-sales service.

The nature of the activities in the value chain varies from one industry to another and there are also differences between the value chain of manufacturers, retailers and other service industries. However, the concept of the primary value chain is valid for all types of business entities.

6.4 Secondary value chain activities: support activities

In addition to the primary value chain activities, there are also secondary activities or support activities. Porter identified these as:

- **Procurement.** These are activities concerned with buying the resources for the entity – materials, plant, equipment and other assets.
- **Technology development.** These are activities related to any development in the technological systems of the entity, such as product design (research and development) and IT systems. Technology development is an important activity for innovation. 'Technology' also includes acquired knowledge: in this sense all activities have some technology content, even if this is just acquired knowledge.
- **Human resources management.** These are the activities concerned with recruiting, training, developing and rewarding people in the organisation.
- **Corporate infrastructure.** This relates to the organisation structure and its management systems, including planning and finance management, quality management and information systems management.

Support activities are often seen as necessary ‘overheads’ to support the primary value chain, but value can also be created by support activities. For example:

- Procurement can add value by identifying a cheaper source of materials or equipment
- Technology development can add value to operations with the introduction of a new IT system
- Human resources management can add value by improving the skills of employees through training.
- Corporate infrastructure can help to create value by providing a better management information system that helps management to make better decisions.

6.5 Adding value

Strategic management should look for ways of adding value because this improves competitiveness (creates competitive advantage).

- Management should look for ways of adding more value at each stage in the primary value chain.
- Similarly, management should consider ways in which support activities can add more value.

Finding ways of adding value is a key aspect of strategic management. Answers need to be provided to a few basic questions:

- Who is the customer?
- What features of the product or service do they value?
- How do we provide value to the customer in the products or services we provide?
- How can we add to the value that the customer receives?
- How can we add value more successfully than our competitors? Do we have some **core competencies** that we can use to give us a **competitive advantage**?

Methods of adding value

There are different ways of adding value. There is an important link between value and CSFs for products and services.

- One way of adding value is to *alter a product design and include features* that might meet the needs of a particular type of customer better than products that are currently in the market. A product might be designed with added features. **Market segmentation** is successful when a group of customers, value particular product characteristics and are willing to pay more for a product that provides them.
- Value can be added by *making it easier for the customer to buy* a product, for example by providing a website where customers can make purchases. Bookstores can add value to the books they sell by providing sales outlets at places where customers often want to buy books, such as airport terminals.
- Value can be added by *promoting a brand name*. Successful branding might give customers a sense of buying products or services with a better quality.
- Value can be added by *delivering a service or product more quickly*. For example, a private hospital might add value by offering treatment to patients more quickly than other hospitals in the region.
- Value can also come from *providing a reliable service*, so that customers know that they will receive the service on time, at the promised time, to a good standard of performance.

New product design (**innovation**) is also concerned with creating a product that provides an appropriate amount of value to customers.

When a business entity is planning to expand its operations into new markets or new market segments, it should choose markets for expansion where the opportunities for adding value are strong.

It is also important to recognise that value is added by all the activities on the primary value chain, including logistics. Customers might be willing to pay more for a product or a service if it is delivered to them in a more convenient way. For example, customers might be willing to pay more for household shopping items if the items are delivered to their home, so that they do not have to go out to a supermarket or a store to get them.

6.6 Value creation and strategic management

By adding value more successfully, a firm will improve its profitability, by reducing costs or improving sales. Some of the extra benefit might be passed on to the customer, in the form of a better-quality product or service or a lower selling price. If so, the business entity shares the benefits of added value with the customers and gains additional competitive advantage.

Added value does not have to be given immediately to customers (in the form of lower prices) or shareholders (in the form of higher dividends). The benefits can be re-invested to create more competitive advantage in the future.

There is a link between:

- corporate strategy, which should aim to add value for the customer
- financial strategy, which should aim to add value for the shareholders and
- investment strategy, which should aim to ensure that the entity will continue to add more value in the future.

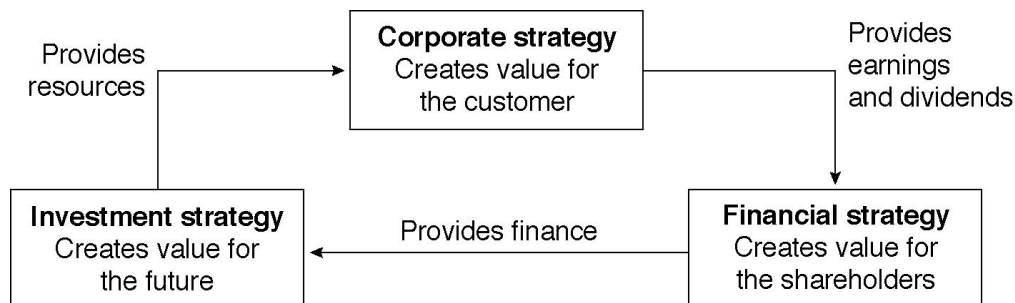


Figure 5.3

6.7 Using value chain analysis

The value chain model is another useful model for business strategy analysis. It can be argued that in business, the most important objective for success should be to add value better than competitors. Creating value for customers will, over the long term, create more value for shareholders.

Since adding value is critical to the success of a business entity, it should be important to identify how it creates value, where it is creating value and whether it could do better (and create more value). The entity's success in creating value can be compared with the performance of competitors. Who is doing better to create value for customers?

In your examination, **the value chain model can be used to make a strategic assessment of performance.** Each part of the primary value chain and each of the secondary value chain activities should be analysed. For each part of the value chain, providing answers to the following questions can assess performance:

- How is value added by this part of the value chain?
- Has the entity been successful in adding value in this part of the value chain?
- Has the entity been more successful than its competitors in adding value in this part of the value chain?
- Has there been a failure to add value successfully?
- Does the entity have the core competencies in this part of the value chain to add value successfully? (If not, a decision might be taken to out-source the activities.)

► Example

The Coffee Hub (TCH) is a newly established chain offering gourmet blend coffee in a variety of flavours in a state-of-the-art customer friendly coffeehouse. It imports the highest quality of coffee beans from suppliers around the globe. Besides own operated coffeehouses, it has issued operating licences to other stores as well. TCH also offers packaged coffee to online customers. Required: List the activities to be carried out by TCH in respect of its primary value chain based on the classification suggested by Porter.

► *Solution*

Activities that may be carried out by TCH in respect of its primary value chain based on the classification suggested by Porter:

- i. Inbound logistics
 - Receiving the finest quality of coffee beans
 - Developing and maintaining strategic relationship with suppliers
 - Safe transportation of beans from suppliers to coffeehouses and licensed stores
 - Adequate storage of beans to ensure that quality remains intact
- ii. Operations
 - Roasting of coffee to bring out the deep and intense flavour
 - Frequent testing to ensure quality consistency
 - Packaging of gourmet blends for online orders
 - Adequate maintenance of coffee makers (coffee brewer, milk frothier etc.)
- iii. Outbound logistics
 - Sale of coffee through TCH's own operated coffeehouses as well as licensed stores
 - Delivery of packaged coffee to online customers
- iv. Marketing and sales
 - Marketing through various mediums i.e. print and electronic media particularly social media
 - Marketing through word of mouth by providing high quality of coffee with high level of customer services
 - Participation in food festivals and related events
- v. Service
 - Ensuring best services at all coffee houses
 - Complimentary coffee or refund to unsatisfied customers
 - Encouraging feedback from customers and addressing their concerns, if any

7. SWOT ANALYSIS

7.1 Assessing resources and competences

In addition to assessing the external environment, including markets and competitors, strategic managers should also assess the internal resources of the entity, its competences and its capabilities.

The following assessment is required:

- What are the resources of the entity?
- Which of these resources are unique or special? What value do they provide? (What competitive advantage do they provide?)
- Will requirements for resources change, as a result of changes in the business environment?
- How are the resources used? Are they used effectively and efficiently? What core competences does the entity have?

7.2 Techniques for assessing resources and competences

As we have seen, there are several techniques that might be used to assess the resources and competences of an entity.

- Management need to understand how value is created and how value might be lost. An assessment of the value that is created or lost by the entity can be made using **value chain analysis**.
- Management can prepare a **capability profile** of the entity. This is an assessment of the key strategic processes that are needed to provide consistently superior value to customers. This is an assessment of capabilities and competitive advantage.
- A capability profile might be prepared together with a **SWOT analysis**.

In order to prepare a capability profile or a SWOT analysis, management need a thorough understanding of the resources that the entity has, the value of those resources and the competences that the entity has acquired in using those resources.

This can be provided by a **resource audit**.

7.3 Resource audit

A resource audit is an initial assessment of the resources of an entity. It is carried out to establish what resources there are, which are unique and how efficiently and effectively they are being used.

A resource audit should identify all the significant resources that are used by an entity. These will vary according to the nature of the entity. In general, however, a resource audit should provide data about the following resources.

Human resources (Part-time and full-time employees, consultants, sub-contractors etc.)	• Size and composition of the workforce
	• Efficiency of the workforce
	• Flexibility of the workforce
	• Rate of labour wastage/turnover
	• Labour relations between management and workers
	• Skills, experience, qualifications
	• Any particular expertise?
	• Labour costs: salaries and wages

Management	• Size of the management team
	• Historical performance
	• Skills of the managers
	• Nature of management structure, the division of authority and responsibility
Raw materials	• Costs as a percentage of total costs
	• Sources, suppliers
	• Availability
	• Future provision. Scarcity?
	• Wastage rates
	• Alternative materials and alternative sources of supply
Non-current assets	• What are they?
	• How old are they? What is their expected useful life?
	• What is their current value?
	• What is the amount of sales and profit per Rs.1 invested in non-current assets?
	• Are they technologically advanced or out-of-date?
	• What condition are they in? How well are they repaired and maintained?
	• What is the utilisation rate for each group of non-current assets?
Intangible resources	• Are there any intellectual rights, such as patent rights and copyrights?
	• Are there valuable brand names?
	• Does the organisation have any identifiable goodwill?
	• What is the reputation of the entity with its customers? How well does it know them?
	• Is the work force well-motivated?
Financial resources	• What is the capital of the entity?
	• What are its sources of new capital?
	• What are the cash flows of the entity?
	• What are its sources of liquidity?
	• How well does it control trade receivables?
Internal controls and organisation	• How well does it control other elements of working capital?
	• How well does the entity control the use of its resources?
	• How effective are its controls over the efficient and effective use of assets?
	• How effective are its controls over accounting and financial reporting?
	• How effective are its controls over compliance with regulations?
	• How effective are its risk management systems?
	• Is the entity organised in an efficient way?

Evaluating resources

Having identified its key resources, management can evaluate them and the entity's ability to use them efficiently and effectively to create value (competences).

A simple framework for evaluating resources is the VIRO framework:

- V:** Value. Does the resource provide competitive advantage? For example, a strong brand like Coca-Cola adds value by creating customer loyalty and allowing premium pricing.
- I:** Imitability. Would it be costly for competitors to imitate the resource or acquire it? For instance, patented formulas or medicines owned by a pharmaceutical company are hard to imitate, giving it a strong competitive edge.
- R:** Rarity. Do competitors own similar resources, or are the resources unique? For example, a luxury fashion boutique with exclusive designer talent and a rich heritage possesses rare creative resources that are not easily found elsewhere.
- O:** Organisation. Is the entity organised to exploit its resources to best advantage? For example, Apple is well-organised to exploit its design and innovation culture through strong leadership, integrated product development, and global marketing.

7.4 SWOT analysis and strengths and weaknesses

SWOT analysis is a technique for analysing strategic position and identifying key factors that might affect business strategy. These factors are both internal and external to the entity.

SWOT analysis is explained in the context of identifying opportunities and threats in the environment. It is also used to identify strengths and weaknesses in the resources, competences and capabilities of the entity.

- **Strengths.** Strengths are resources and competences that an organisation has and the capabilities it has developed. Strengths in resources, competences and capabilities can be exploited and developed to create sustainable competitive advantage.
- **Weaknesses.** Weaknesses are resources, competences and capabilities that are deficient or lacking. These weaknesses are preventing the entity from developing or sustaining competitive advantage.

Identifying strengths and weaknesses

In your examination, you might be given a question that contains a case study or scenario and asked to identify the strengths and weaknesses of the entity and the opportunities and threats that it faces.

To identify strengths and weaknesses, you should consider the following:

- Resources
 - Consider all the resources of the entity and identify those that are significant and unique. Include the skills of management and other employees in your assessment. You should also consider the knowledge that the entity has acquired and its intellectual capital.
 - Consider whether there are key resources that the entity lacks, but a competitor might have.
- Competences
 - Consider all the activities and processes of the entity and how it uses its resources. Identify the competences of the entity and consider whether any of these are core competences that provide competitive advantage.
 - Consider the competences that the entity lacks.
- Capabilities
 - Consider the capabilities of the entity and its relative success or failure in delivering value to the customer or in creating cost efficiency.

7.5 Preparing a SWOT analysis

If you are required to use SWOT analysis in your examination, you may be required to analyse opportunities and threats as well as strengths and weaknesses in the strategic position.

Strengths and weaknesses are concerned with the internal capabilities and core competencies of an entity. Threats and opportunities are concerned with factors and developments in the environment.

In order to prepare a SWOT analysis, it is necessary to:

- analyse the internal resources of the entity and try to identify strong points and weak points
- analyse the external environment and try to identify opportunities and threats.

An analysis might be prepared by a team of managers, a think tank, a risk management committee or another group of individuals within the entity.

7.5.1 Using the SWOT Analysis in exam

If you are required to use SWOT analysis in your examination, you may be expected to do so to answer a case study question. The technique is fairly simple to use. You can prepare four lists as 'workings' for your answer, one for each of the SWOT categories (strengths, weaknesses, opportunities and threats). Read through the question carefully and add to each of the lists as ideas come to your mind. You will need to think 'strategically'. You will also be required to interpret the results of your analysis and consider their strategic implications.

7.5.2 Guidelines for SWOT Analysis

Strengths (S)	Weaknesses (W)
• The things we are doing well • The things we are doing but competitors are not doing • Major successes	• The things we are doing badly (need to correct or improve) • The things we are not doing but competitors are doing and we should do • Major failures
Opportunities (O)	Threats (T)
• Events or changes in external environment that can be exploited (capitalised) • Things likely to go well in future	• Events or changes in external environment that we need to protect ourselves from or defend ourselves against them • Things likely to go badly in future

7.5.3 Strengths and Weaknesses – Examples

A SWOT analysis might be presented as four lists, in a cruciform chart, and strengths and weaknesses should include competences and capabilities as well as resources.

Functions	Strengths	Weaknesses
Finance	Sound finances may give us advantages over our competitors. For example: • positive cash flow • growing turnover and profitability • good credit control and few bad debts • a strong balance sheet, • access to extensive credit, a strong credit rating, and a good relationship with the bank and other sources of finance.	Poor financial management. This may result in situations where: • not enough funds are available for investment in new plant or product development • all available securities/assets are already pledged as collateral for existing borrowings • poor credit control leads to unpredictable cash flow

Functions	Strengths	Weaknesses
Marketing	Marketing may be the key to your success. For example, a business may enjoy: • market leadership in a profitable niche • a good reputation and a strong brand name • an established customer base • a strong product range • an effective online presence • effective market survey and research for need identification • use of design and innovation • a skilled sales team • thorough after-sales service	Lack of marketing focus which may lead to: • unresponsive attitudes to customer requirements • a limited or outdated product range • a bad website • a poor or non-existent online presence (e.g. on social networking sites and in content marketing) • over-reliance on a few customers.
Management & Personnel	Management and personnel skills and systems may underpin your success. These may include factors such as: • management strength • the ability to make quick decisions • skilled employees, successful recruitment, effective training and development • good motivation and morale • efficient administration.	Management and personnel flaws are often hard to recognise without hindsight. Typical examples are: • failure to delegate and train successors • expertise and control locked up in a few key personnel • inability to take outside advice • high staff turnover.
Production	Strengths in production may include the right premises, plant and suppliers You may benefit from: • modern, low-cost production facilities • spare production capacity • a good location • effective purchasing and good relationships with suppliers.	Inefficient production, premises and plant can undermine any business Typical problems include: • poor location and shabby premises • outdated equipment, high cost production and low productivity • long leases tying the business to unsuitable premises or equipment inefficient processes.
R & D	This may include: • Heavy investment in R&D activities and latest equipment to have innovative products • protected intellectual property (e.g. registered designs, patented products)/No. of patent products of our business • Quick pace to convert R&D results into products	This may include: • Lack of innovative products due to limited investment in R&D activities and equipment • Slow pace to complete R&D or failure in create new products after R&D

7.5.4 Opportunities and Threats – Examples

Changes	Opportunities	Threats
Broader business environment	The broader business environment may shift in our favour. This may be caused by: • Political, legislative or regulatory change. For example, a change in legislation that requires customers to purchase a product. • Economic trends. For example, falling interest rates reducing the cost of capital. • Social developments. For example, demographic changes or changing consumer needs leading to an increase in demand for our products. • New technology. For example, new materials, processes and cloud-based platforms.	The broader business environment may change to your disadvantage This may be the result of: • Political, legislative or regulatory change. For example, new regulation increasing your costs or requiring product redesign. • Economic trends. For example, lower exchange rates reducing your income from overseas. • Social developments. For example, consumer demands for 'environmentally-friendly' products. • New technology. For example, technology that makes your products outdated or gives competitors an advantage.
Other changes	Changes involving organisations and individuals which directly affect our business. These may open up completely new possibilities. For example: • deterioration in a competitor's performance, or the insolvency of a competitor • improved access to potential new customers and markets (e.g. overseas) • increased sales to existing customers, or new leads gained through them • the development of new distribution channels (e.g., social media platforms) • improved supply arrangements, such as just-in-time supply or outsourcing non-core activities • the opportunity to take on a key employee from a competitor • the introduction of new financial institutions who are keen to fund expansion.	Changes involving organisations and individuals that directly affect our business These can have far-reaching effects. For example: • improved competitive products or the emergence of new competitors • a reliance on legacy products or services for large chunks of revenue • loss of a significant customer • creeping over-reliance on one distributor or group of distributors • failure of suppliers to meet quality requirements • price rises from suppliers • key personnel leaving, perhaps with trade secrets • lenders reducing credit lines or increasing charges • a rent review threatening to increase costs, or the expiry of a lease • legal action (e.g. being sued by a customer).

7.6 Interpretation of a SWOT analysis

An initial SWOT analysis is simply a list of strengths, weaknesses, opportunities and threats. The **significance** or **potential value/cost of each item** is not considered in the initial analysis and the items are not ranked in any order of importance.

A problem with SWOT analysis is that it can encourage very long lists of strengths, weaknesses, opportunities and threats, without any differentiation between those that are significant and those that are fairly immaterial.

Having prepared an initial SWOT analysis, the next step is to interpret it. Interpretation involves identifying those strengths, weaknesses, opportunities and threats (SWOTs) that might be significant and what their implications might be for the future. The process of interpretation therefore involves ranking the SWOTs in some order of priority or importance.

Another problem with SWOT analysis is that it can be used to identify significant issues, but it cannot be used for evaluation. It cannot be a substitute for a more rigorous strategic analysis.

Having identified the most significant issues facing the organisation, strategic management should then consider:

- how major strengths (for example, core competencies) and opportunities might be exploited, to obtain competitive advantage.
- how major weaknesses and threats should be dealt with, in order to reduce the strategic risks for the entity.

8. SELF-TEST QUESTIONS

1. CORE COMPETENCE

- Define a core competence, and describe the factors that create a core competence.
- For any two successful major companies that you know, identify and explain what you consider to be their core competence (or core competencies).
- Explain the significance of core competences for product-market business strategy.

2. ZAM ACCOUNTANCY SCHOOL - SPRING 2024 (Q4)

ZAM Accountancy School (ZAM) has been a renowned professional education provider for 35 years, known for its quality education and impressive results. With purpose-built campuses in three major cities and 10 branches in five cities, ZAM offers both online and face-to-face classes equipped with the use of latest technological tools that are considered best in the industry. ZAM hires highly qualified and experienced professionals. Unlike other accountancy schools, ZAM offers crash courses before exams and free mock exams that contribute to identifying deficiencies and improving performance. In a unique approach, ZAM conducts career counselling sessions and offers free one-to-one advisory sessions, setting it apart from other accountancy schools.

Required: Briefly explain threshold resources, unique resources, threshold competencies and core competencies, and relate them to the scenario.

3. COMPETITIVE ADVANTAGE

- In the current economic scenario, business organizations are under continuous stress to achieve economies in their production and operating costs. The pressures for cost reduction emanate from the management as well as the competitors and customers.

Required: Identify eight operational and strategic areas which must be scanned continuously by an industry leader to achieve cost economies and maintain its competitive advantage.

- Quality is also a source of competitive advantage which can be achieved by an enterprise through long-term commitment to excellence in all areas of operations.

Required: Identify the factors you consider to be most critical for achieving quality as a sustainable competitive advantage.

4. VALUE CHAIN

- List the primary activities and secondary activities in a value chain.
- Explain the significance of the value chain for business strategy.
- Identify the primary activities in the value chain for a publisher of educational text books.
- Identify the primary activities in the value chain for a company selling insurance policies (such as car insurance) by telephone.

5. RAUF BAEJWA - AUTUMN 2022 (Q4)

Rauf Baweja (Rauf) is the owner of a chain of computer stores, named Complus, that sells computer parts and accessories throughout the city. Rauf sources all its products from a large wholesale supplier situated in Saddar, Karachi. The supplier has an outlet and online store where people can select and order the products. At the start of every week, Rauf visits the supplier's online store, selects and orders inventory for the rest of the week. Upon receiving the payment for products and delivery charges, the supplier sends them directly to each Complus store according to the requirements received from Rauf.

All Complus stores follow a standardized layout. When the products reach the store, the staff places a price tag, stacks and organises the products in a standard fashion. The standard processes make it easy to transfer a well-trained staff member from one store to the other. This also makes it easy for a customer to walk into any Complus store and locate the desired product where they will always find a well-trained staff ready to help.

Complus has a strong marketing team that frequently runs social media campaigns, SMS messages and TV adverts to inform customers about the products and discounts. Complus also has an aftersales customer helpline that assists customers with common queries and collects their feedback. Lately, there have been mounting customer complaints of faulty products upon first use and Rauf is looking for ways to solve it.

Required:

- (a) Perform Porter's primary value chain analysis of Complus. Your analysis should include explanation of each element of value chain and activities being performed under that element.
- (b) Recommend a value addition activity that would reduce customer complaints of faulty products. Also explain its position(s) in Porter's primary value chain.

6. 24SEVEN - SPRING 2023 (Q2)

The management team at 24Seven, a call centre, notices that their call handling times, one of their critical success factors (CSFs), have been consistently underperforming. The management determines that the lack of proper training and inadequate staffing are the main reasons for the declining performance. The data shows that the desired call handling time to achieve the competitive advantage is 30 seconds, but the actual call handling time recorded is 45 seconds.

Given the importance of the issue, the management has hired 3 additional staff and emphasized on setting ambitious training targets to resolve the matter within the next three months. The management is closely following the progress of implementing the plan and has recorded a decrease in call handling time to 35 seconds for the first month. For the second month the target is to reduce call handling time to 30 seconds, which will out beat the competition, and 28 seconds in the third month to solidify their position as a market leader in call handling times.

Required: Identify, explain and relate Johnson and Scholes six-step approach to using CSFs from the scenario above.

7. CRITICAL SUCCESS FACTORS

The Mayor of Capital City wants to improve the road traffic situation in the city by reducing traffic congestion. At the moment, there are frequent traffic jams and transport times through the city are very slow. The Mayor is particularly concerned about delays to public transport services (buses) and taxis. He is discussing with his Road Management Committee a strategy to reduce traffic congestion in the city.

Required:

- a. Suggest two critical success factors (CSFs) that might be used for developing the strategies to reduce road congestion.
- b. For each critical success factor, suggest a key performance indicator (KPI) for setting a measurable target of performance, and comparing actual results against the target.
- c. Suggest two strategies for achieving success in these areas.

8. BENCHMARKING

- a) What is the purpose of benchmarking?
- b) Describe the nature of:
 - i. Internal benchmarking
 - ii. Competitor benchmarking (or competitive benchmarking)
 - iii. Operational benchmarking (also called process benchmarking and activity benchmarking)
 - iv. Customer benchmarking

9. SWOT ANALYSIS I

The Righton Supermarkets Group is the largest supermarket group in the country. In spite of a decline in total consumer spending in the national economy last year, spending in the supermarket sector as a whole increased, and Righton also increased its market share. It now has over 20% of the market for food-and- drink shopping in the country. It is also enjoying strong growth in the sale of non- food products such as clothing (it has its own brand of fashion clothes) and domestic electrical goods.

The group has just announced record annual profits, and investors expect the growth in profitability to continue, in spite of signs of weakness in the national economy.

Rival supermarket groups have been attempting to regain lost market share. Two rival groups merged a year ago. Another competitor was acquired a few years ago by a major US supermarket group and is pursuing an aggressive competitive strategy.

Righton's success is due partly to its reputation for low prices and reasonable- quality products, and its efficient in-store service.

The group continues to acquire land and to purchase retail property with the intention of building more out-of-town stores and smaller in-town convenience stores. It does not have any business operations outside the country. There is some concern about the possibility of government action to prevent the group from exploiting its 'near-monopoly' position in the market.

Required:

- a) What is the purpose of SWOT analysis?
- b) Using the information provided, carry out a SWOT analysis for the Righton Supermarket Group.

10. SWOT ANALYSIS II

The AZ Group is one of the world's leading pharmaceuticals companies. It was created five years ago by the merger of Entity A with Entity Z. The group's operations are based mainly in Western Europe and North America. The North American market currently accounts for 40% of world sales for pharmaceutical companies.

In the past two or three years, AZ has been involved in clinical trials in countries in South America and Asia, aimed at developing new medicinal drugs. These countries were selected because regulatory controls over medical research are less stringent than in the US, Canada or Western Europe.

The group has suffered some setbacks in its business in the past twelve months:

1. There have been serious concerns among the public and the medical profession about the safety of one of AZ's most successful drugs, Carora.
2. A new drug developed by AZ failed to obtain regulatory approval in the US. Approval is needed from the national regulator before it can be sold in the market.
3. Another new drug that AZ has been developing has had disappointing clinical trials. Clinical trials are carried out before further testing and application to the national regulators for approval.

R&D spending accounts for a substantial proportion of total annual expenditure of the AZ Group (and other pharmaceutical companies).

Required:

- a) Using the information provided, carry out a SWOT analysis for the AZ Group.
- b) Suggest a strategy that the AZ Group might pursue as a way of developing and growing its business in the future.

11. SWOT ANALYSIS III

ABC is a multinational company specialising in travel goods such as suitcases and travel bags. It has a strong position in the 'luxury goods' section of the market, and its brand is well-known and highly-regarded.

It has manufacturing facilities and distribution centres located around the world. Its IS/IT systems strategy has been to allow decentralisation of systems. Each division of the company has been allowed to develop and use its own IS/IT systems.

The company has been successful in using developments in information technology. It has EDI links with many of its major suppliers, and it was one of the first companies in the industry to develop a website for advertising and selling its goods directly to consumers. However, the popularity of the website has been falling, and the number of 'hits' per day is now down to a third of its peak level about three years ago.

Although the company has EDI links with suppliers, it does not yet have similar arrangements with its major customers. However, some customers have recently suggested that improvements could be made in their supply chain by establishing extranet links.

The company is in a highly-competitive market, and rival companies have been successful in taking market share by offering well-designed products at lower prices.

The directors of ABC are aware that some managers have ideas for improving competitiveness, but these ideas are spread out throughout the company, and it has been difficult for different divisions in different countries to exchange their ideas. It has been suggested that a new intranet system could be introduced to improve the interchange of ideas within the group.

The directors are also aware that they do not have as much information as they would like about their competitors. Travel goods are a type of fashion accessory for many customers, and ABC would probably benefit from learning much faster about the initiatives that its competitors are taking in the market. It has been suggested that an information system should be developed for senior managers, giving them access to information about competitors, including easy access to their internet sites.

Required: Construct a simple SWOT analysis (strengths, weaknesses, opportunities and threats analysis) for ABC.

12. IQRA - AUTUMN 2023 (Q2)

Ali, a marketing manager at a software company specializing in mobile app development, has task of overseeing the marketing strategy for IQRA, an Arabic language learning app targeting the Indo-Pak region.

Despite IQRA's unique features, user-friendly interface, and cultural relevance, the fiercely competitive market and limited brand recognition pose significant challenges. Catering to varying language learning perceptions and localization challenges within the region adds complexity to the endeavour. The marketing team must navigate these hurdles with a limited budget while capitalizing on factors like the growing smartphone penetration, increasing interest in Arabic learning, and using social media and influencer marketing. Building partnerships with educational institutions will also be crucial for reaching the target audience effectively. To succeed, Ali's team must closely monitor and adapt to changing user preferences and promptly address any negative reviews or feedback. Moreover, they need to ensure compliance with regional legal and regulatory requirements to maintain user trust.

Required:

- (a) Conduct SWOT analysis for IQRA.
- (b) Based on your answer in (a) above, suggest how each identified threat could be tackled using strengths of IQRA. *(Note: Clearly state the strengths used to answer the question)*

13. ELECTRIK AUTOMOBILE (EA) - SPRING 2024 (Q3b)

Elektrik Automobile (EA), a renowned multinational company is currently considering the establishment of an electric car assembly plant in Paland. With manufacturing and assembly plants spread across various countries, EA aims to capture the growing market for electric vehicles. The proposal includes selling a specific number of electric cars locally in Paland and exporting the remaining production to various parts of the world. EA's strategic move is driven by the absence of electric car assembly facilities in Paland, presenting an opportunity to cater to the evolving preferences in the automotive industry.

With the evolution of the automotive industry, electric cars are positioned not only as efficient means of transportation but also as lifestyle choices and status symbols across the world. EA's target demographic in Paland consists of individuals seeking eco-friendly alternatives amid rising petrol prices. Despite the somewhat unstable political and economic conditions in Paland, the government is actively working to instil confidence among foreign investors by providing tax exemptions and strengthening emission regulations, aligning with EA's expansion plans. This venture not only promises economic benefits and job opportunities for the local population but also addresses the increasing environmental concerns by introducing electric vehicles to the market.

Required: Conduct SWOT analysis for EA.

14. SWOT ANALYSIS IV & VALUE CHAIN

Eat Smart (ES), a family owned business is being managed by Mr. & Mrs. Khan. ES has been enjoying high profits and strong client base and is highly regarded for its premium quality diet food, energy drinks and low carb salads. The food is prepared under the supervision of Mrs. Khan, a foreign qualified nutritionist who has hired a team of qualified staff having sound knowledge and experience. Mr. Khan is a marketing graduate and looks after the supply chain activities i.e. from ordering and safe storage of ingredients to dealing with customer complaints and encouraging feedback.

At present, ES is offering take-away and delivery services. Dine-in service is not being offered due to the fact that Mr. & Mrs. Khan have been busy in managing routine work. ES relies on word of mouth and social media pages for promoting the business.

Given the low set-up costs and growing demand for healthy food, number of new online businesses have entered into the market. Some restaurants have also started to offer separate diet food menus.

'Be Fit' (BF), a chain of fitness centre, has approached ES to partner with them in preparing diet plans and meals for its members. Partnering with BF would mean hiring of additional staff at various levels of operations and management.

Required:

- a) Perform SWOT analysis for ES.
- b) Identify the activities forming part of primary value chain as suggested by Porter and give two examples related to each such activity in ES.

15. SWOT ANALYSIS V

Gertonian is the largest economy in the European region and enjoys a stable and business friendly government. Its automotive industry is well known for producing top quality speed car brands and is considered an industry leader in the world. It has an excellent road network with no speed limit that makes it perfect to meet the Gertonian's appetite and demand for quality and speed.

Gertonian's automotive industry is the largest industry sector and employer in the country which includes from the large car manufacturers to extensive support network of many subsystems, component and parts manufacturers. The industry is well supported by iron and steel industries, efficient financial and IT systems, well reputed technical education institutes, heavy public and private expenditure in education and highly skilled workforce. There is an intense competition and a constant pressure on manufacturer to innovate.

Fredrick Dunden, Head of Auto Industry Union, believes Gertonia has developed a national comparative advantage over many other countries, however, he is hesitant about the future leadership position for speed cars mainly due to the tougher regulations on emission requirements prompted by Gertonia's deteriorating environmental conditions, petrol depended engines and systems of speed cars, government plans to introduce speed limits on all areas to reduce the increasing rate of car accidents in some areas, changing needs of the tech-savvy consumers and the rising trend of people interested in driving rented speed cars rather than owning one.

Required: Discuss the threat(s) and weakness (es) of the automotive industry for speed cars presented in the case, and provide suggestions to Fredrick Dunden to tackle these issues.

ANSWERS

1. CORE COMPETENCE

- (a) A core competence is 'something a company does especially well [in comparison with] its competitors. A core competence refers to a set of skills or experience in some activity, rather than physical or financial assets.'

Strong core competencies come from:

- (i) well-organised special skills, knowledge, expertise, ownership or use of technologies, processes or abilities.
- (ii) which are typically achieved or acquired through long-term development and experience.

A core competence creates value for the customer because the customer considers it to be unique and distinguishable, and something that rival suppliers cannot provide.

A core competence is difficult for competitors to imitate.

An important strategic consideration is that a company should be able to transfer its core competencies to other products and markets.

- (b) Suggestions

- (i) Sony has a core competence in miniaturisation.
- (ii) Microsoft has a core competence in developing user-friendly software products.
- (iii) Federal Express has core competencies in logistics and customer service.
- (iv) Honda has core competencies in small engine design and manufacture.

(Note: These core competencies do not specify particular products. The competencies could be transferred to a range of different products and markets.)

- (c) The significance of core competencies is that they can be used by a company to achieve long-term (sustainable) competitive advantage in ever- changing markets.

2. ZAM ACCOUNTANCY SCHOOL

Threshold Resources

Threshold resources are the resources that an entity needs in order to participate in the industry and compete in the market. Without threshold resources, an entity cannot survive in its industry and markets. Threshold resources of ZAM include:

- Building and other facilities to conduct classes.
- Availability of required number of faculty and staff.

Unique Resources

Unique resources are resources controlled by the entity that competitors do not have and would have difficulty in acquiring. Unique resources can be a source of competitive advantage. Unique resources of ZAM include:

- Purpose built campuses in three major cities and 10 branches in five cities.
- All the campuses and branches are fully equipped with latest technology for lectures delivery that are considered best in the industry.
- Resources available for recorded lectures, online as well as face to face lectures.

Threshold competencies

Threshold competencies are activities, processes and abilities that provide an entity with the capability to provide a product or service with features that are sufficient to meet customer needs. Threshold competencies include:

- Professional faculty for lectures delivery.
- Technical competence for online lectures and recordings.

Core competencies

Core competencies are activities, processes and abilities that give the entity a capability of meeting the critical success factors for products or services and achieving competitive advantage. Core Competencies:

- Crash courses before exam besides regular classes.
- Career counselling sessions for prospective students and offers free of cost one to one advisory sessions for students on need basis.
- Free of cost mock exam for all students.
- Quality education and impressive results.

3. COMPETITIVE ADVANTAGE

- The economies in production and operating costs can be achieved by focusing in the following areas:
 - exploring alternate sources of cheaper raw materials and components.
 - negotiating with existing suppliers of raw materials and components for more favourable terms.
 - relocating facilities to areas which have lower costs.
 - improving capacity utilization to achieve economies in costs.
 - introducing modifications in production designs to reduce costs.
 - improving machine and worker efficiencies.
 - re-engineering processes to eliminate activities and bring cost reductions.
 - hiring contract workers with the objective to reduce labour costs.
 - outsourcing processes/ manufacturing of components to low cost suppliers if quality control measures can be implemented.
 - adopting efficient inventory management practices such as just-in-time inventory management techniques.
- The factors which are critical for achieving quality as a sustainable competitive advantage are:
 - Understanding the needs and preferences of the customers.
 - Paying attention to laid out specifications.
 - Striving to learn and improve continuously.
 - Giving importance to customer feedback.
 - Stress on quality assurance in all stage of the value chain

4. VALUE CHAIN

(a) Value chain activities

Primary activities	Secondary activities
• Inbound logistics	• Procurement
• Operations	• Human resource management
• Outbound logistics	• Technological development
• Marketing and sales	• Infrastructure (general management, accounting etc.)
• Service (after sales)	

- (b) Companies compete with each other, and their relative success depends on their ability to add value throughout their value chain.

Companies should try to develop strategies that add value. They should look at each activity in the value chain and consider whether it can be improved to add more value.

A company can also assess its performance by looking at its ability to add value in each part of the value chain (each primary activity and each secondary activity).

(c) Primary activities of a publisher of text books

Activities that may be carried out by a publisher of text books in respect of its primary value chain based on the classification suggested by Porter are as follows:

(i) Inbound logistics

- Receipt and safe transportation of printing supplies such as paper, inks and binding material.
- Appropriate storage of printing supplies, draft manuscripts of books and soft copies.

(ii) Operations

- Editing, formatting of manuscripts and proofreading of initial drafts
- Designing of cover pages and layouts of text books
- Printing and binding the text books
- Maintenance of printing press and paper cutters

(iii) Outbound logistics

- Warehousing (storage) of books
- Delivery or distribution of books to intermediaries (bookshops) or direct customers (schools, colleges and universities, public libraries)

(iv) Marketing and sales

- Conducting a launch ceremony of new text books
- Distribution of complimentary/free samples of books to the teachers/subject experts of leading institutions

(d) Primary activities of insurance company selling policies

Inbound logistics	Operations	Marketing and sales	After-sales service
Managing incoming calls: call systems	Taking calls	Obtaining customer information	Handling claims
	Providing price quotations quickly	Targeting customers	Detecting fraudulent claims
	Cheap prices for insurance policies	Advertising and other forms of marketing	Settlement of successful claims

5. RAUF BAEJWA**(a) Inbound logistics**

These are the activities concerned with receiving and handling purchased materials and components (inputs), and storing them until needed. Complus is carrying out the following activity under inbound logistics:

- The supplier packages the products and sends them directly to each Complus store according to the requirements received from Rauf.

Operations

These are the activities concerned with converting the purchased materials into an item that a business sells to customers (outputs). Complus is carrying out the following activity under operations:

- When the products reach the store, the staff places a price tag, stacks and organises the products in a standard fashion.

Outbound logistics

These are the activities concerned with the storage before sale of finished goods (outputs), and its distribution and delivery to the customers. The following activities can be classified under outbound logistics:

- Customers visit Complus stores to buy products
- The products are stored in Complus stores

Marketing and sales

These are the activities associated with advertising and brand building which seek to increase visibility and communicate why a product or service should be purchased. These activities are usually associated with the '4Ps' of marketing, namely; product, place, price, and promotion. Complus is carrying out the following activity under marketing and sales:

- Complus frequently runs social media campaigns, SMS messages and TV adverts to inform customers about the products and discounts

Service

These are the activities that occur after the point of sale and include activities such as customer service and product support. It may also include activities like installation, warranties, repairs and maintenance, and providing training to the employees of customers. Complus is carrying out the following activity under service:

- Complus has an aftersales customer helpline that assists customers with common queries and collects their feedback.

- (b) Product quality check can be done to reduce customer complaints. Quality check can be performed at any of the following positions in Porter's primary value chain:
- (i) Quality check of products should be done before they are delivered to the stores. This will ensure only products in working condition are present at the store, which will reduce customer complaints of faulty products at first use.

This activity is to be placed in Inbound logistics of Porter's primary value chain.

6. 24 SEVEN

Step 1 - Identify the critical success factors that are essential for profitability.

Short/minimal call handling time is one of their critical success factors (CSF).

Step 2 - Identify what is necessary (the 'critical competence') in order to achieve a superior performance in the critical success factors.

The critical competence in this case is adequate number of staff and their proper training.

Step 3 - The entity should develop the level of critical competence so that it acquires the ability to gain a competitive advantage in the CSF.

The staff, new and existing, should be trained to reduce the call handling time.

Step 4 - Identify appropriate key performance indicators for each critical competence.

The target KPI is to reduce the call handling time from 45 seconds to the desired level of 30 seconds or less.

Step 5 - Give emphasis to developing critical competencies for each aspect of performance, so that competitors will find it difficult to achieve a matching level of competence.

Given the importance of the issue, the management has hired 3 additional staff and emphasized on setting an ambitious training target to resolve the matter within the next three months.

Step 6 - Monitor the firm's achievement of its target KPIs and also monitor the competitors' comparative performance.

The management closely followed the progress in implementing the plan and has recorded a decrease in call handling time to 35 seconds for the first month. Getting the call handling time reduced to 28 seconds as planned shall solidify their position as a leader in the market for call handling times

7. CRITICAL SUCCESS FACTORS

Critical Success Factors (CSFs)	Key performance indicator (KPI)	Strategies
Efficient Public Transport System	Average bus travel time (in minutes) on key routes	• Increase the number of dedicated bus lanes to ensure faster travel times. • Introduce real-time tracking and scheduling to optimize bus routes and minimize delays
Reduction in Traffic Congestion	Frequency of traffic jams during peak hours	• Implement congestion pricing to discourage private vehicle use during peak hours. • Promote carpooling and park-and-ride schemes to reduce the number of private cars on the road. •

8. BENCHMARKING

- (a) The purpose of benchmarking is to compare the performance of an entity (or a product, operation or business unit) against 'the best in the business' or against expectations. Benchmarking helps to identify weaknesses that need to be improved.
- (b) **Internal benchmarking.** An entity compares the performance of its business units (for example, its area offices) against the performance of the business unit that is considered the best.

Competitive benchmarking. An entity compares its performance and its products against the best and most successful of its competitors.

Operational benchmarking. An entity compares the performance of a particular operation, such as handling customer enquiries, or warehousing and dispatch, against the performance of a similar operation in a different entity. This different entity is not a competitor; this means that the benchmarking often involves collaboration between the two entities.

Customer benchmarking. A slightly different type of comparison. An entity compares its performance against what its customers expect the performance to be.

9. SWOT ANALYSIS I

- (a) The purpose of SWOT analysis is to carry out an analysis of the strategic position of an entity, through an assessment of its internal strengths and weaknesses, and the threats and opportunities in its environment. It can be used as a basis for developing strategies for dealing with risks or exploiting opportunities and strengths.

However, it is not a tool for evaluating and prioritising strengths, opportunities, weaknesses and threats.

- (b) SWOT for Righton Supermarkets Group:

Strengths	Weaknesses
• Profitability • Growth in non-food business • Large and increasing market share • Reputation for low prices and reasonable quality • Reputation for good service	• No weaknesses are apparent in the information provided.
Opportunities	Threats
• Continuing growth in the size of the market • Further out-of-town and in-town expansion	• High investor expectations about future performance • Activities of competitors • Possibility of government action against monopoly position

10. SWOT ANALYSIS II

- (a)

Strengths	Weaknesses
• Large continuing investment in R&D	• Operations are based in Western Europe and North America: high labour costs compared to competitor companies. • Clinical failure of new drug

Opportunities	Threats
• Opportunities for growth in the market for pharmaceutical products outside North America and Western Europe • Establish operations in other countries: lower labour costs, but are the skills available	• Public concerns about the safety of new drugs • Concerns about the regulation of drugs and about regulatory decisions by national authorities

(b)

AZ Group could look for future growth in its markets outside North America. If these markets grow, there will be opportunities for switching production facilities to these countries to reduce costs.

11. SWOT ANALYSIS III

Strengths

- Strong brand and reputation
- Worldwide facilities for manufacture and distribution
- Managers with ideas for improving the business
- Successful experience with EDI
- Successful experience with website and e-commerce.

Weaknesses

- Poor communications between divisions within the company
- Little or no access to information about competitors
- Possibly the decentralisation of IS/IT systems is a weakness.

Opportunities

- Possible use of intranet to improve internal communications and interchange of ideas
- Possible use of extranets to improve communications with customers
- Possible use of an executive information system to provide more information about competitors and the market.

Threats

- Strong competition in the market. Competitors have made some successful initiatives
- Significant fall in number of 'hits' on the website

12. IQRA

(a) SWOT Analysis for IQRA is presented below:

Strengths:

- Unique Features:** IQRA has unique features that set it apart from competitors, providing a competitive advantage in the market.
- User-Friendly Interface:** The app's ease of use enhances the overall user experience, which can lead to higher retention rates and word-of-mouth referrals.
- Cultural Relevance:** Catering to the Indo-Pak region's cultural nuances and language learning perceptions helps establish a strong connection with the target audience.

Weaknesses:

- (i) **Limited Brand Recognition:** The lack of brand awareness makes it challenging to attract new users and compete effectively with established competitors.
- (ii) **Limited Budget:** The constrained marketing budget may restrict the reach and impact of promotional efforts.
- (iii) **Localization Challenges:** Adapting the app to suit various dialects and linguistic variations within the region can be complex and resource-intensive.

Opportunities:

- (i) **Growing Smartphone Penetration:** With an increasing number of people owning smartphones in the Indo-Pak region, there is a vast potential user base to tap into.
- (ii) **Increasing Interest in Arabic Learning:** A rising interest in Arabic language learning, possibly due to educational, cultural, or economic reasons, presents a significant opportunity for IQRA.
- (iii) **Social Media and Influencer Marketing:** Leveraging social media platforms and collaborating with influential figures can help reach a broader audience effectively.
- (iv) **Building partnerships:** Building partnerships with educational institutions will help reach target audience effectively.

Threats:

- (i) **Fierce Competition:** The market for language learning apps is highly competitive, with established players and new entrants vying for market share.
- (ii) **Varying Language Learning Perceptions:** Different learning preferences and expectations from users in the region may require diverse approaches to cater to their needs effectively.
- (iii) **Negative Reviews and Feedback:** Any negative feedback or reviews left unaddressed can harm IQRA's reputation and deter potential users.
- (iv) **Legal and Regulatory Compliance:** Failure to comply with regional laws and regulations can lead to legal issues and a loss of user trust.

(b)

- (i) **Threat:** Fierce Competition

Tackled using strength: Unique Features

IQRA can leverage its unique features to stand out from competitors and attract users seeking a more engaging language learning experience. By highlighting these features in its marketing campaigns, IQRA can position itself as a distinct and valuable choice in a crowded market.

- (ii) **Threat:** Varying Language Learning Perceptions

Tackled using strength: Cultural Relevance

IQRA's understanding of the Indo-Pak region's cultural nuances can help address varying language learning perceptions. The app can offer content and learning approaches that align with the preferences and expectations of different user segments, ensuring a more personalized and effective learning experience.

- (iii) **Threat:** Negative Reviews and Feedback

Tackled using strength: User-Friendly Interface IQRA's user-friendly interface can be instrumental in addressing negative reviews and feedback. By actively listening to user concerns and feedback, the app can make continuous improvements to enhance the user experience. Responding to negative reviews

with helpful solutions and thanking users for positive feedback can show a commitment to user satisfaction.

(iv) **Threat:** Legal and Regulatory Compliance

Tackled using strength: Cultural Relevance

IQRA's understanding of the Indo-Pak region's cultural nuances and language learning perceptions can be instrumental in addressing legal and regulatory compliance. By aligning its content and practices with the cultural norms and values of the region, IQRA can navigate potential compliance issues more effectively and gain user trust through responsible and relevant offerings.

13. ELECTRIK AUTOMOBILE (EA)

Strengths:

- *Technological Expertise:* EA is an experienced organisation and likely carries strong technical expertise in electric vehicle manufacturing and technology
- *Global presence:* With manufacturing facilities spread across various countries, EA has established a global presence, allowing it to leverage experience, expertise and resources from diverse markets.
- *Strong Brand Reputation:* EA is renowned multinational company.
- *Established supply chain and distribution network:* EA is an established multinational company and likely has well established supply chain and distribution network to manage such large operations.
- *Resources to expand:* EA likely has access to sufficient financial and non-financial resources to be able establish manufacturing units in Paland.

Weaknesses:

- *Limited local market understanding:* EA has no experience in operating in Paland and may faces challenges in understanding and catering to the preferences of the local market.

Opportunities:

- *Growing Demand for Electric Vehicles:* The global trend toward electric vehicles is likely mirrored in Paland, providing an opportunity for EA to tap into a market with increasing demand for eco-friendly transportation.
- *Government Support:* Paland, the government is actively working to instil confidence among foreign investors by providing tax exemptions and strengthening emission regulations, aligning with EA's expansion plans.
- *Rising Petrol prices:* EA's target demographic in Paland consists of individuals seeking eco-friendly alternatives amid rising petrol prices.
- *First mover advantage:* There is no electric vehicle assembly plant in Paland. This present an opportunity for EA to take the first mover advantage.

Threats:

- *Changing Government Policies:* Despite current support, government policies may change as there is political instability, impacting the ease of doing business or introducing new regulations that could affect EA's operations.
- *Economic Downturn Impact:* A worsening of economic conditions in Paland could reduce consumer purchasing power, affecting the demand for electric vehicles.
- *Dependency of demand on petrol price:* dependency of local eco-friendly vehicles demand on petrol prices means the demand for eco-friendly electric vehicles may shrink should petrol prices decrease.

14. SWOT ANALYSIS IV & VALUE CHAIN

(a) SWOT analysis:

Strengths

Eat Smart (ES) has following strengths:

- It is being managed and operated by qualified persons with a team of qualified staff.
- It is enjoying high profit margins with strong client base.

Weaknesses

ES has following weaknesses to overcome:

- High reliance on family members for management of business.
- No dine-in service is being offered even though other restaurants are offering similar services.

Opportunities

ES has following opportunities to take:

- Partnership with 'Be Fit' to expand the business.
- Start offering dine-in service as client-base is already strong.

Threats

ES is subject to following threats:

- New online businesses are entering into the market because of low set-up costs.
- Existing competitors have also started to offer diet food on their menus.

(b) Activities forming part of primary value chain with two examples:

Inbound logistics

- Transportation and receipt of ingredients.
- Safe storage of ingredients.

Operations

- Preparation of diet food, energy drinks and low-carb salads.
- Packaging of food for delivery.

Outbound logistics

- Direct sale by means of take-away.
- Delivery of food to clients.

Marketing and sales

- Marketing by means of word of mouth.
- Marketing through social media pages.

Services

- Responding to customer complaints.
- Encouraging feedback from customers.

15. SWOT ANALYSIS V

Threat: Tougher regulations on emission requirements / Deteriorating environmental conditions.

This means companies would need to meet the new regulations, which in many cases would mean changing the speed cars. This runs a risk of loss in business due to high costs, risk of compromise in quality, difficulty in meeting regulations, etc.

Suggestions:

- Make environmentally friendly cars to satisfy regulatory requirements.
- Conduct CSR activities to reduce deterioration of environment causing by cars.

Threat: Government plans to introduce speed limits on all areas

One of the reasons Gertonian can produce high speed cars is because of the local demand to meet Gertonian appetite. Plan to introduce speed limits would mean Gertonians cannot drive fast at will which will consequently affect local demand for fast cars. Hence, this can compromise the leadership position.

Suggestions:

- Gertonian has a business-friendly government, as such government can be asked to keep no speed limits for areas that do not run the risk of accidents due to high speed e.g. highways, etc.
- The accidents may be due to reasons other than high speed cars (e.g. bad roads, etc), as such a closer look at the issue should be suggested to the government.

Threat: Changing needs of the IT-savvy consumers

This would require the companies to upgrade to meet the high-tech demands of the consumers. If not responded quick enough, this would result in loss of business.

Suggestions:

- This is a manageable threat as Gertonian has efficient IT and financial systems, healthy spending in education and a push to be innovative. The industry should quickly react to meet the customer needs.

Threat: Rising trend of people interested in driving rented cars rather than owning one

This may result in lower demand resulting in lower profitability and an industry wide change from targeting consumers to own the car to targeting organizations that rent out the car.

Suggestions:

- Strategies should be planned to target businesses who would give people cars to drive.
- Expand market and reach areas where people would like to own cars.

Weakness: Not responding quick enough to the changes in environment

Gertonian automotive industry has not been moving quick enough to respond to the changes in the environment, for example, they are not responding to IT-savvy consumers, heavy reliance on petrol and changing trends of driving a rented car rather than owning one.

Suggestion:

- R&D should be encouraged in the industry.
- Private and public investments should be diverted for R&D.
- R&D efforts should be directed towards reducing reliance on petrol dependent engines. and systems to produce environmentally friendly cars.

ETHICAL DECISION MAKING MODELS

IN THIS CHAPTER

1. The nature of ethics
2. Business ethics
3. Frameworks for ethical decision making
4. Self-test questions

1 THE NATURE OF ETHICS

Ethics, also called 'moral philosophy' is a branch of Philosophy that defines and explains the concepts of right and wrong values, good and bad conduct, just and unjust decisions. It entails the theories, concepts and applications that help understand the differences between what is right and wrong and what lies in between these two extremes.

For instance, should a finance professional conceal figures in the annual report to make the company look profitable? Should a doctor donate organs of a deceased person without his prior consent for the benefit of other patients? Does manufacturing and selling cigarettes count as an ethical business? Should media companies advertise products that are injurious to health? Should lawyers continue to defend the suspect after knowing that he is guilty of the crime convicted? These are the questions addressed by the field of business ethics aiming to comprehend the acceptability of such practices. Apart from the legal status of all the above stated issues, it is important to assess their ethical spectrum.

We all know that it is wrong to kill people but is it wrong to kill criminals. Between the two extremes of killing and not killing criminals comes the middle ground - correctional centres and prisons. Most of the people in most of the situations are completely aware of what is right and wrong but when these people face a little complication wherein the right becomes wrong under certain circumstances then the ethical dilemmas arise. Ethical dilemmas arise when norms and values are in conflict, and alternative possibilities lie within the two extremes of right and wrong. These alternatives are not entirely right and wrong but fall somewhere in between. In such situations, the decision is based on the acceptability level of an individual. This is where ethics come into play by explaining what is acceptable and what is not in terms of moral grounds. It addresses the problems that arise when two or more rights are in conflict and provide guidance through various ethical models for managing such situations. Since it acts as a guidance for behaviour, it helps to avoid real-life problems.

2 BUSINESS ETHICS

Ethics is a vast subject and has numerous definitions with varying nuances. To begin with, it is a set of moral principles or values. This definition by meaning is relatively subjective since moral principles and values vary from person to person. However, the world of ethics does not operate in this way or else there would be no need for the study of ethics at all. A refined version of this definition by Trevino and Nelson is, “the principles, norms and standards of conduct governing an individual or group.” This definition focusses on conduct or behavioural attributes.

Manuel Velasquez states that there are no ethical standards that are true absolutely, i.e., that the truth of all ethical standards depends on (is relative to) what a particular culture accepts. The ethical relativist holds that a person’s action is morally right if it accords with the ethical standards accepted in that person’s culture. The theory is in contrast with how the business ethics work. Trevino and Nelson explained ethical behaviour in business as, “behaviour that is consistent with the principles, norms and standards of business practice that have been agreed upon by society.”

In organizations, rules of ethical conduct are developed that include corporate values, norms of dealing with suppliers and customers, professionally accepted behaviour, gift policies, and other rules as to what is allowed or not within the working premises. All these rules are based on generally accepted principles of the society in which the business operates.

2.1 Business sense of ethical culture

High ethical standards require individuals and businesses to conform to the moral principles and values. Just as individuals build a good character by following morals, in the same way businesses develop an honourable reputation by conforming to ethical standards. A high ethical standing in the corporate world consequently takes businesses to the path of increased profits and continuous growth. Whereas those organizations that are inclined towards unethical practices are doomed. A business committed to ethical behaviour in its day-to-day operations builds positivity in its relationship with employees, customers, investors, general public and other stakeholders.

Employees commitment

Ethics contribute to employee commitment greatly when employees trust that the company is working for the benefit of its employees and the general public as well. On the contrary, employees who feel that their employer is not following ethical standards are more likely to break ethical code of conduct and compromise on values such as integrity, loyalty, fairness and respect while making decisions. This consequently creates issues for the company that adversely effects on the performance.

Investor confidence

Investors nowadays recognize the importance of investing in an ethically sound corporation than the one that is not. They understand that an ethical culture within a company provides the right foundation and growth for the company in the right direction. However, an organization without ethical standards is prone to many risks and issues such as lawsuits, tarnished reputation, and loss of customers and profits. Undoubtedly, investors look for financial fundamentals as their major concern when investing in a company, but they also look for a company that not just has a large market size but also is strong on ethical ground. These factors show that a company intends to stay in the market for long. Therefore, ethics contribute greatly to the stockholders’ selection of a company to invest.

Customer satisfaction

Since a company’s revenue comes from its customers, the success of the company is highly dependent on customer satisfaction. While companies continuously work on developing long-term relationships with the customers to retain them. This long-lasting relationship can only be built when the customer has trust in company’s conduct of business.

Profits

Unethical decisions potentially lead to significant loss along with other litigations and reputation blows. Although ethics might not always bring profits, it is undoubtedly the best course of action to take because focusing solely on profits cannot build a strong foundation for the company intending to operate in the long run.

2.2 Ethical issues and dilemmas in business

According to Fraedrich and Ferrell, “an ethical issue is a problem, situation or opportunity that requires an individual, group or organization to choose among several actions that must be evaluated as right or wrong, ethical or unethical”. In normal circumstances in an ethical issue, there is a clear distinction between what is right and wrong thus, it is comparatively easy to make a decision if the person is trying to make the right decision. On the other hand, there may be a situation when a problem requires an individual, group or organization to choose among several wrong or right actions. Ideally, this means selecting an option that is the best among all the possibilities. Here the decision maker is embroiled in a state of confusion and needs guidance to follow.

2.3 The guidance on ethical issues

The guiding principles for ethical decision making for a chartered accountant in Pakistan are given in Code of Ethics for Chartered Accountants issued by the Institute of Chartered Accountants of Pakistan.

In addition to the Code, the professionals also need frameworks, principles and approaches to make effective and ethical decision-making. The two models being discussed here are:

- The American Accounting Association (AAA) model
- Tucker's 5-question model

3 FRAMEWORKS FOR ETHICAL DECISION MAKING

When confronted with making decisions in professional life, primary guidance comes through law, corporate codes of conduct, Standard Operating Procedures and the sorts. However, these guidelines may not work well in case of ethical dilemma. In such circumstances, professionals turn towards other sources such as theoretical frameworks, principles and approaches inked by scholars and philosophers to acquire adequate guidance for effective and ethical decision-making. We will be discussing two of them for better understanding of the decision-making process.

3.1 The American Accounting Association (AAA) model

The American Accounting Association (AAA) model originates from a report for the AAA authored by Langenderfer and Rockness in 1990. In the report, they suggest a seven-step process for decision making, which takes ethical issues into account.

The seven questions in the model are:

Step 1- Establishing the facts of the case.

This step means that when the decision-making process starts, there is no ambiguity about what is under consideration.

The leading questions about the facts will be revolved around What? Who? Where? When? How?

Essentially, efforts are made to identify what we know or need to know, if possible, to clearly define the problem.

Step 2- Identify the ethical issues in the case.

This involves examining the facts of the case and asking what ethical issues are at stake.

A complete account of key ethical issues and dilemmas is developed that helps in resolving the problem comprehensively.

All threats to compliance with fundamental principles are identified and explained.

Step 3- An identification of the norms, principles and values related to the case.

This involves placing the decision in its social, ethical and in some cases, professional behaviour context. In this last context, professional codes of ethics or the social expectations of the profession are taken to be the norms, principles and values.

Step 4- Each alternative course of action is identified.

This involves compiling a complete set of major practical alternatives or likely decisions one can make in a given situation. These alternatives should not consider the norms, principles and values identified in Step 3.

It is expected that in these alternatives one may feel or see some form of compromise or point between simply doing or not doing something.

Step 5- Matching norms, principles, and values to options

The norms, principles and values identified in Step 3 are overlaid on to the options identified in Step 4. When this is done, it should be possible to see which options accord with the norms and which do not.

Step 6- The consequences of the outcomes are considered.

This step is an analysis of implications and consequences of each possible alternate course of action.

Implication and consequences should be analysed in all respects: short and long run, positive and negative.

This step addresses the problem of human preference or focus on short run benefits/harms over long run.

Again, the purpose of the model is to make the implications of each outcome unambiguous so that the final decision is made in full knowledge and recognition of each one.

Step 7- The decision is taken.

After performing the steps that cover facts, analysis and available options, the final decision requires application of professional judgment. Professional judgment is an application of accumulated knowledge and experience gained during initial professional development and through continuing professional development.

The decision taken in this step should demonstrate that the selected course of action is a well-informed ethical decision and appropriately balances the consequences against primary principles or values.

► Example 1

Opulent Furniture (Pvt) Ltd is one of the largest furniture retailers and has its manufacturing facilities and retail shops across the globe. The company designs and sells premium quality furniture and hardwood flooring. The company, due to the nature of its products, is aware of the deforestation it causes in different regions where it operates. However, the company's values and principles display a high regard for environmental concerns as shown in their vision statement: "At Opulent Furniture our vision is to provide the highest quality furniture for all our customers across the globe whilst integrating environment-friendly practices in the manufacturing of our products."

A recent report entitled "Companies Costing the Environment", published by the Environmental Protection Agency, suggested that Opulent Furniture was clearcutting virgin trees over thousands of acres. If this large-scale deforestation continued, South Asia would be left with significant environmental damage such as loss of habitat, higher stream temperatures, flooding and dying fish which could take decades to repair.

Opulent defended itself by claiming that it sources 55% of its wood from sustainable sources and is aiming to reach 80% in the next five years. It also referred to its heavy contribution towards forest management and reforestation.

AIA has recently joined the company as an Assistant Internal Auditor at a very handsome salary package. She is assigned to verify the sourcing of wood used during the last six months. She has found that the verification process regarding supplies of Forest Stewardship Council (FSC) certified wood is not effective. Most of the time the description on invoices for the wood is accepted as sufficient evidence of sustainable sourcing. She also noted that the spending on forest management includes significant amounts for staff forest visits, which in her opinion are meant for sourcing wood rather than any supporting activities for forest management. She has taken her concerns to the CFO who has told her this is the way business is conducted in the industry and asked her not to highlight these areas in her report. Two days later, the company offers her complete hardwood flooring along with rosewood furniture for her apartment at a 50% discounted price. She is surprised, since as per company policy this is only offered after one has been employed for more than two years.

Application of AAA Model**Step 1- Establishing the facts of the case.**

- Environmental Protection Agency discovers that Opulent Furniture is clearcutting trees
- AIA's reservation on control on classification of sustainable wood sourcing
- AIA discovers that the Company has minimal involvement in forest management
- AIA is offered an undue favour

Step 2- Identify the ethical issues in the case

- Opulent Furniture is clearcutting forests causing environmental concerns
- Senior management offers an undue favour to AIA
- Senior management wants the AIA to ignore the results of her assignment

Step 3- The major principles, rules and values include,

- AIA is bound to show objectivity in such situations
- CFO of the Company is bound to show integrity and professional behaviour
- Senior management is required to present a true and fair view of wood sourcing in financial statements

Step 4- Each alternative course of action is identified.

- AIA can accept the undue favour, and take no action on the findings
- AIA can accept the undue favour, and disclose the findings in his/her report
- AIA can refuse the undue favour, and take no action on the findings.
- AIA can refuse the undue favour, and disclose the findings in his/her report

Step 5- Matching norms, principles, and values to options

- Accepting the undue favour, is accepting inducement that is with an intent to influence. Taking no action on the findings is compromising integrity and objectivity.
- Accepting the undue favour, is accepting inducement that is with an intent to influence. Reporting the findings is in line with the principles of integrity and objectivity.
- Refusing the undue favour, is refusing inducement that is with an intent to influence. But taking no action on the findings is compromising integrity and objectivity.
- Refusing the undue favour, is refusing inducement that is with an intent to influence. Reporting the findings is in line with the principles of integrity and objectivity.

Step 6- Analysis of consequences:

- Accepting the undue favour may damage the reputation of AIA. Taking no action on the findings may support environmental damage that the company is causing, but may save AIA from any career threat. It will also maintain the claim of the Company as being responsible organization.
- Accepting the undue favour may damage the reputation of AIA. Reporting the findings may be a step towards fair and true presentation of the matter. But it may harm AIA's career in the Company. It may also damage the reputation of the Company.
- Refusing the undue favour may build good reputation of AIA. Taking no action on the findings may support environmental damage that the company is causing, but may save AIA from any career threat. It will also maintain the claim of the Company as being responsible organization.
- Refusing the undue favour may build good reputation of AIA. Reporting the findings may be a step towards fair and true presentation of the matter. But it may harm AIA's career in the Company. It may also damage the reputation of the Company.

Step 7- Taking decision

- From the above analysis AIA will be able to balance the consequences against primary principles and values by selecting the best fit alternative.

3.2 Tucker provides a 5-question model

Graham Tucker in Agenda for Action Conference of the Canadian Centre for Ethics & Corporate Policy held in 1990, presented a 5-question model against which ethical decisions can be tested. The objective of the test is to identify best possible choice to make for the shareholders as well as other stakeholders.

Tucker suggests that these questions are to be responded in the following order to assess the value shown against each:

Questions	Values	Explanation
Is it profitable?	Market values	Is the course of action beneficial for all stakeholders (including shareholders) in the short term and long term?
Is it legal?	Legal values	Is the course of action falls within the legal boundaries and comply with rules and regulations of the state without any violation?

Questions	Values	Explanation
Is it fair?	Social values	Is the course of action fair for all the stakeholders in the society?
Is it right?	Personal values	Is the course of action right for professional in light of ethical guidelines, norms, principles, code of conducts and values of the entity?
Is it sustainable development?	Environmental values	Is it environmentally sound (i.e. protects the environment) or sustainable in the long term?

Generally, it happens that for a problem we immediately think of an obvious course of action that comes first to our mind, which is termed as first order thinking. The Model leads us to creative problem solving that involves second-order thinking. In second-order thinking we re-think the facts and reframe the problem and create more than one course of actions.

Value judgment

Tucker's model is based on value judgments and provides an ethical analysis, which is expected to identify the conflicts between the values. This value analysis helps us to make a balanced decision for all stakeholders.

The Tucker Model may be explained by understanding the following two approaches:

- End-point ethics
- Rule ethics

Utilitarianism, or End-Point Ethics

John Stuart Mill said that "to determine whether an action is right or wrong, one must concentrate on its likely consequences, the end point or end result".

Through utilitarianism, or end-point ethics one seeks the greatest benefit for the greatest number of stakeholders. This obviously requires some compromises for certain segments of stakeholder. As a matter of fact, the course of action selected results in greater good if taken in aggregate of all key stakeholders. The first question of the Model is directed to see the problem in the context of utility of the decision, before analysing it on ground rules and ethical principles.

For example, if you look at a business problem from the perspective of each of the five boxes on the chart, you might generate some creative alternatives which might not come to mind if only the corporate box is considered. It will take courage for every business enterprise to make the ethical shift for a sustainable future, but some can and *are* leading the way.

Rule ethics

The rule ethics intends to follow the duty and norms relevant to the problem. The intended decision is assessed on the basis of law of the land, or company's stated policies or any professional code applicable on the matter. It appears easier to see the decisions as right or wrong on the basis of its legal value. But all legally right decisions may not produce social, personal, value for ethical decisions. Therefore, the analysis is extended to moral principles and virtues to have an all-inclusive analysis.

► Example for Tucker: SafeStores Limited

SafeStores Limited (SL) is a company engaged in providing wide-ranged storage services to other companies. Two years ago, SL rented a property for ten years in a small city, which is surrounded by agricultural land. It built a warehouse having humidity, light and temperature control systems. It also had some sterilized sections to store fresh pulps of fruits. This storage facility significantly helped the villagers to store and preserve their produce.

Recently, the local Court took notice of unauthorized use of amnesty plots of land in the city and issued an order to the authorities to demolish all unauthorized constructions and recover the land. SL, through a 30-day demolition notice received at the storage facility, discovered that the property they rented out was illegally constructed over the plot of land originally allotted by the government for the construction of a school. The owner

of the property built a small school on about 30% of the land and on the rest of the land built a bulk store structure. SL storage facility was built in the said structure. The demolition notice shocked the management of SL, as demolition in 30 days can cause substantial loss of business, cost of damages to clients and cost of shifting and re-construction. You, as CFO of SL informed the CEO that in order to minimize the expected losses, SL needs at least one year to properly plan re-construction and shifting. On the instruction of CEO, you met with the lawyer and discussed the way out. Lawyer reviewed the facts of the case and concluded that this is a lost case for the owner of the property, whereas SL as a tenant may become an aggrieved party and can file an appeal for one-year notice time. However, he was of the opinion that Court is likely to issue stay order in its first hearing, but will conclude the case within one month. It is also likely that Court would not allow more than three months. He proposed some strategies that can possibly delay the conclusion of the case and resultantly demolition for six months. You noticed that these strategies include adjournment request on false medical grounds, exaggeration of cost of damage to clients and showing overestimated time and cost for shifting and re-construction. You are preparing your recommendations for CEO on lawyer's advice.

Application of Tucker Model

Use Tucker's five-question to analyse lawyer's advice for recommendation to the CEO.

Is following the lawyer's advice profitable?

- It is profitable for the company if it could delay demolition for six months.
- It is profitable for the villagers as they will have six months to preserve their produce in the storage and subsequently use the planned new facility
- It will delay the possibility of expansion in school, which is not profitable for the society.

Is following the lawyer's advice legal?

- Trying to gain time for shifting may not be illegal, though the storage facility is constructed over illegal property.
- Presenting false documentation to the court for delaying hearing is illegal
- Exaggeration of estimated costs may not be clearly illegal

Is following the lawyer's advice fair?

- Trying to gain time for shifting is fair for tenant, as early demolition will be a disproportionate burden on tenant.
- Struggling for extension in notice period is fair with villagers, as early demolition will cause disproportionate loss to them when they have no facility during the construction period of new facility.
- An extension of six months in notice period will be unfair with the youth of the city who can now go to a bigger school if built over that property

Is following the lawyer's advice right?

- It is not right for you, being responsible to promote the legitimate objectives of your employer, to recommend the any strategy that has any illegal element.

Is following the lawyer's advice sustainable?

- The extension in notice period will prove sustainable for the fruit farms in nearby villages and will encourage farming, which is good for environment.

► *Example for Tucker: Urban Hotels Ltd.*

Urban Hotels Ltd. (UH) is a leading name in the hospitality industry in Pakistan. UH recently developed executive suites advertised at Rs. 36,000 per night. Unfortunately, even after adequate marketing and high levels of comfort, the new rooms are rarely booked. The management is concerned that the standard rooms are more profitable and the new suites are taking up space and becoming a liability. Therefore, the CEO, being authorised to do so, decides to offer these suites at a reduced rate of Rs. 18,000 per night. His decision is communicated to the concerned staff for implementation. However, whilst completing the extra bookings resulting from the reduced rate, the data entry staff erroneously entered the cost as Rs. 28,000, which remained unnoticed for three days. During these three days, 118 nights were booked. The matter was presented to the CEO who finally decided that:

- a) Promotional stands will be placed at the booking counter showing original reduced prices as Rs. 18,000 without mentioning an effective date.
- b) In order to avoid possible negative reaction from guests who had booked during the first three days and were yet to check out, the error would be corrected with retrospective effect in their bills. This was applied to 48 out of the total of 118 nights booked during the first three days.
- c) Any guest who had booked and left would not be refunded the excess charges. This was applicable to 70 out of the total of 118 nights booked during the first three days.
- d) Any replies by hotel staff to requests by customers for clarification on this matter will not mention the issue is an error.

Application of Tucker Model

Are the decisions of CEO profitable?

- Decision (b) is not profitable in the short run, but profitable for the business in the long run, as it will build customer loyalty from those who were refunded. It will be profitable for the guests who were yet to check out.
- Decision (c) is profitable for the business since it will save the amount that otherwise is refundable for 70 nights, but will not be profitable for the guests who left the property.

Are the decisions of CEO legal?

- Decision (b) is legally a gratuitous act of the Hotel, as it does not follow the fundamental principles of offer and acceptance under contract law.
- Decision (c) is legal, as it follows the fundamental principles of offer and acceptance in contract law.

Are the decisions of CEO fair?

- Decision (b) is fair to all the guests who booked during the three nights and are yet to check out.
- Decision (c) is not fair to the guests who already checked out, as the discrimination applied by the Hotel has no grounds except that these guests have left the property before the error could be detected by them.
- Decision (b) is fair to the business as it is refunding the amount collected erroneously

Are the decisions of CEO right?

- The guests who have checked out have a moral right to a refund for the excess price they paid compared to what was offered.

Are the decisions of CEO sustainable?

- The case has no environmental issue

4 SELF-TEST QUESTIONS

1. Spring 2024 Q1

In Tucker's five-question model, the question "Is it right?" primarily considers:

- (a) Personal Values
- (b) Market values
- (c) Environmental values
- (d) Social values

2. TUCKER'S MODEL - AUTUMN 2022 (Q3)

Northern Hotels Limited (NHL) is planning to build a new resort alongside a lake in Baboon Valley (Valley), a remote area of Pakistan. Although the Valley is known for its scenic views, it is largely cut-off from other areas of Pakistan due to its poor infrastructure. There is no sewerage system in the Valley and all the bio-waste created by the locals is put to organic use. People residing in the Valley have been living there below the poverty line.

NHL has obtained all the relevant government approvals. As part of the approval, NHL will build proper road infrastructure leading to the resort. NHL has also been able to enter a deal for the land at a significantly lower market price.

NHL expects to achieve its objective of high profits due to very low operational costs as the labour is available in the Valley at a significantly reduced rate. On the other hand, the locals have also foresighted that this will bring tourism in the area and will create greater earning opportunities.

Required:

Apply the Tucker's 5-question model on the above scenario.

3. TUCKER'S MODEL - AUTUMN 2023 (Q3)

Nawaz Ali, a senior consultant at Vertex Financial Advisors, uncovers financial irregularities in a prominent client's records and promptly reports the same to the managing partner, Asif Ahmed. However, Asif Ahmed faces a challenging decision, as taking action against the client could lead to financial losses for both the firm and the client.

Required:

Apply Tucker's 5-question model to the situation and advise an appropriate action for Asif Ahmed to take.

4. TUCKER'S MODEL - SPRING 2024 (Q5)

ANZ (Pvt) Ltd (ANZ) is in discussions with potential investors for a crucial funding round. Abrar, the accountant, discovers that a significant portion of ANZ's accounts receivable is likely uncollectible, which would negatively impact the company's financial health and overall stakeholder benefits. ANZ's management asks Abrar to temporarily delay recognizing these bad debts to present a more positive financial picture.

Required:

Discuss end-point ethics and rule ethics in light of the scenario above.

5. TUCKER'S MODEL - AUTUMN 2024 (Q3)

Aaliyan launched a business selling pre-loved items and hired ten young, uneducated men from his village. He offered them with accommodation, meals, and low wages without formal agreements. The workers accepted the job, unaware of legal wage requirements.

Three years later, a worker's relative from an NGO, informed them about the minimum wage laws. The workers then demanded higher wages and compensation. When Aaliyan threatened to fire them, they sought help from the NGO, which filed a lawsuit against him for violating the wage laws. Aaliyan's lawyer suggested backdating hiring documents and including the value of meals and accommodation to comply with wage law requirements. Aaliyan believes this will resolve the issue.

Required:

Use Tucker's model to analyse the lawyer's suggestion for Aaliyan and recommend solution(s).

6. AMERICAN ACCOUNTING ASSOCIATION (AAA) MODEL

You are a non-executive director of PrecastConc Limited (PCL) that deals in precast structures used in buildings, bridges and as trench covers. PCL has a few medium-term agreements with pre-qualified steel suppliers. In a Board meeting, the Procurement Committee is presenting the case of a private company, Strong Steel (Private) Limited (SSL), which was pre-qualified in 2013 as a supplier of steel. Recently, an Internal Audit report identified that a key pre-qualification criterion was not applied in SSL's case. The Procurement Committee, considering the exemplary contract performance history of SSL, is suggesting a special waiver of the shortcoming for a period of the next two years, which the Board approves.

As a normal course of SSL's client relationship strategy, higher management and directors of PCL regularly receive small gifts such as family passes for amusement parks and entertainment shows, diaries, and fruit baskets.

Required:

Apply the AAA model on the above scenario.

ANSWERS

1 Option (a) is correct i.e., personal values

2 TUCKER'S MODEL

Is it profitable?

- Yes, it is profitable as NHL will make a superior return from this investment due to lower operating costs.
- Yes, it is profitable for the locals as it will bring tourism in the area and will create greater earning opportunities.

Is it legal?

- Yes, it is legal as all the government approvals have been taken and there seems to be no-legal issues.

Is it fair?

- No, the land is obtained at a significantly lower market price. It seems that the local community did not get a fair price for this deal.
- NHL is expecting to obtain cheap labour for its resort. It needs to be determined whether it would be exploitation of the local community.

Is it right?

- Yes, construction of the resort will help the valley with tourism development and also provide employment opportunities to the local community.

Is it sustainable or environmentally sound?

- Yes, it is sustainable as construction of the road infrastructure will bring a lot of development and would make the valley further sustainable.
- It needs to be considered that in the absence of any sewerage system, how the resort would dispose of the waste without harming the environment.

3 TUCKER'S MODEL

Tucker's Five Question Model is applied to the scenarios above as such:

(i) Is it profitable?

No While taking action against the client might result in financial losses in the short term, it is essential to consider the long-term impact on the firm's reputation and client trust. Upholding ethical standards and maintaining the firm's integrity can lead to stronger client relationships and increased trust from other clients, ultimately benefiting the firm's profitability in the long run.

(ii) Is it legal? (Legal values)

Yes, taking action against the client is aligned with legal values, as it involves addressing fraudulent practices and adhering to the laws and regulations governing financial reporting. Ignoring the fraud could lead to legal consequences and potential damage to the firm's reputation.

(iii) Is it fair? (Social values)

Yes Addressing the financial irregularities is fair to all stakeholders involved. It ensures that all clients are treated with integrity and that the firm's reputation remains untarnished. Failing to take action would be unfair to other clients who rely on the firm's ethical conduct.

(iv) Is it right? (Personal values)

Yes From a personal values perspective, Asif Ahmed, as the managing partner, has a responsibility to ensure the firm operates ethically and maintains its integrity. Doing the right thing involves confronting the fraudulent practices and taking necessary actions to uphold the firm's ethical standards.

(v) Is it sustainable development? (Environmental values)

N/A No environmental information is provided in the scenario.

4 TUCKER'S MODEL

End-point ethics

Through end-point ethics, or utilitarianism, one seeks the greatest benefit for the greatest number of stakeholders. This obviously requires some compromises for certain segments of stakeholder. As a matter of fact, the course of action selected results in greater good if taken in aggregate of all key stakeholders.

In this case, delaying the recognition of uncollectible debts temporarily may present a more positive financial picture, which could potentially attract more investors in the short term for ANZ. However, hiding such information puts investors in a disadvantaged position at the expense of the current shareholders. Also, long term benefits would also need to be assessed for the action for all stakeholders.

Rule ethics

The rule ethics intends to follow the duty and norms relevant to the problem. The intended decision is assessed on the basis of law of the land, or company's stated policies or any professional code applicable on the matter.

From a rule ethics standpoint, the accountant, Abrar, has a responsibility to follow accounting standards and principles that require the timely recognition of bad debts to provide accurate and transparent financial information.

5 TUCKER'S MODEL

1. Is it profitable?

Yes, for short-term: The lawyer's suggestion to backdate hiring documents and include the value of meals and accommodation might provide a short-term solution to avoid immediate financial penalties and increased wages, potentially maintaining short-term profitability.

No, for long-term: This approach risks future profitability due to potential legal ramifications and damage to the business's reputation. If the deception is discovered, it could lead to heavier fines, legal costs, and loss of trust from customers and employees.

2. Is it legal?

No, backdating documents and manipulating the value of meals and accommodation to comply with wage laws is illegal. It constitutes fraud and falsification of records. Following the lawyer's advice could result in severe legal consequences if discovered, including fines, penalties, and possible criminal charges against Aaliyan and his business.

3. Is it fair?

No, the suggestion is unfair to the workers. It attempts to deceive them and the authorities instead of addressing their legitimate grievances and legal rights.

4. Is it right?

No, ethically, the lawyer's suggestion is wrong. It involves exploitation of the workers, who are already disadvantaged by their lack of education and awareness of their rights.

5. Is it sustainable?

No, the proposed deception is not sustainable. If the deceit is uncovered, it could lead to significant legal and financial troubles, loss of business reputation, and potential closure of the business.

Recommendation:

Aaliyan should avoid pursuing any strategy that involves illegal actions, such as backdating documents. Instead, he should negotiate a settlement with the workers that considers both the business interests and workers' rights.

For the future, Aaliyan should ensure that all employment terms and compensation are properly documented prevent similar issues from arising.

6 AMERICAN ACCOUNTING ASSOCIATION (AAA) MODEL

Applying the AAA model:

The facts of the case are:

- Internal audit uncovered that a key pre-qualification criterion was not applied in SSL's case
- The Board approved the Procurement Committee's suggestion of a special waiver for SSL
- SSL had an excellent contract performance history

The ethical issues in the case are:

- By allowing the waiver, the Board might be unfair with other supplier who fulfil all conditions or those who were rejected due to that particular short coming.
- Objectivity of Board members and management might be threatened by familiarity threat due to frequent client relationship techniques used by SSL.

The norms, principles and values related to the case are:

- The Board had to make decisions free from bias and should ignore any favours offered by the SSL.
- SSL was given reasonable favour due to its good performance record.
- Other suppliers were not given fair chance.

Each alternative course of action was:

- The board allows the waiver.
- The board does not allow the waiver and go for rebidding process.

Matching norms, principles, and values to options as follows:

- Allowing waiver could be compromising the fairness in dealing
- Not allowing waiver is not acting with due care.

The analysis of consequences of each possible course of action are:

- Allowing the waiver sets a tone that the Company is flexible towards its policies. This decision may create a domino effect on future decisions that further dilute the Company's policies.
- Rejecting the waiver would mean the Board will not compromise on the Company's policies. However, it may not be in the interest of the company.

Taking decision:

From the above analysis, it appears that the board balanced the consequences against primary principles and values by selecting the best fit alternative.

INTRODUCTION TO SUSTAINABILITY

IN THIS CHAPTER

1. Introduction
2. Stakeholders and sustainability
3. Three pillars of sustainability
4. Measuring corporate sustainability: the ESG Framework
5. Self-test questions

1. INTRODUCTION

1.1 Background of Sustainability

In 1713 **Carlowitz**, a German author, first time introduced the term **nachhaltigkeit** (sustainability) to address the environmental degradation due to excessive exploitation of natural resources by mining and timber industries. He advocated for responsible and long-term resources management in forestry due to critical role of wood for energy and industrial equipment. His ideas regarding careful use of natural resources laid down the foundation for sustainable practices and extended beyond forestry to influence agricultural sectors in which farmers were encouraged to reclaim land, collect seeds and choose crops suited to specific seasons and conditions.

The current-day concept of sustainability appeared in Brundtland Report (1987) when the former prime minister of Norway, Gro Brundtland, warned for the negative environmental consequences of economic development and globalisation on the environment.

1.2 Definitions of Sustainability and Sustainable Development

There are many different definitions of sustainability depending on the context, industry or area of interest. However, in this section we will focus on general definitions that applies broadly across situations.

One of the most well-known definitions comes from the **Brundtland Report (1987)**:

“Sustainable Development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

This definition is widely used but applying in real life situations can be challenging:

- What are the ‘needs of the present’? People have different views on what is essential today.
- How can we know the ‘needs of future generations’? It is hard to predict future lifestyles, technology, and values.
- What time frame should we consider? Should we think about the next 50 years, 100 years, or more?
- Who defines the needs? Should sustainability be measured globally, or within specific countries or regions?

Another important view of sustainability comes from **John Elkington (1997)** who introduced the concept of the Triple Bottom Line. He argued that sustainability involves balancing three areas:

- Economic prosperity,
- Environmental protection, and
- Social equity

The United Nations (2005) also emphasised that sustainability means balancing environmental, social, and economic needs in a way that supports both the planet and human well-being.

Sustainability can also be viewed through two lenses:

- Strong sustainability assumes that natural resources such as clean air, and water are irreplaceable, and thus must be preserved at all costs.
- Weak sustainability suggests that natural capital can be substituted by human-made capital such as technology or infrastructure, allowing some flexibility as long as overall well-being is maintained.

For example, protecting an old-growth mangrove (strong) vs. allowing its removal in exchange for a concrete sea-wall (weak). The former preserves irreplaceable biodiversity; the latter trades natural capital for built capital

Understanding these perspectives helps in evaluating different policy approaches and sustainability strategies.

1.3 Importance of sustainability

1.3.1 Importance for society

Sustainability plays a crucial role in ensuring the well-being of society because it keeps a balance in the environment, promotes social justice and equity, and provides for economic prosperity.

- Societies are able to reduce pollution, conserve natural resources, and mitigate the determinantal effects of climate change through the adoption of sustainable practices and preserving these resources for future generations.
- Sustainability also widens the scope of social justice by the reduction of disparities regarding essential services such as education, healthcare, and clean water.
- These actions in turn can reduce poverty, improve public health and wellness, therefore enhancing the overall quality of life in the community.

1.3.2 Importance for organisations

Sustainability issues have become extremely important across many different industries and organisations worldwide, irrespective of the size and strategies of those organisations. Organisations that take positive actions and publicise their initiatives can achieve competitive advantage as a result.

1.3.3 Importance for Finance Professionals

Financial professionals play a key role for identifying environmental risk, ensuring accurate reporting of sustainability issues and enhancing transparency through implementation of sustainability framework.

Identifying environmental risks in decisions

Understanding and identifying the environmental risks (such as climate change, water scarcity and social issues) enables finance professionals to better assess risks and returns of investments, allowing them to make well informed financial decisions for the companies and its investors.

Accurate Reporting

With the growing emphasis on climate-related disclosures, finance professionals not only ensure the accurate reporting of climate risks and sustainability-related costs but also play a key role in sustainability reporting thereby enhancing transparency and corporate governance.

Capital Allocation

Finance leaders steer cash toward low-carbon projects, green bonds and sustainability-linked loans, lowering the entity's weighted-average cost of capital and signalling long-term resilience

Implementing sustainability frameworks

They contribute to Sustainability Accounting Standards Board (SASB) framework and implement Environmental, Social and Governance (ESG) framework to evaluate whether a company is meeting industry-specific sustainability key performance indicators or not.

Assurance engagements

Moreover, these professionals are also responsible for planning, performing, and reporting on sustainability assurance engagements, ensuring the accuracy and credibility of sustainability claims made by companies.

1.4. Risks of Non-Sustainable Business Practices

Organisations that fail to adopt sustainable practices expose themselves to various risks that can undermine their financial stability, operational efficiency, regulatory compliance, brand reputation, and long-term viability. Sustainability is no longer a choice; it has become an essential component of modern business strategy. Key risks associated with non-sustainable practices include:

Strategic and Business risk

Sustainability issues are changing industries. Companies that fail to predict such changes or adapt according to these changes may find their business models and strategies become obsolete.

For example, automobile companies that are slow to adopt electric vehicle technologies have lost their market share as compared to innovative companies like Tesla. Similarly, in 2020, some textile companies in Pakistan invested in solar energy to meet their power needs while others continued to rely on conventional energy sources. By 2024, companies that adopted solar technology not only reduced their energy cost by 30% but also obtained eco-friendly certifications, leading to higher profitability. In contrast, the companies that remained dependent on traditional energy faced frequent power outages, delays in order fulfilment, and began losing foreign clients to competitors offering more sustainable production solutions.

Regulatory and compliance risk

This risk occurs when a company is unable to meet the evolving environmental and social regulations. Non-compliance can result in fines, legal consequences and restricted market access.

For example, in 2022, Pakistan introduced legislation mandating that health warnings cover 60% of the front and back of all cigarette packaging. Non-compliance of this packaging regulations may result in hefty fines, product seizures and ban from selling non-compliant stock.

Reputational risk

This risk occurs due to reputational damage when stakeholders perceive that companies are not acting responsibly towards sustainability. This is often linked to **greenwashing** which occurs when companies exaggerate their environmental efforts but actually, they are not contributing towards sustainability.

For instance, a fashion brand is claiming to use sustainable materials but actually outsourcing from factories with poor labour and environmental standards may lose consumer trust and loyalty.

Transparency of accurate and credible information is key to minimising reputation risk.

Operational risk

Operational risk occurs when sustainability related events such as climate change, scarcity of required resources, disruptions in supply chain can hinder operational efficiency and output of the entity.

Extreme weather events like floods or droughts can halt production, damage assets, or disrupt logistics. In 2021, a severe drought in Taiwan impacted the global semiconductor supply chain due to water shortages affecting chip manufacturing plants.

Financial risk

This includes both direct and indirect financial losses related to sustainability issues, including costs of remediation, reduced investor confidence, and loss of revenue due to reputational harm.

For example, if an organisation is held responsible for environmental damage (e.g., oil spills, deforestation), it may face high clean-up costs, litigation expenses, and falling share prices. The 2010 BP Deepwater Horizon oil spill resulted in billions of dollars in penalties and a major loss in shareholder value.

2. STAKEHOLDERS AND SUSTAINABILITY

2.1. Definition of stakeholders

Every business involves transactions with people. Those people are affected by the business and therefore have a stake in it. They are referred to as stakeholders i.e., people who have an interest (or stake) in the business.

A stakeholder in an organisation is a person who has an interest (or 'stake') in what the organisation does, and who might therefore try to influence the decisions and actions of the entity.

Edward Freeman (1983) defines stakeholders as:

'Any person or group that are *directly or indirectly affected* by the policies or activities of an organisation and therefore they have the *capacity to directly or indirectly affect* how it's carried out'.

In short, stakeholders are not only affected by the organisation but they also affect the organisation.

2.2. Classification of stakeholders

Stakeholders can be either:

2.2.1 Internal stakeholders

These are the individuals or groups **within the organisation** who are directly involved in its operations and success. They have **direct interest** in performance, decision making and sustainability efforts of the company.

Internal stakeholders can be categorised into groups as follows:

- i. shareholders/owners
- ii. Executive Directors
- iii. Senior and Managers
- iv. Employees and their trade unions
- v. Staff Association Representatives

2.2.2 External stakeholders

These are individuals or entities **outside the organization** who are indirectly affected by its activities or have an indirect interest in its impact.

External stakeholders can be categorised as follows:

- Government (local or national government)
- Regulatory bodies
- Suppliers especially major suppliers
- Customers
- Local communities in which the entity operates
- Pressure groups (e.g., Environmental protection groups or Human rights groups)
- NGOs
- Media; and
- General Public

Note: Some frameworks classify suppliers and customers as connected stakeholders, which are closely linked but external to the core organization.

2.3. Stakeholder Analysis

Stakeholder Analysis include the Power/ Interest Matrix (also known as Mendelow matrix) or Stakeholder Radar to map stakeholders and to understand the level of engagement required according to interest and importance of the stakeholders.

In addition to mapping power and interest, organisations also assess stakeholder materiality which is the degree to which stakeholders' concerns are critical to the organisation's sustainability performance and reporting. Material issues are those that significantly affect the ability of the organisation to create long-term value and are often prioritised in sustainability disclosures (e.g., under Global Reporting Initiatives - GRI Standards).

Both models are used for the same purpose and we can also group stakeholders into those affected by change and those delivering change.

The Mendelow's stakeholder Matrix and Sustainability

2.3.1 Introduction

A power-interest matrix such as 'Mendelow's Matrix, is a model used to categorise stakeholders based on their level of power (influence) and degree of interest in sustainability initiatives of an organisation. The matrix is a 2x2 grid in which specifically:

- **Power** refers to a stakeholder's *ability to influence the entity's objectives/decisions* and actions (how much they can?).
- **Interest** refers to the *extent of a stakeholder's willingness in activities of entity* (how much they care?).

2.3.2 Purpose of Mendelow's Matrix

This matrix helps organisations to prioritise stakeholder engagement and tailor communication strategies to effectively manage support or resistance related to sustainability efforts.

2.3.3 Identifying Stakeholders

According to Mendelow's Matrix, there are four types of stakeholders:

Key Players (High Power, High Interest)

These stakeholders have significant influence and are highly concerned with the organization's sustainability initiatives. They must be **managed closely** through active engagement and two-way communication.

Keep Satisfied (High Power, Low Interest)

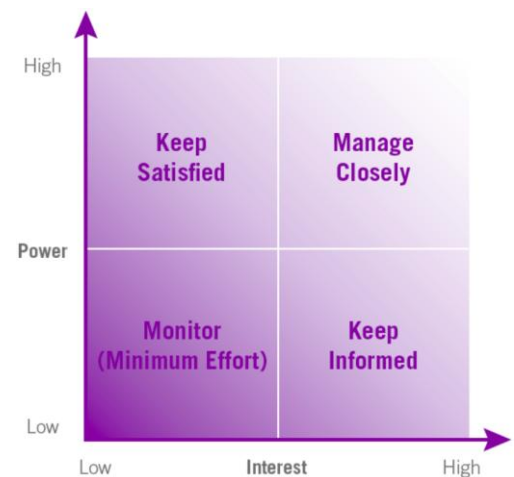
These stakeholders have the power to influence outcomes but are not deeply interested in the sustainability agenda. They should be **kept satisfied** to ensure they remain supportive and do not become obstructive.

Keep Informed (Low Power, High Interest)

These stakeholders are interested in sustainability efforts but have limited influence. They should be **kept informed** through regular updates, as they can be valuable allies and may become more influential over time.

Minimal Effort (Low Power, Low Interest)

These stakeholders have little interest or influence in sustainability matters. They require minimal effort, but their position should be monitored in case their interest or power changes.



► Example 01: Mendelow's Stakeholder Matrix

Greener Future Textiles (GFT), a mid-sized textile manufacturer in Pakistan, exports its products to international supermarket chains. The company has committed to transform its production processes to align with international sustainability standards. The company is aiming to reduce water consumption, switch to renewable energy sources, and eliminate hazardous chemicals from its dyeing units within the next three years. Additionally, GFT wants to ensure ethical labour practices and actively contribute to the well-being of the local community.

To achieve these sustainability objectives, GFT must have to obtain regulatory approvals and subsidies from the Ministry of Climate Change, Pakistan. The company also plans to engage World Wide Fund for Nature (WWF) Pakistan for third-party sustainability assessments, collaborate with media outlets to publicise its shift towards sustainable practices, and involve its internal teams to ensure compliance with Ministry regulations, implement new procedures effectively and to inform the Ministry on regular basis.

Recognising the importance of strategic stakeholder engagement, GFT's management has decided to apply the Stakeholder Matrix to map and prioritise stakeholder involvement. As the sustainability officer, you have been tasked with conducting a stakeholder analysis and recommending an appropriate course of action.

Required: Using the Mendelow's Stakeholder Matrix approach, identify four types of stakeholders relevant to GFT's sustainability transformation and classify each of the identified stakeholders into four types with proper justification.

► **Answer:**

Classification of Stakeholders

Classification	Stakeholders	Justification
Key players	Ministry of Climate Change (Pakistan)	Ministry must be provided regular updates and ensure compliance to gain approvals and subsidies therefore they have high power and high interest in sustainability initiatives.
	Team of employees and managers	These employees are involved in training, implementation, and ensure compliance of sustainability regulations.
	Providers of renewable energy	Their expertise is essential for implementing clean energy solutions. Their interest may be medium if specific supplier, but their power in providing the solution justifies engagement.
Keep Satisfied	International Supermarket chains	These are satisfied by sharing sustainability certifications and maintain transparency to retain business.
Keep informed	Media outlets	They have low involvement in sustainability initiatives of entity but have interest in sustainability efforts carried out and share success stories of entities locally and globally.
	WWF Pakistan	
	Local community	
Monitor	Not applicable	Not applicable

Note: The stakeholder groups may vary from company to company and time to time therefore your classifications may vary based on valid justifications.

The Stakeholder's Radar and Sustainability

2.3.4 Introduction

As stakeholders are people who can impact or be impacted by the shift towards sustainability, identifying and involving them is crucial to achieve sustainable development. Some stakeholders may benefit immediately, while others may face challenges adapting to sustainable changes.

The stakeholder radar is a highly useful model to *identify, segment and prioritise* stakeholders.

2.3.5 Identifying the key stakeholders

The Stakeholder radar identifies four kinds of stakeholders:

Customers

These are the *end users who have to adapt* to sustainable change and will pay for or use the new products and services. A few examples:

- Companies
- Governments
- Society as a whole

Suppliers

Suppliers will *provide the people, materials, and knowledge* to allow a shift toward sustainability. These are people or groups of people who contribute to designing, defining, building and implementing sustainability initiatives. A few examples:

- The public sector
- Companies
- NGOs
- Trade unions

Influencers

Influencers are people and groups that will *influence or condition* the change. These can influence, set guidelines and directives, popularise, propagate and inspire the path towards sustainability. A few examples:

- Opinion leaders
- The media
- Political leaders
- Business leaders
- Certifying entities
- Disseminators
- NGOs
- Governance

Governance

Governance refers to people who will be able to *make the most significant decisions* with regard to the evolution towards sustainable models. These can make decisions (prioritising, assigning budgets, providing resources, etc.) related to sustainability initiatives. A few examples:

- Government
- United Nations
- Regulators

2.3.6 Segmenting the stakeholders

The distance to the centre of radar determines the desired degree of participation, support and commitment from different types of stakeholders. The stakeholder radar divides the stakeholders in keeping with four levels of participation.

Vital to Engage (V)

These are the stakeholders whose participation is crucial for *success or failure of the change*.

Necessary to Engage (N)

These stakeholders must take part in order to *contribute* to the desired impact.

Good to have on board (G)

Those who, if they participate, will ensure that the *result is better* or more comprehensive

Courtesy to inform (C)

Those whose degree of participation does *not condition the success* of the initiative and, as a result, their involvement would not be sought.



► Example 02: Stakeholder Radar

Greener Future Textiles (GFT), a mid-sized textile manufacturer in Pakistan, exports its products to international supermarket chains. The company has committed to transform its production processes to align with international sustainability standards. The company is aiming to reduce water consumption, switch to renewable energy sources, and eliminate hazardous chemicals from its dyeing units within the next three years. Additionally, GFT wants to ensure ethical labour practices and actively contribute to the well-being of the local community.

To achieve these sustainability objectives, GFT must have to obtain regulatory approvals and subsidies from the Ministry of Climate Change, Pakistan. The company also plans to engage World Wide Fund for Nature (WWF) Pakistan for third-party sustainability assessments, collaborate with media outlets to publicise its shift towards sustainable practices, and involve its internal teams to ensure comply with Ministry regulations, implement new procedures effectively and to inform the Ministry on regular basis.

Recognising the importance of strategic stakeholder engagement, GFT's management has decided to apply the Stakeholder Radar model to map and prioritise stakeholder involvement. As the sustainability officer, you have been tasked with conducting a stakeholder analysis and recommending an appropriate course of action.

Required: Using the Stakeholder Radar approach:

- Identify four types of stakeholders relevant to GFT's sustainability transformation.
- Classify the each of the above identified stakeholder in part (a) based on the degree of participation required for sustainability initiatives and justify your classification.

► *Answer:*

(a) Identification of stakeholders

- **Customers:** International super market chains
- **Suppliers:** Providers of renewal energy technology and products and team of employees
- **Influencers:** Environmental NGO (i.e., WWF Pakistan) and media outlets
- **Governance:** Ministry of Climate Change, Pakistan

(b) Classification of stakeholders using Stakeholder Radar

Classification	Type	Stakeholders	Justification
Vital to Engage (V)	Governance	Ministry of Climate Change, Pakistan	Since GFT needs regulatory approvals and government subsidies, timely coordination and engagement are essential. Passive updates (courtesy) may risk delays or penalties therefore they are necessary to engage.
Necessary to Engage (N)	Supplier	Team of employees and managers	These are necessary to engage in achieving desired objectives in form of implementing the sustainability initiatives, ensuring compliance of Ministry regulations and keeping to inform the influencers.
Necessary to Engage (N)	Suppliers	Providers of renewal energy products and technology	The shift to renewable energy depends on access to their technology, expertise, and implementation support. They are essential for technical execution but not strategic.
Good to have on board (G)	Customers	International Supermarket Chains	GFT's business model relies on supermarket chains therefore taking input from these customers is good to have on board to sell them sustainable products and adherence to international sustainability standards.
Courtesy to inform (C)	Influencer	WWF Pakistan (NGO)	Their support is not mandatory but their third-party assessment may improve credibility, media visibility, and international recognition
	Influencer	Media outlets	Media involvement improves external visibility and reputation, but GFT can still pursue sustainability initiatives without their active involvement.

Note: The stakeholder groups may vary from company to company and time to time therefore your classifications may vary based on valid justifications.

2.4. Stakeholders' Expectations regarding Sustainability

The expectations of key stakeholders regarding sustainability differ based on their relationship with the organisation:

Investors (Owners)

Investors and shareholders are increasingly interested in how sustainability affects long-term value creation and risk management. They expect companies to disclose their ESG performance through formal reporting frameworks like the Global Reporting Initiative (GRI) or Sustainability Accounting Standards Board (SASB). Responsible governance, ethical leadership, and sustainable business models are key expectations that influence investment decisions.

Employees and managers

Employees and managers expect organisations to provide safe, inclusive, and fair working environments. They value opportunities to participate in sustainability initiatives, receive training related to sustainable practices, and work within an organisation that upholds ethical values and corporate responsibility. A sustainability-driven culture not only boosts morale of employees but also enhances their engagement and loyalty with the organisation.

Customers

Domestic and international customers, increasingly demand products that are ethically and sustainably produced. Their expectations include the use of eco-friendly materials, safe and non-toxic manufacturing processes, and transparent supply chain practices. Certifications and third-party verifications, such as ISO standards or fair-trade labels, are often expected to validate the company's sustainability claims. Many customers also appreciate innovations in environmentally friendly product designs and packaging.

Governments and regulators

Governments and regulators expect organisations to comply with environmental laws, labour standards, and other sustainability-related regulations. They look for transparency in reporting and regular updates on sustainability performance. Additionally, they expect companies to contribute positively to national and international goals, such as the United Nations Sustainable Development Goals (SDGs), and ensure responsible use of public resources like subsidies and grants.

NGOs

NGOs expect transparency and measurable impact from corporate sustainability efforts. They look for genuine collaboration in tackling environmental and social issues, rather than superficial efforts or greenwashing. Their expectations also include evidence-based actions and contributions to long-term community welfare and ecological balance.

Media outlets

Media seek access to credible and impactful sustainability stories that reflect wider societal values. They expect organizations to provide verifiable data, clear communication, and real evidence of sustainability outcomes. This helps build a positive public image while holding companies accountable.

Local communities

Local communities, often directly affected by corporate operations, expect organisations to respect local customs, protect natural resources, and contribute to the social and economic development of the area. This includes support for education, healthcare, employment, and infrastructure. Communities also value being actively involved in decision-making processes and expect businesses to mitigate any negative environmental or social impacts.

Altogether, meeting stakeholder expectations in sustainability is crucial for maintaining trust, ensuring long-term success, and building a resilient, responsible organization.

► *Example 03: Stakeholder Expectations*

Royal Leathers Limited (RLL), a prominent manufacture and exporter of leather belts and jackets based in Pakistan, has publicly committed to sustainable practices and fair labour policies. The company has implemented a rainwater harvesting system and installed solar panels to reduce reliance on non-renewable energy. Additionally, it pays fair wages to its employees and has recently introduced skill development programs for female workers.

However, a recent environmental audit revealed that the company still uses chrome-based tanning without proper effluent treatment, leading to chemical discharge into nearby river. Although company received government subsidies to upgrade to cleaner tanning technology, but little progress has been made in that area. Moreover, the company has not responded to collaboration requests from local NGOs working on sustainable leather supply chains, and has yet to share detailed sustainability performance reports with international retail clients demanding supply chain transparency.

Required: Identify and explain which expectations of key stakeholders are currently being compromised and which are being met by RLL.

► *Answer:*

Expectations of Stakeholders

Stakeholders	Expectations	Justification
Employees	Met	RLL provides fair wages and has introduced skill development programs, particularly for female workers, fulfilling expectations for ethical labour practices.
Government	Partially met	The company has installed solar panels and implemented a rainwater harvesting system, showing some compliance with environmental goals. However, continued use of chrome tanning and lack of waste treatment undermines full compliance.
Local communities	Compromised	Discharge of untreated chemicals into water sources harms residents' health and the environment, failing the expectations of nearby communities.
NGOs	Compromised	The company has ignored outreach from NGOs focused on building sustainable supply chains, violating expectations of cooperation and shared responsibility.
International clients	Compromised	Royal Leathers has failed to provide performance reports, compromising transparency and potentially risking client trust and long-term business.

3. THREE PILLARS OF SUSTAINABILITY

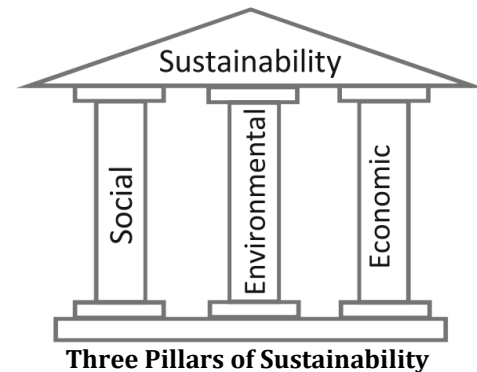
3.1 Background

The concept of three pillars of sustainability (i.e., environmental, social, and economic sustainability) was first introduced in 1987 by the World Commission on Environment and Development (WCED) in its influential Brundtland Report, titled *Our Common Future*. This framework was further reinforced in 2005 Summit on World Social Development where it was formally recognised and adopted as an integral and interconnected component of sustainability. Since then, the three-pillars model has become a foundational framework for policy-making, corporate strategy, and global initiatives, including the United Nations Sustainable Development Goals (SDGs).

The three-pillar model aims to provide a balanced and holistic perspective on sustainability emphasising that societies can achieve economic growth while meeting the needs of their citizens and protecting the natural ecosystems.

If we think of sustainability as the roof of a building that protects its occupants, we see that it takes all three pillars to hold it up. These pillars are not independent; each supports and influences the others. Sometimes people summarise them with the words **people**, **planet**, and **profit**. Weakness in any one pillar puts the roof in danger of collapsing.

The upcoming sections will explore each pillar individually, but it is important to remember that they must work together to achieve long-term sustainable development.



3.2 The First Pillar: Environmental Sustainability

3.2.1 Definition

Environmental sustainability refers to the systematic management of natural resources to prevent the ecosystem degradation and ensure that the environment continues to provide the necessary resources and services for present and future generations. It involves a conscious effort to protect air, water, soil, and biodiversity while minimising the harmful impact of human activities. Its ultimate aim is to maintain ecological balance and prevent irreversible damage to natural systems.

3.2.2 Purpose

The primary purpose of environmental sustainability is to conserve the ecosystems of the Earth to sustain life. It ensures that the natural capital, such as forests, water bodies, and biodiversity, is not depleted beyond its capacity to regenerate. Environmental degradation, if left unchecked, may lead to health problems, loss of livelihoods, and climate-related disasters.

3.2.3 Environmental footprint

Every economic activity has an environmental impact and that effect is known as environmental footprint. This environmental footprint is mostly harmful and mitigating it requires proactive and sustained efforts. Key environmental threats and corresponding initiatives may include:

Pollution

Pollution includes air pollution from vehicles and factories, water pollution from industrial and domestic waste, noise pollution from urban activities, and soil pollution from overuse of chemicals in cultivation.

To mitigate pollution, initiatives may include:

- Enforce strict pollution control regulations
- Promote cleaner production technologies
- Establish efficient waste management systems.
- Encourage eco-friendly transport.

Climate change

Climate change is primarily caused by greenhouse gas emissions and contributes to global warming, rising sea levels through melting glaciers, and unpredictable weather patterns.

To control the climate change, initiatives may include:

- Implement carbon taxes and cap-trade systems
- Adopt international climate agreements
- Shift to renewable energy sources such as solar, wind and hydro
- Promote energy efficiency across different industries and reduce dependence on fossil fuels

Loss of biodiversity

Loss of biodiversity results from deforestation, habitat destruction, and the introduction of invasive species, disrupting the balance of ecosystems.

To control the loss of biodiversity, protection initiatives may include:

- Establish and maintain protected areas and wildlife reserves by government and non-government organisations
- Enforce anti-poaching and conservation laws
- Support afforestation and reforestation programs
- Restore natural habitats

Overexploitation of natural resources

Overexploitation of natural resources include overfishing, excessive extraction of clean groundwater, and unsustainable mining. This leads to weaken the environmental systems and reduces resource availability for future generations.

To protect overexploitation of natural resources, initiatives may include:

- Promote responsible resource management
- Regulate groundwater extraction
- Promote sustainable fishing
- Encourage sustainable mining practices

Excessive waste and unsustainable consumption

Excessive waste production and unsustainable consumption patterns, including fast fashion, single-use plastic bags and high carbon lifestyles, further exacerbate these challenges.

To minimise waste and unsustainable consumption, initiatives may include:

- Adopt circular economy principles such as reduce, reuse and recycle the waste
- Ban or heavy tax on single use plastic bags
- Promote awareness among communities on waste reduction
- Encourage sustainable product design, green packaging and labelling

Unsustainable agricultural practices

Unsustainable agricultural practices include excessive use of chemical fertilisers, pesticides, monocropping, over-irrigation and deforestation of farmland. These farming methods contribute to degrading the soil fertility and depletion of water resources.

To promote sustainable agricultural practice, initiatives may include:

- Implement regenerative farming such as crop rotation, cover cropping, reduced tillage, composting and integrating livestock to rebuilt organic matter
- Introduce agrivoltaics to combine crop growth with solar power
- Train farmers on organic methods of cultivation
- Promote use of natural fertilisers

3.3 The Second Pillar: Social Sustainability

3.3.1 Definition

Social sustainability refers to the capacity of a society to maintain and uphold the well-being of its people by ensuring equal access to basic needs, protecting human rights, promoting social equity, and encouraging community resilience. It emphasises fairness, justice, and dignity for all individuals regardless of their background or identity.

3.3.2 Purpose

The purpose of social sustainability is to create cohesive societies where individuals can thrive. It aims to reduce inequality, ensure social justice, and creating systems in which people feel empowered, secure and connected. A socially sustainable society supports the health, education, safety, and cultural needs of its population.

3.3.3. Social footprint

Just as with environmental impacts, every economic activity also has social footprint which may have beneficial or damaging impacts. Key social issues and remedial initiatives include:

Poverty and social inequality

Poverty and social inequality include economic disparity among communities, where some people lack access to food, shelter, income opportunities, and a widening wealth gap between rich and poor. According to some scholars nine human needs must be met: subsistence, affection, protection, participation, understanding, identity, creation, leisure, and freedom. Lack of any one of these needs represents some kind of poverty.

To alleviate poverty and social inequality, initiatives may include:

- Introduce social welfare programs or direct cash transfer
- Introduce tax reforms for redistribution of wealth and reduced wealth gap between rich and poor
- Promote inclusive economic growth to benefit all segments of society

Social exclusion and injustice

Social exclusion and injustice include discrimination based on gender, ethnicity, disability. It also includes lack of fairness, equal opportunities and inclusivity in the society.

To alleviate social exclusion and injustice, initiatives may include:

- Enforce job and education quotas for women, minorities and differently abled individuals in government jobs and universities
- Implement legal reforms

Access to essential services

This includes the inability of individuals and communities to access essential services such as healthcare, education, clean water and housing. Such lack of access to these essential services undermines community development and significantly reduces overall quality of life.

To improve access to essential services, initiatives may include:

- Increase public spending for provision of basic needs
- Support public-private partnerships with schools for provision of education to underserved communities such as
 - Punjab Education Foundation (PEF),
 - Sindh Education Foundation (SEF),
 - KP Public Schools Support Program (KP-PSSP)
- Ensure universal access to healthcare services

Security and Governance

This includes the issues like conflict, lawlessness, insecurity, corruption, weak governance and inefficient institutions. Lack of security and proper governance impairs public safety and trust.

To improve the situation of security and governance, initiatives may include:

- Promote transparency through digitalisation.
- Introduce citizen feedback system
- Strengthen accountability
- Rehabilitation of conflict-affected zones

Lack of Community Development and Wellbeing

This includes gaps in urban planning, lack of workforce development, and overall community health and wellbeing.

To promote community development and wellbeing, initiatives may include:

- Promote apprenticeship programs and vocational trainings
- Promotion of women in workforce
- Preserve the heritage sites
- Launch urban infrastructure development programs

3.4 The Third Pillar: Economic Sustainability

3.4.1 Definition

Economic sustainability refers to the approach where economic activities are conducted in a manner that long-term economic growth is achieved without compromising the integrity of environmental and social systems.

3.3.2 Purpose

The core objective of economic sustainability is to strike a balance between economic growth and long-term prosperity. This includes generating employment, ensuring stable income streams, and improving standards of living while ensuring that economic activities do not undermine other pillars of sustainability.

3.4.3. Economic Challenges

Economic sustainability is challenged by various factors which reflect the adverse outcomes of unsustainable economic practices. Following are the key challenges with initiatives to address such factors challenging economic sustainability

Reliance on non-renewable resources

Overdependence on finite natural resources (fossil fuels, minerals, forests and freshwater) results in their depletion, thereby reducing the availability of input for future production and threatens the future economic stability for countries dependent upon these finite resources.

To address this issue, initiatives may include:

- Promote efficient use of resources and energy conservation in industrial and domestic sectors
- Encourage the use of renewal energy sources
- Invest in sustainable agriculture and eco-friendly industries to reduce environmental strain

Unemployment and underemployment

Unemployment and underemployment include availability of limited job opportunities which can lead to underutilisation of labour force, especially women and youth, and increase their social dependency.

To address this issue, initiatives may include:

- Encourage entrepreneurship by offering financial support and awareness campaigns to young entrepreneurs.
- Enhancing employability by bridging the gap between academic knowledge and professional skills of recent graduates through practical work experience
- Promoting skills in digital economy

Financial instability

Weak financial system, lack of regulations, poor enforcement of financial regulation, speculation and stock market instability can trigger financial instability, reduced investor confidence and consequently may harm economic growth.

To mitigate financial instability, initiatives may include:

- Strengthen regulatory bodies such as SECP reforms for capital markets to enhance transparency
- Improve regulatory oversight such as improved supervision of banking sector by State Bank of Pakistan
- Improve investor confidence by implementing strategic reforms.
- Improved compliance with international standards through IMF programs and FATF recommendations
- Promote awareness among investors regarding utility of long-term investments

Unsustainable Debt Levels

Unsustainable debt levels include the excessive use of public or private borrowings without corresponding productivity gains can lead to burden of debt serving cost which would increase inflation, and making the economy vulnerable to shocks.

To address this issue, initiatives may include:

- Strengthen tax base and revenue generation. For example, FBR's tax digitalisation and broadening initiatives
- Improve fiscal disciplines such as IMF extended credit facility with fiscal reforms
- Reduce reliance on external debt for granting subsidies on non-essential items

Myopia

Myopia include focusing on immediate short-term gains by the government and/or business community which may lead to policies and decisions that compromise long term economic as well as environmental and social sustainability.

To mitigate myopia, initiatives may include:

- Promote long-term strategic planning in public sector such as Pakistan Vision 2025 emphasises inclusive growth, environmental sustainability and human capital development
- Encouraging companies to regularly report their sustainability efforts and future goals.
- Promotion of Green Finance

	Explanation
Description	Green finance can be described as a form of financing specifically allocated to projects or initiatives that are expected to have a positive environmental impact. In essence, it involves a commitment to investing the funds raised into 'green' projects such as renewable energy, low-carbon solutions, sustainability initiatives, and climate change resilience. The use of green finance helps integrate sustainability and environmental considerations into mainstream financial decision-making.
Advantages	There are several advantages associated with green finance. - It is typically structured as debt finance, is often more cost-effective than conventional debt financing. This can result in significant savings on interest expenses for an organisation. - Utilising green finance can also serve as a signal that a project is environmentally friendly and sustainable. This, in turn, can enhance an organisation's corporate image and reputation among stakeholders, investors, and the wider public.

Disadvantages	However, green finance also comes with certain disadvantages. - One major drawback is the additional cost associated with increased reporting requirements. Organisations must often demonstrate that the funds are being used appropriately and that the environmental objectives are being met. - Furthermore, there is usually a requirement to prove that the project or initiative being financed will indeed have a measurable positive environmental impact. - This might involve an independent audit or verification process. Even if an audit is not mandated, organisations are likely to face an increased administrative burden in order to comply with transparency and accountability expectations.

3.5 The interaction of the three pillars of sustainability

The three pillars of sustainability are interconnected and they must work in harmony to achieve a true sustainable development. Environmental sustainability protects and preserves natural resources, which are essential for economic activities and human well-being. Social sustainability focuses on equity, education, health, and community development, which results in a stable and productive society capable of supporting environmental stewardship (responsible environmental practices) and economic growth. Economic sustainability emphasises long-term economic growth without compromising environmental integrity and social welfare.

When these pillars are balanced, they yield living conditions that are **viable**, **bearable**, and **equitable**. However, the neglecting any one pillar destabilises the system:

- Environmental and economic sustainability combine to make everyone's living conditions viable—until social unrest overwhelm them.
- Environmental and social sustainability combine to make everyone's living conditions bearable—until they run out of money to keep it all going.
- Economic and social sustainability combine to make everyone's living conditions equitable—until the environment degrades to where Earth can't sustain human life.

Sustainable living conditions require the intersection of all three facets.

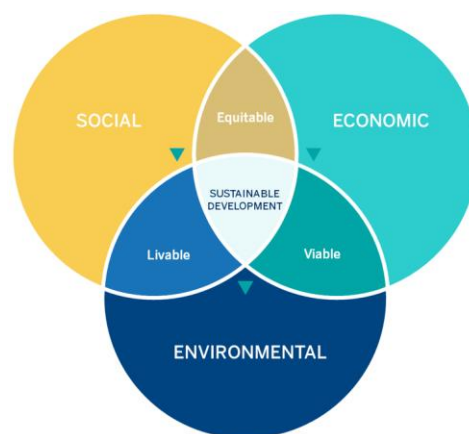
3.6 Sustainability Reporting

3.6.1 Introduction

The Global Reporting Initiative (GRI) explains that a sustainability report is a report published by a company or organisation about the economic, environmental, and social impacts caused by its everyday activities. The GRI also provides sector-specific standards to address the unique sustainability challenges of different industries. For example, there are tailored GRI Standards for industries such as Oil and Gas, Financial Services, Agriculture, Mining, and Textiles. These sector-specific standards guide companies in disclosing material impacts most relevant to their operations and stakeholders.

The report also presents the organisation's values and governance model and demonstrates the link between its strategy and its commitment to a sustainable global economy.

A program of data collection, communication, and responses is necessary to produce such a report. To improve performance, the data can be provided regularly to decision-makers. Sustainability reporting can be considered synonymous with other terms for non-financial reporting, such as triple bottom line reporting, CSR reporting, and more.



Nowadays, sustainability reporting combines the analysis of both financial and non-financial performance. The uptake of sustainability reporting is increasing among organizations of all types and sizes.

3.6.2 Benefits of Sustainability Reporting

Sustainability reporting can serve as a differentiator in competitive industries and foster investor confidence and trust. Analysts often consider sustainability disclosures when assessing management quality and efficiency. Additionally, the new data obtained for sustainability reporting can provide firms with valuable knowledge to reduce their use of natural resources, increase efficiency, and improve overall operational performance.

Internal benefits of sustainability reporting include increased understanding of risks and opportunities, emphasising the link between financial and non-financial performance, and influencing long-term management strategy, policies, and business plans. It also helps in streamlining processes, reducing costs, and improving efficiency. Furthermore, organisations can benchmark their sustainability performance against laws, norms, and performance standards, avoid involvement in publicized environmental, social, and governance failures, and compare performance internally and across organizations and sectors.

External benefits include mitigating or reversing negative environmental, social, and governance impacts. Sustainability reporting also improves reputation and brand loyalty, enables external stakeholders to understand the organisation's true value (including tangible and intangible assets), and demonstrates how the organisation is influenced by expectations surrounding sustainable development.

4. MEASURING CORPORATE SUSTAINABILITY: THE ESG FRAMEWORK

4.1 Levels of Sustainability Measurement

A comprehensive understanding of sustainability necessitates its assessment across multiple spatial scales (macro, meso and micro) to generate efficient and context-specific information.

- **Macro-level sustainability** measurement operates at the scale of nations or globe focusing on board indicators such as gross domestic product (GDP), Human Development Index (HDI), and Ecological Footprint to assess national and global sustainability trends. The United Nations' Sustainable Development Goals (SDGs) serve as a prominent framework at this level, offering a set of global targets and indicators to guide and measure progress towards sustainable development worldwide.
- **Meso-level sustainability** measurement focuses on industries, regions, or interconnected entities such as eco-industrial parks, analysing collaborations, shared resources, and the broader ecosystem in which organizations operate. This level is instrumental in identifying scalable sustainable development solutions that can be adapted across different communities and regions, thus avoiding a one-size-fits-all approach.
- **Micro-level sustainability** measurement focuses on evaluating the sustainability performance of individual entities, including products or services. It involves analysing resource usage, waste diversion, and energy efficiency at the enterprise or product level.

Here, we are only focusing on micro-level sustainability performance measurement.

4.2 Approaches to Measure Sustainability

There are two main approaches to measure sustainability:

4.2.1 Quantitative Approach

Quantitative approach uses **numerical**, data-based performance indicators offering a structured and objective way to monitor progress and compare sustainability performance over time or against established benchmarks.

For example, total greenhouse gas emissions can be measured in terms of CO₂ output, energy consumption in kilowatt-hours and total water consumption in metric tons.

4.2.2 Qualitative Approach

Qualitative approach focuses on non-numerical data such as descriptions, explanations and contextual insights providing a more nuanced understanding of sustainability performance. This approach collects and analyses the data from diverse sources including surveys, interviews, focus groups, ethnographic notes, photographs, drawings, and audio or video recordings. Qualitative data plays a vital role in identifying underlying patterns, themes, views, feelings, and meanings that are not easily captured by numerical performance indicators.

4.2.3 Which approach is better?

The choice between quantitative and qualitative approaches depends on the objectives and context of the sustainability assessment. Quantitative approach offers comparability and precision, while qualitative methods provide depth, contextual understanding and explain the meaning behind the numbers. A **mixed-methods approach**, integrating both quantitative and qualitative data, is often considered most effective for gaining a comprehensive view of corporate sustainability performance.

4.3 Reasons for Measuring Meso Level Sustainability: Corporate Sustainability

4.3.1 Tracking Progress towards Sustainability Goals

Measuring the corporate sustainability is essential to gauge the impact of business activities and organisational investments, as well as to assess the effectiveness of their sustainability initiatives.

Companies can

- define clear performance metrics,
- collect relevant data and
- gain a comprehensive snapshot of their sustainability performance at a given point in time.

This allows them to track their progress towards the achievement of predetermined sustainability goals. This continuous assessment enables organisations to evaluate their position on the sustainability agenda and make well-informed, data-driven decisions and adjustments where needed.

For example, a manufacturing company tracks its energy consumption in order to identify inefficiencies in its production processes, may subsequently implement energy-saving technologies to reduce its carbon footprint and enhance overall sustainability performance.

4.3.2 Stakeholder Engagement

Measuring corporate sustainability encourages stakeholder involvement by aligning organisational goals with sustainability priorities. It ensures the availability of accurate data for transparent reporting and helps to meet the expectations of investors and consumers. Ultimately, measurable sustainability performance enhances brand reputation, build trust, and provides a competitive advantage.

For example, a retail company that tracks and reports reductions in the use of plastic packaging can gain customer loyalty and improve its brand image.

4.3.3 Balancing Trade-offs

Sustainability measurement helps organisations to evaluate and balance the different trade-offs by offering structured, data-driven insights for complex decisions. It allows them to compare different non-equivalent options using quantified sustainability criteria. This supports strategic choices that address environmental, social, and economic risks. For example, Unilever uses sustainability metrics to decide whether to reformulate products with eco-friendly ingredients, balancing cost, consumer preferences, and environmental impact.

4.3.4 Meeting the Requirements

Measuring corporate sustainability provides familiarity with the tools and processes which can significantly aid organisations in meeting or even anticipating new, related requirements that may emerge in the regulatory landscape. Tracking the sustainability Key Performance Indicators (KPIs) ensures compliance with these increasingly stringent regulations and avoids potential fines or penalties associated with non-compliance.

4.3.5 Improved Communication

Measuring sustainability and reporting the results enables organisations to effectively communicate their sustainability goals and their achieved tangible benefits to their diverse stakeholders. Furthermore, measuring the corporate sustainability acts as a valuable tool for influencing public opinion and for raising broader awareness among members of society about the critical importance of sustainability.

4.4 ESG Framework

4.4.1 Introduction

Environmental, Social, and Governance (ESG) is a widely recognised framework used to evaluate the sustainability of companies by assessing their performance across three critical categories:

- The Environmental factors encompass a broad range of considerations related to how a company interacts with the natural world.
- The Social factors examine a company's relationships with its employees, customers, suppliers, and the communities in which it operates.
- The Governance pillar focuses on how a company is managed and governed.

4.4.2 Three pillars of Sustainability and ESG Framework

While the three pillars of sustainability and ESG are often used interchangeably, it is important to recognise their difference. The three pillars of Sustainability represent a broad, holistic concept focused on long-term well-being of the planet and society, serving as a guiding philosophy for responsible business practices aimed at long-term viability. In contrast, ESG Framework is a practical tool comprising specific set of metrics used to evaluate a company's performance on sustainability-related issues.

4.4.3 Role of ESG Framework

In order to establish perception about transparency, trust and accountability among the investors, customer and other stakeholders of the company, amongst other things, it is vital for the companies to measure and report sustainability data by using ESG framework.

Individual and institutional investors across the world seek attractive financial returns along with a positive impact on communities and the environment. Nonetheless, integration of firms' economic, environmental, social, and corporate governance performance is equally important for the managers, employees and other stakeholders along with the investors.

Using ESG Framework, for measuring sustainability is important for organisations for many reasons, making it a corporate mainstay across industries and jurisdictions. Following are a few reasons for opting ESG framework for measuring and reporting sustainability performance of entity:

Promoting Transparency

As climate change and corporate social responsibility are issues of concern for stakeholders, organisations must be transparent about their operations. Measuring sustainability by using ESG framework promotes that transparency, giving organisations the opportunity to report on sustainability efforts and progress.

Meeting investors' expectations

Investors rely on different metrics to assess the value and growth potential of an organisation. Any report by using ESG framework provides help information to investors regarding risk and opportunities for growth, making it easier to make better investment decisions.

Building brand loyalty

Consumers prefer to buy goods or services of the business organisations that align with their beliefs about governance and sustainability. The consumers are likely to exhibit more brand loyalty with those organisations that report on sustainability initiatives and progress.

Ensuring regulatory compliance

Globally the number of regulations is increasing and requiring organisations to disclose and report on ESG initiatives, sustainability and governance. A report, by using ESG framework, provides a way for organisations to make proper disclosure and helps ensure regulatory compliance.

Strengthen Risk management

By identifying and addressing ESG-related risks early through reporting, organizations can proactively manage vulnerabilities and safeguard their operations.

4.4.4 Measures of Sustainability by using ESG Framework

There are some Key Performance Indicators (KPIs) for measuring the corporate sustainability by using ESG Framework. Following are some specific measurement methods suggested for companies for each of these ESG Key Performance Indicators. Companies should then accordingly treat measurements of the ESG factors relevant to their company.

Measuring the Environment

Sr. #	KPIs	Measurement Method
i.	Environmental Policy	Does the company publicly publish, follow an environmental policy and indicate where it can be accessed? (Yes/No)
ii.	Environmental Impacts	Has the entity faced and legal or regulatory responsibility due to environmental impacts? (Yes/No). If Yes, explain
iii.	Raw materials	○ Raw material usage per unit of output ○ % of non-renewable raw material used ○ % of recycled raw material used ○ Supply chain miles (i.e., total distance (in miles or Km) that raw materials, products, goods travel from suppliers to the company's premises or manufacturing facilities)

Sr. #	KPIs	Measurement Method
		Product recycling rate (i.e., % of old products are collected back from customers after use and then processed to recover raw material for production of new products) $= \text{No. of old products recycled} \div \text{No. of products sold}$
iv.	Energy	- Energy consumption (i.e., Total amount of energy used during a particular accounting period) - Primary source of energy used by the company (e.g., fossil fuels, renewable etc) % of total energy used that is generated from renewable sources - Energy intensity (i.e., amount of energy used per unit of output e.g., KWH used per unit of product manufactured) - Energy saved due to implemented improvements
v.	Water management	- Total amount of water consumed (e.g., Consumed 10,000 m³ water), % of water recycled or reused measures (e.g., Out of 10,000 m³ water used, 1,500 m³ recycled through internal filtration plant and reused therefore 15% of the consumed water recycled/reused)
vi.	Emissions	- Toxic emissions in kgs or tons (e.g., amount of harmful chemicals, heavy metals emitted into air, water or land during a particular accounting period) - Carbon footprint (or) Total amount of Carbon Dioxide (CO₂) emitted in metric tons due to fuel usage, transportation and electricity etc. - Total amount of Greenhouse gas emissions in metric tons (inclusive of CO₂, methane, nitrous oxide etc.)
vii.	Waste Management	- Total amount of waste generated (or) - Waste production rate $= (\text{Total quantity of waste generated} \div \text{production units})$ - Total amount of waste recycled broken down by type, weight and disposal method (e.g., 50 tons of waste generated: 30 tons recycles, 15 tons sent to landfill, 5 tons burnt)

Measuring the Social

Sr. #	KPIs	Measurement Method
i.	Full time Employees	Number of full-time employees
ii.	Monetary and non – monetary benefits for employees	Total amount of employee wages, salaries, allowances and other benefits
iii.	Attrition Rate	Percentage of employee turnover $= (\text{Employee left} / \text{Average No. of employees}) \times 100$
iv.	Training and development Hours	Total number of hours of training divided by the number of employees
v.	Health care benefits	Does the company have and disclose a healthcare policy? (Yes/No) and is it accessible?
vi.	Human Rights Policy	Does the company disclose and follows a Human Rights Policy and indicates it is publicly accessible?
vii.	Human Rights Violations	Number of human rights complaints/grievances received, addressed and resolved
viii.	Child & Forced Labour	Does the company prohibit the use of child or forced labour? (Yes/No)

Sr. #	KPIs	Measurement Method
ix.	Gender parity ratio at Workforce	Percentage of women in the workforce including women at executive/management level versus in rest of the workforce
x.	Community and social Work	Number of hours spent, and/or other community investments made as a percentage of pre-tax profit
xi.	Local Procurement	Percentage of total procurement from local suppliers
xii.	Workplace safety	Number of health and safety incidents at workplace
xiii.	Employees' health and wellbeing	Average number of employee sick days during the year

Measuring the Governance

Sr. #	KPIs	Measurement Method
i.	Gender diversity on Board	Percentage of Board seats taken by women
ii.	Board - Independence	Percentage of Board seats taken by independent directors
iii.	Board - Separation of Powers	Specify whether the CEO is allowed to sit on the Board, act as the Chairman
iv.	Voting Results	Disclosure of the voting results of the latest AGM
v.	Gender Pay Ratio	Ratio of median male salary to median female salary
vi.	Incentivized Pay	Specify the links between remuneration and performance targets
vii.	Business Ethics and Code	Does the company publish and follow an Ethics Code of Conduct?
viii.	Supplier Code of Conduct	Does the company publish and follow a Supplier Code of Conduct?
ix.	Bribery/Anti-Corruption Code	Does the company publish and follow a Bribery/Anti-Corruption Code?
x.	Corporate Governance	Composition of the Board (beyond gender, e.g., in terms of age, tenure, skills and expertise), board committees, evaluation of board performance etc.

5. SELF-TEST QUESTIONS

1. Define the term 'Sustainable Development'. Also give one example of an industry in which sustainable development is of particular importance along with the reason thereof.

2. **Case Scenario**

A global manufacturer of consumer electronics, including smartphones, laptops, and other personal devices, has continued to focus solely on profit maximization without considering sustainability practices. The organization has ignored emerging environmental regulations, failing to incorporate eco-friendly practices in its manufacturing process. Recently, regulatory bodies have started implementing stricter environmental laws, and failure to comply with these regulations could result in significant consequences.

Required: Identify and explain the most immediate risk faced by the company due to its failure to adopt sustainable business practices. Provide justification for the identified risk.

3. **Alpha Limited**

Alpha Limited, a football manufacturing company, claims to adopt sustainable business practices and promotes sustainability through its marketing campaigns. However, investigations have revealed that some of the company's suppliers are significantly contributing to environmental damage and are also involved in child labour.

Required:

- (a) Define the term greenwashing.
- (b) Identify and explain whether Alpha Limited is involved in greenwashing or not
- (c) Explain how non-sustainable practices of suppliers could impact Alpha Limited

4. **HiTech Limited**

HiTech Limited, a technology company, has started adopting sustainable practices by reducing carbon emissions, minimising waste, and ensuring ethical labour practices. The initiative has led to increased investor confidence, improved public perception, and long-term cost savings. The finance team is actively involved in measuring environmental impact and reporting sustainability performance.

Required: Identify and explain the importance of sustainability for society, organisation and finance professionals.

5. **AZ Chemicals Limited**

AZ Chemicals Limited is a Pakistani medium-sized chemical manufacturing company which supplies industrial chemicals to the textile, agriculture, and pharmaceutical industries.

In 2024, AZ Chemicals Limited sought to enter into a new market by setting up a new production plant in Indonesia, despite having no prior experience in the country. Unfortunately, the management miscalculated the details of the region's legislation dealing with local ecological laws and the hostile rivalry from well-established local players. Furthermore, local protests concerning environmental issues, coupled with extended waiting periods for regulatory approval, greatly hindered progress of the project.

Required: Identify and explain any two risks faced by company for ignoring sustainability in setting up new production plant in Indonesia.

6. **Ms. Ayesha**

Ms. Ayesha, the Chief Financial Officer (CFO) of a large manufacturing company, notices that a new investment project could potentially increase the frequency of droughts in the regions where the company operates. She raises her concerns in a recent board meeting about the potential water scarcity risks associated with this proposed investment project.

Required:

Identify and explain the role of Ms. Ayesha is performing in company. Propose remedial measures to mitigate the water scarcity in the region.

7. Mr. Ali

Mr. Ali has recently joined as the Chief Financial Officer (CFO) of a company that primarily relies on coal-based power for its operations. The company has been facing significant criticism from its stakeholders due to its negative environmental impact. The management has asked Mr. Ali to assess the situation and propose his role in transforming the company into a sustainable organisation.

Required: Identify and explain any **TWO** roles that Mr. Ali can perform as a finance professional to help the company for adopting sustainable business practices.

8. Beta Limited

Beta Limited is undertaking multiple strategic projects involving various stakeholders. By using Mendelow's Matrix, classify the following stakeholders into the appropriate quadrants and briefly justify your classification:

- i. A major shareholder of Beta Limited has a high percentage of shares and regularly participates in decision making of the company.
- ii. A small group of loyal customers who continue to buy Beta Limited's products, although many other alternatives are also available in the market.
- iii. A government regulatory body is responsible for approving new product safety standards, but generally remains passive unless regulations are breached.
- iv. Employees of Beta Limited who are actively involved in daily operations but have no decision-making authority.
- v. A local nature conservation group protesting against Beta's new infrastructure project in an area of natural beauty.

9. Telelink (Private) Limited

Telelink (Private) Limited is one of the leading telecom service providers in Pakistan. As part of its recent business expansion, the company has installed thousands of mobile towers and laid extensive fibre-optic cables across both urban and rural areas. These developments require use of heavy machinery, consume significant amount of electricity (primarily derived from non-renewable sources) and generate construction waste. Additionally, frequent replacement and disposal of outdated telecom equipment contribute to the production of electronic waste (e-waste).

Required: Identify and explain **THREE** examples of environmental footprints resulting from operations and expansion activities of Telelink (Private) Limited.

10. Al-Noor Islamic Bank Limited

Al-Noor Islamic Bank Limited is a medium-sized Islamic financial institution operating in Pakistan. In recent years, the bank has launched a range of Shariah-compliant microfinance products aimed at supporting low-income women entrepreneurs, particularly in rural areas. Furthermore, the bank has established a Zakat fund to help underprivileged families for accessing healthcare and education services. It has also introduced interest-free house financing for widows and orphans.

Required: Identify and explain **THREE** examples of social footprints resulting from operations and community development initiatives of Al-Noor Islamic Bank.

11. ABC Steels

ABC Steel, a mid-sized steel and iron producer in Pakistan, is currently facing a number of economic challenges. Ongoing political instability and rising inflation have increased the cost of inputs which is putting significant pressure on the profit margins of the company. As a result, company is experiencing cash flow shortages and has had to downsize its workforce, leaving many employees without job opportunities. Additionally, due to volatility in stock market, the company is unable to raise funds for future expansion projects.

Required: Identify and explain **THREE** challenges from the scenario that are negatively affecting economic sustainability.

12. Delightful Toy Pakistan Limited (DTPL)

Delightful Toy Pakistan Limited (DTPL) is in the process of establishing a factory for manufacturing of an assorted range of toys for infants between the ages of 12-24 months. Describe briefly the measures which DTPL should take as an environmentally and socially responsible company to conform to the high standards of safety for the infants

13. Aspire Textile Mills (ATM)

Aspire Textile Mills (ATM) is a large-scale textile manufacturer operating across Pakistan. The company is planning to expand its market reach into Europe. A potential European client has expressed interest in partnering with ATM but has requested evidence of the company's sustainability policy and report on sustainable business practices.

Although the company has conducted some isolated environmental and social initiatives in response to pressure from local advocacy groups, there is no structured or documented approach to sustainability. One of the board members has expressed concern that developing and implementing sustainability framework will increase operational costs of ATM significantly.

Required:

- (a) Evaluate the board member's concern regarding the cost implications of adopting sustainability reporting and performance measurement systems.
- (b) Recommend four environmental measures and four social measures that ATM may adopt to enhance its sustainable performance.
- (c) Suggest a suitable sustainability reporting framework that ATM can adopt to disclose its performance to stakeholders, with brief justification.

14. (a) What is 'Green Finance'?

(b) Briefly explain advantages and disadvantages of green finance

15. State briefly the concept of Triple bottom line reporting system. Identify any three performance measurement indicators under each aspect of performance discussed in Triple bottom line reporting system**16. Sustainability Reporting**

- (a) Define sustainability reporting.
- (b) List down two internal and two external benefits of sustainability reporting.

17. Fertiliser Company

A fertiliser company is working on improving its sustainability practices and has gathered the following Key Performance Indicators (KPIs) to measure its performance:

- a) Total amount of water consumed in production (e.g., 500,000 litres annually)
- b) Percentage of board seats taken by independent directors

- c) Number of hours spent on community and social work
- d) Percentage of energy used from renewable sources
- e) Total amount of waste generated during the production process
- f) Number of health and safety incidents reported at the workplace
- g) Percentage of women in the workforce, including women at executive/management level
- h) Carbon footprint of the company, in metric tons of CO₂ emissions
- i) Percentage of procurement from local suppliers
- j) Number of employee sick days taken during the year
- k) Ratio of median male salary to median female salary
- l) Total number of hours of employee training and development per year
- m) Total amount of greenhouse gas emissions (including CO₂, methane, nitrous oxide, etc.)
- n) Percentage of recycled raw materials used in production
- o) Published policy on Anti-corruption code
- p) Independent directors on board

Required: Classify the above KPIs into Environment, Social and Governance components of ESG Framework.

18. Book publishing companies are expected to operate sustainably.
Identify and explain two key performance indicators (KPIs) for each area (i.e., environmental, social, and governance) to measure their performance.
19. For a furniture manufacturer, identify and explain two key performance indicators (KPIs) for each area (i.e., environmental, social, and governance) to assess its sustainability performance.
20. **Pearl (private) Limited**
Pearl (private) Limited has many Banquet halls in various cities of Pakistan which often have significant environmental footprints. Identify and explain **FOUR** key performance indicators (KPIs) that can be used to evaluate environmental performance of these halls.
21. **Islamic Bank**
Since the global financial crisis of 2008, the Islamic banking industry has experienced a remarkable growth in terms of assets and consumer base worldwide. To evaluate its Environmental, Social, and Governance (ESG) performance, identify and explain two key performance indicators (KPIs) for each component of ESG framework that an Islamic bank can use to assess its sustainability.
22. XYZ Limited is reviewing its sustainability reporting approach. The company's CEO wants to align its reporting with globally accepted frameworks and contribute to global sustainability initiatives. Advise XYZ Limited on the key frameworks and goals it should consider, based on recent global developments.

23. ABC Limited

ABC Limited operates in the chemical industry and has implemented sustainability initiatives over the past three years. The company has reported the following Key Performance Indicators (KPIs) under each component of the ESG framework:

Performance indicators	2022	2023	2024
Employee turnover rate (%)	15%	13%	11%
Independent directors on board (%)	35%	40%	45%
Percentage of waste recycled (%)	40%	30%	20%
Average training hours per employee	12	18	25
Existence of anti-bribery and corruption policy	No	Yes	Yes
Total GHG emissions (metric tons)	50,000	47,000	43,000

Required: By using ESG framework, evaluate the sustainability performance of ABC Limited over the period of three years.

24. Rehman Limited

Rehman Limited operates in the textile industry and has reported the following Key Performance Indicators (KPIs) over the past four years:

Performance indicators	2021	2022	2023	2024
Water consumption per ton of fabric produced (litres)	1,500	1,600	1,700	1,800
Employee injury rate (injuries per 100 employees)	2.5	3.0	3.5	4.0
Renewable energy usage	25%	22%	20%	18%
Community investment (Rs. in billion)	50	40	30	20
Board meetings attendance rate	90%	88%	85%	80%
Number of regulatory violations	1	2	4	6

Required: By using ESG framework, evaluate the sustainability performance of Rehman Limited over the period of four years.

ANSWERS

1. Sustainable Development

Sustainable development refers to meeting the needs of the present without compromising the ability of future generations to meet their own needs. It involves a balanced integration of economic growth, environmental protection, and social equity.

Example of Textile Industry

The textile industry has a significant impact on the environment due to high water consumption, chemical usage, and waste generation. Therefore, adopting sustainable practices (such as water recycling, eco-friendly dyes, and ethical labour policies) is crucial to reduce environmental degradation and promote social well-being.

2. Case Scenario

Regulatory risk arises when an organization fails to comply with existing or upcoming laws and regulations, particularly in relation to sustainability and environmental protection. This non-compliance can result in legal penalties, sanctions, operational restrictions, or bans in certain markets.

The organization operates globally in countries where environmental regulations are becoming increasingly strict. The company has not taken proactive measures to align with sustainable practices such as reducing emissions or responsible waste disposal. This exposes the company to legal actions, fines, or loss of licenses to operate. In addition, lack of compliance may restrict entry into environmentally conscious markets and damage the company's ability to compete globally. Therefore, *regulatory and compliance risk* is a serious threat for the entity and requires immediate attention.

3. Alpha Limited

(a) Greenwashing

Greenwashing refers to the practice in which companies mislead its consumers by falsely claiming that their products or operations are environment friendly or sustainable when in reality they are not.

(b) Is Alpha Limited involved in greenwashing?

Yes, Alpha Limited is involved in greenwashing because the company markets itself as sustainable but it is procuring raw material from suppliers who are involved in child labour and environmental damage.

(c) Impact of non-sustainable practices

Selecting and procuring from a supplier who adopt non-sustainable practices may:

- Damage the brand reputation and erode consumer trust in Alpha Limited as well
- Lead to potential legal and regulatory consequences as well as loss of long-term business agreements with ethical clients and investors.

4. HiTech Limited

Importance of sustainability

- i. Sustainability aids in conserving the environment, enhancing public health, and ensuring ethical labour practices which could lead to a better quality of life and social equity.
- ii. Businesses can improve their brand reputation, save money in the long run, gain investors' confidence, and reduce risks associated with non-sustainable business practices.
- iii. Without a doubt, every finance professional contributes by analysing the sustainability-related risks and returns, ensuring transparent reporting, and taking investment decisions aligned with environmental and social goals.

5. AZ Chemicals Limited

Risks	Explanation
Regulatory and Compliance Risk	AZ Chemicals Limited failed to assess the complexity of environmental and industrial regulations in Indonesia. This has resulted in delays in obtaining necessary approvals, increasing uncertainty and putting the entire project timeline at risk.
Operational Risk	Secondly, the company is facing operational risk due to a lack of experience in the Indonesian market, which has led to poor planning and a misunderstanding of the local environment. Protests from local communities and insufficient engagement of local stakeholders have disrupted the operations of the project.

6. Ms. Ayesha

As a CFO, Ayesha has *identified the environmental risk* (such as water scarcity) related to its new investment project which could impact the existing operations and profitability of the company as well as operations of its new project.

To address water scarcity, she can propose following measures:

- Implement water saving methodologies to reduce water usage or
- Invest in water-efficient systems for better management of this natural resource
- Explore alternative water sources such as rainwater (rain harvesting)
- Water recycling

7. Mr. Ali

Mr. Ali can perform following two roles to transform the company into a sustainability organisation:

Role in Sustainability Disclosures and Corporate governance

Mr. Ali can ensure accurate reporting of the environmental risks and sustainability-related costs incurred by the company. He can assist in improving the climate-related disclosures and aligning with recognised reporting frameworks, which could enhance transparency, build trust among stakeholders and strengthen corporate governance.

Role in sustainability frameworks

He can implement well recognised sustainability frameworks such as Environmental, Social and Governance (ESG) framework to evaluate whether company is meeting industry-specific sustainability key performance indicators or not.

8. Beta Limited

Mendelow's Matrix

Stakeholders	Level of power	Level of interest	Classification	Justification
Major shareholders	High	High	Key player	High power due to significant shareholding, and high interest in the company's success. Therefore, they are a Key Player.
Small group of loyal customers	Low	Low	Minimal Effort	Low power (easy to find alternative suppliers) and low interest (purchasing based on convenience or price), hence Minimal Effort.

Stakeholders	Level of power	Level of interest	Classification	Justification
Regulatory body	High	Low	Keep Satisfied	High power (regulatory authority) but low interest unless a breach occurs. Needs to be kept satisfied to avoid legal consequences.
Employees	Low	High	Keep informed	Low power (limited decision-making) but high interest (concern for welfare and job security), so they should be Kept Informed
Nature conservation group	Low	High	Keep informed	Low power (no regulatory authority) but high interest (concerned about environmental impact), so they should be Kept Informed.

9. Telelink (Private) Limited

Environmental footprints	Explanation
High consumption of Non-renewable Energy	Mobile towers and fibre-optic infrastructure consumes substantial electricity which is obtained from fossil fuels. This leads to high emission of carbon, contributing to global warming and climate change.
Construction Waste	Setting up telecom towers and installing fibre cables leads to generation of construction waste. These installation activities also disturb natural habitats, degrade land quality, leading to noise and/or air pollution.
Electronic Waste	With the advancement of technology, telecom equipment is frequently and thrown away leading to generation of electronic waste (e-waste). When this waste is not handled properly then it can release hazardous substances into the environment, polluting soil and water.

10. Al-Noor Islamic Bank Limited

Social footprints	Explanation
Poverty reduction	The Islamic bank is contributing poverty reduction by offering Shariah-compliant microfinance to low-income women entrepreneurs of rural areas supporting income generation and financial independence.
Access to essential services	The bank has established a Zakat fund to help underprivileged families so they can access to essential healthcare and educational services and improving their quality of life.
Social inclusion and justice	The bank has also introduced interest free house financing to widows and orphans for promotion of fairness, equity, inclusion and justice in a society.

11. ABC Steels

Economic Challenges	Explanation
High inflation	Due to inflation, the costs of raw materials and labour have increased and profitability of company has declined. It has made it more difficult for the company to remain competitive and sustainable in present economic situation.

Economic Challenges	Explanation
Unemployment and underemployment	The company is facing cash shortages therefore company has decided to downsize its workforce and this human resource is unable to contribute towards economic growth of the country
Volatility of Stock market	Political instability has contributed to volatility in the stock market, making it challenging for the company to raise capital through equity, thereby limiting its ability to fund expansion projects and sustain growth.

12. Delightful Toy Pakistan Limited (DTPL)

Delightful Toy Pakistan Limited (DTPL) should adopt the following measures to ensure safety for infants:

- Compliance with Safety Standards:* DTPL should adhere to international safety standards ensuring that the toys are free from choking hazards, toxic chemicals, and sharp edges.
- Use of Non-Toxic Materials:* The company must use non-toxic, child-safe materials and ensure that toys do not contain harmful substances like lead and phthalates.
- Rigorous Quality Control and Testing:* Regular testing and inspections should be conducted to check for durability, strength, and safety, preventing any small parts or defects that could harm infants.
- Child Development Considerations:* DTPL should design toys that are age-appropriate, promote cognitive development, and are easy to clean, ensuring both safety and educational value.
- Consumer Education:* The company should provide clear labelling and instructions to educate parents about the safe use, maintenance, and cleaning of the toys.

These measures will ensure that DTPL meets safety standards, supports child development, and builds trust among consumers.

13. Aspire Textile Mills (ATM)

- While implementing a sustainability program and reporting framework may involve initial costs—such as staff training, technology upgrades, or third-party audits—it can lead to long-term benefits including:

- Improved brand image and access to new markets (especially Europe where sustainability is valued).
- Operational efficiencies through energy and waste reduction.
- Better risk management and regulatory compliance.
- Increased investor and customer confidence.

Thus, although cost concerns are valid, they should be weighed against the strategic advantages and long-term cost savings of sustainable practices.

- Measures of Sustainability**

Environmental Measures

- Install water recycling and treatment systems to reduce pollution and conserve water in textile processing.
- Shift to renewable energy sources (e.g. solar panels) to reduce the carbon footprint and qualify for green certifications.
- Adopt green procurement policies, ensuring that raw materials and supplies are sourced from environmentally responsible vendors.
- Encourage waste minimization and recycling by implementing clear policies focused on reducing pollution and managing industrial waste effectively.

Social Measures

- Implement worker safety programs including provision of personal protective equipment (PPE), training, and proper working conditions.
- Initiate community development programs like education support, healthcare camps, and skill training for local populations.
- Promote employee diversification by striving for appropriate ratios of male, female, and minority group representation across all levels.
- Support local communities through donations and sponsorships of cultural, educational, and social events.

c) Sustainability Reporting Framework

ATM may adopt the Triple Bottom Line (TBL) approach for its sustainability reporting. This framework encourages organizations to go beyond financial performance by also measuring and reporting on environmental (planet) and social (people) impacts, along with economic (profit) results. It promotes the idea that sustainable success involves a balanced consideration of all three dimensions.

The Global Reporting Initiative (GRI)—an internationally recognized body promoting sustainability reporting—supports the use of TBL and provides detailed guidelines and standards that ATM can follow to structure its disclosures. By adopting TBL through GRI-compliant reporting, ATM can improve transparency, meet the expectations of international stakeholders, and demonstrate its commitment to sustainable development.

14. (a)

Green Finance

Green finance does not have a globally agreed definition, but it can be described as a specific financing for projects or initiatives which will have a positive environmental impact.

This means there is a commitment to investing the funds raised into 'green' projects such as:

- renewable energy
- low carbon solutions
- sustainability initiatives
- climate change resilience

As a result, the use of green finance means that sustainability and environmental factors become part of mainstream financial decision making.

(b)

Advantages and disadvantages of green finance

Green finance may have following advantages:

- i. Green finance, which is typically debt finance, is often *cheaper* than conventional debt finance, thereby creating a saving on interest expense for an organisation.
- ii. Another aspect is that the use of green finance can demonstrate that a project is sustainable and environmentally friendly. This can help to improve a *corporate image and reputation*.

Green finance may have following disadvantages:

- i. Green financing involves *additional costs* as a result of increased reporting requirements.
- ii. It will need to be shown that the project or initiative being financed will actually have a positive environmental impact. This may require an independent audit and even if not, there is likely to be an *increased administrative burden* because of this.

15. Triple Bottom Line

The Triple Bottom Line (TBL) is a sustainability reporting framework that encourages organizations to evaluate their performance not just based on financial (profit) results, but also on their environmental (planet) and social (people) impact. The concept aims to promote responsible business practices that balance economic growth with social well-being and environmental protection. It helps stakeholders assess how an organization contributes to sustainable development.

Economic (Profit) Indicators

- Net Profit Margin: Measures profitability after all expenses, indicating the financial health of the business.
- Return on Investment (ROI): Assesses the efficiency of investments made by the business.
- Cost Savings from Sustainability Initiatives: Tracks reductions in costs due to resource efficiency (e.g., energy, waste reduction).

Environmental (Planet) Indicators

- Carbon Emissions: Total greenhouse gases emitted by the organization (measured in CO₂ equivalents).
- Water Usage and Conservation: Volume of water used and initiatives taken to reduce or recycle water.
- Waste Management: Percentage of waste recycled or reduced through environmental policies and programs.

Social (People) Indicators

- Employee Turnover Rate: Reflects workforce satisfaction and organizational culture.
- Workplace Health and Safety Incidents: Number of reported injuries or safety violations.
- Community Engagement Initiatives: Number and impact of programs supporting local education, healthcare, or other social causes.

16. Sustainability Reporting

(a) Definition of Sustainability Reporting

Sustainability reporting is the process by which a company publicly discloses information about the economic, environmental, and social impacts resulting from its everyday activities. According to the Global Reporting Initiative (GRI), such reporting demonstrates how operations of an organisation affect the world around it and how it is addressing key sustainability challenges.

(b) Benefits of sustainability reporting

Internal Benefits	External Benefits
Improved understanding of risks and opportunities	Enhanced reputation and brand loyalty
Streamlining processes and improving efficiency	Stakeholders understand true value of entity

17. Fertiliser Company

ESG Dimension	KPIs
Environment	(a), (d), (e), (h), (m), (n)
Social	(c), (f), (g), (i), (j), (k), (l)
Governance	(b), (o), (p)

18. KPIs for a Book Publisher

ESG Dimension	KPIs	Measurement
Environment	Waste management	Total quantity of waste generated and how much is recycled or sent to landfill. For example, a book publisher generated 50 tons waste (in form of paper scraps, defective books and used ink cartridges) during the year. 30 tons of scrap paper recycled into new paper, 5 tons of used ink cartridges are recycled to recover plastic and metal 15 tons of non-recyclable waste sent to the landfill.
	Carbon/GHG Emission	Total metric tons of CO₂ and greenhouse gases emitted annually For example, a book publisher emitted 60 metric tons of CO₂ as follows: 20 metric tons emitted in printing process which used energy from fossil fuels 30 metric tons emitted in transportation and delivery of books to retailers and customers 10 metric tons emitted in operation of warehouse for lighting, cooling and heating.
Social	Gender parity ratio	Percentage of women in total workforce
	Training and development	Average training hours per employee (i.e., designers, production staff, marketing staff etc.)
Governance	Board diversity	Percentage of women on the board
	Board independence	Percentage of independent directors on the board

19. KPIs for a Furniture Manufacturer

ESG Dimension	KPIs	Measurement
Environment	Raw material usage	Raw material usage per unit of output. For example, a furniture manufacturer used 50 tons of wood during a period to produce 10,000 tables. <u>Raw material usage</u> = 50 tons ÷ 10,000 tables = 0.005 tons/table (or) 5 kg per table.
	Product recycling rate (%)	A furniture manufacturer sold 10,000 wooden chairs in a year with 2,500 old chairs were collected, dismantled, and recycled for parts and material reuse through a take-back program. <u>Product Recycling Rate (%)</u> = (Number of products recycled ÷ Total products sold) = (2,500 ÷ 10,000) × 100 = 25%

ESG Dimension	KPIs	Measurement
Social	Full time employees	Number of full-time employees in workforce For example, in a furniture manufacturing company, 200 full-time employees are working in design department, factory, sales and marketing department and administration department.
	Attrition rate	% of employees left during the period For example, in a furniture manufacturer, out of 200 full time employees, only 10 employees left during the year. <u>Employees attrition rate</u> = 10 employees left ÷ 200 total employees x 100 = 5%
Governance	Supplier code of conduct	Whether a company clearly publishes suppliers' code of conduct or not? For example, a furniture manufacturer may require that all of its wood suppliers to provide certified renewable wood sourced from sustainable forests in accordance with Forest Stewardship Council (FSC) or any other equivalent standard.
	Bribery/Anti-corruption policy	Whether company has Bribery/Anti-corruption policy and ensures its compliance? For example, a furniture manufacturer has a strict bribery/Anti-Corruption Policy that prohibits its procurement employees from accepting or offering bribes while sourcing raw materials including wood.

20. KPIs for Banquet Halls

ESG Dimension	KPIs	Measurement
Environment	Energy consumption	Energy consumption per event by each banquet hall For example, each banquet hall consumer significant amounts of electricity for lighting, air-conditioning and other electrical operations during an event. Reducing energy consumption is a key to minimise environmental footprint therefore every hall can track its per event energy consumption (in KWH) to compare it with other banquet halls.
	Water usage and recycling rate	Total amount of water used by each banquet hall for cleaning of cutlery and facilities after each event. Furthermore, it may also measure the water that is recycled and/or reused by each hall.
	Waste	- Amount of food waste generated during events and effectiveness of initiatives to reduce food waste, such as donations of leftover food. For example, in a banquet hall, if 500 kg of food waste was generated last year, the target for this year is to be 425 kg. - Total amount of other waste generated during an event such as disposable packaging and other non-recyclable items.

ESG Dimension	KPIs	Measurement
	Emission	Total GHG emissions produced by kitchen operations, including emissions from cooking equipment, refrigeration, and food preparation processes. For instance, if a commercial kitchen uses 1000 kg of LPG (liquefied petroleum gas) monthly, it could calculate the GHG emissions based on the carbon content of LPG.

21. KPIs for Islamic Bank

ESG Dimension	KPIs	Measurement
Environment	Waste management	Total quantity of waste generated per branch For example, paper-based waste is generated in each branch of the bank in form of cheques, pay orders, demand drafts, damaged currency notes and other documents.
	Energy	Total energy consumption (in KWH) per branch to compare branch-wise energy usage and transition towards energy efficient banking system to reduce energy consumption. For example, electricity is consumed in each branch of Islamic bank to operate computers, printers, air-conditioning, lighting and ATMs.
Social	Training on Islamic Banking products and services	Total number of training hours provided to young university graduates and/or new recruited employees in order to create awareness about Islamic banking products and services in a society.
	Employee turnover	% of employees left the bank during the period. It can be further broken down into: - Employee turnover by gender - Employee turnover by age group - Employee turnover by region
	Composition of workforce	Number of employees working during an accounting period and can be further broken down into: - Region-wise male and female employees - Gender-wise permanent and contract employees - Gender-wise of new hiring
Governance	Board diversity	The gender, age, and expertise of bank's board of directors.
	Shariah Compliance	- Whether bank has proper Shariah supervisory board to ensure its products and services comply with Islamic Shariah? (Yes/No) - What is the qualification, experience of the members of Shariah Supervisory board? - Number of Shariah compliance audit per year
	Independence of Shariah Board	Number of independent Shariah Scholars in Shariah Board

22. XYZ Limited

Sustainability is an important and a major global issue and there has been increasing recognition for a globally accepted framework within which organisations can frame their sustainability strategy.

Global Reporting Initiative (GRI) Standards

The Global Reporting Initiative (GRI) Standards provide best practice for reporting on a range of economic, environmental and social impacts, and give companies specific guidance on what information they should report on. However, the GRI Standards are not mandatory. And while there is an increasing recognition of the need to set a sustainability equivalent of the International Financial Reporting Standards (IFRS), to put financial and non-financial information on the same footing, this has not been achieved yet.

The United Nations' Sustainable Development Goals (SDGs)

The United Nations' Sustainable Development Goals (SDGs) could be more relevant at a strategic level, encouraging companies to embed sustainability measures into their 'core' performance reporting. The SDGs are part of the United Nations (UN) 2030 Agenda for Sustainable Development. The Agenda, formally adopted by the UN in 2015, is a 15-year plan with the aim of ending poverty, combatting climate change, and fighting injustice and inequality.

The SDGs are 17 high level goals for sustainable development, with each goal supported by a number of specific objectives. In turn, indicators are recommended for each objective to enable performance against it to be measured.

1. No poverty	2. Zero hunger	3. Good health and well-being
4. Quality education	5. Gender equality	6. Clean water and sanitation
7. Affordable and clean energy	8. Decent work and economic growth	9. Industry, innovation and infrastructure
10. Reduced inequalities	11. Sustainable cities and communities	12. Responsible consumption and production
13. Climate action	14. Life below water	15. Life on land
16. Peace, justice and strong institutions	17. Partnerships for the goals	

The overall goals are broad and aspirational. However, they are supported by a range of associated targets (169 in total) and indicators, which provide a quantifiable framework for assessing whether the goals are being achieved.

23. ABC Limited

Environmental Performance

ABC Limited has demonstrated a mixed trend in its environmental performance over a three-year period from 2022 to 2024:

- The total Greenhouse Gas (GHG) emissions of company reduced steadily from 50,000 metric tons in 2022 to 47,000 metric tons in 2023, and further down to 43,000 metric tons in 2024. This reflects an overall reduction of 14% $((43,000/50,000) - 1)$ over the three years showing commitment to lower environmental footprints.
- However, the percentage of waste recycled decreased from 40% in 2022 to 30% in 2023 and further dropped to 20% in 2024. This declining trend in recycling practices highlights a weakness in waste management, suggesting the need for renewed focus on improving recycling initiatives to complement the achievements made in emissions reduction.

Social Performance

In social dimension, ABC Limited has shown positive performance during the same period from 2022 to 2024:

- Average training hours per employee increased by 108% from year 2022 to 2024 showing increased focus of the company on skills development of its employees and providing them career growth opportunities.
- The employee turnover rate improved from 15% in year 2022 to 11% in year 2024 reflecting growing level of employee satisfaction, likely due to increased training opportunities. Other contributing factors may include improved working conditions and provision of better incentives.

Governance Performance

From a governance perspective, ABC Limited has clearly shown positive symptoms during the period from 2022 to 2024:

- Proportion of independent directors on board increased from 35% in year 2022 to 45% in year 2024 indicating the higher level of board independence and increased adherence to good corporate governance practices.
- There was no anti-bribery and corruption policy in year 2022 but in later years company introduced and maintained this policy which reflects its commitment towards ethical business practices and enhancing the reputation of the company

24. Rehman Limited

Environmental Performance

Rehman Limited has shown a deterioration in its environmental performance over a four-year period from 2021 to 2024:

- The water consumption per ton of fabric produced has increased from 1,500 litres in year 2021 to 1,800 litres in year 2024. This reflects an overall increase of by 20% $((1,800/1,500) - 1)$ over four years showing inefficient water consumption and departure from sustainable resource management during the manufacturing process of fabric.
- Similarly, the proportion of renewable energy usage has dropped from 25% in year 2021 to 18% in year 2024 suggesting that company is using non-renewable energy sources, thereby showing lack of commitment to reducing environmental footprints.

Social Performance

In social dimension, Rehman Limited has shown negative performance during the same period from 2021 to 2024:

- The employee injury rate has increased each year from 2.5 injuries per 100 employees in year 2021 to 4 injuries in year 2024 showing a significant decline in level of workplace safety and/or casual attitude of the employees towards their safety.
- The community investment is an indicator of the contribution by the company towards society. In Rehman Limited this investment has declined sharply by 60% over four years highlighting that company has reduced its engagement and support for wider community.

Governance Performance

From a governance perspective, Rehman Limited has experienced the weakening governance practices during the period from 2021 to 2024:

- The board meeting attendance rate has decreased from 90% in year 2021 to 80% in year 2024 indicating lack of active involvement, reduced governance and oversight by top leadership.
- The number of regulatory violations has increased from 1 in year 2021 to 6 violations in year 2024 raising serious concerns about commitment to regulatory compliance and ethical business practices.

SOURCES OF FINANCE

IN THIS CHAPTER

1. Core sources of finance
2. Equity
3. Debt
4. Factors considered before selecting the source of finance
5. Islamic finance
6. Other common sources of finance
7. Self-test questions

1. CORE SOURCES OF FINANCE

An important aspect of financial management is the **financing decision** in which company has to evaluate and select the most appropriate method of financing for buying the assets. Companies use a variety of sources of finance and the aim should be to achieve an efficient capital structure that provides:

- A suitable balance between short-term and long-term funding
- Adequate working capital
- A suitable balance between equity and debt capital in the long-term capital structure

There are two main sources of finance:

1. Equity
2. Debt

2. EQUITY

2.1 Definition

Equity finance is the funds provided by the ultimate *owners of the company* and they exercise *control through the voting rights* attached to shares

2.2 Features of Equity Finance

Equity shareholders gain a return on their investment in two ways:

- **Capital gains** – the value of their share in the company increases as the value of the company increases
- **Dividends** – companies return cash to shareholders through the payment of dividends. Dividends are typically paid once or twice per year.

The cost of equity is higher than other forms of finance as the equity holders carry a high level of risk, and therefore command the highest of returns as compensation.

New issues to new investors will dilute control of existing owners. Finance is raised through the sale of shares to existing or new investors (existing investors often have a right to invest first which is called pre-emption rights). Issue costs can be high in case of issue of shares to new investors.

2.3 Types of Shares

The company issues two types of shares to raise equity finance:

- **The ordinary shareholders** are the real owners of the company and are entitled for residual profit of the company. Their investments are not normally redeemable.
- **The Preference shareholders** are entitled normally for fix dividend before distribution of profit to ordinary shareholders. Their investments are normally redeemable.

2.4 Comparison of ordinary shares and preference shares

The company can issue ordinary shares as well as preference shares to raise equity finance but the characteristics of both types of shares are different as:

Feature	Ordinary shares	Preference shares
Dividend rate	Variable – higher in a good year, lower in a bad year	Fixed e.g. 4% per annum
Dividend distribution	Paid only if there are spare funds after the payment of a preference dividend	Receives the dividend before ordinary shareholders (therefore lower risk)
Liquidation	The last to be repaid in a liquidation	Repaid before (in preference to) the ordinary shareholders
Voting rights	Normally receive the right to vote on major decisions. Each ordinary share would attract one vote.	Typically receive no right to vote on company decisions.
Redemption	Ordinary shares are irredeemable.	Preference shares can be redeemable or irredeemable.
Conversion	Ordinary shares are not convertible	Preference shares can be convertible into ordinary shares
Cost	Its cost is known as cost of equity (K_E).	Its cost is known as cost of preference shares (K_P).

2.5 Methods of Floatation

There are five principal methods for a company to raise equity finance:

- Initial public offer
- Private placing
- Stock exchange Introduction
- Right Issue
- Bonus Issue

2.5.1 Initial public offer (IPO)

Definition

A public offer refers to the process in which a company offers its *shares for sale to private investors or general public*. The first time the company offers its shares for sale is called an initial public offer.

Features

Shares are normally *offered at a fixed price* which is decided by the company and its broker. The issue price needs to be attractive to prospective shareholders in order to incentivize them to invest.

An initial public offer normally *involves the acquisition (or underwriting) by an issuing house* of a large block of shares of a company. They will then offer them for sale to the general public and/or other investors. The issuing house is normally a merchant bank or a syndicate of banks.

IPOs are normally the *most expensive route* to market and are therefore commonly seen with larger companies looking to *raise substantial amounts of capital*.

Note: As per Companies' Act, private companies are not allowed to offer shares for sale to the public at large. In such cases the private limited company would need to convert to a public limited company to enable it to offer shares for sale to the public.

2.5.2 – Private placing

With a private placing an issue of equity shares is 'placed' by the company with *one or more institutional investors* through a broker. Unlike with an IPO it is not open to the general public.

Placing is a *lower risk and lower cost method* of issuing shares. Placing is suitable when issuing a *lower volume of shares* than in an IPO. For such issues the costs of an IPO such as advertisement, marketing and underwriting costs are unjustified by the size of issue.

A private placing normally results in a *narrower shareholder base* and potentially *lower liquidity* in the shares once the company has been admitted to a market.

There may be some *limits on the maximum amount of an issue* that can be placed. This will depend on local law.

2.5.3 Stock exchange Introduction

Under a stock exchange introduction, *no new shares are made available* to the market. An 'introduction' describes when shares in a large company are already widely held by the public (typically at least 25% of a company's ordinary share capital - so that a market for the shares already exists) and the company wants its shares to be publicly tradable on a recognized stock market.

A company might execute an 'introduction' in order to *enhance the marketability of its shares*, gain better access to capital in the future through increased exposure to a wider investor base (and image enhancement in the eyes of shareholders due to compliance of stock exchange regulations.)

Comparison of Introduction with other methods of raising equity

If the company uses placing a method of raising equity finance as compare to introduction, then it can avail different benefits that are:

- Placings are cheaper and therefore well suited to smaller issues.
- Placings are quicker to perform.
- Placings are likely to involve less disclosure of information.

At the same time if the company uses placing a method of raising equity finance as compare to introduction then it faces different drawbacks that are:

Most of the shares are usually placed with a small number of institutional investors. This means that most of the shares are unlikely to be available for public trading and therefore institutional investors will have control of the company.

2.5.4 Right Issue

When a company issues new shares to its existing ordinary shareholders then such issue is known as right issue. Shares are usually issued to existing shareholders at less than market price and market price will fall immediately after the issue of right shares. Each shareholder has the right to buy new shares in proportion to their existing shareholding – e.g. “1 for 1” which means a shareholder can buy one new share for each one they already own. Due to right issue in a specific proportion, there would be no dilution of control of existing shareholders.

When a company issues free of cost additional shares to existing shareholders then such issue of shares is known as bonus shares. With a bonus issue no new capital is raised. Bonus issue is also known as capitalisation of reserves. The company capitalises part of its reserves by making a bonus issue to the existing shareholders. This has the effect of increasing the number of shares in circulation (and thus increase liquidity) although as no new capital was raised the average value of the greater number of shares will fall proportionally. This concept is also known as stock dividends and capitalisation of earnings as it converts retained earnings into share capital. Strictly speaking as such, this is not a source of new finance for the company

Difference between Right issue and Bonus issue

In case of right issue, the company issues share to its existing shares holders *in exchange of consideration* that increases the assets of company normally in cash.

In case of bonus issue, the company issues shares by capitalizing its existing reserves that increase the shares of company without increasing the assets of company.

For example, if company ‘A’ limited issued 10,000 right shares to existing shares holders of Rs. 10 per share then at the same time it increases the share capital as well as cash of the company by Rs. 100,000.

On the other hand, if company ‘A’ issues 10,000 bonus shares to its existing shares holders then it only increasing its share capital by Rs. 100,000 without increase in assets of company.

3. DEBT

3.1 Definition

Debt finance is the funds provided by the *creditors of the company* in exchange for the payment of *interest* and repayment of the *principal amount of loan* amount subsequently.

3.2 Features of Debt Finance

Debt investors gain a return on their investment in two ways:

- **Redemption value** – At the time of repayment of loan, a company may repay the loan at an amount known as redemption at premium.
- **Interest income** – companies pay annual or semi-annual interest payments to debt investors based on par value to debt investors.

The cost of debt (K_D) is *lower* than the cost of equity (K_E) because debt holder carries *lower level of risk*, and therefore, they accept lower returns. Furthermore, interest payments on debt are typically *tax allowable expense*, further reducing the cost of debt. Raising debt finance *does not lead to dilution of control* for existing shareholders of company.

Debt financing can be categorised based on its maturity:

- **Short term debt** (up to one year) is used to fund short-term working capital requirements. It includes
 - Bank overdraft,
 - Short-term bank loans,
 - Certificate of deposits,
 - Treasury bill and
 - Trade credit.
- **Long term debt** (beyond one year) is used for major long-term investments and is usually more expensive and less flexible than short term debt finance (because the lender is risking their money for longer period of time). It includes:
 - Bonds, loan stock, debentures, loan notes
 - Long-term bank loan

Debt financing is also classified between redeemable and irredeemable:

- Redeemable debt will be repaid and cancelled.
- Irredeemable debt is (in theory) never repaid. The debt buyer benefits solely from the interest payments they receive.

Irredeemable debt is less common compared to redeemable debt although some national, state and local governments and some companies do issue irredeemable debt, typically as bonds or debentures.

3.3 Advantages and disadvantages of Debt Finance

For Investors

Advantages	Disadvantages
• Investors are entitled to a <i>fixed return</i> each year thus reducing the risk of variable income (e.g. dividends).	• Debt holders do <i>not have any voting rights</i>.
• In the case of non-payment of interest, debt holders can <i>appoint a liquidator</i>.	• In case of high profit, their <i>interest will be limited</i> (fixed interest).

Advantages	Disadvantages
Debt is attractive to investors because it will be <i>secured against the assets</i> of the company.	If the bonds or debentures are unsecured, the investment will be <i>high risk</i> compared to secure loans.
In the case of liquidation debt holders <i>rank higher than other payables</i> for recovery of dues.	

For Company

Advantages	Disadvantages
Debt is a <i>cheaper form of finance</i> than equity because, unlike dividends, debt interest is tax deductible in most tax regimes.	Companies have to <i>provide security</i> against the debt provided which may limit their use of the mortgaged asset.
Debt holders <i>do not have any voting rights</i> and therefore will not participate in the decision-making process therefore the current owners do not have to yield decision making powers.	In the case of very <i>low profits or losses fixed interest</i> still has to be paid.
In the case of high profits companies only have to <i>pay a fixed interest</i>.	In the case of non-payment of interest debt holders can appoint <i>liquidators which will affect the reputation</i> of the company.
There is <i>no immediate dilution in earnings</i> and dividends per share.	In the case of company liquidation, the company must <i>repay the debt holders first</i>.
<i>Low issuance cost</i> as compared to equity.	The future borrowing capacity of the firm will be reduced as there will be <i>fewer assets to provide security</i> for future loans.
Provides the company with a <i>facility to raise cash</i>.	The <i>real cost is likely to be high</i> as compared with other sources of finance.
	The more <i>highly geared the company</i>, the higher will be its risk profile.

3.4 Factors influencing the choice of debt finance

3.4.1 Availability

For example, only listed companies will be able to make a public issue of loan notes on a stock exchange. Smaller companies may only be able to obtain significant amount of debt finance from the banks or other financial institutions.

3.4.2 Duration

If finance is sought to buy a particular asset to generate revenue for the business, the period of repayment of the finance should match the length of time that the asset will be generating revenues.

3.4.3 Fixed or floating rates

Expectations of interest rate movements will determine whether a company chooses to borrow at a fixed or floating rate. Fixed rate finance may be more expensive, but the business runs the risk of adverse upward rate movements if it chooses floating rate finance on the other hand it will have to forego the upside potential of rate reduction.

3.4.4 Security and covenants

The choice of finance may be determined by the assets that the business is willing or able to offer as security, also on the restrictions in the covenants that the lenders wish to impose and the business is able to bear.

3.5 Long term Debts: Bonds

3.5.1 Definition of bond

An instrument issued by the company as a written acknowledgment of loan taken from debt investor in exchange of interest payment and subsequent redemption value.

3.5.2 Features of bonds

In today's markets the terms bonds, loan note, debentures and commercial paper are often used interchangeably although the legal definition can vary between jurisdictions.

The most commonly accepted differences between the instruments are:

- **Commercial paper** – very short term with a maturity of less than 9 months
- **Loan note** – short term with maturity of less than 12 months in the case of government notes, or less than 5 years for corporate loan notes
- **Debenture** – unsecured long-term loan
- **Bond** – secured long-term loan (typically between 5 and 20 years)

All these instruments have a '**par value**' that signifies the debt owed by a company to the instrument holder. In Pakistan, each bond has a par value of Rs. 100.

Interest rate of bonds: Interest is usually paid every year or every six months and is calculated on the par value. Interest rate (which is also known as coupon rate) is fixed: however, it may also be floating (variable) related to the current market interest rate. For example, a bond has coupon rate of 5% and has par value of Rs. 100 each so annual interest payment on each bond will be equal to Rs. 5 (Rs. 100 x 5%).

Redemption of bonds: Redeemable bonds are normally repaid or redeemed on maturity date at par value but sometimes it can be redeemed at its premium on its maturity date.

Tradeable: These instruments can be bought and sold on the capital markets. These markets are known as secondary markets, since they trade debt that has already been issued. The par value of bond remains constant throughout its life but market value may be different from the par value because the market value depends upon market forces and interest rate expectations.

Charge (mortgage) on loan stock: Loan stock may be secured through a fixed or floating charge on assets. A fixed charge may be on specific assets such as land and buildings. The specified assets cannot be sold while the loan is outstanding. A floating charge is a charge on a class of assets, such as inventory, receivables or machinery. Sale of some assets of the class is permitted. When a fault arises, such as a default in payment of interest, a floating charge converts into a fixed charge on the specific class of assets.

3.5.3 Types of bonds

(a) Deep discounted bonds

A deep discounted bond is offered at a large discount on the par value of the debt so that a significant proportion of the return to the investor comes by way of a capital gain on redemption rather than through interest payment.

(b) Zero coupon bonds

A zero-coupon bond is the extreme case of a deeply discounted bond with an interest rate of zero. All investor returns are gained through capital appreciation.

Advantages	Disadvantages
Zero coupon bonds can be used to raise cash immediately without the need to repay cash until redemption.	The advantage for lenders is restricted, unless the rate of discount on the bonds offers a high yield.

Advantages	Disadvantages
The cost of redemption is known at the time of issue and so the borrower can plan to have funds available to redeem the bonds at maturity.	They are ideal for investors who are willing to sacrifice periodic return for a higher return at maturity.
	The only way of obtaining cash from the bonds before maturity is to sell them, and their market value will depend on the remaining term to maturity and current market interest rates.

(c) Convertible bonds and warrants (hybrids)

(i) Definitions

A **hybrid** is a financial instrument that combines features of equity and debt. Convertible bonds and warrants are examples of hybrids.

Convertible bonds are fixed interest debt securities which give the holder the right to convert the bond into ordinary shares of the company. The conversion takes place at a pre-determined rate and on a pre-determined date. If the conversion does not take place the bond will run its full life and be redeemed on maturity. Conversion rates often vary overtime.

Once converted, convertible securities cannot be converted back into original fixed return security.

A **warrant** is similar to a convertible bond in that the warrant allows the holder to buy shares at a set price (rather than convert the underlying bond into shares). As such the 'share' part of a warrant can be separated from the bond and traded on its own whereas a convertible bond cannot be separated.

(ii) Features of convertible securities

How they work: Interest is paid at an agreed rate for a specified period. At the end of the period the holder can choose to be repaid in cash or to change the debt into equity shares. Whether or not conversion occurs depends on the share price at the conversion date.

The issuing company will need to raise cash in order to pay back the amount if conversion is not chosen.

Conversion rate: The conversion rate is expressed as a conversion price. i.e. the price of one ordinary share that will be appropriated from the nominal value of the convertible bond. Conversion terms may vary over time.

Conversion value: The current market value of ordinary shares into which a loan note may be converted is known as the conversion value. The conversion value will be below the value of the note at the date of issue, but will be expected to increase as the date for the conversion approaches on the assumption that a company's shares ought to increase in market value over time.

$$\text{Conversion value} = \text{Market price per ordinary share} \times \text{Conversion ratio}$$

Conversion premium: A conversion premium is the difference between the market price of the convertible bond and its conversion value. In other words, it is the difference between the market price of the convertible bond and the market price of shares into which the bond is expected to be converted.

$$\text{Conversion premium} = \text{Current market price of bond} - \text{Current Conversion value}$$

As the conversion date approaches the market price of a convertible bond and its conversion value tend to be equal. In other words, the conversion premium will be negligible. Initially the conversion value is lower than the market value of the bond. The conversion premium is proportional to the time remaining before conversion. It is highest in the beginning and decreases so that, just before conversion, it is negligible.

Interest rate on convertible debt: Convertible securities attract lower interest rates than straightforward debt due to the presence of a conversion right. The lender is, in effect, lending money and buying a call option on the company's shares.

Market price of convertibles: The actual market price of convertible notes depends upon:

1. The price of straight debt.
2. The current conversion value
3. The length of time before conversion may take place.
4. The markets expectation as to future equity returns and the risks associated with these returns.

(iv) Advantages and disadvantages of Convertible Bond

For Investors

Advantages	Disadvantages
A convertible bond offers the unique combination of fixed interest plus lower risk in the beginning and the possibility of higher gains in the long run.	Future dividend payments are not taken into account in the calculations. Therefore, after conversion there may be less profit available for distribution as dividends. In this case investors will incur an opportunity cost related to their investment.
Investors get an opportunity to participate in the growth of the company.	
It is possible for investors to evaluate the performance of a company and then decide whether to opt for conversion.	

For Company

Advantages	Disadvantages
Convertible bonds serve a company as delayed equity. Thus, a company can delay the issue of ordinary shares (equity) and the resultant reduction in earnings per share (EPS).	On conversion there will be a reduction in EPS.
Similarly, if the directors feel that the prices of shares of the company are depressed at present and therefore do not represent a favourable time to issue new ordinary shares immediately it may issue convertible bonds.	On conversion there may be a reduction in the control of existing shareholders.
The interest payable on the bond is tax deductible.	Before conversion gearing will be higher, thereby affecting the risk profile of the company.
Since interest payments are fixed financial planning becomes easier.	

(d) Euro bonds

A Eurobond is a bond denominated in a currency that is not native to the country where it is issued.

Eurobonds are named after the currency they are denominated in. For example:

- A Eurodollar bond could be issued anywhere outside the USA
- A European bond could be issued anywhere outside Japan
- A Euro sterling bond could be issued anywhere outside the UK

Eurobonds are normally issued by an international syndicate and are an attractive financing tool as they normally have small par values and high liquidity. Eurobonds give the issuer flexibility to choose the country in which to offer their bond according to the country's regulatory constraints.

3.6 Long term Debts: Bank Loans

3.6.1 Definition

When a company borrows a specific amount from bank and subsequently pays it back with interest and principal amount then such borrowed amount is known as bank loan.

3.6.2 Features of bank loans

Banks provide term loans as medium or long-term financing for customers. The principal amount of bank loan is typically repaid at the end of the loan term although it may be repayable in tranches (in form of instalments).

With a loan both the customer and the bank know exactly what the repayment of the loan will be and how much interest is payable and when. This makes planning (budgeting) simpler compared with the uncertainty of the overdraft (see below).

Other features of bank loans include:

- Interest and fees are tax deductible.
- Once the loan is taken interest is paid for the duration of the loan.
- A loan might become immediately repayable if loan covenants are breached but failing that the cash is available for the term of the loan.
- Can be taken out in a foreign currency as a hedge of a foreign investment.
- A company can offer security in order to secure a loan.

3.6.3 Difference between Bank Loan and Loan Stock

If company wants to know which type of loan is beneficial for it either bank loan or loan stock, then it considers the following points:

Feature	Bank loans	Loan stock
Flexibility	It may be possible to alter the terms of the bank loan as the finance requirements of the company changes	Terms are fixed
Confidentiality	Only the bank will require limited information as part of the loan application	Customer will have to fulfil the publicity requirements that an issue of loan stock on the financial markets would need
Speed	Quick to arrange	Slower to arrange due to the need to fulfil the requirements of a public issue
Issue costs	Low issue costs	High issuance costs
Restrictions	Restrictions such as collateral and possible restrictive covenants are normally required	Much less restrictive
Financial information	Detailed financial information such as budgets and management accounts may have to be submitted periodically to the bank	No such submissions required
Tradeable	Bank loans are non-traded loans	Loan notes are tradeable among investors in secondary market i.e., stock exchange

3.7 Short term Debts: Overdrafts

3.7.1 Definition

With an overdraft facility the borrower can borrow through their current account on a short-term basis up to an agreed overdraft limit. However, overdrafts are repayable on demand whereas term loans are repayable only on the date(s) agreed when the loan was arranged.

3.7.2 Features of overdraft

- Interest and fees are tax deductible.
- Interest is only paid when the account is overdrawn.
- Penalties for breaching overdraft limits can be severe.
- Overdrafts are normally used to finance day-to-day operations and as such form an important component of working capital management policies.

3.8 Short-term Debts: Trade Credit

3.8.1 Definition

When raw material or finished goods are purchased from suppliers on credit basis then the amount due is known as trade credit. Credit available from suppliers is one of the easiest and cheapest sources of short-term finance. If credit is obtained, it reduces the need for finance from other sources e.g. banks.

3.8.2 Advantages and disadvantages of Trade Credit

Advantages	Disadvantages
• The advantage of trade credit is that no interest is usually charged unless the firm defaults on payment.	• Delays in payment will worsen a company's credit rating.
• Current assets such as raw materials can be purchased on credit with payment terms normally varying between 30 to 90 days.	• Additional credit is difficult to obtain if you are currently delaying the payments.
• In a period of high inflation, purchasing through trade credit will be very helpful in keeping costs down.	• Cost of trade credit beyond the agreed terms is very high in terms of the penalty interest charged as well as in terms of retaining relations with suppliers.
	• In case of late payments, sometimes supplier provides raw material or goods on cash basis only or withheld the supplies.

3.9 Short-term Debts: Certificates of deposit (CDs)

3.9.1 Definition

A CD is a security that is *issued by a bank*, acknowledging that a certain amount of money has been deposited with it for a certain period of time (usually, a short term).

3.9.2 Features of CDs

The CD is issued to the depositor, and attracts a stated amount of interest. The depositor will be another bank or a large commercial organization. CDs are negotiable and traded on the CD market (a money market), so if a CD holder wishes to obtain immediate cash, he can sell the CD on the market at any time. This secondary market in CDs makes them attractive, flexible investments for organizations with excess cash.

3.10 Short-term Debts: Treasury bills (T-bills)

3.10.1 Definition

Treasury bills are *issued by a government* to finance short-term cash deficiencies in the government's expenditure program.

3.10.2 Features of T-bills

They are essentially bonds issued by the government, giving a promise to pay a certain amount to their holder on maturity. Treasury bills typically have a term of less than a year to maturity after which the holder is paid the full value of the bill.

3.11 Leases

3.11.1 Definition of lease

An agreement whereby the lessor conveys to the lessee in return for a payment or series of payments the right to use an asset for an agreed period of time (IFRS 16).

3.11.2 Parties of lease agreement

There are two main parties in lease agreement:

- Lessor – a party who grants right of asset for use
- Lessee – a party who uses the asset which is acquired from lessor

3.11.3 Types of leases

As per IFRS 16 lessee shall capitalize all leases except short term and low value lease and IFRS 16 identifies two types of lease for Lessor one is finance lease and other is operating lease:

Finance lease

A finance lease is a lease that transfers substantially all the risks and rewards incidental to ownership of an asset. Title may or may not eventually be transferred.

Operating Lease

An operating lease is a lease other than a finance lease. The tax deductibility of rental payments depends on the tax regime but typically they are tax deductible in one way or another. In both cases:

- legal ownership of the asset remains with the lessor; but
- the lessee has the right of use of the asset in return for a series of rental payments

3.11.4 Difference between Finance and Operating lease

The leases differ in the following respects for lessor:

	Finance lease	Operating lease
Lease term	Long (compared to the life of the asset). Usually for major part of the asset's life.	Short (compared to the life of the asset)
Risks and rewards of ownership	Pass to the lessee	Remain with the lessor
Insurance of the asset	Lessee's responsibility	Lessor's responsibility
Maintenance of the asset	Lessee's responsibility	Lessor's responsibility
Ownership	The contract may allow the lessee to buy the asset at the end of the lease (often at a low price – giving the lessee a bargain purchase option)	The contract never allows the lessee to buy the asset at the end of the lease

4. FACTORS CONSIDERED BEFORE SELECTING THE SOURCE OF FINANCE

Decision of selecting the suitable source of finance by the company is very critical for its long-term survival of the company and it should consider different factors that are:

- **Amount required** – for example access to long-term bank lending may be restricted due to the amount of risk that banks are willing to take. The company may be required to raise new long-term capital through the sale of equity shares (see below).
- **Cost** – the company should consider both the on-going servicing cost and the initial arrangement cost for its financing. For example, the cost of both raising and servicing equity may be high as shareholders accept high risk in return for the promise of higher rewards (dividends).
- **Duration** – broadly speaking short-term financing is used to fund short-term assets and long-term financing used to fund long-term assets.
- **Flexibility** – the Directors should consider balancing risk, cost and flexibility. For example, in a year with low profits (or even a loss) the company could decide not to pay a dividend to the shareholders. However, most debt financing requires the payment of interest irrespective of company performance.
- **Repayment** – the company needs to carefully forecast future cash flows in order to ensure it is able to repay debt as it falls due. For example, a company should ensure it generates enough cash to repay a 10-year bank loan in 10-years' time on the due date.
- **Level of gearing** – the company should consider present level of gearing. 'Gearing' describes the balance of long-term financing between non-interest-bearing Equity and interest-bearing Debt. The higher the proportion of interest-bearing debt, the higher the gearing. Equity finance may be used in preference to debt finance if the company is already highly geared.
- **Impact on financial statements** – stakeholders such as equity investors and the providers of debt finance will often analyse a company's financial statements to help them assess the risk involved in financing the company. Therefore, the company should consider the impact that its financial management decisions might have on its financial statements and the message that sends to providers of finance. The details of sources of finance are explained in next section.

5. ISLAMIC FINANCE

5.1 Introduction to Islam

Islam is a comprehensive way to spend life and provides a holistic system to guide Muslims in all aspects of their life. It can be understood through three fundamental components:

- Aqidah (Faith & Belief)*: This refers to the fundamental beliefs of Islam, including belief in Allah (SWT), Prophets (PBUH), Angels, the Holy Books, the Day of Judgment, and Destiny (Qadr).
- Shariah (Practices & Activities)*: This governs all aspects of a Muslim's life, including worship (Ibadat) and social, economic, and political interactions (Muamalat).
- Akhlak (Moralties & Ethics)*: This deals with personal character, ethics, and manners in accordance with Islamic teachings.

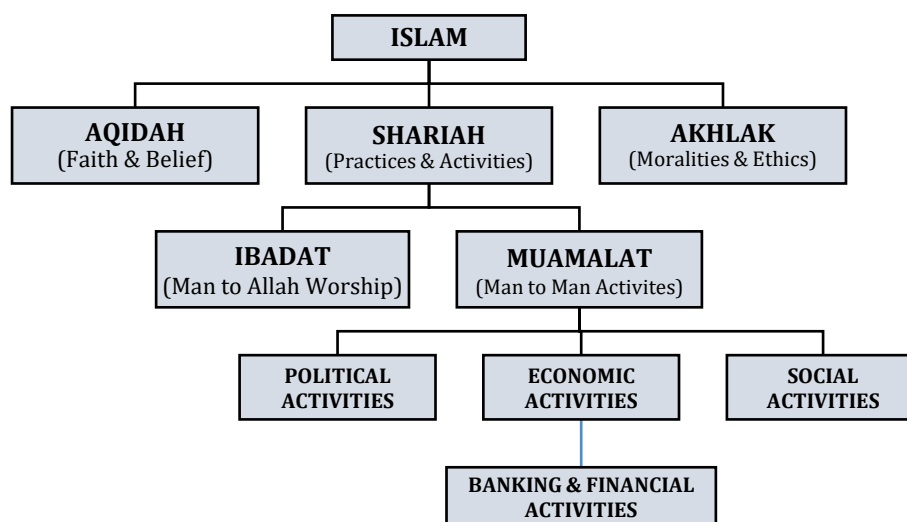


Figure 10.1

5.2 Islamic Finance

5.2.1 Definition of Islamic Finance

Islamic finance refers to a financial system in which economic activities are conducted in compliance with Shariah (Islamic Law). Certain practices and principles of conventional financing are strictly prohibited under Islamic financing.

Examples of prohibitions include:

- Riba
- Gharar,
- Maysir,
- Dealing in unlawful products or services

5.2.2 Prohibitions in Islamic Finance

Riba (interest or usury)

Riba, which literally means 'excess' or 'increase'. In Islamic finance it means any extra compensation received by lenders from the borrowers (in form of cash or kind) over and above to the principal amount of loan. Any form of Riba is strictly prohibited in Islam, regardless of whether is it imposed by lender or whether is it paid by borrower willingly without objection or whether is it paid at fixed rate or variable rate or whether is it paid in name of profit or markup. The prohibition of Riba applies to all loan transactions whether loan is taken for personal household expenses or for business purpose. For example, late payment fines or penalties are also prohibited because it leads to exploitation and unjust financial gains to the lenders. Islamic finance promotes profit sharing and risk sharing principles to conduct financial transactions.

Gharar (Uncertainty and Ambiguity)

Gharar means chance, excessive risk and uncertainty or ambiguity in contracts, particularly in financial transaction. Uncertainty may present in wording, subject matter, consideration and liabilities of the contract. For instance, selling something that does not exist at the time of sale or selling something which is not owned and possessed by the seller (or have no right to sell) or entering into any contract without clear terms that create disputes between contract parties. Islam prohibits Gharar to ensure transparency, fairness and mutual consent in all transactions.

Maysir (Gambling and speculation)

Maysir refers to any form of transaction based on chance. In financial transactions, any form of gambling in which wealth is earned purely by chance and where one-party gains at the expense of other party without efforts or risk sharing. Lottery, betting and speculative trading are examples of Maysir. Islamic financing prohibits Maysir because it creates economic instability and unethical enrichment.

Dealing in unlawful products or services

Islam prohibits the financial activities that involve business dealing in unlawful (Haram) products or services such as alcohol, pork, drugs, tobacco or any immoral activity. Islam prohibits dealing in certain products or services to promote ethical investments for developing a well civilised society.

5.3 Islamic Modes of Financing

Islamic modes of financing can be sub-divided into three main categories:

- Participatory modes of financing – Musharakah and Mudarabah
- Trade/sale-based modes of financing – Murabaha, Salam, Istisna
- Rental based modes of financing – Ijarah

5.4 Participatory Modes of Financing - Musharakah

5.4.1 Definition of Musharakah

Musharakah literally means 'sharing'. Its root word is 'Shirakah' which means 'Being a partner'. In Islamic finance, Musharakah is defined as any joint enterprise established for conducting some lawful business activity (or investment project) in which two or more parties, known as Musharik, join the joint business venture.

5.4.2 Features of Musharakah

Capital injection – All partners provide capital for the business project. However, they are not required to contribute equal amounts of capital.

Management of business venture – In principle, all partners have the right to participate in management of business activities, regardless of their capital contribution. However, any partner may voluntarily waive his/her management rights allowing other partners to take full responsibility of management and control. It means all or some partners can be active managers or others remain silent partners. Partners managing the business actively are not entitled to fixed salary for their efforts but they may receive higher share of profits as per original agreement.

Profit distribution – Profit is distributed among all partners according to pre-agreed profit-sharing ratio expressed as a percentage of profit rather than percentage of capital contribution. Pre-agreed profit-sharing ratio may differ from the ratio of capital contribution. Additionally, payment of profit is not guaranteed to any partner.

Loss sharing – Any profits will be shared among partners according to the ratios agreed upon in original contract. However, any losses incurred by the project must be distributed strictly in proportion to each partner's capital contribution. If loss is occurred due to negligence of a partner then only a particular partner will be responsible of loss, not other partners.

Termination of contract – Musharakah contract can be terminated by mutual consent of all partners when they decide to discontinue the business venture or when specific period is expired for which partnership was formed or when any partner dies/become insolvent or entire capital is lost due to heavy business losses.

5.5 Participatory Modes of Financing - Mudarabah

5.5.1 Definition of Mudarabah

Mudarabah is a partnership in which one partner invests in business venture, while other partner manages the activities of business venture. The person investing funds is called Rabb-ul-Maal, the person managing the business activities is known as Mudarib and the amount of investment is called Raas-ul-Maal.

5.5.2 Features of Mudarabah

Capital injection – All partners don't provide capital for the business project. However, only Rabb-ul-Maal contributes the amount of investment for business venture.

Management of business venture – Mudarib has the right to participate in management of business activities according to his/her skills or expertise in the industry or business area. Mudarib is not entitled to fixed salary for his/her efforts but they may receive higher share of profits as per original agreement.

Profit distribution – Profit is distributed among all partners according to pre-agreed profit-sharing ratio expressed as a percentage of profit. Pre-agreed profit-sharing ratio may differ from the ratio of capital contribution of Rabb-ul-Maal. Additionally, payment of profit is not guaranteed to Rabb-ul-Maal.

Loss sharing – Loss is shared according to the ratio of capital contribution so any losses incurred by the project must be borne by the Rabb-ul-Maal because he/she is the sole provider of capital. Mudarib will not bear the loss unless loss is occurred due to negligence of a Mudarib then he/she will be responsible of loss, not Rabb-ul-Maal.

Termination of contract – A Mudarabah contract can be terminated by mutual consent of all parties if they decide to discontinue the business venture. Furthermore, termination may occur upon fulfilment of any conditions specified in original contract.

5.5.3 Types of Mudarabah

There are two types of Mudarabah: restrictive and unrestrictive.

- *Restrictive Mudarabah* means that the investor has specified investment details in the Mudarabah contract and has restricted the working partner within the scope of such specifications.
- *Unrestrictive Mudarabah* mean that the investor has granted the working partner the right to undertake any lawful investment to make profits. It is the responsibility of the working partner to avoid unlawful and high-risk investments. The working partner is liable for any losses suffered from such investments.

5.6 Trade/Sale based Modes of Financing – Murabaha

5.6.1 Definition of Murabaha

Murabaha is a particular kind of sale (also known as cost plus sale transaction) in which the seller expressly discloses the cost price of product to the buyer and adds a pre-agreed profit margin. The buyer then pays the total price, either as a lump sum or in instalments.

5.6.2 Features of Murabaha

- i. The subject matter of sale *must exist* at the time of sale. For example, Mr. A is selling the unborn calf of his cow Mr. B. This sale is void.
- ii. The subject matter of sale must be in the *ownership of the seller* at the time of sale and he must have a good title to it. For example, Mr. A sell a car to Mr. B which is presently owned by Mr. C but Mr. A is hopeful that he will buy it from Mr. C and can easily deliver it to Mr. B subsequently. This sale is not valid.
- iii. The subject matter of sale must be in the *physical or constructive possession of the seller* when he sells it to another person. For example, Mr. A has purchased a car from Mr. B but Mr. B has not yet delivered it to A or to his agent. Mr. A cannot sell this car to Mr. C. If he sells it before taking its physical or constructive delivery from Mr. B the sale is void.
- iv. The subject matter of sale must be a *property of value*. The subject matter of the contract should not be a thing that cannot be used.

- v. The delivery of the subject matter must be *certain* and should not depend on a contingency or chance.
- vi. The subject matter must be tangible goods and commodities.
- vii. The exact cost of the subject matter can be ascertained, and a third party purchases it.
- viii. The price must be certain (lump sum or percentage). It may be deferred or on the spot, and if it is deferred, the instalments and due date must be determined.

For example, Mr. A says to Mr. B, "if you pay within a month, the price is Rs. 50/-. But if you pay after two months, the price is Rs.55/- Mr. B agrees without absolutely determining one of the two prices. In this case as the price remains uncertain the sale is void, unless anyone of the two alternatives is settled by the parties at the time of concluding the transaction.

- ix. The sale must be unconditional. For example, Mr. A purchase a car from Mr. B, with a condition that Mr. B will employ his son in his firm. The sale is conditional, hence invalid.

5.7 Rental based Mode of Financing – Ijarah

5.7.1 Definition of Ijarah

Ijarah means 'lease', 'rent' or 'hire'. In the context of Islamic finance, Ijarah refers to a contract where one party (lessor) transfers usufruct of a tangible asset or property to another party (lessee) for an agreed period of time and at an agreed rental price.

5.7.2 Features of Ijarah

Ownership of asset – This means that the lessor retains ownership of the asset during lease term while the lessee has the right to use it in exchange for periodic rental payments.

Risks of asset – Lessor is legally bound to bear the ownership associated risks of the asset, which also includes obligations to repair any damage caused naturally or due to wear and tear, insurance, accidental repairs for the asset. While, actual operating/overhead expenses related to running the asset, any damage to the asset arising out of his negligence will be borne by the lessee.

Penalty – In case of late payment of rentals by lessee, the lessor cannot charge late payment penalty as his income.

Termination of contract – An Ijarah contract terminates upon the completion of the lease term, mutual agreement, breach of contract, destruction of the asset, or insolvency of the lessee or transfer of ownership to lessee (in case of Ijarah Muntahia Bittamleek).

5.7.3 – Difference between conventional lease and Ijarah

	Ijarah	Conventional Lease
Ownership	The lessor retains the right of ownership.	The lessor transfers the right of ownership of the asset to the lessee.
Risk	The lessor is legally bound to bear the risks of the asset. Any loss or harm caused by factors beyond the control of the lessee shall be borne by the lessor.	The lessor transfers the risks related to the asset to the lessee.
Sale and leaseback	Sale and lease back are allowed, but only as two separate transactions.	This transaction involves the sale of the asset by one party to another which in turn leases the same property back to the original seller.
Penalty	The lessor cannot charge late payment penalty as his income.	Penalty charged to the lessee for delayed payment is only to be used for charitable purposes by the lessor.

6. OTHER COMMON SOURCES OF FINANCE

Other common sources of finance include the following:

- Venture capital
- Business angels
- Private equity funds
- Asset securitization and sale

6.1 Venture capital (VC)

The term 'venture capital' is normally used for capital provided to a private company by specialist investment institutions, sometimes with support from banks in the form of loans.

The company must demonstrate to the venture capitalist organization that it has a clear strategy and a convincing business plan.

A venture capital organization will only invest if there is a clear 'exit route' (e.g. a listing on an exchange).

Investment is typically for 3-7 years after which the VC will realize their profits and exit the investment.

Factors to consider the appropriateness of Venture Capital:

- VC is an important source of finance for management buy-outs.
- VC can provide finance to take young private companies to the next level.
- VC may provide cash for start-ups but this is less likely.

6.2 Business angels

Business angels are wealthy individuals who invest directly in small businesses, usually by purchasing new equity shares. Angels do not get involved in the management of the company.

Business angels are not that common. There is too little business angel finance available to meet the potential demand for equity capital from small companies. Business angels are way for small companies to raise equity finance, normally at the very start of their life.

6.3 Private equity funds

Private equity describes equity in operating companies that are not publicly traded on a stock exchange.

Private equity as a source of finance includes venture capital and private equity funds.

A private equity fund looks to take a reasonably large stake in mature businesses.

In a typical leveraged buyout transaction, the private equity firm buys majority control of an existing or mature company and tries to enhance value by eliminating inefficiencies or driving growth.

Their view is to realize the investment, possibly by breaking the business into smaller parts.

Private equity's approaches to eliminate inefficiencies usually by downsizing have attracted criticism.

Factors to consider the appropriateness of private equity fund. For example, if the company wants to judge when private equity fund is appropriate it should consider the following points:

- If used as a source of funding a private equity fund will take a large stake (30% is typical) and appoint directors.
- Private equity is a method for a private company to raise equity finance where it is not allowed to do so from the market.

6.4 Asset securitization and sale

Securitization is the process of converting existing assets or future cash flows into marketable securities.

Typically, the following occur simultaneously:

- Company A sets up Company B (described as a special purpose vehicle or SPV) and transfers an asset to it (or rights to future cash flows).
- Company B issues securities to investors for cash. These investors are then entitled to the benefits that will accrue from the asset.
- The cash raised by Company B is then paid to Company A.

In substance this is like Company A raising cash and using the asset as security. Accounting rules might require Company A to consolidate Company B even though it might have no ownership interest in it.

Conversion of existing assets into marketable securities is known as asset-backed securitization and the conversion of future cash flows into marketable securities is known as future-flows securitization.

Factors to consider the appropriateness of asset securitization and sale

- Asset securitization is used extensively in the financial services industry.
- Securitization allows the conversion of assets which are not marketable into marketable ones.
- Securitization allows the company to borrow at rates that are commensurate with the rating of the asset. A company with a credit rating of BB might hold an asset rated at AA. If it securitizes the asset it gains access to AA borrowing rates.

7. SELF-TEST QUESTIONS

1. **Model paper (vii):** Danish Ibrahim is considering a start-up business. He has performed the feasibility of business and is very optimistic about its future prospects. The business would require the investment of Rs. 5 million for financing capital assets and working capital. Danish has Rs. 2 million as savings and looking for Islamic mode of financing for the remaining amount. He does not want any interference from finance provider in making business decisions.

Danish should opt for:

- (a) Murabaha
 - (b) Ijarah
 - (c) Mudaraba
 - (d) None of the above
2. **Spring 2022 (ii):** Furqan runs a chain of retail outlets of electronic items (items). Due to economic downturn, the demand for items has declined significantly. Furqan is considering to sell the items on credit to customers but he wants to charge some additional profit for allowing the customers to pay later. He is seeking the Islamic mode of financing for these transactions.

Which of the following modes of financing would be most appropriate?

- (a) Mudaraba, however, Furqan would need to expressly mention the retail price of the items and the additional profit he would charge
 - (b) Murabaha, however, Furqan would need to expressly mention the cost of items and the additional profit he would charge
 - (c) Musharaka, however, Furqan would need to mutually agree the profit over the cost with the customers
 - (d) Credit transactions cannot be financed through Islamic mode of financing as Furqan wants to charge profit over the retail price
3. **Spring 2022 (i):** Agha (Private) Limited (APL), a family-owned business, registered as a private company two years ago. The business has grown exponentially and now Salman, CEO, is considering to expand the business by introducing a new product. He has developed a comprehensive business plan and is looking for source of finance for expansion. Salman is not sure regarding the tenure for which finance would be needed as it is highly dependent on how product would perform in the initial years.

Salman has approached a venture capitalist to finance the expansion of business. The venture capitalist would:

- (a) likely finance the project as APL has excelled in the past two years
 - (b) likely finance the project as APL has a comprehensive business plan
 - (c) less likely finance the project as there is no clear exit route for venture capitalist
 - (d) less likely finance the project as it has only been two years since APL has registered as a private company
4. **Autumn 2022 (iv):** Which **TWO** of the following justify that equity investment is riskier than investment in the debt capital of the same company?
- (a) Providers of debt capital have a contractual right to collect cash flows
 - (b) Debt capital generally provides much better return than equity investment
 - (c) Earnings per share can be volatile
 - (d) Providers of debt may ask any time to pay the debt in full

5. **Autumn 2022 (vi):** The Islamic mode of financing in which the seller expressly mentions the cost of a commodity sold and sells it to another person by adding mutually agreed profit is called:
- (a) Ijarah
 - (b) Murabaha
 - (c) Mudarabah
 - (d) Musharakah
6. **Spring 2023 (iii):** Which of the following is the difference between Ijarah and conventional finance lease?
- (a) In Ijarah, the lessor bears the risk of the asset, while, in conventional lease, the lessee bears the risk of the asset
 - (b) In Ijarah, the lessor transfers the ownership, while, in conventional lease, the lessor retains the ownership
 - (c) In Ijarah, any surcharge for delayed payments is credited to income, while, in conventional lease, any such surcharge cannot be credited to income
 - (d) In Ijarah, rental amount can be variable, while, in conventional lease, rental amount is fixed
7. **Spring 2023 (viii):** Which of the following is the difference between Musharakah and Mudarabah financing?
- (a) In Musharakah, profits are shared equally, while, in Mudarabah, profits are shared on a pre-agreed ratio
 - (b) In Musharakah, only one party provides management responsibility, while, in Mudarabah, all parties share management responsibility
 - (c) In Musharakah, both parties provide the capital, while, in Mudarabah, only one party provides the capital
 - (d) In Musharakah, losses are borne by all parties, while, in Mudarabah, losses are borne by the Mudarib
8. **Autumn 2023 (v):** Which of the following best explains a deep-discounted bond?
- (a) A bond with a low coupon rate that adjusts annually
 - (b) A bond with a low coupon rate that is sold at a significant discount to its fair value
 - (c) A bond with a high coupon rate but sold at a significant discount to its fair value
 - (d) A bond that is available in the market at a significant discount to its issue price
9. **Autumn 2023 (vii):** Which of the following is a characteristic of a zero-coupon bond?
- (a) Investor return is gained through capital appreciation
 - (b) It can have only one annual interest payment
 - (c) It is ideal for those investors who require a periodic return
 - (d) It cannot be sold before its maturity date
10. **Spring 2024 (viii):** Which of the following is correct regarding a bonus issue and a right issue?
- (a) A bonus issue involves the issuing of shares to existing shareholders while a right issue involves offering shares to the general public
 - (b) A bonus issue increases the company's assets, while a right issue increases the number of shares in circulation
 - (c) A bonus issue increases the number of shares in circulation, while a right issue increases the company's assets
 - (d) A bonus issue requires purchase of additional shares at a discount while right shares are given at a premium

11. Autumn 2024 (xiii): What does the seller do in a Murabaha transaction?

- (a) Provides financing to the buyer without disclosing the product cost
- (b) Sells a product by mentioning the cost and adding a profit
- (c) Sells a product at a fixed price without considering the cost
- (d) Engages in a profit-sharing agreement with the buyer

12. Autumn 2024 (xiv): When is venture capital most likely to be used?

- (a) As a way for small companies to raise debt finance
- (b) As an important source of finance for management buy-outs
- (c) To manage the day-to-day operations of a company
- (d) To fund start-ups exclusively

13. Autumn 2024 (xv): How do business angels differ from private equity funds, in terms of their approach to investment?

- (a) Business angels usually take control of the companies they invest in, while private equity funds do not.
- (b) Business angels do not usually get involved in the management, while private equity funds may appoint directors and take an active role.
- (c) Business angels invest in publicly traded companies, while private equity funds focus on private companies.
- (d) Business angels require a clear exit route, while private equity funds do not.

14. Al-Noor Textile Mills, a family-owned textile manufacturing company, has been in operation for 20 years, specialises in producing high-quality fabrics and has built a strong reputation in the market. Due to increasing demand for its products, the management plans to expand its production capacity by purchasing new high-speed weaving machines and setting up an additional production unit.

The management has some capital available but requires additional funding to cover the full cost of the expansion. They are willing to partner with an investor who can contribute capital in exchange for a share in the profits and losses of the expansion project. The company is confident that the increased production capacity will result in higher revenues.

Required: Identify and explain the most suitable Islamic mode of financing for Al-Noor Textile Mills

15. Agha Limited (AL), a family owned business, is considering expanding its operations. The expansion would require the finance amounting Rs. 50 million. Agha Junaid, CEO, has proposed to finance the expansion through a bank loan as he believes that financing through equity shares outside the family would mean sharing the decision-making power in the board meetings and AL is not ready to compromise on that.

Fauzia Agha, Finance Director, mentioned that AL's bank is offering loan on strict terms and conditions thereby increasing the future compliances. She has proposed that AL should finance through issue of equity shares. She believes that new shareholders would only have stake of 10% in shareholdings of AL and therefore, have barely any say in decision making.

Required:

- (a) Evaluate the proposals of CEO and Finance Director.
- (b) Recommend how AL may finance the expansion.

16. Explain the key features of the sources of finance listed below. Describe when it might be appropriate to use each of them:
- (a) Equity (shares)
 - (b) Leases
 - (c) Venture capital
 - (d) Business angel
 - (e) Private equity fund

ANSWERS

1. The correct answer option is (c). Mudarabah is a better option for Danish as it allows him to maintain control over the decision-making of the business while also receiving financing.
2. The correct answer is (b) Murabaha. Murabaha is an Islamic mode of financing in which the seller discloses the cost of the item and adds a profit margin to it, which is agreed upon by both the parties. In this case, Furqan wants to sell items on credit and charge additional profit for allowing customers to pay later, which can be accommodated through Murabaha.
3. The option (c) is correct answer because it less likely finance the project when there is no clear exit route for venture capitalist.
4. Option (a) and (c) are correct. Option (b) is incorrect because debt capital never provides better return than equity investment because risk of debt investors is lower than risk of equity investors. Option (d) is incorrect because debt has a specific maturity date and debt is never paid any time when debt investor asks from the company.
5. The correct answer option is (b) because in Murabaha, seller clearly expresses his cost and profit to customer at the time of sale.
6. Option (a) is correct because in Ijarah the lessor bears the risk of the asset, while in conventional lease the lessee bears the risk of the asset
7. The correct answer is (c) In Musharaka, both parties provide the capital, while in Mudaraba, only one party provides the capital.
8. Option (b) is correct answer i.e., A bond with a low coupon rate that is sold at a significant discount to its fair value.
9. Option (a) is correct answer i.e., Investor return is gained through capital appreciation
10. Option (c) is correct answer. i.e., A bonus issue increase the number of shares in circulation, while a right issue increases the company's assets.
11. Option (b) is correct answer i.e., Sells product by mentioning the cost and add profit
12. Option (b) is correct answer i.e., An important source of finance for management buyouts.
13. Option (b) is correct answer i.e., Business angels do not usually get involved in the management, while private equity funds may appoint directors and take an active role.
14. Since Al-Noor Textile Mills is looking to expand its production capacity and is willing to accept any party as a partner who will *share both profit and loss* of expansion project. In this particular case, *participatory modes of financing* can be advised for long term capital investment project. Participatory mode of financing may include *Musharakah as well as Mudarabah* contract. Mudarabah is not suitable because company is also contributing capital whereas Mudarabah requires financing from one party and management from other party. Therefore, the most suitable mode of financing is *Musharakah contract*.
15. **(a) Evaluation of proposals from CEO and Finance Director**

When evaluating the financing proposals of Agha Limited (AL), it is important to consider the pros and cons of each option and determine which one is most suitable for the company's growth and long-term goals.

CEO's proposal

CEO Agha Junaid's proposal to finance the expansion through *a bank loan* is a common approach of debt financing to take advantage of *cheap debt* and its associated *tax saving on interest payments* but it comes with the downside of *strict repayment terms* that can *limit the company's financial flexibility* in the future. Additionally, taking on debt can *increase financial risk* and negatively impact the company's creditworthiness.

Finance Director's proposal

Finance Director Fauzia Agha's proposal to finance through *issue of equity shares* would allow the company to *avoid debt obligations* and *reduce financial risk*. However, it would result in *dilution of ownership and control*, which may be an important consideration for the family-owned business. It is worth noting that a 10% stake in shareholdings could still give outside shareholders some influence in decision-making, especially if they are large institutional investors.

(b) Recommendation of financing for expansion

In this scenario, the best financing proposal for AL would be a *combination of debt and equity financing*. This would allow the company to limit the amount of debt taken on while still retaining a significant portion of ownership and control. Ultimately, the financing proposal that best balances the company's financial needs and strategic objectives should be selected.

16. (a) Equity (shares)

Features

- Finance raised through sale of shares to existing or new investors (existing investors often have a right to invest first – pre-emption rights).
- Providers of equity are the ultimate owner of the company. They exercise ultimate control through their voting rights.
- Issue costs can be high.
- Cost of equity is higher than other forms of finance – they carry the risk, and therefore command the highest of returns as compensation.
- New issues to new investors will dilute control of existing owners.

When appropriate

- Used to provide long-term finance. May be used in preference to debt finance if company is already highly geared.
- Private companies may not be allowed to offer shares for sale to the public at large (e.g. in Pakistan).

(b) Leases

Features

- Legal ownership of the asset remains with the lessor.
- Lessee has the right of use of the asset in return for a series of rental payments.
- Tax deductibility of rental payments depends on the tax regime but typically they are tax deductible in one way or another.

When appropriate

Operating leases

- For the acquisition of smaller assets but also for very expensive assets.
- Common in the airline industry

(c) Venture capital

Features

- The term 'venture capital' is normally used to mean capital provided to a private company by specialist investment institutions, sometimes with support from banks in the form of loans.

- The company must demonstrate to the venture capitalist organisation that it has a clear strategy and a convincing business plan.
- A venture capital organisation will only invest if there is a clear 'exit route' (e.g. a listing on an exchange).
- Investment is typically for 3-7 years

When appropriate

- An important source of finance for management buy-outs.
- Can provide finance to take young private companies to the next level.
- May provide cash for start-ups but this is less likely.

(d) Business angels**Features**

- Business angels are wealthy individuals who invest directly in small businesses, usually by purchasing new equity shares, but do not get involved in the management of the company.
- Business angels are not that common.
- There is too little business angel finance available to meet the potential demand for equity capital from small companies.

When appropriate

- A way for small companies to raise equity finance.

(e) Private equity funds**Features**

- Private equity is equity in operating companies that are not publicly traded on a stock exchange.
- Private equity as a source of finance includes venture capital and private equity funds.
- A private equity fund looks to take a reasonably large stake in mature businesses.
- In a typical leveraged buyout transaction, the private equity firm buys majority control of an existing or mature company and tries to enhance value by eliminating inefficiencies or driving growth.
- Their view is to realise the investment, possibly by breaking the business into smaller parts.

When appropriate

- If used as a source of funding a private equity fund will take a large stake (30% is typical) and appoint directors.
- It is a method for a private company to raise equity finance where it is not allowed to do so from the market.

COST OF FINANCE

IN THIS CHAPTER

1. Introduction
2. Cost of equity
3. Cost of debt capital
4. Cost of preference shares
5. Weighted average cost of capital (WACC)
6. Valuation of debts
7. Yield curves
8. Self-test questions

1. INTRODUCTION

1.1 Defining the cost of capital (WACC)

Cost of capital is the *minimum required rate of return* of all financiers of the company against the risk they face while investing in the company. Investors require return by considering the risk-return relationship. Higher the risk faced by investors, the higher return they will expect from company to compensate the risk. It is also known as:

- Weighted average cost of capital (WACC)
- Overall cost of capital

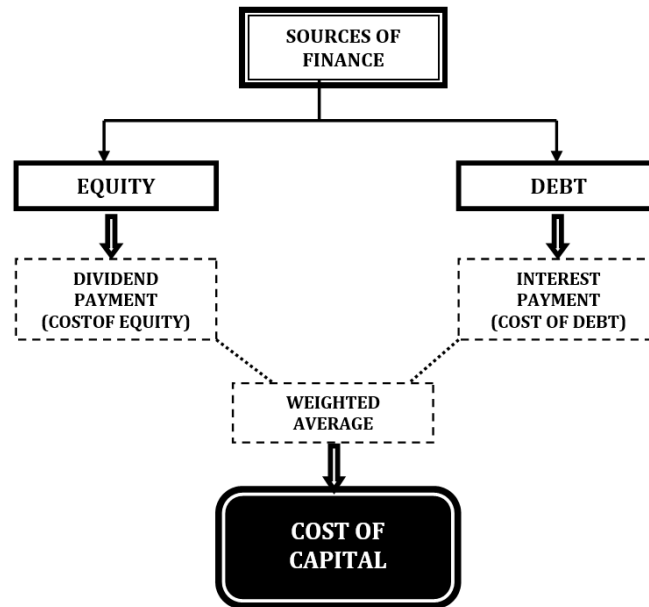


Figure 11.1

The **weighted average cost of capital (WACC)** is the average cost of all the sources of capital that a company uses. This average is weighted, to allow for the relative proportions of the different types of capital in the company's capital structure.

1.2 Need for weighted average cost of capital

Weighted average cost of capital is needed for evaluation of capital investment appraisal of long-term investment projects; or evaluating the impact of additional debt or equity financing, valuation of business; or evaluating mergers and acquisition; or evaluating demergers; or identification of optimal debt/equity ratio for the company.

1.3 Types of weighted average cost of capital

Sr. #	Types	Usage
(i)	Current WACC	It is used in NPV when company plans to expand its existing business operations through new investment project.
(ii)	Revised WACC	It is used when company has: - Acquired a new loan/issued new bonds - Repayment of any existing loan/bond - Implemented a new capital investment project - Issued new ordinary or preference shares for financing

Sr. #	Types	Usage
(iii)	Risk adjusted WACC	Risk adjusted WACC is when company plans to diversify into new industry through new investment project but it is not included in syllabus of CAF-07
(iv)	Combined WACC	Combined WACC is computed for merged entity but it is not included in syllabus of CAF-07.

1.4 Cost of capital for investors vs Cost of capital for company

The **cost of capital for investors** is the return that investors require from their investment. Companies must be able to make a sufficient return from their own capital investments to pay the returns required by their shareholders and holders of debt capital. The cost of capital for investors therefore establishes a cost of capital for companies.

- The **cost of capital for a company** is the return that it must make on its investments so that it can afford to pay its investors the returns that they require.

The cost of capital for investors and the cost of capital for companies should theoretically be the same. However, they are different because of the differing tax positions of investors and companies.

- The cost of capital for investors is measured as a pre-tax cost of capital
- The cost of capital for companies recognises that interest costs are an allowable expense for tax purposes, and the cost of debt capital to a company should allow for the tax relief that companies receive on interest payments, reducing their tax payments. The cost of debt capital for companies is measured as an after-tax cost.

1.5 Average and marginal cost of capital

One approach to the evaluation of capital investments by companies is that all of their investment projects should be expected to provide a return equal to or in excess of the WACC. If all their investment projects earn a return in excess of the WACC, the company will earn sufficient returns overall to meet the cost of its capital and provide its investors with the returns they require.

An alternative is to use the marginal cost of capital when evaluating investment projects. The marginal cost of capital is the cost of the next increment of capital raised by the company.

1.6 Comparing the cost of equity and the cost of debt

The cost of equity is *always higher* than the cost of debt capital. This is because equity investment in a company is always riskier than investment in the debt capital of the same company.

- Interest on debt capital is often fixed: bondholders for example receive a fixed amount of annual interest on their bonds. In contrast, earnings per share are volatile and can go up or down depending on changes in the company's profitability.
- Providers of debt capital have a contractual right to receive interest and the repayment of the debt principal on schedule. If the company fails to make payments on schedule, the debt capital providers can take legal action to protect their legal or contractual rights. Shareholders do not have any rights to dividend payments.
- Providers of secured debt are able to enforce their security if the company defaults on its interest payments or capital repayments.
- In the event of insolvency of the company and liquidation of its assets, providers of debt capital are entitled to payment of what they are owed by the company before the shareholders can receive any payment themselves out of the liquidated assets.

Since equity has a higher investment risk for investors, the expected returns on equity are higher than the expected returns on debt capital.

In addition, from a company's perspective, the cost of debt is also reduced by the tax relief on interest payments. This makes debt finance even lower than the cost of equity.

2. COST OF EQUITY

2.1 Methods of calculating the cost of equity

The cost of equity is the annual return expected by ordinary shareholders, in the form of dividends and share price growth (capital gain). However, share price growth is assumed to occur when shareholder expectations are raised about future dividends. If future dividends are expected to increase, the share price will also increase over time. At any time, the share price can be explained as a present value of all future dividend expectations.

Using this assumption, we can therefore say that the current value of a share is the present value of future dividends in perpetuity, discounted at the cost of equity (i.e. the return required by the providers of equity capital).

There are two methods that you need to know for estimating what the share price in a company ought to be:

- The dividend valuation model;
- The dividend growth model (Gordon growth model)

Each of these methods for obtaining a share price valuation uses a formula that includes the cost of equity capital.

The same models can therefore be used to estimate a cost of equity if the share price is known. In other words, the dividend valuation model and dividend growth model can be used either:

- To calculate an expected share price when the cost of equity is known; or
- To calculate the cost of equity when the share price is known.

Another method of estimating the cost of capital is the **capital asset pricing model or CAPM**. This is an alternative to using a dividend valuation model method, and it produces a different estimate of the cost of equity.

2.2 The dividend valuation model method of estimating the cost of equity

If it is assumed that future annual dividends are expected to remain constant into the foreseeable future and the whole of the profit will be distributed as dividend, the cost of equity can be calculated by re-arranging the dividend valuation model.

Formula: Dividend valuation model (without growth)

	$MV = \frac{D_1}{K_E}$	This is the present value of a perpetuity	
	rearranging:		
	$K_E = \frac{D_1}{MV}$	This is an IRR of a perpetuity	
	Where:		
	K_E = the cost of equity		
	D_1 = the expected future annual dividend (starting at time 1)		
	MV = Market value per shares/the share price ex dividend		

The formula assumes that dividends are paid annually and that the first dividend is received in one year's time. It is the present value of a constant perpetuity.

'Ex dividend' means that if the company will pay a dividend in the near future, the share price must be a price that excludes this dividend.

For example, a company might declare on 1 March that it will pay a dividend of Rs.0.60 per share to all holders of equity shares on 30 April, and the dividend will be paid on 31 May. Until 30 April the share price allows for the fact that a dividend of Rs.0.60 will be paid in the near future and the shares are said to be traded 'cum dividend' or 'with dividend'.

After 30 April, if shares are sold, they are traded without the entitlement to dividend, or 'ex dividend'. This is the share price to use in the cost of equity formula whenever a recently announced dividend is payable in the near future and shares are being traded cum dividend.

► **Example: DVM**

A company's shares are currently valued at Rs. 8.20 and the company is expected to pay an annual dividend of Rs. 0.70 per share for the foreseeable future.

The cost of equity in the company can therefore be estimated as:

$$(0.70/8.20) = 0.085 \text{ or } 8.5\%.$$

2.3 The dividend growth model method of estimating the cost of equity

If it is assumed that the annual dividend will grow at a constant percentage rate into the foreseeable future, the cost of equity can be calculated by re-arranging the dividend growth model.

Formula: Dividend valuation model (with growth)

$MV = \frac{D_0(1+g)}{K_E - g}$	Note: this formula gives the present value of any cash flow which starts in one year's time and grows at a constant rate in perpetuity
rearranging:	
	$K_E = \frac{D_0(1+g)}{MV} + g$
Where:	
K_E = the cost of equity	
D_0 = the annual dividend for the recent year ended	
g = the expected annual growth rate expressed as a proportion (4% = 0.04, 2.5% = 0.025 etc.)	
Therefore, $D_0(1+g)$ = expected annual dividend next year or D_1	
MV = the share price ex dividend.	

► **Example: DVM with growth – market value**

A company has recently paid a dividend Rs. 3 per share and the dividend is expected to grow by 5% into the foreseeable future. The next annual dividend will be paid in one year's time.

The shareholders require an annual return of 12%.

The market value of each equity share is as follows:

$$MV = \frac{D_0(1+g)}{K_E - g}$$

$$MV = \frac{3(1+0.05)}{0.12 - 0.05} = \text{Rs.45 per share}$$

► **Example: DVM with growth – cost of equity**

A company's share price is Rs. 8.20. The company has just paid an annual dividend of Rs. 0.70 per share, and the dividend is expected to grow by 3.5% into the foreseeable future. The next annual dividend will be paid in one year's time.

The cost of equity in the company can be estimated as follows:

$$K_E = \frac{0.70 (1.035)}{8.20} + 0.035$$

$$= 0.123 \text{ or } 12.3\%.$$

2.4 Estimating growth rate

The growth rate used in the expression is the growth rate that investors expect to occur in the future. This can be estimated in one of two ways:

- Extrapolation of historical growth; and
- Gordon's growth model

Extrapolation of historical growth

This is based on the idea that the shareholders' expectations will be based on what has been experienced in the past.

An average rate of growth is estimated by taking the geometric mean of growth rates in recent years.

Formula: Geometric mean

$$\text{Geometric mean growth rate} = \sqrt[n]{\frac{\text{value at end of period of } n \text{ years}}{\text{value at start}}} - 1$$

Where:

n = number of terms in the series (e.g. years of growth)

► Example: Extrapolation of historical growth

A company has paid out the following dividends in recent years:

Year	Dividend
20X1	100
20X2	110
20X3	120
20X4	134
20X5	148

The average rate is calculated as follows:

$$g = \sqrt[4]{\frac{148}{100}} - 1 = 0.103 \text{ or } 10.3\%$$

Gordon's growth model (the earnings retention valuation model)

Dividend growth can be achieved by retaining some profits (retained earnings) for reinvestment in the business. Reinvested earnings should provide extra profits in the future, so that higher dividends can be paid.

When a company retains a proportion of its earnings each year, the expected annual future growth rate in dividends can be estimated using the formula:

► Formula: Gordon's growth model

$$g = b \times r_E$$

Where:

g = annual growth rate of dividends in perpetuity

b = proportion of earnings retained (for reinvestment in the business)

r_E = rate of return that the company will make on its investments

► *Example: Gordon's growth model*

A company has just achieved annual earnings per share of Rs. 50 of which 40% has been paid in dividends and 60% has been reinvested as retained earnings.

The company is expected to retain 60% of its earnings every year and pay out the rest as dividends.

The cost of equity capital is 8%.

The current annual dividend is $40\% \times \text{Rs.}50 = \text{Rs.}20$.

The anticipated annual growth in dividends = $b \times r_E = 60\% \times 8\% = 4.8\%$ or 0.048.

Using the dividend growth model, the expected value per share is:

$$D_0(1+g)/K_E - g = \text{Rs.}20 (1.048)/0.08 - 0.048 = \text{Rs.}655$$

2.5 The Dividend growth model (with variable growth) for estimating market value of ordinary share

According to dividend growth model (with variable growth rate), it is assumed that amount of dividend will increase in future at a non-linear manner. So, market value of ordinary share is determined by taking present value of future dividends discounted at shareholders' required rate of return (or cost of equity).

It involves following two steps:

- Step 1 – Estimate the future dividends
- Step 2 – Compute market value of ordinary shares by taking present value of future dividends discounted at cost of equity

► *Example: Dividend growth model (with variable growth)*

Z Limited recently paid dividend of Rs. 10 per share. It is expected that dividend will grow according to following pattern during next five years:

- 5% annual growth in dividend for each of next 2 years; then
- 4% annual growth in dividend for each of next 2 years; and
- 3 % per annum growth in dividend from year 5 to perpetuity

Calculate market value of ordinary share assuming cost of equity is 10%.

► *Answer*

Step 1 – Future dividends

$$Y1: D_1 = D_0 (1 + g) = \text{Rs.} 10 (1+0.05) = \text{Rs.} 10.50$$

$$Y2: D_2 = D_1 (1 + g) = \text{Rs.} 10.50 (1 + 0.05) = \text{Rs.} 11.03$$

$$Y3: D_3 = D_2 (1 + g) = \text{Rs.} 11.03 (1 + 0.04) = \text{Rs.} 11.47$$

$$Y4: D_4 = D_3 (1 + g) = \text{Rs.} 11.47 (1 + 0.04) = \text{Rs.} 11.92$$

$$Y5 - \infty: D_5 = D_4 (1 + g) = \text{Rs.} 11.92 (1+0.03) = \text{Rs.} 12.28 \text{ per annum}$$

Step 2 – Present value of future dividends at K_E

Years	Computations	Present value
1	$10.50 \times (1 + 0.10)^{-1}$	3.86
2	$11.03 \times (1 + 0.10)^{-2}$	3.85
3	$11.47 \times (1 + 0.10)^{-3}$	3.84
4	$11.92 \times (1 + 0.10)^{-4}$	3.83
5 - ∞	$[12.28 \div (0.10 - 0.03)] \times 1.10^{-4}$	119.82
		135.21

2.6 The CAPM method of estimating the cost of equity

2.6.1. Introduction

Whenever an investment is made, for example in the shares of a company listed on a stock market, there is a risk that actual return will be different from expected return of investment. Investors consider the risk of an investment when deciding on the return they wish to receive for making the investment. The capital asset pricing model (CAPM) is a method of calculating the required rate of return of investment based on an assessment of its systematic risk.

2.6.2. Systematic and unsystematic risk

According to CAPM, risk of any investment is the fluctuations in returns of investor due to some common and specific factors. Total risk of any investment can be sub-divided into:

Unsystematic risk

Unsystematic risk refers to the fluctuations in return of any investor due to company specific or industry specific factors. Investors can eliminate or reduce this risk by holding a well-diversified portfolio therefore it is also known as:

- diversifiable risk (or)
- unique risk (or)
- specific risk.

Systematic risk

Systematic risk refers to the fluctuations in return of any investor due to macroeconomic factors. There is limit to risk reduction effect, however, so that a fully diversified portfolio will not eliminate risk entirely. Systematic risk is faced by all companies and its investors but in different magnitude. It is also known as:

- non-diversifiable risk (or)
- market risk.

Investors can eliminate unsystematic risk through a well-diversified portfolio but can never control systematic risk. So, we may conclude that investors face only systematic risk and required compensation from the company against level of systematic risk.

2.6.3 CAPM Formula

The CAPM assumes that investors hold fully diversified portfolios. This means that investors are assumed by the CAPM to want a return on an investment based on its systematic risk alone, rather than on its total risk.

When the actual return of investment is similar to its expected return then there is no risk at all in particular investment and minimum level of return is required by investors. This minimum level of return is called the 'risk-free rate of return'.

According to CAPM, required rate of return of any investment is equal to:

- risk free rate of return plus
- risk premium

If shares are being considered, the required return of equity investors, usually referred to as the 'cost of equity'.

The formula for the model is as follows:

► *Formula: Capital asset pricing model (CAPM)*

$$K_E = R_F + \beta_E (R_M - R_{RF})$$

Where:

K_E = the cost of equity for a company's shares

R_F = the risk-free rate of return: this is the return that investors receive on risk-free investments such as government bonds

R_M = the average return on market investments as a whole, excluding risk-free investments

β_E = the beta factor for the company's equity shares

This formula expresses the required return on any investment as the sum of the risk-free rate of return and a risk premium – $\beta (R_M - R_F)$ – which compensates the investor for the systematic risk of the investment.

2.6.4. Risk free rate of return (RF)

In the real world, there is no such thing as a risk-free asset but short-term government bonds such as treasury bills are used as a substitute for safe or risk-free investment. The yield on treasury bills is used in CAPM equation, rather than the interest rate, and also called as:

- Yield to maturity of T-bills (or)
- Cost of debt of T-bills

Because the CAPM is applied within a given financial system, the risk-free rate of return (the yield on short-term government debt) will change depending on which country's stock market is being considered. The risk-free rate of return is also not fixed, but will change with changing economic circumstances.

2.6.5 Risk premium ($R_M - R_F$)

Researchers often aim to determine the value of risk premium ($R_M - R_F$) rather than focusing to find average return of capital market (R_M). The difference is called equity risk premium (or) market risk premium since it represents the excess return required for investing in equity (shares on the capital market as a whole) rather than investing in risk-free assets.

Share prices can increase or decrease in short term, so the average return of stock market (R_M) can be positive or negative but time smoothed moving average analysis is used to smooth out short term changes.

2.6.6 Beta

In CAPM, systematic risk of any investment is expressed through a factor called 'beta' which compares the systematic risk associated with a company's shares with the systematic risk of the stock market as a whole. Beta can also be described as an index of responsiveness of the returns on a company's shares compared to the returns on the market as a whole. Beta value can be more than 1, equal to 1 or less than 1.

Beta value can be interpreted as follows:

Sr. #	Beta of a company	Direction	Interpretation
(i)	2.0	Returns of company move in same direction as market	Returns of company fluctuate twice the fluctuations in stock market
(ii)	1.0		Returns of company fluctuate similar the fluctuations in stock market
(iii)	0.5		Returns of company fluctuate half of the fluctuations in stock market
(iv)	0	Unaffected	Returns of company fluctuate irrespective of fluctuations in stock market
(v)	- 0.5	Returns of company move in opposite direction as market.	Returns of company fluctuate oppositely half of the fluctuations in stock market
(vi)	- 1.0		Returns of company fluctuate inversely similar to the fluctuations in stock market.
(vii)	- 2.0		Returns of company fluctuate oppositely twice the fluctuations in stock market

► *Example: CAPM*

The rate of return available for investors on government bonds is 4%. The average return on market investments is 7%. The company's equity beta is 0.92.

Using the CAPM, the company's cost of equity is therefore:

$$4\% + 0.92 (7 - 4)\% = 6.76\%.$$

3. COST OF DEBT CAPITAL

3.1 Important terminology

The following terms are important in understanding the explanation of the market value and cost of debt.

Face value/nominal value: This is the reference value used for the determination of coupon interest. The price determined by the issuer when the bond is first issued. This is usually payable at the time of bond maturity and used as reference to calculate the bond's coupon interest.

Nominal or coupon (interest) rate: This is the rate at which interest is actually paid by the borrowers to holder of the debt securities (the lenders). The coupon interest rate is applied to the nominal value to determine the amount of cash paid as interest (coupon interest amount).

Redemption value: The amount for which a security will be redeemed on its maturity i.e. it is the amount of principal to be paid back by the borrower at end of the loan term.

Redemption may be at:

- a premium: this where the redemption amount is greater than the face value of the bond;
- par: this where the redemption amount is equal to the face value of the bond;
- a discount: this where the redemption amount is less than the face value of the bond.

3.2 Introduction to cost of debt

Each item of debt finance for a company has a different cost. This is because different types of debt capital have differing risk, according to whether the debt is secured, whether it is senior or subordinated debt, and the amount of time remaining to maturity. (Note: Longer-dated debt normally has a higher cost than shorter-dated debt).

Calculation of the cost of debt uses the same sort of approach as that used to calculate the cost of equity using the dividend valuation model.

► *Example: Pre-tax cost of debt and post-tax cost of debt*

A company takes out a bank loan.

The bank charges interest at 10%.

The company pays interest at 10% but obtains tax relief on this at 30%.

The pre-tax cost of the debt is 10% and the post-tax cost is $10 (1 - 0.3) = 7\%$. This would be a component of the WACC calculation.

The required rate of return can be found by calculating the IRR of the cash flows associated with the debt using the market value as the amount of cash flow at time 0.

This is easily achieved if debt is irredeemable (i.e. it is never paid back so interest must be paid into infinity) by rearranging the expressions for cost of debt.

Calculating the cost of redeemable debt requires a full IRR calculation.

Nominal rate of interest

This is another rate that appears in cost of debt calculations. The nominal interest rate is used to identify the cash flow paid on a nominal amount of debt.

► *Example: Nominal interest rate*

A company borrows Rs. 1,000,000 by issuing Rs. 1,000, 10% bonds.

This means that it has issued 1,000 bonds and each of these is for Rs. 1,000.

The company has to pay interest of 10% which totals to be Rs. 100,000 per annum (or Rs.100 per annum for each individual bond).

Suppose the market value of the bonds changed to Rs. 2,000 (perhaps because the company's debt was looked on very favourably by the market).

This would have no effect on the nominal interest rate which is still 10% of the nominal value of the bonds. However, the bondholders (the lenders) are now receiving Rs. 100,000 on an investment worth Rs. 2,000,000. This is a return of 5%. This is the pre-tax return and is also known as the yield on the bond.

3.3 Cost of irredeemable fixed rate debt (perpetual bonds)

The expressions for the market of irredeemable fixed rate bonds (perpetual bonds) and the rearrangement to provide an expression for the cost of debt are as follows:

► *Formula: Cost of irredeemable fixed rate debt*

Pre-tax cost of debt (the lender's required rate of return)	Post-tax cost of debt
$MV = \frac{i}{K_D}$	N/A
rearranging:	
$K_D = \frac{i}{MV}$	Post tax $K_D = \frac{i(1 - t)}{MV}$

Where:

K_D = the cost of the debt capital

i = the amount of annual interest payable

t = rate of tax on company profits.

MV = Ex interest market value of the debt

Note that calculations are usually performed on a nominal amount of Rs. 100 or Rs. 1,000.

► *Example: Cost of debt*

The coupon rate of interest on a company's irredeemable bonds ('perpetual bonds') is 6% and the market value of the bonds is 103.60. The tax rate is 25%.

- The pre-tax cost of the debt is $6/103.60 = 0.058$ or 5.8%.
- The after-tax cost of the bonds is $6(1 - 0.25)/103.60 = 0.043$ or 4.3%.

3.4 Cost of redeemable fixed rate debt (redeemable fixed rate bonds)

The cost of redeemable bonds is their redemption yield. This is the return, expressed as an average annual interest rate or yield, that investors in the bonds will receive between 'now' and the maturity and redemption of the bond, taking the current market value of the bonds as the investment. It is the investment yield at which the bonds are currently trading in the bond market.

This is calculated as the rate of return that equates the present value of the future cash flows payable on the bond (to maturity) with the current market value of the bond. In other words, it is the IRR of the cash flows on the bond to maturity, assuming that the current market price is a cash outflow.

The redemption of the principal at maturity is not an allowable expense for tax purposes. This means that post-tax cost of redeemable debt cannot be calculated by multiplying the pre-tax cost by $(1 - t)$. A full IRR calculation must be carried out.

The approach is to calculate the post-tax cost of debt as the IRR of the future cash flows, allowing for tax relief on the interest payments and the absence of tax relief on the principal repayment using the market value as the cash flow at time 0.

The cash flows for calculating the cost of redeemable debt

The cash flows used to calculate an IRR (redemption yield) are:

- The current market value of the bond, excluding any interest payable in the near future (shown as a cash outflow).
- The annual interest payments on the bond (shown as a cash inflow).
- Tax relief on these annual interest payments: these are cash outflows (the opposite of the interest payments) and occur either in the same year as the interest payments or one year in arrears, depending on the assumption used about the timing of tax payments (shown as a cash outflow)
- The redemption value of the bonds, which is often par (shown as a cash inflow).

Tutorial comment

Note: You may find the direction of cash flows to be a little confusing here. For example, the interest payments are to be shown as an inflow!

You do not have to do this. What really matters is that the market value and tax benefits are shown as being in one direction and the interest and redemption in the other. You could show the former as inflows and the latter as outflows and it would give exactly the same answer.

However, we are used to calculating IRRs where there is an initial cash outflow so it is better to structure these calculations in this way as you have less chance of making an error in the interpolation.

► Example: Post-tax cost of debt

The current market value of a company's 7% loan stock is Rs. 96.25.

Annual interest has just been paid. The bonds will be redeemed at par after four years.

The rate of taxation on company profits is 30%.

Required

Calculate the after-tax cost of the bonds for the company.

► Answer

It is assumed here that tax savings on interest payments occur in the same year as the interest payments.

Yr.	Cash flow		Try 6%		Try 5%	
			Discount factor	PV	Discount factor	PV
0	Market value	(96.25)	1.000	(96.25)	1.000	(96.25)
1 - 4	Interest less tax	4.90	3.465	16.98	3.546	17.36
4	Redemption	100.00	0.792	79.20	0.823	82.30
	NPV			(0.07)		+ 3.41

Using interpolation, the after-tax cost of the debt is:

$$5\% + \frac{3.41}{(3.41 + 0.07)} \times (6 - 5)\% = 5.98\%, \text{ say } 6.0\%.$$

3.4 Cost of convertible debt

Convertible debt is debt that gives the holder (the lender) the option of converting it into equity at an agreed rate and at an agreed time (or during an agreed period) in the future.

The cost of a convertible bond is the higher of:

- The cost of the bond as a straight bond that will be redeemed at maturity, and
- The IRR of the relevant cash flows assuming that the conversion of the bonds into equity will take place in the future.

The cost of capital of the bond as a straight bond is only the actual cost of the bond if the bonds are not converted into shares at the conversion date. The IRR of the relevant cash flows is the cost of the convertible bond assuming that conversion will take place.

The relevant cash flows for calculating this yield (IRR) are:

- The current market value of the bonds (Year 0 outflow);
- Annual interest on the bonds up to the time of conversion into equity (annual inflows);
- Tax relief on the interest (annual outflows);
- The expected market value of the shares, at conversion date, into which the bonds can be converted.

► **Example:**

The current market value of a company's 7% convertible debenture is Rs.108.70. Annual interest has just been paid.

The debenture will be convertible into equity shares in three years' time, at a rate of 40 shares per debenture.

The current ordinary share price is Rs.3.20 and the rate of taxation on company profits is 30%.

The post-tax cost of the bonds is calculated as follows.

Yr.		Cash flow	Try 10%		Try 9%	
			DCF factor	PV	DCF factor	PV
0	Market value	(108.7)	1.000	(108.7)	1.000	(108.7)
1- 3	Interest less tax	4.9	2.487	12.19	2.531	12.40
3	Value of shares on conversion (40 x Rs.3.2)	128.0	0.751	96.13	0.772	98.82
	NPV			(0.38)		+ 2.52

Using interpolation, the after-tax cost of the debt is:

$$9\% + [2.52/(2.52 + 0.38)] \times (10 - 9)\% = 9.9\%.$$

The cost of the convertibles as a straight bond is obviously less than 9.9% (since the market value is above par and the coupon is only 7%). The market therefore expects the bonds to be converted into equity, and the after-tax cost is 9.9%.

4. COST OF PREFERENCE SHARES

4.1 Cost of irredeemable preference shares

For **irredeemable preference shares**, the cost of capital is calculated in the same way as the cost of equity assuming a constant annual dividend, and using the dividend valuation model.

► *Formula: Dividend valuation model (without growth)*

$MV = \frac{D}{K_P}$	This is the present value of a perpetuity
rearranging:	
$K_P = \frac{D}{MV}$	This is an IRR of a perpetuity
Where:	
K_P = the cost of preference shares	
D = the expected future annual dividend (starting at time 1)	
MV = the share price ex dividend	

4.2 Cost of redeemable preference shares

For **redeemable preference shares**, the cost of the shares is calculated by using IRR in the same way as the pre-tax cost of irredeemable debt. (Dividend payments are not subject to tax relief; therefore, the cost of preference shares is calculated ignoring tax, just as the cost of equity ignores tax.)

► *Example:*

A company has 200,000 8% preference shares in issue having par value of Rs. 10 each. The current ex div market price of each preference share is Rs. 35. Preference shares are redeemable at par in 4 years' time.

Calculate the cost of the preference shares.

Yr.		Cash flow	Try 10%		Try 5%	
			DCF factor	PV	DCF factor	PV
0	Market value	(35)	1.000	(35)	1.000	(35)
1- 4	Preference dividend	8	3.170	25.4	3.546	28.4
4	Redemption value	10	0.683	6.8	0.823	8.2
	NPV			(2.8)		+ 1.6

Using interpolation, the cost of the redeemable preference shares is:

$$K_P = 5\% + [1.60 / (1.60 + 2.8)] \times (10 - 5)\% = 6.8\%.$$

5. WEIGHTED AVERAGE COST OF CAPITAL (WACC)

5.1 Calculating the weighted average cost of capital (WACC)

The weighted average cost of capital (WACC) is a weighted average of the (after-tax) cost of all the sources of capital for the company.

The different costs are weighted according to their market values. This can be done using a formula or a table.

► *Formula: WACC*

$$WACC = K_E \frac{MV_E}{MV_{TOTAL}} + K_D \frac{MV_D}{MV_{TOTAL}} + K_P \frac{MV_P}{MV_{TOTAL}}$$

There would be a different term for each type of capital in the above formula.

► *Illustration: WACC*

Source of finance	Market value	×	Cost (r)	Market value × cost
			K	KMV
Equity	MV_E	×	K_E	$K_E MV_E$
Preference shares	MV_P	×	K_P	$K_P MV_P$
Debt	MV_D	×	K_D	$K_D MV_D$
Total	ΣMV			$\Sigma K MV$
$WACC = \Sigma K MV / \Sigma MV$				

► *Example: WACC*

A company has 10 million shares each with a value of Rs.4.20, whose cost is 7.5%.

It has Rs.30 million of 5% bonds with a market value of 101.00 and an after-tax cost of 3.5%.

It has a bank loan of Rs.5 million whose after-tax cost is 3.2%.

It also has 2 million 8% preference shares of Rs.1 whose market price is Rs.1.33 per share and whose cost is 6%.

Calculate the WACC.

► *Answer*

Source of finance	Market value	Cost	Market value × cost
	Rs. million	K	$MV \times K$
Equity	42.00	0.075	3.150
Preference shares	2.66	0.060	0.160
Bonds	30.30	0.035	1.061
Bank loan	5.00	0.032	0.160
	79.96		4.531

$$WACC = \frac{4.531}{79.960} = 0.05667, \text{ say } 5.7\%.$$

► *Formula for WACC*

$$WACC = (0.075 \times 42/79.96) + (0.06 \times 2.66/79.96) + (0.035 \times 30.3/79.96) + (0.032 \times 5/79.96) = 0.05667 \text{ or } 5.7\%$$

5.2 WACC and market values

For a company with constant annual 'cash profits', there is an important connection between WACC and market value. (Note: 'Cash profits' are cash flows generated from operations, before deducting interest costs.)

If we assume that annual earnings are a constant amount in perpetuity, the total value of a company (equity plus debt capital) is calculated as follows:

► *Formula: WACC and market value*

$$\text{Total market value of a company} = \frac{\text{Earnings (1 - t)}}{\text{WACC}}$$

From this formula, the following conclusions can be made:

- The lower the WACC, the higher the total value of the company will be (equity + debt capital), for any given amount of annual profits.
- Similarly, the higher the WACC, the lower the total value of the company.

For example, ignoring taxation, if annual cash profits are, say, Rs.12 million, the total market value of the company would be:

- Rs.100 million if the WACC is 12% (Rs.12 million/0.12)
- Rs.120 million if the WACC is 10% (Rs.12 million/0.10)
- Rs.200 million if the WACC is 6% (Rs.12 million/0.06).

The aim should therefore be to achieve a level of financial gearing that minimises the WACC, in order to maximise the value of the company.

Important questions in financial management are:

- For each company, is there an 'ideal' level of gearing that minimises the WACC?
- If there is, what is it?

6. VALUATION OF DEBTS

6.1 – Basic principle of valuation

In order to calculate market value of any asset like building, machinery, shares, debentures or any other instruments we have to take present value of its future cash flows discounted at required rate of return.

$$\text{Market value} = \text{Present value of future cash flows discounted at required rate of return}$$

6.2 – Value of redeemable debt

Market value of redeemable debentures can be computed by taking present value of its future cash flows at debt investors' required rate of return. In case of redeemable debentures, investor receives periodic interest payment from company; and redemption value at maturity date.

Therefore, market value of redeemable debenture is equal to present value of periodic interest payment and present value of redemption value discounted at investors' required rate of return. As we know, total market value of redeemable debt is equal to market value per debt multiplied by number of debt instruments.

More specifically, market value of redeemable debentures is:

Market value of redeemable debt	
$MV = PV \text{ of periodic interest at } K_D + PV \text{ of redemption at } K_D$	
(OR)	
$MV = I \times [(1 - (1 + K_D)^{-n}) \div K_D] + RV \times (1 + K_D)^{-n}$	
Where	
I = Amount of periodic interest per bond = Par value x Coupon rate	
n = Number of years till maturity	
RV = Redemption value per redeemable bond	
K _D = Debt investors' required rate of return is also known as:	
- Pre-tax cost of debt (K _D)	
- Yield to maturity (YTM)	

► *Example: Market value of loan stock*

A company has issued 7% loan stock.

Annual interest has just been paid. The bonds will be redeemed at par after four years.

The lenders' required rate of return is 8.14%.

Calculate the market value of each loan stock.

► *Answer*

Year	Cash flow		Discount factor (8.14%)	PV (Rs.)
		Cash flow		
1	Interest	7.00	0.925	6.48
2	Interest	7.00	0.855	5.99
3	Interest	7.00	0.791	5.55
4	Interest	7.00	0.731	5.13
4	Redemption	100.00	0.731	73.10
0	Market value			96.25

► *Example: Market value of loan stock*

A company has issued 12% bonds that are due to be redeemed at a premium of 5% in four years' time.

The tax rate is 20% and the post-tax cost of debt is 8%.

Calculate the market value of each bond.

► *Answer*

Year		Cash flow	Discount factor (10%)	PV
1 – 4	Interest (Rs. 100 x 12%)	12	3.170	38.04
4	Redemption	105.00	0.683	71.72
	Market value of each bond			109.76

Market value of bond is equal to present value of interest and redemption at pre-tax cost of debt. Here post tax cost of debt is given so we will convert from post-tax to pre-tax cost of debt:

Post-tax cost of debt = Pre-tax cost of debt x (1 – T)

0.08 = Pre-tax cost of debt x (1 – 0.20)

Pre-tax cost of debt = $0.08 \div 0.8 = 0.10$ or 10%

6.3 – Value of convertible debt

At maturity, convertible bond holder has a choice to receive cash against redemption of bond or can convert the bond into equity shares after making comparison of:

- Cash value to be received at the redemption of the bond (known as redemption value)
- Market value of shares received against conversion of bond (known as conversion value)

Therefore, market value of convertible debt is computed similar to market value of redeemable debt but after making comparison.

Step 1 – Comparison by investors

(i) Redemption value = cash

(ii) Conversion value = Market value of ordinary shares received against conversion of debt

Investor will prefer higher of redemption value or conversion value.

Step 2 – Market value per convertible debt**Market value of convertible debt**

$MV = PV \text{ of periodic interest at } K_D + PV \text{ of redemption value/Conversion value at } K_D$

(OR)

$MV = I \times [(1 - (1 + K_D)^{-n}) \div K_D] + RV \text{ (or) } CV \times (1 + K_D)^{-n}$

Where

I = Amount of periodic interest per bond = Par value x Coupon rate

n = Number of years till maturity

RV = Redemption value (or) CV = Conversion value

K_D = Debt investors' required rate of return is also known as:

- Pre-tax cost of debt (K_D)
- Yield to maturity (YTM)

► *Example: Market value of convertible loan notes*

A company has issued 500,000 6% convertible loan notes which are due to be redeemed at a 5% premium in five years' time. The investors can redeem these loan notes or can convert each loan note into 20 ordinary shares on the same date. The company's ordinary shares are currently trading at Rs. 4 each and their value is expected to grow at a rate of 5% p.a.

Calculate market value of convertible loan notes assuming debt investors' required rate of return is 8%

► *Answer*

Step 1 – Comparison by investors

- Redemption value = Rs. 100 x 1.05 = Rs. 105 per loan note
- Conversion value = Rs. 4 x 1.05⁵ x 20 ordinary shares = Rs. 102.10 per loan note

Investors will prefer higher benefit i.e., redemption value

Step 2 – Market value of each loan note

Year		Cash flow	Discount factor (8%)	PV
1 – 5	Interest (Rs. 100 x 6%)	6.00	3.312	23.96
5	Redemption value	105.00	0.735	71.46
	Market value of each convertible loan note			95.42

7. YIELD CURVES

Each item of debt finance for a company has a different cost. This is because debt capital has differing risk, according to whether the debt is secured, whether it is senior or subordinated debt, and the amount of time remaining to maturity.

Furthermore, the cost of debt differs for different periods of borrowing. This is because lenders might require compensation for the risk of having their cash tied up for longer and/or there might be an expectation of future changes in interest rates. The relationship between length of borrowing and interest rates is described by the yield curve. This session looks at the derivation and use of yield curves.

7.1 Background

An earlier section covered the relationship that exists between the market value of a bond, the cash flows that must be paid to service that bond and the cost of debt inherent in that bond.

The market value of a bond is the present value of the future cash flows that must be paid to service the debt, discounted at the lender's required rate of return (pre-tax cost of debt).

The lender's required rate of return (the pre-tax cost of debt) is the IRR of the cash flows (pre-tax) that must be paid to service the debt.

► Example: Market value of bond

A company has issued a bond that will be redeemed in 4 years. The bond has a nominal interest rate of 6%.

The required rate of return on the bond is 6%.

Required

Calculate what the market value of the bond would be if the required rate of return was 5% or 6% or 7%.

► Answer

Year	Cash flow	Discount factor (5%)	PV (5%)	Discount factor (6%)	PV (6%)	Discount factor (7%)	PV (7%)
1 Interest	6	0.952	5.71	0.943	5.66	0.935	5.61
2 Interest	6	0.907	5.44	0.890	5.34	0.873	5.24
3 Interest	6	0.864	5.18	0.840	5.04	0.816	4.90
4 Interest + redemption	106	0.823	87.21	0.792	83.96	0.763	80.87
Market value			103.54		100.00		96.62

Note that there is an inverse relationship between the lender's required rate of return and the market value. The cash flows do not change. The investor can increase his rate of return by offering less for the bond. If the investor offers more the rate of return falls.

It follows from the above example, that if the cash flows were given as above together with a market value of Rs.103.54, the required rate of return could have been calculated as the IRR of these amounts, i.e. 5%. This would then be the pre-tax cost of debt.

Similarly, a market value of Rs.100 would give a cost of debt of 6% and a market value of Rs.96.62 would give a cost of debt of 7%.

The IRRs calculated in this way can be described in a number of ways including:

- lenders' required rate of return;
- cost of debt (pre-tax);
- gross redemption yield;
- yield to maturity.

The implied yield for a market value of Rs.103.54 is 5%. This implies that an investor in the bond discounts each of the future cash flows at 5% in order to arrive at the market value of the bond.

This is a simplification. The 5% is an average required rate of return over the life of the bond. In fact, an investor might require a higher rate of return for the year 2 cash flows than for the year 1 cash flows and a higher rate of return for the year 3 cash flows than for the year 4 cash flows and so on. In other words, cash flows with different maturities are looked on differently by investors.

A plot of required rates of return (yields) against maturity is called a yield curve.

The normal expectation is that the yield curve will slope upwards (as described above) though this is not always the case.

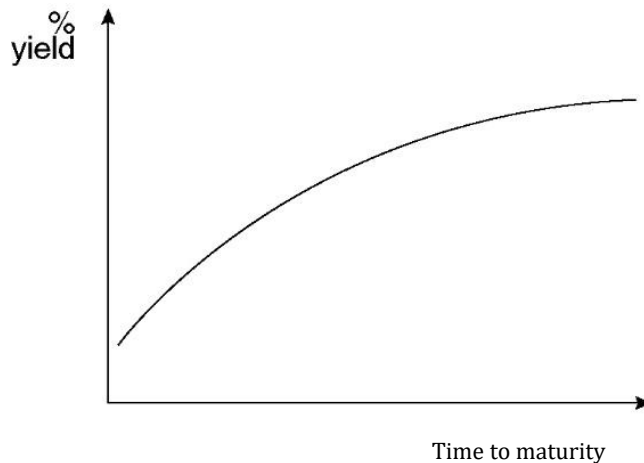
7.2 Shape of the yield curve (term structure of interest rates)

The cost of fixed-rate debt is commonly referred to as the 'interest yield'. The interest yield on debt capital varies with the remaining term to maturity of the debt.

- As a general rule, the interest yield on debt increases with the remaining term to maturity. For example, it should normally be expected that the interest yield on a fixed-rate bond with one year to maturity/redemption will be lower than the yield on a similar bond with ten years remaining to redemption. Interest rates are normally higher for longer maturities to compensate the lender for tying up his funds for a longer time.
- When interest rates are expected to fall in the future, interest yields might vary inversely with the remaining time to maturity. For example, the yield on a one-year bond might be higher than the yield on a ten-year bond when rates are expected to fall in the next few months.
- When interest rates are expected to rise in the future, the opposite might happen, and yields on longer-dated bonds might be much higher than on shorter-dated bonds.

Interest yields on similar debt instruments can be plotted on a graph, with the x-axis representing the remaining term to maturity, and the y-axis showing the interest yield. A graph which shows the 'term structure of interest rates', is called a yield curve.

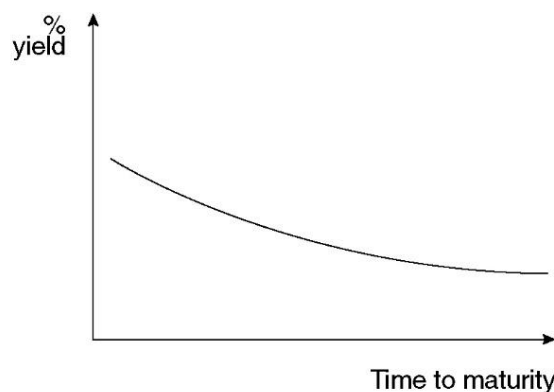
► Illustration: Normal yield curve



As indicated above, a normal yield curve slopes upwards, because interest yields are normally higher for longer-dated debt instruments.

Sometimes it might slope upwards, but with an unusually steep slope (steeply positive yield curve).

However, on occasions, the yield curve might slope downwards, when it is said to be 'negative' or 'inverse'.

► *Illustration: Inverse yield curve*

When the yield curve is inverse, this is usually an indication that the markets expect short-term interest rates to fall at some time in the future.

When the yield curve has a steep upward slope, this indicates that the markets expect short-term interest rates to rise at some time in the future.

Yield curves are widely used in the financial services industry. Two points that should be noted about a yield curve are that:

- Yields are **gross yields**, ignoring taxation (pre-tax yields).
- A yield curve is constructed for '**risk-free**' **debt securities**, such as government bonds. A yield curve therefore shows 'risk-free yields'.

As the name implies, risk-free debt is debt where the investor has no credit risk whatsoever, because it is certain that the borrower will repay the debt at maturity. Debt securities issued by governments with AAA credit ratings (see later) in their domestic currency by the government should be risk-free.

7.3 Bond valuation using the yield curve

Annual spot (valid on the day they are published) yield curves are published in the financial press.

The cost of new debt can be estimated by reference to a yield curve.

► *Example:*

A company wants to issue a bond that is redeemable at par in four years and pays interest at 6% of nominal value.

The annual spot yield curve for a bond of this class of risk is as follows:

Maturity	Yield
One year	3.0%
Two years	3.5%
Three years	4.2%
Four years	5.0%

Required

Calculate the price that the bond could be sold for (this is the amount that the company could raise) and then use this to calculate the gross redemption yield (yield to maturity, cost of debt).

► Answer

An investor will receive a stream of cash flows from this bond and will discount each of those to decide how much he is willing to pay for them.

The first year flow will be discounted at 3.0%, the second year flow at 3.5% and so on. (Note that the two-year rate of 3.5% does not mean that this is the rate in the second year. It means that this is the average annual rate for a flow in 2 years' time).

Year		Cash flow	Discount factor	PV (4%)
1	Interest	6	$1/1.03 = 0.971$	5.83
2	Interest	6	$1/1.035^2 = 0.934$	5.60
3	Interest	6	$1/0.42^3 = 0.884$	5.30
4	Interest + redemption	106	$1/1.05^4 = 0.823$	87.21
	Market value			103.94

The company would need to issue a Rs.100 nominal value bond for Rs.103.94.

The cost of debt (gross redemption yield) of the bond can be calculated in the usual way by calculating the IRR of the flows that the company faces.

			Try 4%		Try 6%	
Year		Cash flow	Discount factor	PV	Discount factor	PV
0	Market value	(103.94)	1.000	(103.94)	1.000	(103.94)
1	Interest	6.00	0.962	5.77	0.943	5.66
2	Interest	6.00	0.925	5.55	0.890	5.34
3	Interest	6.00	0.889	5.33	0.840	5.04
4	Interest + redemption	106.00	0.855	90.61	0.792	83.96
	NPV			+ 3.32		(3.94)

Using interpolation, the before-tax cost of the debt is:

$$4\% + 3.32/(3.32 + 3.94) \times (6 - 4)\% = 4.91\%$$

The cost of the debt is therefore estimated as 4.91%. This is the average cost that the entity is paying for this debt.

7.4 Estimating the yield curve

A yield curve was provided in the previous section. The next issue to consider is how these are constructed.

This technique is called "bootstrapping".

► *Example: Estimating the yield curve*

There are three bonds in issue for a given risk class.

All three bonds pay interest annually in arrears and are to be redeemed for par at maturity.

Relevant information about the three bonds is as follows:

Bond	Maturity	Coupon rate	Market value
A	1 year	6.0%	102
B	2 years	5.0%	101
C	3 years	4.0%	97

Required

Construct the yield curve that is implied by this data.

► *Answer*

Step 1 – Calculate the rate for one-year maturity

Work out the rate of return for bond A.

The investor will pay Rs.102 for a cash flow in one year of Rs.106.

This gives an IRR of $(106/102) - 1 = 0.0392$ or 3.92%

Step 2 – Calculate the rate for two-year maturity

The market value bond B is made up of the present value of the year one cash flow discounted at 3.92% (from step 1) and the present value of the two-year cash flow discounted at an unknown rate.

This can be modelled as follows:

		Cash flow	Discount factor	PV (4%)	
1	Interest	5	$1/1.0392$	4.81	
2	Interest + redemption	105	$1/(1+r)^2$	96.19	(Balancing figure)
	Market value (given)			101.00	

Therefore:

$$105 \times 1/(1+r)^2 = 96.19$$

Rearranging:

$$105/96.19 = (1+r)^2$$

$$r = \sqrt{105/96.19} - 1 = 0.0448 \text{ or } 4.48\%$$

Step 3 – Calculate the rate for three-year maturity

The market value of the three-year bond is made up of the present value of the year one cash flow discounted at 3.92% (from step 1), the present value of the two-year cash flow discounted at 4.48% (from step 2) and the present value of the three-year cash flow discounted at an unknown rate.

This can be modelled as follows:

t		Cash flow	Discount factor	PV (4%)	
1	Interest	4	$1/1.0392$	3.85	
2	Interest	4	$1/1.0448^2$	3.66	
3	Interest + redemption	104	$1/(1+r)^3$	89.49	(Balancing figure)
	Market value (given)			97.00	

Therefore:

$$104 \times 1/(1+r)^3 = 89.49$$

Rearranging:

$$104/89.49 = (1+r)^3$$

$$r = \sqrt[3]{104/89.49} - 1 = 0.051 \text{ or } 5.1\%$$

Step 4 – Summarise in a table

Maturity	Yield
1 year	3.92%
2 year	4.48%
3 year	5.1%

9. SELF-TEST QUESTIONS

1. **Spring 2022 Q1 (iv):** Fortune Limited (FL) is in the process of issuing bonds to finance its project. It has been decided to issue bonds that are redeemable at par (i.e. Rs. 100) in three years' time. The bonds would carry annual interest at 10.4%, payable at the end of each year.

The annual spot yield curve for a bond of this class of risk is as follows:

Maturity	1 year	2 years	3 years	4 years
Yield	8.0%	9.5%	11.0%	12.5%

FL should issue the bonds at:

- an approximate discount of Re. 1 per bond
 - an approximate discount of Rs. 5 per bond
 - an approximate premium of Re. 1 per bond
 - a par value
2. **Autumn 2022 Q1 (v):** Which of the following is **NOT** considered as cash flows to calculate an IRR of redeemable debt?
- Annual interest payment on the bond
 - Tax relief on annual interest payments
 - Par value of the bond, excluding any interest payable in near future
 - Redemption amount
3. **Autumn 2023 Q1 (x):** A negative or inverse yield curve indicates that the market expects:
- long-term interest rates to fall at some time in the future
 - short-term interest rates to fall at some time in the future
 - short-term interest rates to rise at some time in the future
 - long-term interest rates to rise at some time in the future
4. **Autumn 2023 Q1 (xiii):** GG Limited (GGL) has achieved an annual earnings per share of Rs. 60 and has reinvested 70% of the earnings as retained earnings while distributing 30% as dividend. Assuming that GGL is expected to continue this, practice every year, and with a cost of equity capital of 18%, what is the approximate expected value of each GGL's share?
- Rs. 876
 - Rs. 151
 - Rs. 375
 - Rs. 502
5. **Spring 2024 Q1 (vii):** Which **TWO** of the following can be used to estimate the cost of equity of a company?
- Gordon growth model
 - Internal rate of return
 - Capital asset pricing method
 - Weighted average cost of capital

6. **Spring 2024 Q1 (x):** When shares are traded “ex dividend (XD)”, which of the following **TWO** statements accurately describe the situation?
- a) Buyers of shares at XD price are entitled to receive the dividend upon selling their shares
 - b) The XD share price reflects the anticipation of future dividends
 - c) Buyers of shares at XD price are not entitled to receive the upcoming dividend payment
 - d) The XD share price is typically lower than when shares are traded “cum dividend”
7. **Autumn 2024 Q1 (vii):** A company has recently paid a dividend of Rs. 6 per share, which is expected to grow by 9% per annum in the foreseeable future. The shareholders require an annual return of 19% and the next annual dividend will be paid in one year’s time. What would be the market value of each share? **(01)**
- a) Rs. 79.3
 - b) Rs. 66.7
 - c) Rs. 65.4
 - d) Rs. 60
8. **Autumn 2024 Q1 (viii):** The WACC of a company is 12%, and 50% of its shares are held by the directors. Ignoring taxation, if annual cash profits of the company are Rs. 240 million, the total market value of the company would be:
- a) Rs. 1 billion
 - b) Rs. 2 billion
 - c) Rs. 4 billion
 - d) Rs. 480 billion
9. **COST OF EQUITY (K_E)**
- (a) A company’s shares are currently trading at Rs. 8.20 cum-div and the company has recently announced dividend of Rs. 0.70 per share which is expected to pay in foreseeable future.
- Required:** Estimate the cost of equity
- (b) A company’s share price is currently trading at Rs. 5.00 each. The next annual dividend of Rs. 0.45 per share will be paid in one year’s time and dividends are expected to grow by 4% per year into the foreseeable future.
- Required:** Estimate the cost of equity
- (c) A company’s shares have a current market value of Rs. 13.00 each. The most recent annual dividend of Rs. 1.50 per share has just been paid.
- Required**
- Estimate the cost of equity in this company in each of the following circumstances:
- (i) Using the DVM and when the annual dividend is expected to remain Rs.1.50 into the foreseeable future.
 - (ii) Using the DVM and when the annual dividend is expected to grow by 4% each year into the foreseeable future
 - (iii) The CAPM is used, the equity beta is 1.20, the risk-free cost of capital is 5% and the expected market return is 14%.

10. MARKE VALUE USING DIVIDEND VALUATION MODEL

Zimba plc is a listed all-equity financed company which makes parts for digital cameras. The company pays out all available profits as dividends. Zimba plc has a share capital of 15 million ordinary shares. On 30 September 20X0 it expects to pay an annual dividend of Rs. 20 per share. In the absence of any further investment the company expects the next three annual dividend payments also to be Rs. 20p, but thereafter a 2% per annum growth rate is expected in perpetuity. The company's cost of equity is currently 15% per annum. The company is considering a new investment which would require an initial outlay of Rs.500 million on 30 September 20X0.

If this investment were financed by a 1 for 3 rights issue it would enable the share dividend per share to be increased to Rs. 21 on 30 September 20X1 and all further dividends would be increased by 4% per annum.

The new investment is, however riskier than the average of existing investments, as a result of which the company's overall cost of equity would increase to 16% per annum were the company to remain all-equity financed.

Required.

- Assuming the Zimba plc remains all-equity financed and using the dividend valuation model calculate the expected ex-dividend price per share at 30 September 20X0 if the new investment does not take place.
- Assuming the Zimba plc remains all-equity financed and using the dividend valuation model calculate the expected ex-dividend price per share at 30 September 20X0 if the new investment does take place.
- Compare the market values with and without the investment and determine whether the new investment should be undertaken.

11. MARKET VALUE OF CONVERTIBLE BONDS

A company has issued 4% convertible bonds that can be converted into shares in two years' time at the rate of 25 shares for every Rs.100 of bonds (nominal value). It is expected that the share price in two years' time will be Rs.4.25. If the bonds are not converted, they will be redeemed at par after four years. The yield required by investors in these convertibles is 6%.

Required: What is the value of the convertible bonds?

12. WEIGHTED AVERAGE COST OF CAPITAL (WACC)

- A company has 20 million shares each with a market value of Rs. 6.00, whose cost is 9%. It has debt capital with a market value of Rs. 80 million and a before-tax cost of 6%. The rate of taxation on profits is 30%.

Required: Calculate the WACC.

- Educare plc is listed on the Karachi Stock Exchange. The company's statement of financial position at 31 August 20X3 showed the following long-term financing:

	Rs. m
1.2 million ordinary shares of Rs. 25 each	30
Reserves	55
	85
9% loan stock 20X5	30

On 31 August 20X3 the shares were quoted at Rs. 121 cum div, with a dividend of Rs. 5.2 per share due very shortly. Over recent years, dividends have increased at the rate of about 5% a year. This rate expected to continue in the future.

The loan stock is due to be redeemed at par on 31 August 20X5. Interest is payable annually on 31 August. The pre-tax cost of the loan stock is 5.5%. The company's corporation tax rate is 30%.

Required: Determine the company's WACC at 31 August 20X3.

13. EXISTING WACC - MODEL PAPER (Q9)

Jamal Limited (JL) is intending to expand its existing operations and considering to issue bonds to finance the expansion. You have been provided with the following extracts from JL's financial statements:

Statement of Financial Position

	Rs. in '000
3 million ordinary shares of Rs. 100 each	300,000
Retained earnings	400,000
10% Long-term loan	650,000

The shares are quoted at Rs. 475 cum dividend. The dividend of Rs. 25 per share is due shortly. JL has paid out following dividends during the past four years:

Year	20X1	20X2	20X3	20X4
Dividend	10	15	18	20

The loan was obtained from a bank 2 years ago and is repayable in 10 years' time.

The tax rate applicable to JL is 30%.

Required: Determine JL's weighted average cost of capital (WACC).

14. REVISED WACC - SPRING 2022 (Q6)

Zaryaab Limited (ZL) is engaged in manufacturing and selling sports goods. Following information has been extracted from the latest financial statements of ZL:

	Rs. in '000
5,000,000 ordinary shares @ Rs. 10 each	50,000
8% bank loan	25,000

Other information:

- Shares of ZL are currently trading at Rs. 25 each.
- The return on government bonds is 6% whereas the average return on market investments is 10%. The average equity beta for ZL's share is 0.9.
- The tax rate applicable to ZL is 30%.

ZL is planning to set-up another factory in Peshawar for which it would need finance of Rs. 150 million for four years. Following two financing proposals are under the consideration of ZL's management:

- Issue 9% preference shares of Rs. 100 each. The preference shares would be redeemable at par at the end of 4th year.
- Issue 9% bonds of Rs. 1,000 each. The bondholders would have a right to either convert each bond into 35 ordinary shares or redeem it at a premium of 10% at the end of 4th year. The market value of ZL's shares is expected to increase by 7% per annum.

Required: Recommend the financing proposal that would result in lower weighted average cost of capital (WACC). (*Show necessary computations*)

15. EXISTING WACC & REVISED WACC - AUTUMN 2022 (Q 9)

Lahore Quotient (LQ) is engaged in manufacturing and selling of textile products. LQ is presently considering to expand the business and needs finance of Rs. 50 million. The management is considering the following two options:

Option I: Issuance of new shares

Finance the entire expansion by issuing new shares. However, the new project would result in equity beta of 1.2.

Option II: Issuance of convertible bonds

Finance the entire expansion by issuing 10% convertible bonds of Rs. 1,000 each. Each bond will be converted into 3 shares at the end of year 4. The market value of each share is expected to be Rs. 400 on the date of redemption.

Following information has been extracted from the latest financial statements of LQ:

	Rs. in '000
1,000,000 ordinary shares (Rs. 100 each)	100,000
11% bank loan	100,000

Other information:

- The return on government bonds is 8% per annum, whereas, the average return on market investments is 12% per annum. The current equity beta for LQ is 1.3.
- Applicable tax rate to LQ is 30%.
- The details of dividend paid during the last four years (including current year 2022) are given below:

Year	2019	2020	2021	2022
Dividend per share	Rs. 10	Rs. 11	Rs. 12	Rs. 14

Required:

- Compute LQ's existing weighted average cost of capital.
- Recommend whether LQ should finance the new project by issuing new shares or by issuing convertible bonds.
- Discuss any four factors that LQ may need to consider before deciding on whether to finance the expansion by issuing new shares or convertible bonds.

16. EXISTING WACC & REVISED WACC - SPRING 2023 (Q 10)

International Packaging Limited (IPL) is in business of packaging material for a range of food products. Following information has been extracted from IPL's financial statements as on 31 December 2022:

	Rs. in '000
Ordinary share capital (Rs. 10 each)	100,400
Irredeemable preference share capital (Rs. 100 each)	20,400
9% redeemable bonds (Rs. 100 each)	30,200

Additional information:**Existing businesses:**

- (i) IPL distributes 60% of its earnings as cash dividend. Following is the trend of its earning per share (EPS) for the preceding six years:

For the year ended 31 December	2017	2018	2019	2020	2021	2022
EPS (Rs.)	16	19	21	24	26	28

- (ii) The return on government securities is 9% per annum whereas market risk premium is 5% per annum. IPL's current equity beta is 1.2.
- (iii) IPL pays Rs. 20 as annual dividend on each preference share every year. The current market price of preference shares is Rs. 185 each.
- (iv) 9% redeemable bonds will be redeemed on 31 December 2025 at 15% premium. The current market price of these bonds is Rs. 110 each.
- (v) Applicable tax rate is 30%.

New business:

- (vi) IPL is planning to setup one more packaging unit. Total cost of the project is estimated to be Rs. 45 million which will be financed by issuing 15% redeemable preference shares of Rs. 100 each at par value. These shares will be redeemed after 4 years at a premium of 20% above par value.
- (vii) IPL estimates that, as a result of this new investment, the equity beta will increase to 1.3.

Required:

- (a) Compute IPL's weighted average cost of capital (WACC) of the existing business.
- (b) Calculate the impact of new business on IPL's existing WACC. Also discuss the effect of the revised WACC on the overall market value of the company.

17. REVISED WACC - SPRING 2024 (Q9)

Arctic Meridian Limited (AML) specializes in the establishment, maintenance and operation of a fibre optic cable system. Following information has been extracted from the latest financial statements of AML:

	Rs. in '000
10 million ordinary shares @ Rs. 10 each	100,000
11% bank loan	15,000

The risk-free rate of return is 9%, while the risk premium is 6%. The equity beta for AML's share is 1.1. The market value of AML's share is Rs. 45 each and is expected to grow by 5% per annum.

Expansion plan

AML is all set to expand its business by acquiring a local fibre optic business for Rs. 240 million. For this venture AML's management is considering either of the following two financing proposals:

- (i) Issue right shares at a premium of Rs. 10 per share. The equity beta would remain unchanged under this proposal.
- (ii) Issue 13% convertible bonds at par value of Rs. 1,000 each. The bondholders would have a right to either convert each bond into 15 ordinary shares or redeem it at par at the end of the third year. This proposal would result in an increase in equity beta to 1.2

The tax rate applicable to AML is 30%.

Required:

Recommend the financing proposal that would result in a lower weighted average cost of capital (WACC).

18. MARKET VALUE USING DIVIDEND VALUATION MODEL - AUTUMN 2023 (Q 10)

Plasto Plastic Limited (PPL) is an all equity financed company. Following information has been extracted from PPL's financial statements as at 30 June 2023:

- (i) PPL has ordinary share capital of Rs. 150 million with a face value of Rs. 10 per share.
- (ii) On 30 June 2023, PPL paid an annual dividend of Rs. 25 per share.
- (iii) PPL expects the next three annual dividend payments to be Rs. 25 per share. Thereafter, a 3% per annum growth rate is expected in perpetuity.
- (iv) The equity beta of PPL's share is 0.8, and the average return on the stock market is 21%. The return on government bonds is 12%.

PPL is considering a new investment which would require an initial outlay of Rs. 600 million and is considering financing it with a 1-for-3 rights issue. The following additional information is available regarding the new investment:

- (i) The investment would enable PPL to increase the dividend to Rs. 26 per share on 30 June 2024 and all subsequent dividends would increase by 5% per annum in perpetuity.
- (ii) The investment is riskier than the average of PPL's existing investments and, therefore, the beta would increase to 1.05.

Required: Using the dividend valuation model, determine whether PPL should undertake the new investment.

19. Azomax Limited - Revised WACC - AUTUMN 2024 (Q 8)

Azomax Limited (AL) is a company involved in the manufacturing and sale of home appliances. Below are the extracts from its latest annual financial statements:

	Rs. in million
Ordinary share capital (Rs. 100 each)	80
9% Irredeemable preference shares	30
Earnings before tax	150

Additional information:

- (i) AL's ordinary shares are currently trading at Rs. 110 each.
- (ii) The risk free rate of return is 7% and the average return on market investments is 11%. AL's equity beta is 1.1.
- (iii) The applicable tax rate is 35%.

Proposal under consideration:

AL plans to expand its product line by setting-up a new plant in Khushaab for manufacturing refrigerators. The project requires financing of Rs. 100 million for four years. The management is considering the following two financing options:

Option I: Issue 13% bonds of Rs. 100 each at par. Bondholders can either convert their bonds into ordinary shares at a ratio of 1 share for every 2 bonds or redeem them at a 15% premium at the end of the 4th year.

Option II: Issue zero-coupon bonds of Rs. 100 each at a discount of 20%. Bondholders can either convert each bond into 1 ordinary share or redeem them at par at the end of 4th year.

It is expected that either financing option will increase AL's equity beta to 1.2. Additionally, the market value of AL's shares is expected to grow by 5% per annum.

Required:

Using the weighted average cost of capital (WACC), recommend which of the two financing options should AL use for the new plant.

20. XYZ Limited – SPRING 2025 (Q 7)

XYZ Limited (XYZ) is engaged in the manufacturing of motor cycles. The following information has been extracted from the financial statements of XYZ as of 31 December 2024:

	Rs. in million
Ordinary share capital (Rs. 10 each)	100
20% Irredeemable preference shares (Rs. 100 each)	20
10% Bank loan	20

Additional information:

- (i) The details of the dividends in the last four years are as follows:

Year	2021	2022	2023	2024
Dividend per share	Rs. 6.0	Rs. 6.5	Rs. 7.0	*Rs. 8.0

**declared but not paid, due very shortly*

- (ii) XYZ's ordinary share price is quoted at Rs. 104 (cum dividend) per share and is expected to grow at 5% per annum.
- (iii) The preference share price is quoted at Rs. 200 per share.
- (iv) The applicable tax rate is 30%.
- (v) XYZ's current equity beta is 1.2.

New investment

XYZ plans to setup an assembly unit for electric motorcycles. The estimated project cost is Rs. 50 million, which will be financed through 12% convertible debentures (Rs. 100 each). Debenture holders will have the right to either convert each bond into one ordinary share or redeem it at a premium of 10% above par value of the bond, at the end of the third year.

Required:

- (a) Compute XYZ's weighted average cost of capital (WACC) for the existing business.
- (b) Calculate the impact of the new investment on XYZ's WACC.

ANSWERS

1. Option (a) is correct i.e., an approximate discount of Re. 1 per bond
2. Option (c) is correct i.e., par value of the bond, excluding any interest payable in near future
3. Option (b) is correct i.e., short-term interest rates to fall at some time in the future
4. Option (c) is correct i.e., Rs. 375 per share
5. Option (a) and (c) both are correct i.e., Gordon's growth model and Capital asset pricing model
6. Option (c) and (d) both are correct answers i.e., Buyers of shares at XD price are not entitled to receive the upcoming dividend payment. The XD share price is typically lower than when shares are traded "cum dividend"
7. Option (c) is correct i.e., Rs. 65.4
8. Option (b) is correct i.e., Rs. 2 billion

9. COST OF EQUITY

- (a) The cost of equity in the company can be estimated as:

$$0.70 / (8.20 - 0.70) = 0.70 / 7.50 = 0.093 \text{ or } 9.3\%.$$

- (b) The cost of equity in the company can be estimated as follows:

$$K_E = \frac{0.45}{5.00} + 0.04 = 0.13 \text{ or } 13\%.$$

- (c)

(i) Cost of equity = $\frac{1.50}{13.00} = 0.115 \text{ or } 11.5\%$.

(ii) Cost of equity = $\frac{1.50(1.04)}{13.00} + 0.04 = 0.16 \text{ or } 16\%$.

(iii) Cost of equity = $5\% + 1.20 (14\% - 5\%) = 15.8\%$.

10. MARKET VALUE USING DIVIDEND VALUATION MODEL

a) Market value of a share without the new investment

Item	20X1	20X2	20X3	20X4 to infinity
	Rs.	Rs.	Rs.	Rs.
	20	20	20	20×1.02
Terminal value				$\frac{1}{(0.15 - 0.02)}$
			157	↓
Cash flows	20	20	177	
Discount factors (at 15%)	0.870	0.756	0.658	
	17.4	15.1	116.4	
PV			148.9	

Discounting a cash flow by $1/r - i$ ($1/K_E - g$) gives a present value, where the present is one year before the first cash flow.

Therefore, discounting the t4 to infinity cash flow by $1/r - i$ gives a present value, where the present is t3.

This is the same as a sum of cash at t3 of this size. This must be discounted back from T3 to T0 in the usual way

b) Market value of a share with the new investment

$$MV = \frac{d(1+g)}{K_E - g}$$

$$MV = \frac{21}{0.16 - 0.04} = \text{Rs. 175 per share}$$

c) Whether the investment is worthwhile

	Rs. m
Exiting MV of equity (15m × Rs. 148.9)	2,233.5
New MV of equity (20m × Rs. 175)	3,500.0
Increase in MV of equity	1,266.5
Amount raised through rights issue	(500.0)
Increase in MV of equity due to the project	766.5

Conclusion: The project is favourable and should be undertaken.

11. MARKET VALUE OF CONVERTIBLE BONDS

Value of the convertible bond if it is expected to convert the bonds into shares

Year		Amount	Discount factor at 6%	Present value
		Rs.		Rs.
1	Interest	4.00	0.943	3.77
2	Interest	4.00	0.890	3.56
2	Share value (25 × Rs.4.25)	106.25	0.890	94.56
				101.89

Value of the convertible bond if not converted into shares

Year		Amount	Discount factor at 6%	Present value
		Rs.		Rs.
1	Interest	4	0.943	3.77
2	Interest	4	0.890	3.56
3	Interest	4	0.840	3.36
4	Interest and redemption	104	0.792	82.37
				93.06

The value of the convertible bond will be 101.78, in the expectation that the bonds will be converted into shares when the opportunity arises

12. (a) WACC of Company

$$WACC = (K_E \times (MV_E / \text{Total MV})) + (K_D \times (MV_D / \text{Total MV}))$$

$$WACC = (9.0\% \times (120/200)) + (6\% \times (1 - 0.30) \times (80/200))$$

$$WACC = 5.40\% + 1.68\% = 7.08\%$$

Workings

Market value of equity (ex div) = 20 m shares × Rs. 6 = Rs. 120 m

(b) WACC of Educare plc

Source of finance	Market value	Cost	Market value × cost
	Rs. million	K	MV × K
Equity	138.96	9.7%	13.48
Bonds	31.94	3.85%	1.23
	170.90		14.71

$$WACC = 14.71/170.90 = 0.0861 = 8.61\%$$

Alternatively using the WACC formula:

$$WACC = (K_E \times (MV_E / \text{Total MV})) + (K_D \times (MV_D / \text{Total MV}))$$

$$WACC = (9.7\% \times (138.96/170.90)) + (5.5\% \times (1 - 0.30) \times (31.94/170.90))$$

$$WACC = 7.89\% + 0.72\% = 8.61\%$$

Workings

Market value of equity (ex div) = 1.2m shares × (121 – 5.2) = Rs. 138.96m

Cost of equity

$$K_E = \frac{D_0(1+g)}{MV} + g \quad K_E = \frac{5.2(1.05)}{121 - 5.2} + 0.05 = 0.097 \text{ or } 9.7\%$$

Market value of debt

		Cash flow (Rs. m)	Discount factor (5.5%)	Present value (Rs. m)
1	Interest 9% × 30m	2.7	1/1.055	2.56
2	Interest	2.7		
2	Redemption	30.00		
		32.7	1/1.055 ²	29.38
				31.94

Pre-tax Cost of debt: Given as 5.5%

13. Jamal Limited**WAAC:**

Sources of Finance	Total market value (Rs. m)	Individual cost (%)	Overall cost (%)
Ordinary shares	1,350 (W-1)	32.73% (W-2)	$32.73\% \times (1,350 \div 1,950) = 22.66\%$
<u>Long term debts:</u>			
Bank loan	650	7% (W-3)	$7\% \times (650 \div 1,950) = 2.33\%$
	1,950		WACC = 24.99%

(W-1) Total market value of ordinary shares

Market value (ex-div) = Rs. 475 per share – Rs. 25 = Rs. 450 per share

Number of shares = 3 million

Total market value = Rs. 450 per share x 3 million = Rs. 1,350 m

(W-2) Cost of equity (K_E) by dividend valuation model with growthRecent (latest) dividend (D_0) = Rs. 25 per shareGrowth rate of dividend (g) = $[\text{Latest dividend} \div \text{Oldest dividend}]^{1/n} - 1$ Growth rate of dividend (g) = $[\text{Rs. 25} \div \text{Rs. 10}]^{1/4} - 1 = 0.2574$ Dividend after 1 year (D_1) = $D_0 (1 + g) = \text{Rs. 25} (1 + 0.2574) = \text{Rs. 31.435}$ per shareCost of equity (K_E) = ? $K_E = [D_1 \div \text{MV ex-div}] + g$ $K_E = [\text{Rs. 31.435} \div \text{Rs. 450}] + 0.2574 = 0.3273$ or 32.73%**(W-3) Cost of bank loan**Cost of bank loan = $K_D (1 - T) = \text{Interest rate} (1 - \text{tax rate}) = 10\% (1 - 0.30) = 7\%$ **14. Zaryab Limited (ZL)****Existing WACC**

	Rs. in '000		Rs. in '000
	Market value	Cost (Rate)	MV x Cost
Equity (5000 x Rs.25)	125,000	0.096 (W-1)	12,000
Bank loan	25,000	0.056 (0.08 X 0.7)	1,400
	150,000		13,400

$$\text{Existing WACC} = \frac{E \times K_E + D \times K_D}{E + D} = \frac{13,400}{150,000} = 8.93\%$$

Issue of Preference Shares	Rs. in '000
Cost	150,000
Rate	0.09
MV X Rate	13,500
Revised WACC $[13,400 + 13,500] / [150,000 + 150,000]$	8.97%

Issue of Convertible Bonds	Rs. in '000
Cost/Market Value	150,000
Rate (W-2)	0.0954
MV X Rate	14,310
Revised WACC $[13,400 + 14,310] / [150,000 + 150,000]$	9.24%

W-1: Cost of equity

$$K_E = R_f + (R_m - R_f) \times B_e$$

$$K_E = 0.06 + (0.1 - 0.06) \times 0.9$$

$$K_E = 0.096 \text{ or } 9.6\%$$

W-2: IRR	Cash flow	D.F. @ 10%	PV	D.F. @ 5%	PV
Issue Value [given]	1,000	1.000	1,000	1.000	1,000
Interest $(1000 \times 0.09 \times 0.7)$	(63)	3.170	(200)	3.546	(223)
Redemption Value (W-2.1)	(1,147)	0.683	(783)	0.823	(944)
			17		(167)

$$IRR = A\% + \left[\frac{NPV_A}{NPV_A - NPV_B} \right] \times (B - A)\%$$

$$IRR = 0.05 + \left[\frac{-167}{-167 - 17} \right] \times (0.1 - 0.05)$$

$$IRR = 9.54\%$$

W-2.1: Redemption Value	Rs.
Higher of:	
- Bond $[1000 \times 1.1]$	1,100
- Shares $[35 \times 25 \times (1.07)^4]$	1,147
	1,147

Recommendation:

ZL should issue preference shares as it would result in lower WACC.

15. (a) Lahore Quotient (LQ)

Existing WACC

Sources of Finance	Total market value (Rs. m)		Individual cost (%)		Overall cost (%)
Ordinary shares	(W-2)	1,177.58	13.20%	(W-1)	$13.2\% \times (1,177.58 \text{ m} \div 1,277.58 \text{ m}) = 12.17\%$
<u>Long term debts:</u>					
Bank loan		100.00	7.7%	(W-3)	$7.7\% \times (100 \text{ m} \div 1,277.58 \text{ m}) = 0.60\%$
		1,277.58			Existing WACC = 12.77%

(b) Revised WACC

Option 1: Revised WACC after issue of new shares

Sources of Finance	Total market value (Rs. m)		Individual cost (%)		Overall cost (%)
Ordinary shares	(W-5)	1,734.06	12.80%	(W-4)	$12.8\% \times (1,734.06 \text{ m} \div 1,834.06 \text{ m}) = 12.10\%$
<u>Long term debts:</u>					
Bank loan		100.00	7.7%	(W-3)	$7.7\% \times (100 \text{ m} \div 1,834.06 \text{ m}) = 0.42\%$
		1,834.06			WACC = 12.52%

Option 2: Revised WACC after issue of convertible bonds

Sources of Finance	Total market value (Rs. m)		Individual cost (%)		Overall cost (%)
Ordinary shares	(W-2)	1,177.58	13.2%	(W-1)	$13.2\% \times (1,177.58 \text{ m} \div 1,327.58 \text{ m}) = 11.71\%$
Convertible bonds		50	11.27	(W-6)	$11.27\% \times (50 \text{ m} \div 1,327.58 \text{ m}) = 0.42\%$
<u>Long term debts:</u>					
Bank loan		100	7.7%	(W-3)	$7.7\% \times (100 \text{ m} \div 1,327.58 \text{ m}) = 0.58\%$
		1,327.58			WACC = 12.71%

(W-1): Cost of equity

$$K_E = R_f + (R_m - R_f) \times \beta_e$$

$$K_E = 0.08 + (0.12 - 0.08) \times 1.3 = 13.20\%$$

(W-2): Market value (MV) of equity

$$\text{MV per share} = d(1+g) / K_E - g$$

$$\text{MV per share} = \frac{14(1+0.1187)}{0.132-0.1187} = \text{Rs. } 1,177.58$$

$$\text{MV of equity} = 1,000,000 \times 1,177.58 = \text{Rs. } 1,177,580,000$$

$$(W-2.1) \text{ Growth rate} = P(1+g)^n - P = 10(1+g)^3 - 10 \Rightarrow g = 11.87\%$$

$$(W-3): \text{Cost of debt } K_D(1-T) = \text{Interest}(1-\text{tax}) = 11\%(1-30\%) = 7.70\%$$

$$(W-4) K_e \text{ (using CAPM)} = 0.08 + (0.12 - 0.08) \times 1.2 = 12.80\%$$

(W-5) Revised market value (MV) of equity:

$$\text{MV per share} = \frac{14(1+0.1187(W2.1))}{0.128-0.1187} = \text{Rs. } 1684.06$$

$$\text{MV of equity} = (1,000,000 \times 1684.06) + 50,000,000 = \text{Rs. } 1,734,060,000$$

(W-6) K_D for convertible bonds using IRR of Cash flows:

	Cash flows (Rs.)	D.F @ 10%	PV (Rs.)	D.F. @ 12%	PV (Rs.)
Issue value	1000	1.000	1000	1.000	1000
Interest (1000 X 0.1 X 0.7)	(70)	3.170	(222)	3.037	(213)
Redemption (3 X 400)	(1200)	0.683	(820)	0.636	(763)
			(42)		24

$$\text{IRR} = A\% + \left(\frac{\text{NPV}_A}{\text{NPV}_A - \text{NPV}_B} \right) \times (B - A)\%$$

$$\text{IRR} = 0.1 + \left(\frac{-42}{-42 - 24} \right) \times (0.12 - 0.1) = 11.27\%$$

Recommendation: LQ should issue new shares to raise additional financing as it would result in lower WACC.

(c)

Before selecting the source of finance, KK should consider the following factors:

Amount required – The Company should have a best estimate of the amount of finance required as after financing, further long-term bank lending may be restricted or available at a higher cost.

Cost – The Company should consider both the on-going servicing cost and the initial arrangement cost for its financing. For example, the cost of both raising and servicing equity may be high as shareholders accept high risk in return for the promise of higher rewards.

Duration – Broadly speaking short-term financing is used to fund short-term assets and long-term financing used to fund long-term assets.

Flexibility – The Directors should consider balancing risk, cost and flexibility. For example, in a year with low profits (or even a loss) the company could decide not to pay a dividend to the shareholders. However, most debt financing requires the payment of interest irrespective of company performance.

16. International Packaging Limited**a. Cost of equity**

$$K_e = R_f + (R_m - R_f) \times B_e = 9\% + (5\% \times 1.2) = 15.00\%$$

Dividend Growth

Year	EPS (Rs.)	Dividend (Rs.) @ 60%
Dec-17	16	9.6
Dec-22	28	16.8

$$S = P(1+g)^n \Rightarrow 16.8 = 9.6(1+g)^5 = 11.843\%$$

Market value - Ordinary share capital

$$\text{MV per share} = d(1+g) \div K_e - g \Rightarrow 16.8 (1+0.11843) \div 0.15 - 0.11843 = \text{Rs. } 595.17$$

Cost of 9% Redeemable Bonds:

Years	Cash flows (Rs.)	Discount factor @ 10%	PV (Rs.)	Discount factor @ 8%	PV (Rs.)
0	110.0	1.000	110.00	1.000	110.00
1	(6.3)	0.909	(5.73)	0.935	(5.89)
2	(6.3)	0.826	(5.20)	0.873	(5.50)
3	(121.3)	0.751	(91.10)	0.816	(99.02)
			7.97		(0.41)

$$IRR = L + \frac{NPV_L}{NPV_H - NPV_L} \times (H - L) = 7.15\%$$

Cost of irredeemable preference shares:

$$MV = \frac{d}{r_p} = \frac{20}{185} = 10.81\%$$

Weighted average cost of capital - Existing

Description	Units (in '000)	Per unit MV	Total MV (Rs. in '000)	Cost %	Cost (Rs. in '000)
Ordinary shares	10,040	595.17	5,975,507	15.00%	896,331
9% redeemable bonds	302	110.00	33,220	7.15%	2,375
Preference Shares	204	185.00	37,740	10.81%	4,080
			6,046,467		902,786

$$WACC = 902,786 \div 6,046,467 = 14.93\%$$

b. Revised cost of equity & market value (MV) of ordinary shares

$$K_e = R_f + (R_m - R_f) \times B_e = 9\% + (5\% \times 1.3) = 15.50\%$$

$$MV \text{ per share} = d(1+g) \div K_e - g \Rightarrow 16.8 (1+0.11843) \div 0.155 - 0.11843 = \text{Rs. } 513.8$$

Cost of new redeemable preference shares:

Years	Cash Flow (Rs.)	Discount factor 20%	Present Value	Discount factor 15%	Present Value
0	100	1.000	100.00	1.000	100.00
1	(15)	0.833	(12.50)	0.870	(13.04)
2	(15)	0.694	(10.42)	0.756	(11.34)
3	(15)	0.579	(8.68)	0.658	(9.86)
4	(135)	0.482	(65.10)	0.572	(77.19)
			3.30		(11.43)

$$IRR = L + \frac{NPV_L}{NPV_H - NPV_L} \times (H - L) = 18.88\%$$

Weighted average cost of capital – revised:

Description	Units (in '000)	Per unit MV	Total MV (Rs. in '000)	Cost %	Cost (Rs. in '000)
Ordinary shares	10,040	513.80	5,158,552	15.50%	799,576
9% redeemable bonds	302	110.00	33,220	7.15%	2,375
20% Preference Shares	204	185.00	37,740	10.81%	4,080
15% redeemable preference shares	450	100.00	45,000	18.88%	8,496
			5,274,512		814,527

$$WACC = 814,527 \div 5,274,512 = 15.44\%$$

Conclusion: As a result of increase in the WACC, the overall market value (equity, preference and debt capital) of the company will fall.

17. Arctic Meridian Limited**Ordinary share capital****Cost of equity**

$$K_e = R_f + (R_m - R_f) \times \beta_e$$

$$= 9\% + 6\% \times 1.1 \Rightarrow 15.60\%$$

$$\text{Cost of debt} = 11\% \times 0.7 \Rightarrow 7.70\%$$

New Financing**Option I – Right Shares****Weighted average cost of capital**

	Units (in '000)	MV	MV (Rs. in '000)	Cost %	Rs. in '000
Ordinary shares	10,000	45.00	450,000	15.60%	70,200
Loan (Existing)	-	-	15,000	7.70%	1,155
Right Shares	-	-	240,000	15.60%	37,440
			705,000		108,795

$$\text{Revised WACC} \Rightarrow 108,795 \div 705,000 \times 100 \Rightarrow 15.43\%$$

Option II – Convertible loan:

$$\text{Cost of equity } K_e = R_f + (R_m - R_f) \times \beta_e$$

$$= 9\% + 6\% \times 1.2 \Rightarrow 16.20\%$$

Cost of convertible loan

Description	Cash Flow (Rs.)	Discount factor @ 9%	PV (Rs.)	Discount factor @ 12%	PV (Rs.)
Issue value	1,000.00	1.000	1,000.00	1.000	1,000
Interest (Rs. 1,000×0.13×0.7)	(91.00)	2.531	(230.35)	2.402	(218.57)
Redemption (W-1)	(1,000.00)	0.772	(772.18)	0.712	(711.78)
			(2.53)		69.65

$$IRR = L + \frac{NPV_L}{NPV_H - NPV_L} \times (H - L) = 9\% + \frac{-2.53}{69.5 - (-2.53)} \times (12\% - 9\%) = 9.11\%$$

(W-1) Redemption value	Rs.
Higher of:	
- Par value	1000.00
- Shares 45 X 15 X (1.05) ³	781.40

Weighted average cost of Capital:

	Units (in '000)	MV	MV (Rs. in '000)	Cost %	Rs. in '000
Ordinary shares	10,000	45.00	450,000	16.20%	72,900.00
Loan (Existing)	-	-	15,000	7.70%	1,155.00
Right Shares	240	1000	240,000	9.11%	21,852.48
			705,000		95,907.48

$$\text{Revised WACC} \Rightarrow 95,907.48 \div 705,000 \times 100 \Rightarrow 13.60\%$$

Recommendation: Option II – Convertible loan gives lower WACC than issuance of right shares.

18. Plasto Plastic Limited (PPL)**Market value of a share without the new investment****Cost of equity:**

$$K_e = R_f + (R_m - R_f) \times \beta_e$$

$$K_e = 0.12 + (0.21 - 0.12) \times 0.8$$

$$K_e = 19.20\% \text{ or } 0.192$$

Terminal value of dividend:

$$TV = D_0(1+g) / (K_e - g)$$

$$TV = 25(1+0.03) / (0.192 - 0.03)$$

$$TV = 158.95$$

	2024	2025	2026
Dividend	25.00	25.00	25.00
Terminal value	-	-	158.95
	25.00	25.00	183.95
Discount factor	0.839	0.704	0.590
	20.97	17.59	108.61
Market value per share	147.18		

Market value of a share with new investment

Cost of equity:

$$K_e = R_f + (R_m - R_f) \times B_e$$

$$K_e = 0.12 + (0.21 - 0.12) \times 1.05$$

$$K_e = 21.45\% \text{ or } 0.2145$$

Market value per share

$$MV = D_1 / (K_e - g)$$

$$MV = 26 / (0.2145 - 0.05)$$

$$MV = 158.05$$

Whether the investment should be undertaken:

	Rs. in million
Existing MV of equity	2,207.68
20 million shares × 158.05	
New MV of equity	
New shares (1 for 3)	
15 × 4 ÷ 3 = 20	
20 million shares × 158.05	3,161.00
Increase in MV of equity	953.32
Amount raised through rights	600.00
Increase in MV of equity (due to project)	353.32

Conclusion: The project results in increase in MV of the equity, hence should be undertaken.

19. AZOMAX LIMITED - REVISED WACC - AUTUMN 2024 (Q 8)**Ordinary share capital****Revised cost of equity**

$$K_e = 0.07 + (0.11 - 0.07) \times 1.2 \Rightarrow 11.8\%$$

Option I – 13% Bonds**Weighted average cost of capital**

	Units in '000	MV	MV Rs. in '000	Cost %	Rs. in '000
Ordinary shares	800	110.00	88,000	11.80%	10,384
11% Irredeemable preference shares	-	-	30,000	9.00%	2,700
13% bond	-	-	100,000	11.72%	11,720
			218,000		24,804

$$\text{Revised WACC} \Rightarrow 24,809 \div 218,000 \times 100 \Rightarrow 11.38\%$$

Description	Cash Flow (Rs.)	Discount factor @ 10%	Present value (Rs.)	Discount factor @ 15%	Present value (Rs.)
Issue value	100.00	1.000	100.00	1.000	100.00
Interest (Rs. $100 \times 0.13 \times 0.65$)	(8.45)	3.169	(26.78)	2.854	(24.12)
Redemption (W-1)	(115.00)	0.683	(78.55)	0.571	(65.67)
			(5.33)		10.21

$$\text{IRR} = L + \frac{\text{NPV}_a}{\text{NPV}_a - \text{NPV}_b} \times (H - L) \quad 10\% + \frac{-5.33}{-5.33 - 10.12} \times (15\% - 10\%) \Rightarrow 11.72\%$$

W-1: Redemption value – Higher of

Repay at premium		115
Convertible into shares	$110 \times (1.05)^4 \times 0.5$	66.852

Option II – Zero coupon bonds**Weighted average cost of capital**

	Units in '000	MV	MV Rs. in '000	Cost %	Rs. in '000
Ordinary shares	800	110.00	88,000	11.80%	10,384
11% Irredeemable preference shares	-	-	30,000	9.00%	2,700
Zero coupon bond	-	-	100,000	13.94%	13,940
			218,000		27,024

$$\text{Revised WACC} \Rightarrow 27,025 \div 218,000 \times 100 \Rightarrow 12.40\%$$

Description	Cash Flow (Rs.)	Discount factor @ 12%	Present value (Rs.)	Discount factor @ 20%	Present value (Rs.)
Issue value	80.00	1.000	80.00	1.000	80.00
Interest – zero coupon	-	-	-	-	-
Redemption	(133.71)	0.636	(85.03)	0.482	(64.45)
			(5.03)		15.55

$$\text{IRR} = L + \frac{\text{NPV}_a}{\text{NPV}_a - \text{NPV}_b} \times (H - L) \quad 12\% + \frac{-5.03}{-5.03 - 15.52} \times (20\% - 12\%) \Rightarrow 13.96\%$$

W-1: Redemption value – Higher of

Repay at par		100.00
Convertible into shares	$110 \times (1.05)^4$	133.71

Conclusion: Option 1 is the recommended option because it results in the lower WACC.

20. XYZ LIMITED – SPRING 2025 (Q 7)

(a) Weighted average cost of capital (WACC)

	Units in '000	MV	MV Rs. in '000	Cost %	Rs. in '000
Ordinary shares	10,000	96.00	960,000	19.24%	184,668
Preference shares	200	200.00	40,000	10.00% (20÷200)	4,000
Bank loan	-	-	20,000	7.00% (10%×30%)	1,400
			1,020,000		190,068

$$\text{WACC} \Rightarrow 190,068 \div 1,020,000 \times 100 \Rightarrow 18.63\%$$

W-1:

XD Price	104-8	96
Dividend growth rate	$(8/6)^{1/3} - 1$	10.06%
Cost of equity	$[8 \times (1 + 10.06\%) \div 96] + 10.06\%$	19.24%

(b) Revised WACC

	Units in '000	MV	MV Rs. in '000	Cost %	Rs. in '000
Ordinary shares capital	10,000	96.00	960,000	19.24%	184,668
Preference shares	200	200.00	40,000	10.00%	4,000
Bank loan	-	-	20,000	7.00%	1,400
Convertible debentures			50,000	11.81%	5,903
			1,070,000		195,971

$$\text{Revised WACC} \Rightarrow 195,971 \div 1,070,000 \times 100 \Rightarrow 18.32\%$$

W-1: Redemption value – Higher of

Par value	10% premium	110
Convertible into shares	$96 \times (1.05)^3$	111.13

Description	Cash flow (Rs.)	Discount factor @ 10%	Present value (Rs.)	Discount factor @ 15%	Present value (Rs.)
Issue value	100.00	1.000	100.00	1.000	100.00
Interest	(8.40)	2.487	(20.89)	2.283	(19.18)
Redemption (W-1)	(111.13)	0.751	(83.49)	0.658	(73.07)
			(4.38)		7.75

$$\text{IRR} = L + \frac{\text{NPV}_a}{\text{NPV}_a - \text{NPV}_b} \times (H - L) \quad 10\% + \frac{-4.38}{-4.38 - 7.75} \times (15\% - 10\%) \Rightarrow 11.81\%$$

FINANCIAL RISK MANAGEMENT

IN THIS CHAPTER

1. Risk management
2. Risk management framework: ISO 31000
3. Risk management - the business benefits
4. Financial risk management
5. Types of financial risks and their management
6. Self-test questions

1. RISK MANAGEMENT

1.1 Risk

Risk exists whenever a future outcome or future event cannot be predicted with certainty, and a range of different possible outcomes or events might occur.

1.2 Categories of Risks

Risks can be divided into two categories:

- pure risks
- speculative risks.

1.2.1 Pure risk (downside risk)

Pure risk, also called *downside risk*, is a risk where there is a possibility that an adverse event might occur. Events might turn out to be worse than expected, but they cannot be better than expected.

For example, there might be a safety risk that employees could be injured by an item of machinery. This is a pure risk, because the expectation is that no-one will be injured but a possibility does exist.

Similarly, there might be a risk for a company that key workers will go on strike and the company will be unable to provide its goods or services to customers. This is a pure risk, because the expected outcome is 'no strike' but the possibility of a strike does exist.

1.2.2 Speculative risk (two-way risk)

Speculative risk, also called *two-way risk*, exists when the actual future event or outcome might be either better or worse than expected.

- An investor in shares is exposed to a speculative risk, because the market price of the shares might go up or down. The investor will gain if prices go up and suffer a loss if prices go down.
- An individual might ask his bank for a loan to buy a house, and the bank might offer him a 10-year loan at a fixed rate of interest or at a rate of interest that varies with changes in the official bank rate. The individual takes a risk with his choice of loan. If he chooses a fixed interest loan, there is a risk that interest rates will go up in the next 10 years, in which case he will benefit from the fixed rate on his loan. On the other hand, interest rates might go down, and he might find that he is paying more in interest than he would have done if he had arranged a loan at a variable rate of interest.
- Companies face two-way risk whenever they make business investment decisions. For example, a company might invest in the development of a new product, on the basis of sales and profit forecasts. Actual sales and profits might turn out to be higher or lower than forecast, and the investment might provide a high return, moderate return or low return (or even a loss).
- Companies face both pure risks and speculative risks.
- Pure risks are risks that can often be controlled either by means of internal controls or by insurance. These risks might be called internal control risks or operational risks.
- Speculative risks cannot be avoided because risks must be taken in order to make profits. As a general rule, higher risks should be justified by the expectation of higher profits (although events might turn out worse than expected) and a company needs to decide what level of speculative risks are acceptable. Speculative risks are usually called business risk, and might also be called strategic risk or enterprise risk.

► *Example: Strategic and operational risks*

The following examples illustrate how there are both strategic risks and operational risks in many decisions taken by management. The examples relate to a large public company.

Management decision	Comment on the risk
The company has commissioned a software company to design a new information system. The system will be used for marketing analysis and to sell goods to customers on-line.	There are strategic risks with the new system. These include the risk that customers will not want to buy goods on-line, and the risk that a competitor will develop a more popular e-commerce web site. There are also operational risks. These include risks that the new system will fail to function properly, and might suffer from hardware or software faults. These risks can be managed by operational controls.
The company has a large customer service centre where its employees take telephone calls from customers and deal with customer complaints. On average, staff are on the telephone talking to customers for 75% of their working time. Management has decided that in order to increase profits, staff levels should be reduced by 10% at the centre. It is estimated that this will have only a small effect on average answering times for customer calls.	There is a strategic risk. The company might lose some customers if the level of service from the service centre deteriorates. Management must judge whether the risk of losing customers is justified by the expected reduction in operating costs. There are also operational risks. If employees have to spend more time on the telephone the risks of making mistakes or providing an unsatisfactory service is likely to increase. There might also be a risk that answering times will be much longer than expected, due to operational inefficiencies.

1.3 Risk management

1.3.1 Definition of risk management

Risk management is the process of managing both downside risks and business risks. It can be defined as the culture, structures and processes that are focused on achieving possible opportunities yet at the same time control unwanted results.

Risk management is a corporate governance issue. The board of directors have a responsibility to safeguard the assets of the company and to protect the investment of the shareholders from loss of value. The board should therefore keep strategic risks within limits that shareholders would expect, and to avoid or control operational risks.

The SECP's Code of Corporate Governance in Pakistan states that the directors should report on governance, risk management and compliance issues and that risks considered shall include reputational risk and shall address risk analysis, risk management and risk communication.

The Board is responsible for defining the company's risk policy, risk appetite and risk limits as well as ensuring that these are integrated into the day-to-day operations of the company's business.

1.3.2 Elements of a risk management system

The elements of a risk management system should be similar to the elements of an internal control system:

- There should be a culture of risk awareness within the company. Managers and employees should understand the 'risk appetite' of the company, and that excessive risks are not justified in the search for higher profits.
- There should be a system and processes for identifying, assessing and measuring risks. When risks have been measured, they can be prioritised, and measures for controlling or containing the risk can be made.
- There should be an efficient system of communicating information about risk and risk management to managers and the board of directors.

- Strategies and risks should be monitored, to ensure that strategic objectives are being achieved within acceptable levels of risk.

1.3.3 Organising for risk management

The responsibilities for risk management and the management structures to go with it vary between organisations. Some companies employ risk management specialists and in financial services there is a regulatory requirement in many countries for banks and other financial service organisations to have well-structured risk management systems.

It is useful to be aware of differences in organisation structures and responsibilities.

The board of directors of large public companies may be expected to review the risk management system within their company on a regular basis, and report to shareholders that the system remains effective. If there are material weaknesses in the risk management system, a company may be required to provide information to shareholders.

Codes of corporate governance typically suggest that the Board of Directors establish a Risk Management Committee to review the adequacy and effectiveness of risk management and controls at least annually and the board has responsibility to report on the effectiveness of the controls to shareholders

A company may decide that it needs a senior management committee to monitor risks. This management committee may be chaired by the CEO and consist of the other executive directors and some other senior managers. It may also include professional risks managers or the senior internal auditor. The function of this executive committee would be to co-ordinate risk management throughout the organisation.

- It would be responsible for identifying and assessing risks, and reporting to the board. It may also formulate possible business risk management strategies, for recommendation to the board.
- It should also agree on programmes for the design and implementation of internal controls.
- It should monitor the effectiveness of risk management throughout the company (both business risk management and the control of internal control risks).

Risk management should therefore happen at both board level (with the involvement of independent NEDs) and at operational level (with the involvement of senior executives and risk managers).

1.3.4 Benefits of risk management

As with all major undertakings within an organization, it is essential to gain the backing and sponsorship of executive management. By far the best way to achieve this, rather than through highlighting the negative aspects of not having risk management, is to illustrate the positive gains of having an effective risk management framework in place.

Risk management allows an organization to ensure that it knows and understands the risks it faces. The adoption of an effective risk management process within an organization will have benefits in a number of areas, examples of which include:

- Increased likelihood of achieving objectives
- Encouraged proactive management
- Awareness of the need to identify and treat risk throughout the organization
- Improved identification of opportunities and threats
- Compliance with relevant legal and regulatory requirements and international norms
- Improved mandatory and voluntary reporting
- Improved governance
- Improved stakeholder confidence and trust
- Establishment of a reliable basis for decision making and planning
- Improved controls
- Effective allocation and use of resources for risk treatment

2. RISK MANAGEMENT FRAMEWORK: ISO 31000

2.1 Introduction and scope

ISO (the International Organisation for Standardisation) is a worldwide federation of national standards bodies (ISO member bodies). ISO 31000 is an international standard first published in 2009. It **provides principles and guidelines for effective risk management**. It outlines a generic approach to risk management, which can be applied to different types of risks and used by any type of organisation.

ISO 31000 offers a set of best practices so an organisation can formalize its risk management practices. This approach is intended to facilitate broader adoption of enterprise risk management by companies that currently struggle with multiple, “silo-centric” risk management systems.

Even if an organisation already has a formal process for managing uncertainty, it can still use ISO 31000 to carry out a critical review of its existing practices and processes. Although ISO 31000 is not a certification, it does provide an easy to use and adapt guide to help organisations manage risk in order to achieve objectives, identify opportunities and threats and allocate resources for risk treatment.

2.2 Main Components of ISO 31000

There are three main components of ISO 31000:

- Risk Management Principles – What risk management should achieve?
- Risk Management Framework – How risk management should be embedded in the organisation?
- Risk Management Process – What are the stages of risk management?

2.2.1 Risk Management Principles

ISO 31000 provides a set of principles for guidance on the characteristics of effective and efficient risk management, communicating its value and explaining its intention and purpose.

The standard includes a number of principles that risk management should verify. These principles explain that risk management is effective when it has the following principles:

- **Customised:** Risk management process are tailored/customized as per objectives of the organisation
- **Human and Cultural Factors:** Risk management at each level takes human and cultural factors into account
- **Integrated:** Risk management is an integral part of organisational processes.
- **Best Available Information:** Information is relevant, timely, clear and available to relevant stakeholders.
- **Value Creation and Protection:** The purpose of risk management is to create and protect value
- **Dynamic:** Risk management is responsive to change.
- **Inclusive:** is transparent and involve stakeholders on a timely basis.
- **Structured and Comprehensive:** Risk management is systematic and structured.
- **Continual Improvement:** Risk management is continually improved through learning and experience.

2.2.2 Risk Management Framework

The purpose of the risk management framework is to assist the organisation in integrating risk management into significant activities and functions. This also includes ownership of the risk management system by top management and other key stakeholders.

The framework guides towards establishing the foundations and organisational arrangements for designing, implementing, monitoring, continually improving risk management throughout the organisation.

The framework has the following elements:

Leadership and commitment

Management of the organisation needs to demonstrate a strong and sustained commitment to risk management by defining risk management policy, objectives, ensuring legal and regulatory compliance, ensuring necessary resources are allocated to risk management, communicating the benefits of risk management to all stakeholders.

Examples of how the management can get involved and lead are:

- aligning risk management with the strategy, objectives and culture of the organisation;
- issuing a statement or policy that establishes the RM approach, plan or course of action;
- making necessary resources available for managing risk; and
- establishing amount and setting metrics for the type of risk that may or may not be taken (risk appetite).

Integration

Risk is managed in every part of the organisation's structure. Everyone in an organisation has responsibility for managing risk.

Integrating risk management into an organisation is a dynamic and iterative process, and should be customised to the organisation's needs and culture. Risk management should be a part of, and not separate from, the organisational purpose, governance, leadership and commitment, strategy, objectives and operations.

Design

While designing a risk management framework, ISO 31000 explains that it is important to outline specific steps that the business will take to manage risk, and design that program so that it reflects items such as the organisation's core values, its business strategy, regulatory obligations, contractual obligations to third parties, etc. This means primarily:

- understanding the organisation and its internal and external context;
- demonstrating commitment to risk management and allocating appropriate resources; and
- facilitating communication and consultation.

Implementation

The implementation of a risk management system should start by developing a plan by ensuring that plan has the appropriate time and resources to execute the implementation effectively. The steps for implementation should include:

- developing an appropriate implementation plan including deadlines;
- identifying where, when and how different types of decisions are made, and by whom;
- modifying the applicable decision-making processes where necessary;
- ensuring that the organisation's arrangements for managing risk are clearly understood and practiced.

Evaluation

Once the implementation stage is complete, it is important to periodically review the risk management techniques being used to assess how well they achieve the organisation's original goals, and to see whether any new risks have occurred that need to be incorporated. This would include:

- periodically measure risk management metrics and performance against set goals, the original purpose, implementation plans, indicators and expectations.
- determine whether the current risk management set up is still suitable or needs an update.

Improvement

An evaluation may allow a risk manager to identify any new steps to be taken, as necessary, either to improve the risk management systems, or to introduce new techniques to the implementation plan to address new risks.

A technological risk currently facing manufacturers of televisions and media companies is which format of high definition (HD) television they should support. There are two competing formats, and only one seems likely to succeed in the longer term.

2.2.3 Risk Management Process

This is the set of management policies, procedures, and practices that are meant to assure risk management is effective. Ideally, the risk management process is guided by the risk management framework.

The risk management process outlined in the ISO 31000 standard includes the following activities:

Communication and consultation

Communication seeks to promote awareness and understanding of risk, whereas consultation involves obtaining feedback and information to support decision-making.

The purpose of communication and consultation is to assist relevant stakeholders in understanding risk, the basis on which decisions are made and the reasons why particular actions are required.

Close coordination between the two should facilitate factual, timely, relevant, accurate and understandable exchange of information, taking into account the confidentiality and integrity of information as well as the privacy rights of individuals.

Scope, context and criteria

Scope, context and criteria involve defining the scope of the process and understanding the external and internal context.

The purpose of establishing the scope, the context and criteria is to customize the risk management process, enabling effective risk assessment and appropriate risk treatment.

The context comprises both external elements (regulatory environment, market conditions, stakeholder expectations) and internal elements (the organisation's governance, culture, standards and rules, capabilities, existing contracts, worker expectations, information systems, etc.).

Risk assessment

Risk assessment is the overall process of risk identification, risk analysis and risk evaluation. Risk assessment should be conducted systematically, iteratively and collaboratively, drawing on the knowledge and views of stakeholders. It should use the best available information, supplemented by further enquiry as necessary.

Risk identification is identifying risks that could prevent us from achieving our objectives.

Risk analysis involves understanding the sources and causes of the identified risks; studying probabilities and consequences given the existing controls, to identify the level of residual risk.

Residual Risk

Companies control the risks that they face. Controls cannot eliminate risks completely, and even after taking suitable control measures to control a risk, there is some remaining risk exposure.

The remaining exposure to a risk after control measures have been taken is called residual risk. If a residual risk is too high for a company to accept, it should implement additional control measures to reduce the residual risk to an acceptable level.

Risk evaluation includes comparing risk analysis results with risk criteria to determine whether the residual risk is tolerable.

Risk treatment

The purpose of risk treatment is to select and implement options for addressing risk. Risk treatment involves an iterative process of:

- formulating and selecting risk treatment options;
- planning and implementing risk treatment;
- assessing the effectiveness of that treatment;
- deciding whether the remaining risk is acceptable;
- if not acceptable, taking further treatment

Risk treatment options are not necessarily mutually exclusive or appropriate in all circumstances. Options for treating risk may involve one or more of the following:

- avoiding the risk by deciding not to start or continue with the activity that gives rise to the risk;
- taking or increasing the risk in order to pursue an opportunity;
- removing the risk source;
- changing the likelihood;
- changing the consequences;
- sharing the risk (e.g. through contracts, buying insurance);
- retaining the risk by informed decision.

Monitoring and review

Monitoring and review includes planning, gathering and analysing information, recording results and providing feedback.

The purpose of monitoring and review is to assure and improve the quality and effectiveness of process design, implementation and outcomes. Ongoing monitoring and periodic review of the risk management process and its outcomes should be a planned part of the risk management process, with responsibilities clearly defined.

The results of monitoring and review should be incorporated throughout the organisation's performance management, measurement and reporting activities

Recording & Reporting

The risk management process and its outcomes should be documented and reported through appropriate mechanisms.

3. RISK MANAGEMENT - THE BUSINESS BENEFITS

As with all major undertakings within an organisation, it is essential to gain the backing and sponsorship of executive management. By far the best way to achieve this, rather than through highlighting the negative aspects of not having risk management, is to illustrate the positive gains of having an effective risk management framework in place.

Risk management allows an organisation to ensure that it knows and understands the risks it faces. The adoption of an effective risk management process within an organisation will have benefits in a number of areas, examples of which include:

- Increased likelihood of achieving objectives
- Encouraged proactive management
- Awareness of the need to identify and treat risk throughout the organisation
- Improved identification of opportunities and threats
- Compliance with relevant legal and regulatory requirements and international norms
- Improved mandatory and voluntary reporting
- Improved governance
- Improved stakeholder confidence and trust
- Establishment of a reliable basis for decision making and planning
- Improved controls
- Effective allocation and use of resources for risk treatment

4. Financial Risk Management

4.1 Definition of Financial Risk

The Financial Risk may be explained as the *effect of uncertainty on financial objectives* of the business. The term effect refers to positive or negative deviation from what is expected or planned.

4.2 Financial objectives

Some of the key financial objectives are:

- Stability of earnings trends
- Optimization of working capital
- Timely discharge of liabilities
- Timely recovery of debts
- Reduced cost of capital

The key factors causing risks of not achieving the above stated objectives could be due to uncertainty about:

- Price of commodities or services relevant to business
- Rates of interest
- Rates of foreign exchange
- Credit worthiness of debtors
- Quality of liquidity of financial assets
- Ability of business to access financing

4.3 Types of Financial Risks

Based on the nature of uncertainty the financial risk can be classified into the following broader categories:

- Market Risk
- Credit Risk
- Liquidity Risk

5. TYPES OF FINANCIAL RISKS AND THEIR MANAGEMENT

5.1 Market Risk:

These are the financial risks that are associated with the uncertainty about the market rates and prices at which a business can deal in commodities, services, foreign exchange and financing.

5.1.1 Interest Rate Risk:

Interest rates can move up or down, although economists are often able to predict the direction of future movements. A movement in interest rates can affect companies in either a positive or a negative way.

- If a company has borrowed at a variable rate of interest, it will have to pay higher interest costs if the interest rate goes up, and lower interest costs if the rate goes down.
- If a company has borrowed at a fixed rate of interest, for example by issuing bonds, it will continue to pay the same rate of interest even if market interest rates go down.
- If company has invested in fixed rate bonds a rise in interest yields will result in a fall in the price of existing fixed rate bonds. A fall in the market interest rate will send bond prices up.

Managing Interest Rate Risk: Interest Rate Hedging

Some organisations might wish to hedge their exposures to interest rate risk. They might also want to take advantage, if possible, from any favourable movements in interest rates. There are several ways in which risks can be hedged and opportunities to benefit from interest rate changes can be exploited.

Few common methods include:

- Forward rate agreements (FRAs);
- Interest rate futures; and
- Interest rate options

Forward Rate Agreements

A forward rate agreement (FRA) is a forward contract for an interest rate. FRAs are negotiated 'over-the-counter' with a bank. It is a contract arranged 'now' that fixes the rate of interest for a future loan or deposit period starting at some time in the future.

An FRA is a binding agreement between a bank and a customer. It is an agreement that fixes an interest rate 'now' for a future interest period.

An FRA for an interest period starting at the end of month 3 and lasting until the end of month 9 is mentioned as a 3v9 FRA or a 3/9 FRA.

Buying and selling FRAs

FRAs are bought and sold in the following manner:

- If a company wishes to fix an interest rate (cost) for a future borrowing period, it buys an FRA. In other words, **buying an FRA fixes a forward rate for short-term borrowing.**
- If a company wishes to fix an interest rate (income) for a future deposit period, it sells an FRA. **Selling an FRA fixes a forward rate for a short-term deposit.**
- The counterparty bank sells an FRA to a buyer and buys an FRA from a seller.

► *Example 1:*

Suppose that a company knows that it will need to borrow Rs.5 million in three months' time for a period of six months.

The company can hedge its exposure to the risk of a rise in the six-month interest rate by buying a 3 v 9 FRA for a notional principal amount of Rs.5 million.

If the bank's FRA rates for 3 v 9 FRAs are 5.40 – 5.36, the rate applied to the agreement will be 5.40%.

The company has fixed the rate that it will pay on the loan at 5.4%.

Settlement of the FRA► *Example 2:*

Suppose that at the end of month 3, six-month KIBOR is 6.25%.

The FRA is settled by a payment from the bank (seller) to the buyer of the FRA.

The difference between the FRA rate and KIBOR is 0.85%.

The payment to settle the FRA will therefore be based on an interest difference of: $0.85\% \times \text{Rs.5 million} \times 6/12 = \text{Rs. 21,250}$.

The actual payment will be less than this, because the FRA is settled immediately, at the beginning of the notional interest period, and not at the end of the period.

The Rs. 21,250 is therefore discounted from an end-of-interest period value to a start-of-interest period value, using the reference rate of interest as the discount rate.

This PV is the amount received in settlement of the FRA.

$$PV = 21,250/1.0313$$

$$PV = 20,605$$

► *Example 3:*

Suppose that at the end of month 3, six-month KIBOR is 4.75%.

The FRA is settled by a payment from the buyer of the FRA to the bank (seller). The difference between the FRA rate and KIBOR is 0.65%.

The payment to settle the FRA will therefore be based on this interest rate difference: $0.65\% \times \text{Rs.5 million} \times 6/12 = \text{Rs. 16,250}$.

Again, because the payment is at the beginning of the interest period and not at the end of the period, the Rs. 16,250 is discounted to a present value at the reference rate of interest.

This PV is the amount of the payment in settlement of the FRA.

$$PV = 16250/1.0237$$

$$PV = 15,873$$

Interest Rate Futures

Futures contracts are similar to forward with more formalities and legal protection for investors. Future contracts also offer a decided interest rate for a specified amount and dates. These contracts are offered through third-party intermediaries.

- *Buying* an interest rate future creates the obligation to deposit money and the right to receive interest.
- *Selling* an interest rate future creates the obligation to borrow money and the obligation to pay interest.

There are quite a few market terminologies and concepts important to understand, but at this stage the following are important:

Future contract: There is always a standard size of future contracts. For example, size of future contract of June 202X is Rs. 1,000,000. One can only buy or sell in multiples of Rs. 1,000,000.

Tick: A tick is the minimum price movement for a futures contract. For example:

Short-term interest futures are priced up to a theoretical maximum of 99.9999 and each tick is 0.0001 in price. A tick represents an interest rate of 0.01% per annum.

Buying and selling FRAs

A short-term interest rate future (STIR) is a contract for the purchase and sale of a notional deposit, usually a three-month bank deposit. The futures price for STIRs is the annual interest rate. However, the rate is deducted from 100, which means that:

- A rate of 4% per year is indicated by a futures price of 96.0000 (100 – 4)
- A rate of 5.2175% is indicated by a futures price of 94.7825
- A price of 93.5618 represents an annual interest rate for the three-month deposit of 6.4382%.

A reason for pricing STIRs in this way is that:

- when interest rates go up, the value of a future will fall, and
- when interest rates fall, the price of the future will rise.

► Example 4:

A company will need to borrow Rs. 8 million from the end of May. It is now January.

The company is concerned about the risk of a rise in the KIBOR rate (the benchmark interest rate) and it wishes to hedge its position with futures.

The current spot KIBOR rate is 3.50% (for both three months and six months) and the current June KIBOR futures price is the same, 96.50.

The value of 1 tick for a KIBOR futures contract is Rs. 25 (Rs. 1,000,000 × 0.0001 × 3/12).

Suppose that in May when the company borrows Rs. 8 million, the three-month and six-month spot KIBOR rate is 4.25% and the June futures price is the same, 95.75 (100 – 4.25).

The exposure is the risk of a rise in the KIBOR rate. Therefore, the company should sell 8 KIBOR futures of June (Rs. 8,000,000/Rs. 1,000,000 per contract) if it is hedging a three-month loan exposure.

In May, the futures position will be closed. The selling price is 95.75.

Open futures position: sell at	96.50
Close position: buy at	95.75
Gain	00.75

Gain = 75 ticks per contract at Rs. 25 per tick.

Total gain on futures position = 8 contracts × 75 ticks × Rs. 25 = Rs. 15,000.

The company will borrow Rs. 8 million at 4.25%.

	Hedging the three-month rate
	Rs.
Interest cost: Rs. 8 million × 3/12 × 4.25%	85,000
Less gain on futures position	(15,000)
Net effective cost	70,000

The net effective cost can be converted into a net annualized interest rate that has been achieved by the hedge with futures.

Net effective interest rate for hedge of three-month rate = $\left(\frac{70,000}{8,000,000}\right) \times \frac{12}{3} = 0.035$ or 3.50%

The hedge fixes the effective interest rate at 3.5%, which is exactly the rate when the futures position was opened.

Interest Rate Options

An interest rate option grants the buyer of the option the right, but not the obligation, to deal at an agreed interest rate at a future maturity date. On the date of expiry of the option, the buyer must decide whether or not to exercise the right.

The option guarantees a maximum or a minimum rate of interest for the option holder, and interest rate options are therefore sometimes called interest rate guarantees or IRGs.

- A call option is the right to buy (in this case to receive interest at the specified rate). It guarantees a maximum rate of interest.
- A put option is the right to sell (that is, the right to pay interest at the specified rate). It guarantees a minimum rate of interest.

Options on interest rate futures are traded on the futures exchanges where the interest rate futures are also traded.

► Example 5: Interest rate option

A company intends to borrow US\$10 million in four months' time for a period of three months, but is concerned about the volatility of the US dollar LIBOR rate.

The three-month US\$ LIBOR rate is currently 3.75%, but might go up or down in the next four months.

The company therefore takes out a borrower's option with a strike rate of 4% for a notional three-month loan of US\$10 million.

The expiry date is in four months' time. The option premium is the equivalent of 0.5% per annum of the notional principal. For simplicity, we shall suppose that the company is able to borrow at the US dollar LIBOR rate.

- If the three-month US dollar LIBOR rate is higher than the option strike rate at expiry, the option will be exercised. If the three-month LIBOR rate is 6%, the company will exercise the option, and the option writer will pay the option holder an amount equal to the difference between the strike rate for the option (4%) and the reference rate (6%). The payment will be based on 2% of \$10 million for three months. (This payment is discounted because a borrower's option is settled at the beginning of the notional interest period, and not at the end of the interest period).
- If the three-month US dollar LIBOR rate is lower than the option strike rate at expiry, the option will not be exercised. For example, if the LIBOR rate after four months is 3%, the option will not be exercised and will lapse.

These possible outcomes are summarised in the table below, assuming (for the purpose of illustration) a spot LIBOR rate at the option expiry date of (a) 6% and (b) 3%.

LIBOR rate at expiry

	6%	3%
	Exercise the option	Do not exercise
	%	%
Borrow for three months at	6.00	3.00
Receive from option writer	(2.00)	-
Cost of option premium	0.50	0.50
Net annualized interest cost (% annual rate)	4.50	3.50

If the borrower can borrow at the reference rate of interest, a borrower's option sets the maximum borrowing cost at the strike rate plus the option premium cost.

5.1.2 Foreign Exchange Rate Risk

The purpose of hedging an exposure to currency risk is to remove (or reduce) the possibility that a future transaction involving a foreign currency will have to be made at a less favourable exchange rate than expected.

Exchange rates can move up or down, and the changes could be favourable or adverse for a firm. However, many companies prefer to hedge their currency risks by fixing an exchange rate now for a future transaction, even if this means that it will not be able to benefit from any favourable movement in the exchange rate.

Methods of hedging exposures to foreign exchange risk

The most important methods of hedging exposures to currency risk are:

- forward exchange contracts;
- creating a money market hedge
- currency futures
- currency options

Forward rates

Banks trade in foreign currencies both for immediate delivery (either to or from the bank) at the spot rate or for future delivery (either to or from the bank) at a forward rate.

The forward rate is the rate at which a bank is willing to trade in foreign currency at a pre-agreed date.

Banks are able to quote forward exchange rates for currencies because of the money markets (short-term borrowing and lending markets). Forward exchange rates differ from spot rates because of the interest rate differences between the two currencies.

Forward contracts

A forward exchange contract is a contract entered today for settlement at an agreed future date (or at any time between two agreed future dates).

It is a contract between a customer and a bank for the purchase or sale of:

- a specified amount; of
- a specified foreign currency;
- for delivery at a specified future date
- at a specified rate

A bank can arrange a forward contract for settlement at any future date, but commonly-quoted forward rates are for settlement in one month, three months, six months and possibly one year.

► Example 6:

A UK company expects to receive US\$75,000 in six months from a US customer and it wishes to hedge the exposure to currency risk by arranging a forward contract.

The following rates are available

Spot (US\$ per £1)	1.7530	-	1.7540
Six months forward	240	-	231 pm

The dollar is quoted forward at a premium. The premium is shown in 'points' of price, so that 240 – 231 means 0.0240 – 0.0231.

The bank will apply the rate that is more favourable to itself. (If you need to work out which rate is more favourable, use the spot rates to do this).

The company will be selling US dollars in exchange for pounds, and the higher rate will be used (the offer rate).

Spot rate	1.7540
Forward points (deduct premium)	<u>(0.0231)</u>
Forward rate	<u>1.7309</u>

The company can use a forward contract to fix its future income from the US dollars at £43,330.06 (75,000/1.7309).

Money Market Hedge

A money market hedge is another method of creating a hedge against an exposure to currency risk. Instead of hedging with a forward exchange contract, a company can create a hedge by borrowing or lending short-term in the international money markets, to fix an effective exchange rate 'now' for a future currency transaction.

The process to create a money market hedge for a future foreign currency receipt is as follows:

- The company borrows an amount of the foreign currency immediately with a repayment time matching with the time that the future foreign currency receipt will be received.
- The future receipt in the foreign currency will be used to repay the loan with interest.
- The amount borrowed together with the accumulated interest for the borrowing period should, therefore, be equal to the amount of the future currency receipt.
- Having borrowed the quantity of currency, the company exchanges it immediately (spot) for its domestic currency.
- The domestic currency will be deposited for the same period to earn interest in domestic currency.
- At the end, the local currency deposit plus accumulated interest is used to calculate an effective forward interest rate for the hedge of the currency exposure.

► Example 7:

A UK company expects to receive US\$800,000 in three months' time. It wants to hedge this exposure to currency risk using a money market hedge.

Spot three-month interest rates currently available in the money markets are:

	Deposits	Borrowing
US dollar	4.125%	4.250%
British pound	6.500%	6.625%

The spot exchange rate (US/£1) is 1.7770 – 1.7780.

Step 1

The UK company will be receiving US dollars in three months' time. It should therefore borrow US dollars for three months. The borrowing rate will be 4.25% (the higher of the two quoted rates). Here, the interest for three months will be $4.25\% \times 3/12 = 1.0625\%$ or 0.010625.

The borrowed dollars plus accumulated interest after three months needs to be \$800,000, therefore the amount of dollars borrowed should be:

$$\frac{\text{Final amount}}{1 + \text{interest rate for the period}} = \frac{\$800,000}{1.010625} = \$791,589$$

Step 2

The company should sell the borrowed \$791,589 in exchange for British pounds. The appropriate spot rate is 1.7780. The company will receive £445,213.

This will be placed on deposit for three months. The interest rate on deposits for sterling is 6.500%. This is an annual rate, and the interest for three months is assumed to be $6.5\% \times 3/12 = 1.625\%$ or 0.01625.

After three months, the deposit plus accumulated interest will be $£445,213 \times 1.01625 = £452,448$.

Step 3

At the end of three months, the company will receive US\$800,000. Its three-month loan will mature, and the \$800,000 is used to pay back the loan plus interest. The company has £452,448 from its deposit (its short-term investment in British pounds).

The money market hedge has therefore fixed an effective exchange rate for the dollar receipts, which is calculated as $\$800,000/£452,448$. This gives an effective three-month forward rate of $£1 = \$1.7682$.

Currency futures

Currency futures are contracts for the purchase/sale of a standard quantity of one currency in exchange for a second currency. Futures contracts are priced at the exchange rate for the transaction. Most currency futures are contracts for the major international currencies.

► **Example 8:**

A Pakistani company expects to receive US\$1,200,000 in July, in three months' time, and it wants to hedge its exposure with currency futures. The current spot price is Rs.174.0000/\$. It will exchange the dollar income in July for Rupees, and so will be selling dollars. Its exposure is therefore to a fall in the value of the dollar.

A futures contract is for \$125,000. The value of a tick is Rs. 12.50. (This is $\$125,000 \times \text{Rs. } 0.0001 \text{ per Rs. } 1$)

The company will create a hedge with futures by selling September futures. \$125,000 is equivalent to 9.6 contracts. The company can buy 9 or 10 contracts

The company cannot buy a fraction of a future, and so must buy 9 or 10 contracts. 9.6 is nearer to 10, so company buys 10 contracts.

Suppose the company sells September futures at 172.2350 (Rs. 172.2350 per \$1).

Let us see the outcome if dollar is stronger in September and the buying price is 175.1350.

In September, the futures position will be closed.

Open futures position: sell at	172.2350
Close position: buy at	175.1350
Loss	2.90
Loss is 29,000 ticks at Rs. 12.5 per tick	
The total loss on futures (10 contracts X 29,000 ticks X 12.5)	Rs. 3,625,000
The effective rate of exchange can be worked out as follows:	
Company sell its receipt in September (\$1,200,000 X 175.1350)	Rs. 210,162,000
Less: Loss on futures	<u>Rs. (3,625,000)</u>
Net receipt	<u>Rs. 206,537,000</u>
Effective exchange rate	(Rs.206,537,000/\$1,200,000) 172.11417
The company is able to manage the effective rate (172.11417) closer to the rate (172.2350), which was prevailing when future was opened.	

Currency Options

The main features of currency options have already been described.

- A currency option gives its holder the right to buy (call option) or sell (put option) a quantity of one currency in exchange for another, on or before a specified date, at a fixed rate of exchange (the strike rate for the option).
- Currency options can be purchased over-the-counter or on an exchange. Currency options are traded on some exchanges, notably the Philadelphia Stock Exchange, and options on currency futures are traded on the CME exchange in Chicago.
- Traded currency options are for a standard quantity of one currency in exchange for another currency, and strike prices are quoted as exchange rates. The premiums are normally quoted as an amount in one currency per unit of the other currency. For example, traded options on currency futures for US\$ - £ are for £62,500 and are priced in US cents per £1.

► Example 9: Currency option

A US company expects to pay 1 million euros to a supplier in Belgium. It is now November and the payment is due in March. The company wants to use currency options to hedge the exposure. Each currency option is for 125,000 euros.

The company will need to buy euros to make the payment to the supplier; therefore, it wants to hedge against the risk of a rise in the value of the euro (= a fall in the value of the dollar). The company should therefore buy call options.

We shall suppose that the company chooses a strike price of 1.2400 (US\$/€1) for the options, and that the premium for a March call option at this strike price is 3.43 US cents per euro.

The company should buy 8 call option contracts (€1,000,000/€125,000 per contract). The cost of the premium will be \$34,300 (1,000,000 × \$0.0343).

► Example 10: Foreign exchange options to hedge exchange rate risk

A firm could buy put options to protect the value of overseas receivables. Similarly, it could protect against the increase in cost of imports (overseas payables) by buying call options.

Therefore, suppose that a US company has a net cash outflow of €300,000 in payment for clothing to be imported from Germany. The payment date is not known exactly, but should occur in late March. On January 15, a ceiling purchase price for euros is locked in by buying 10 calls on the euro, with a strike price of \$1.58/€ and an expiration date in April.

The option premium on that date plus brokerage commissions is \$.0250, or a unit cost of \$1.6050/€. The company will not pay more than \$1.6050/€.

If euros are cheaper than dollars on the March payment date, the company will not exercise the call option but simply pay the lower market rate of, say, \$1.52/€. Additionally, the firm will sell the 10 call options for whatever market value they have remaining.

5.1.3 Market rate risk of commodity

The risk of loss due to market price fluctuation of a commodity relevant to the business can be hedged by using derivatives available in commodity exchanges.

The most common hedges are:

- Futures contracts
- Forward contracts

Commodity futures

Commodity futures are futures contracts for the sale and purchase of commodities, such as wheat, oil, copper, gold, rubber, soya beans, coffee, cotton, sugar, and so on. Futures contracts have some special features.

- They are standardised contracts. Every futures contract for the purchase/sale of a particular item is identical to every other futures contract for the same item, with the only exception that their settlement dates/delivery dates may differ.
- They are traded on an exchange, rather than negotiated 'over-the-counter'.
- Such contracts cannot be tailored to the users' requirements.

The hedging of risk attached to the fluctuation of a commodity price can be explained in the following example.

► **Example 11:**

A sugar producer estimates 14.55 tons of sugar will be sold in three months' time. The following are relevant information:

- Price needs to be hedged is Rs. 120,000 per ton.
- Futures contract on one ton of sugar with three months to expiry is at Rs. 130,000.
- Producer will sell 15 futures at Rs. 130,000, as the standard contract size is one ton.
- After three months, price of sugar is 145,000/ton.

The hedge will work in the following way:

The futures position will be closed.

Open futures position: sell at	130,000
Close position: buy at	145,000
Loss	15,000
The total loss on futures (15 contracts X 15,000)	Rs. 225,000
The effective rate of sugar can be worked out as follows:	
Company sells the sugar in spot market (14.55 X 145,000)	Rs. 2,109,750
Less: Loss on futures	Rs. (225,000)
Net receipt	Rs. 1,884,750
Effective rate/ton (Rs. 1,950,000/15)	129,5

Commodity forwards

A forward contract is a contract entered into 'now' for settlement at an agreed future date (or at any time between two agreed future dates).

It is an over the counter contract between a buyer and seller for:

- a specified quantity; of
- a specified commodity;
- for delivery at a specified future date
- at a specified rate

The hedging of risk attached to the fluctuation of a commodity price can be explained in the following example.

► **Example 12:**

A sugar producer estimates 14.55 tons of sugar will be sold in three months' time. The following are relevant information:

- Price needs to be hedged is Rs. 120,000 per ton.
- Forward contract on one ton of sugar with three months to expiry is available at Rs. 130,000.
- Producer will sell 14.55 tons of sugar at Rs. 130,000, as the in forward contract any quantity can be agreed between the parties.
- After three months, price of sugar is 145,000/ton.
- The producer will have to deliver 14.55 tons of sugar at Rs. 130,000/ton. The producer could not gain in rise in price but able to lock the rate at 130,000 as per the objectives of the business. It means that producer was not interested in speculation business, in which producer could have gained Rs. 145,000 after assuming the risk of fall in price of sugar when delivery was due.

5.2 Credit Risk

There are a number tools and strategies to manage credit risk. Some key tools are as follows:

- Setting credit limits
- Regular monitoring
- Guarantees
- Credit insurance

Credit limits

The company can have a broader credit policy to set varying credit limits for different customers based on pre-defined criteria. For example, the following could be a policy for credit:

• Category	Max. limit
• Listed companies with minimum B ⁺ credit rating	Rs.40 million
• All other listed companies	Rs.10 million
• Private companies	Rs. 2 million
• Partnerships and individuals	None

The credit limit for a particular customer is set within the maximum limit given in the policy based on other factors. The data analytics tools have enabled the companies to use big data to have a predictive analysis of a particular customer to set the credit limit.

Regular monitoring

Risk profile of a customer depends on various variables, such as, business performance, financial ratios, credit rating and debt burden. Regular monitoring of changes in these variables helps the companies to manage the risk specific to a particular customer. Risk can be managed by adjusting the credit limit, asking for further securities or in extreme case discontinuing business with the customer.

Guarantees

Asking for credit guarantee is a risk sharing strategy whereby customer arranges a third party's guarantee (usually banks offer these services).

Credit insurance

Credit risk can be managed by shifting the risk to insurer. The credit insurance is arranged by the company offering credit to customers, for which cost of premium is incurred.

5.3 Liquidity Risk (Short-term solvency)

Companies use various methods to avoid the risk of incurring losses resulting from the failure to pay obligations on time. Two key tools are discussed in following paragraphs.

Standing credit lines

Companies arrange credit lines and overdraft facilities to manage the liquidity risk.

Regular monitoring of working capital ratios

Companies keep a close watch on working capital trends to take timely corrective measures. Companies regularly monitor and manage unnecessary inventory built up, lack of actions on delayed debt recovery or addition of customers without evaluating the impact on working capital.

6. SELF-TEST QUESTIONS

1. RISK AWARENESS

- (a) One of the principles of ISO 31000 explains the importance of risk awareness across all levels of the organisation. Discuss how risk awareness can be embedded throughout an organisation.
- (b) Give examples of how risk awareness could help management in the following sectors;
 - i. Health and Safety
 - ii. Banking Sector

2. RISK MANAGEMENT PROCESS

List and briefly explain the activities in the process of risk management in view of ISO 31000.

3. VENTEX (PRIVATE) LIMITED

Ventex Private Limited is a company dealing in supplying IT services to clients in large manufacturing organisations that are listed in the Fortune 500. Although their clients are satisfied with their services but due to some recent mishaps, they are questioning whether Ventex has taken sufficient risk management measures to reduce such incidents in the future. This comes as a threat to the company's reputation and future of the business.

In order to streamline its risk management strategy, Ventex has hired a Risk Manager. The Risk Manager has suggested the management of Ventex to implement risk management strategies in light of a risk management framework such as ISO 31000 to formalise its risk management processes.

The management is not sure if the scope of the ISO 31000 is relevant to their organisation needs. They have called an urgent meeting to discuss the issue.

Required: In your opinion, what are the key takeaways about the scope of ISO 31000 standard that the Risk Manager could use in the meeting that would give a clearer picture about the ISO 31000 standard?

4. INTEREST RATE FRA

On January 1, 202X ABC Company is planning to borrow Rs. 30 million for a period of six months starting from April 1, 202X. ABC wants to lock the rate of interest today for the planned period of borrowing.

Today the bank's FRA rates for 3 v 9 FRAs are 5.50 – 5.47 and KIBOR is the reference rate in the contract.

- (a) What should ABC do to lock the interest rate today?
- (b) Calculate the future value of settlement of the FRA on April 1, 202X if:
 - (i) Six-month KIBOR is 6.25%.
 - (ii) Six-month KIBOR is 4.955%.

5. INTEREST RATE FUTURES

On January 1, 202X, XYZ Company plans to borrow Rs. 57 million on April 1, 202X for six months. Standard future contract size is Rs.10 million.

The current spot KIBOR rate is 7.00% (for both three months and six months) and the current September KIBOR futures price is the same, 93.00.

The value of 1 tick for a KIBOR futures contract is Rs. 500 ($\text{Rs. } 10,000,000 \times 0.0001 \times 6/12$).

Required

- (a) How should XYZ Company hedge the interest rate risk using future contracts?
- (b) Calculate the total effective borrowing cost if on April 1, 202X the three-month and six-month spot KIBOR rate is 6.50% and the September 30, 202X futures price is also the same, 93.50 ($100 - 6.5$).

6. INTEREST RATE OPTIONS

Best Trading Limited needs to borrow US\$20 million in six months' time for a period of four months. The four-month US\$ LIBOR rate is currently 3.00%, but might go up or down in the next six months.

The borrower's option is available at a premium of 0.2% per annum with a strike rate of 3.35% with expiry date in six months' time. Assume that the company is able to borrow at the US dollar LIBOR rate.

Required:

Compute effective interest rate for Best Trading Limited, if:

- The three-month LIBOR rate is 3.9% at the expiry date.
- Three-month US dollar LIBOR rate is 3% at the expiry.

7. IMRAN TRADING CO – SPRING 2024 (Q 8)

- Imran Trading Company (ITC) intends to borrow Rs. 30 million in one month's time for a period of 6 months. Being concerned about the volatility in the KIBOR rate, ITC has taken out a borrower's option with a strike rate of 21% for a notional 6-month loan of Rs. 30 million. The option will expire in one month's time. The option premium is the equivalent of 0.5% per annum of the notional principal.

The current and the expected KIBOR rates are as under:

	Current KIBOR	Expected KIBOR in 1 months' time
1-month KIBOR	19.5%	22.0%
6-month KIBOR	20.5%	23.5%

Required: Determine whether the option would be exercised. Also calculate the net effective interest rate.

- It is now 1 March 2024. Medical Hub (MH) signed an agreement with an American Welfare Organization to build a world class medical school in Pakistan, offering free medical education. In lieu of this agreement, MH anticipates to receive a grant of USD 50 million in June 2024. To hedge this potential receipt, MH wishes to use a currency option. Each currency option is for USD 5 million.

The current spot exchange rate is USD 1 = PKR 279. June options are available with a strike price of PKR 280 and a premium of PKR 500,000 per option. MH expects that spot rate in June will move to USD 1 = PKR 276.

Required: Determine whether the option should be purchased. *(Show all necessary computations)*

8. SHAHEEN LIMITED – SPRING 2022 (Q 7)

Shaheen Limited (SL) is engaged in manufacturing and selling textile products. SL procures the material locally which is then manufactured and exported to customers. The management of SL is concerned over high volatility in foreign exchange rates. The receipt of USD 50,000 from a customer is expected in three months' time and management is considering to hedge the foreign exchange risk.

SL's bank has quoted the following exchange rates and annual interest rates:

	USD 1	
	Buy	Sell
Spot (PKR)	178.650	179.800
1 month forward (PKR)	177.745	178.795
3 months forward (PKR)	177.555	178.555

	Deposit %	Borrowing %
USD	1.25	2.75
PKR	6.75	9.75

Required: Determine which of the following options would be more beneficial for SL:

- Hedging through forward contract
- Hedging through money market
- No hedging. *Assume that on the date of settlement of transaction, spot rate is USD 1 = PKR 178.15.*

9. FIFA LIMITED – SPRING 2023 (Q 9)

- Apart from market risk, identify other broader categories of financial risks that a business is subjected to. Also identify two strategies to manage each of the identified financial risks.
- FIFA Sports Limited (FSL) imports raw material from China. FSL has to pay CNY 1,000,000 in six months' time. FSL plans to hedge this exposure to currency risk using a money market hedge. Following information is available in this regard:

Interest rates	Deposit	Borrowing
	-- Rate per annum --	
In CNY (3 months)	11.35%	15.12%
In CNY (6 months)	11.71%	15.81%
In PKR (3 months)	12.12%	17.01%
In PKR (6 months)	12.90%	17.16%

	PKR/CNY
Current spot exchange rate	PKR 34.5
Estimated exchange rate in 3 months	PKR 36.8
Estimated exchange rate in 6 months	PKR 37.6

Required: Construct money market hedge and determine the effective exchange rate. Recommend whether the hedge would be beneficial for FSL.

10. KARACHI KITES LIMITED – AUTUMN 2022 (Q 8)

Assume today is 1 September 2022.

On 1 September 2022, Karachi Kites Limited (KK) plans to hedge the market rate risk of an export receipt amounting to USD 2,000,000 which is expected to be received on 30 November 2022. The current spot price per USD is Rs. 208.

KK intends to hedge the currency risk through futures. A future contract is for USD 120,000 and is available in standard lot size of 1 with a tick value of Rs. 12. Following future rates are available:

Future	Rate	Maturity Date
October future	Rs. 210.5/USD	31 October 2022
November future	Rs. 213.5/USD	30 November 2022
December future	Rs. 215.5/USD	31 December 2022

The spot rate on 30 November 2022 is expected to be Rs. 218.5.

Required:

- (a) Set up the hedge for USD receipt.
- (b) Compute the gain/loss in term of ticks.
- (c) Compute the effective exchange rate for KK.

11. UNITY RICE TRADERS – AUTUMN 2023 (Q 9)

Assume that the date today is 1 September 2023

Unity Rice Traders (URT) estimates that it will have 25.59 metric tons (MT) of rice available for sale on 29 February 2024. In view of the recent volatility in food prices, URT is considering hedging its market risk. The following information is available:

- (i) The current spot price stands at PKR 90,000/MT.
- (ii) The futures contract for one MT, set to expire in six months, is priced at PKR 93,500/MT.
- (iii) The term of the forward contract for one MT, with six-months expiry, is as follows:

Buy	Sell
PKR 93,600	PKR 94,500

Required:

- (a) Determine the outcome using the futures and forward contract hedging strategies, assuming the spot rate on 29 February 2024 is expected to be PKR 87,500/MT.
- (b) Suggest the optimal strategy for URT, along with appropriate justifications, in the event that the spot price is forecasted to rise to PKR 102,000/MT within the next six months. What could be the reason(s) that might prevent the execution of the optimal strategy?

(Note: Calculations are not required for this part)

12. ZAIN ASSOCIATES AUTUMN 2024 (Q 7)

- (a) List **four** benefits of having an effective risk management process in place.

- (b) **Assume that the date today is 1 September 2024.**

Zain Associates (ZA) has been in the beverages business for past many years and recently signed an export agreement with a customer in Germany. The management of ZA is concerned over high volatility in foreign exchange rates. The receipt of EUR 75,000 from that customer is expected on 30 November 2024, and the management is considering to hedge the related foreign exchange risk through the money market.

ZA's bank has quoted the following exchange rates and annual interest rates:

	PKR / EUR	
	Buy	Sell
Spot – Current	301.25	303.15
Spot – 30 November 2024 (Estimated)	310.00	312.00

	Deposit %	Borrowing %
EUR	4.5	6.0
PKR	12.5	18.0

Required: Determine whether hedging through the money market is beneficial for ZA.

13. AZAD LIMITED – MODEL PAPER (Q 10)

- (a) Azad Limited (AL) is engaged in manufacturing and selling of consumer goods. Due to on-going pandemic, some of the customers of AL are in financial crunch. There is also news circulating that one of the major customers of AL might go bankrupt shortly. Until now, AL has been lenient in offering credit terms to its customers to build a good relationship. However, the management is concerned and looking for ways to mitigate such situation in future.

Required:

- (i) Identify and explain the financial risk being faced by AL.
 - (ii) Suggest and discuss the strategies that AL may adopt to manage the financial risk identified in (i) above.
- (b) On 1 May 202X, a Pakistani company plans to hedge the foreign exchange risk of an export receipt amounting to USD 1,600,000 expected to receive on 31 July 202X. The current spot price is Rs. 174.0/USD.

A futures contract is for USD 125,000 and is available at Rs. 175.50/ USD. The value of a tick is Rs. 12.50.

Required: Compute the outcome of hedge with future contracts if:

- (i) spot rate of dollar on 31 July 202X is PKR 174.155 per USD
- (ii) spot rate of dollar on 31 July 202X is PKR 176.225 per USD

14. COMMODITY FUTURES

A wheat trader estimates demand from her customers in next four months as 13.68 tons of wheat. The following are relevant information:

- Spot price is Rs. 55,000 per ton.
- Futures contract on one ton of wheat with four months to expiry is at Rs. 58,000.

Required: Compute the outcome at the end of four months if trader uses future contracts to hedge the market rate risk and price goes to Rs. 61,000 per ton at the end of fourth month.

ANSWERS

1. RISK AWARENESS

- (a) Risk managers, risk committees and risk audits can contribute to a culture of risk awareness, and can help to provide a sound system of risk management. A risk management culture would give rise to systems and procedures that promote risk awareness.

Embedding risk awareness in the culture of an organisation

An essential aspect of risk management and control is the culture within the organisation. The culture within the organisation is set by the board of directors and senior management (the 'tone at the top'), but it should be shared by every manager and employee.

Risk awareness is 'embedded' in the culture of the organisation when thinking about risk and the control of risk is a natural and regular part of employee behaviour.

Creating a culture of risk awareness should be a responsibility of the board of directors and senior management, who should show their own commitment to the management of risk in the things that they say and do.

- There should be reporting systems in place for disclosing issues relating to risk. There should be a sharing of risk-related information.
- Managers and other employees should recognise the need to disclose information about risks and about failures in risk control.
- There should be a general recognition that problems should not be kept hidden. 'Bad news' should be reported as soon as it is identified. The sooner problems are identified, the sooner control measures can be taken (and the less the damage and loss).
- To create a culture in which problems are disclosed, there must be openness and transparency. Employees should be willing to admit to mistakes.
- Openness and transparency will not exist if there is a 'blame' culture. Individuals should not be criticised for making mistakes, provided that they own up to them promptly.
- The attitude should be that problems with risks will always occur. When they do happen, the objective should be to take measures to deal with the problem. Mistake should be analysed in order to find solutions and prevent a repetition of the problem. Risk management should be a constructive process.

Embedding risk awareness in systems and procedures

In addition to creating a culture of risk awareness within an entity, it is also important to establish systems and procedures in which the management of risk is 'embedded'.

'Embedding' risk in systems and procedures means that risk management should be an integral part of management practice. Risk management must be a core function which managers and other employees consider every day in the normal course of their activities. The concept of embedding risk can be compared with a situation where risk management is treated as an 'add-on' process, outside the normal procedures and systems of management.

There are no standard rules about how risk awareness and risk control can be embedded within systems and procedures. Each organisation needs to consider the most appropriate methods for its own purposes. ISO 31000 provides a set of guidelines on how to implement these methods.

- (b) Senior managers are responsible for the management of business risks/strategic risks. Every employee needs to be aware of the need to contain operational risks. For example:
- All employees must be aware of health and safety regulations, and should comply with them. A failure to comply with fire safety regulations could result in serious fire damage. For a manufacturer of food products, a failure in food hygiene regulations could have serious consequences for both public health and the company's reputation.

- In some entities, there could be serious consequences of failure to comply with regulations and procedures. For example, in banking, there must be a widespread understanding of anti-money laundering regulations and the rules against mis-selling of banking products. The consequences for a bank of failures in compliance could be fines by the regulator and damage to the bank's reputation.

2. RISK MANAGEMENT PROCESS

The risk management process outlined in the ISO 31000 standard includes the following activities:

- **Communication and consultation:** This activity helps understand stakeholders' interests and concerns, to check that the risk management process is focusing on the right elements, and also helps explain the rationale for decisions and for particular risk treatment options.
- **Scope, context and criteria:** This activity involve defining the scope of the process, and understanding the external and internal context.
- **Risk assessment:** Risk assessment is the overall process of risk identification, risk analysis and risk evaluation. Risk assessment should be conducted systematically, iteratively and collaboratively, drawing on the knowledge and views of stakeholders. It should use the best available information, supplemented by further enquiry as necessary.
- **Risk treatment:** changing the magnitude and likelihood of consequences, both positive and negative, to achieve a net increase in benefit.
- **Monitoring and review:** this task consists of measuring risk management performance against indicators, which are periodically reviewed for appropriateness. It involves checking for deviations from the risk management plan, checking whether the risk management framework, policy and plan are still appropriate, given organisations' external and internal context, reporting on risk, progress with the risk management plan and how well the risk management policy is being followed, and reviewing the effectiveness of the risk management framework.
- **Recording & Reporting.** The risk management process and its outcomes should be documented and reported through appropriate mechanisms.

3. VENTEX (PRIVATE) LIMITED

ISO 31000 is an international standard that provides principles and guidelines for effective risk management. It outlines a generic approach to risk management, which can be applied to different types of risks (financial, safety, project risks) and used by any type of organisation.

The standard does not provide detailed instructions or requirements on how to manage specific risks, nor any advice related to a specific industry or type of organisation; it consists of a general framework or guideline to be adapted

ISO 31000 can be applied to any and all types of objectives at all levels and areas within an organisation. It can be used at a strategic or organisational level to help make decisions or help manage processes, operations, projects, programs, products, services, and assets. It can be applied to any type of risk, whatever its nature, cause or origin, whether they may have a positive or negative effect of the organisation.

The ISO 31000 document has clear guidelines on risk management being a cyclical process with sufficient room for customization and improvement. Instead of prescribing a one-size-fits-all approach, the ISO document advises that top leadership can customize its risk strategy for the organisation as per their requirement and circumstances — in particular, its risk profile, culture and risk appetite.

Organisations using ISO 31000 can compare their risk management practices with an internationally recognized benchmarks, providing sound principles for effective management and corporate governance.

The purpose of ISO 31000 is to be applicable and adaptable for any public enterprise, private enterprise, association, group, or individual. If an organisation implements and maintains ISO 31000 successfully it will enable them to:

- Comply with legal and regulatory requirements and international standards
- Improve financial information

- Improve business management
- Improve the confidence of stakeholders
- Establish a reliable basis for decision-making and planning
- Distribute and effectively use resources to manage risks
- Improve the effectiveness and operational efficiency
- Increase safety and health performance
- Improve prevention and incident management
- Minimize losses
- Increased likelihood of achieving objectives
- Encouraged proactive management
- Awareness of the need to identify and treat risk throughout the organisation
- Improved identification of opportunities and threats
- Improved controls
- Effective allocation and use of resources for risk treatment

4. INTEREST RATE FRA

(a) ABC Company will buy 3 v 9 FRA of Rs. 30 million at 5.50% (Bank's selling rate) from bank. This way the rate will be locked at 5.50%.

(b) Settlement on April 1, 202X.

(i) If KIBOR is 6.25% on April 1, 202X

The Bank will pay the amount because KIBOR is more than the locked rates. The future value at the end of sixth month is worked out as follows:

Interest difference (6.25 – 5.50) %	0.75%
Future value to be settled (0.75 X Rs.30 million X 6/12)	Rs. 112,500

The actual payment will be less than this, because the FRA is settled immediately, at the beginning of the notional interest period, and not at the end of the period.

(ii) If KIBOR is 4.95% on April 1, 202X

ABC Company will pay to the Bank the amount because KIBOR is less than the locked rates. The future value at the end of sixth month is worked out as follows:

Interest difference (4.95 – 5.50) %	0.55%
Future value to be settled (0.55 x Rs.30 million x 6/12)	Rs. 82,500

Again, because the payment is at the beginning of the interest period and not at the end of the period, the Rs. 82,500 is discounted to a present value at the reference rate of interest.

5. INTEREST RATE FUTURES

The exposure is the risk of a rise in the KIBOR rate. Therefore, the company should sell 6 KIBOR futures of September 30, 202X (Rs. 57,000,000/Rs. 10,000,000 per contract = 5.7 contract rounded off to 6) if it is hedging a six-month loan exposure.

On April 1, 202X, the futures position will be closed.

Open futures position: sell at	93.00
Close position: buy at	93.50
Loss	0.50

Loss = 50 ticks per contract at Rs. 500 per tick.

Total loss on futures position = 6 contracts × 50 ticks × Rs.500 = Rs. 150,000.

The company will borrow Rs. 57 million at 6.50%.

	Hedging the three-month rate
	Rs.
Interest cost: Rs. 57 million × 6/12 × 6.50%	1,852,500
Add: Loss on futures position	150,000
Net effective cost	2,002,500

The net effective cost can be converted into an effective annual interest rate that has been achieved by the hedge with futures.

$$\text{Net effective interest rate for hedge of six-month rate} = \left(\frac{2,002,500}{57,000,000} \right) \times \frac{12}{6} = 0.00702 \text{ or } 7.02\%$$

The hedge fixes the effective interest rate at 7.02%, which is almost the same rate when the futures position was opened.

6. INTEREST RATE OPTIONS

- (a) In case LIBOR is 3.9% at expiry, the option will be exercised.
- (b) In case LIBOR is 3% at the expiry, option will not be exercised.

LIBOR rate at expiry

	3.9% Exercise the option	3% Do not exercise
	%	%
Borrow for six months at	3.9	3.00
Receive from option writer (3.9 – 3.35)	(.55)	-
Cost of option premium	0.20	0.20
Effective interest cost (% annual rate)	3.55	3.20

7. IMRAN TRADING CO – SPRING 2024 (Q 8)

(a) Interest rate options

	%
Borrow for 6 months at	23.5
Receive from option writer (23.5% – 21%)	(2.5)
Cost of option premium	0.5
Net annualised interest rate	21.5

As net annualised interest rate is less than KIBOR spot rate in 1 months' time (23.5%) so ITC should exercise this option.

(b) Currency options

Number of options (50 million ÷ 5 million)	10 options
	Rs. in million
Receipts after exercising option (280×\$50 m)	14,000
Premium on currency option (Rs. 500K × 10)	(5)
Net of Premium	13,995
Receipts at spot rate without option (276×\$50 m)	13,800
Option should be exercised or not?	Yes

8. SHAHEEN LIMITED – SPRING 2022 (Q 7)**(a) Hedging through forward contract**

SL is expected to receive \$50,000 in three months' time. Therefore, it should enter into a 3 months' forward contract to sell \$50,000 as follows:

Receipt in PKR = \$50,000 × 177.555 = = PKR 8,877,750

(b) Hedging through money market

SL is expected to receive USD 50,000.

Step 1: Borrow USD today for three months that would be equivalent to USD 50,000 (principal and interest) in three months' time.

Annualised borrowing rate	2.75%
Three month borrowing rate (2.75% × 3/12)	0.6875%
Amount to borrow (USD 50,000 ÷ 1.006875)	USD 49,659

Step 2: Convert USD into PKR at spot rate

PKR amount = USD 49,659 × 178.650 = PKR 8,871,580

Step 3: Put PKR on PKR Deposit account for three months

Annualised deposit rate	6.75%
Three month borrowing rate (6.75% × 3/12)	1.6875%

Step 4: On the date of settlement, principal and interest on PKR deposit account would be:

Amount received from deposit account = PKR 8,871,580 × (1 + 1.6875%) = PKR 9,021,288

Step 5: On the settlement date, repay USD loan from USD receive from the customer.

(c) No hedging

Amount	USD 50,000
Spot rate	178.150
Amount in PKR (\$50,000 × 178.150)	PKR 8,907,500

Conclusion: The hedging through money market would be more beneficial for SL as it would result in the highest amount of receipts.

9. FIFA LIMITED – SPRING 2023 (Q 9b)

- (a) Apart from market risk, businesses may be subject to the following financial risks:

Credit risk

Credit risk is the risk of loss as a result of a borrower's inability to make a payment on a debt obligation. Some key strategies to manage credit risk are:

- Setting credit limits
- Regular monitoring
- Guarantees
- Credit insurance

Liquidity risk

Liquidity risk is the risk that a business may not be able to meet its short-term obligations. Some key strategies to manage liquidity risk are:

- Standing credit lines
- Regular monitoring of working capital ratios

(b) Money market hedge for CNY paymentStep 1 – Present value

Present value = CNY payment in 6 months $\times [1 + (\text{CNY deposit rate} \times t \div 12)]^{-1}$

Present value = CNY 1,000,000 payment $\times [1 + (11.71\% \times 6 \div 12)]^{-1}$ = CNY 944,689

Step 2 – Conversion into PKR

Local currency amount (PKR) = PV of CNY payment $\times$ Spot rate

Local currency amount (PKR) = CNY 944,689 $\times$ PKR 34.5 = PKR 32,591,770

Step 3 – Future value

Future value = Local currency amount $\times [1 + (\text{PKR borrowing rate} \times t \div 12)]^1$

Future value = PKR 32,591,770 $\times [1 + (17.16\% \times 6 \div 12)]^1$ = PKR 35,388,144 payment

Effective exchange rate (PKR per CNY) = PKR 35,388,144 $\div$ CNY 1,000,000 = PKR 35.39 per CNY

Recommendation

- Effective exchange rate under money market hedge = PKR 35.39 per CNY
- Open market estimated exchange rate in 6 months = PKR 37.6 per CNY

The money market hedge is likely to be beneficial because the effective exchange rate is lower than the estimated open market spot rate after 6 months

10. KARACHI KITES LIMITED – AUTUMN 2022 (Q 8)**(a) Set up the hedge for USD receipt on 1st September 2022**

No. of contracts = USD 2,000,000 $\div$ USD120,000 = 16.67 or 17 contracts

Sell 13 USD futures contracts for 30th November 2022 expiry at a price of Rs. 213.5/USD.

(b) Gain/loss from futures market (in terms of tick)

In order to realize, gain or loss, buy 13 US\$ futures contracts for 30th November expiry at a price of Rs. 218.5/\$.

Sell future price (Rs. per USD)	213.50
Less: Buy future price (Rs. per USD)	(218.50)
= Loss per contract (Rs. per USD)	(5.00)
Loss in no. of ticks (Rs. 5.00/0.0001)	50,000

(c) Effective exchange rate

Net cash outcome	Rs.
Sell US\$2,000,000 from open market at spot rate (US\$ 2,000,000 x Rs. 218.5 per \$)	437,000,000
Loss from futures market (Rs. 5 x 17 contracts x USD120,000)	(10,200,000)
= Total receipt in local currency	426,800,000

Effective exchange rate (PKR per USD) = Rs. 426,800,000 ÷ USD 2000,000 = Rs. 213.40 per USD

11. UNITY RICE TRADERS – AUTUMN 2023 (Q 9)**(a) Net outcome under forward contract**

Today, Unity Rice Traders will lock lowest selling price of rice under forward contract at PKR 93,600.

On 29 February, 2024, company will sell rice at PKR 93,600 per MT and receipt will be:

Receipt from sale of rice under forward contract = 25.59 MT x PKR 93,600 = PKR 2,395,224

Net outcome under futures contract**Step 1) Open position in futures market**

No. of contracts = 25.59 MT ÷ 1 MT = 25.59 or 26 contracts

Sell 26 rice futures contracts at a future price of PKR 93,500 per MT.

Step 2) Close position in futures market

	Rs.
Sell future price	93,500
Less: Buy future price	(87,500)
= Gain per future	6,000

Total gain = PKR 6,000 x 26 contracts x 1 ton = PKR 156,000

Buy 26 rice futures contracts at a price of PKR 87,500 per MT to realize gain of PKR 156,000 from futures market.

Step 3) Net cash outcome

	Rs
Actual sales value of rice at open market rate (Rs. 87,500 per MT x 25.59 MT)	2,239,125
Gain from futures market	156,000
= Effective sales receipt after hedging	2,395,125

(b) Optimal strategy if spot price is expected to be PKR 102,000 per MT

If the expected spot price at 29 February 2024 is PKR 102,000 / MT, then the best strategy for URT would be to not hedge at all, and instead sell the rice directly at the spot rate. By doing this, URT can take advantage of higher expected spot price and maximize its profit.

Factors that prevent the execution of optimal strategy

The strategy may however not be implemented because of the following reasons:

- (i) The expected price is just an expectation and may not turn out to be true. OR
The expected spot price may not be accurate, and the actual price could turn out to be lower than the price available under the hedging strategies, resulting in potential losses for URT.
- (ii) While no-hedge strategy may result in a better position it is only after assuming the risk of fall in price of rice. OR
- (iii) URT might have a lower risk tolerance and may prefer the certainty of a hedging strategy, even if it means potentially lower profit.

12. ZAIN ASSOCIATES (Autumn 2024 (Q.7))**(a) Benefits of effective risk management process**

The adoption of an effective risk management process within an organisation will have a number of benefits, examples of which include:

- Increased likelihood of achieving objectives
- Awareness of the need to identify and treat risk throughout the organization
- Improved identification of opportunities and threats
- Compliance with relevant legal and regulatory requirements and international norms
- Improved governance
- Improved stakeholder confidence and trust
- Establishment of a reliable basis for decision making and planning
- Effective allocation and use of resources for risk treatment

(b) Money market hedgeStep 1 – Present value

Present value = Euro receipt in 3 months $\times [1 + (\text{EUR borrowing rate} \times t \div 12)]^{-1}$

Present value = EUR 75,000 receipt $\times [1 + (6\% \times 3 \div 12)]^{-1}$ = EUR 73,892

Step 2 – Conversion into PKR

Local currency amount (PKR) = PV of EUR receipt $\times$ Spot rate

Local currency amount (PKR) = EUR 73,892 $\times$ PKR 301.25 = PKR 22,259,965

Step 3 – Future value

Future value = Local currency amount $\times [1 + (\text{PKR deposit rate} \times t \div 12)]^1$

Future value = PKR 22,259,965 $\times [1 + (12.5\% \times 3 \div 12)]^1$ = PKR 22,955,589 receipt

Effective exchange rate (PKR per EUR) = PKR 22,955,589 $\div$ EUR 75,000 = PKR 306.07 per EUR

Conclusion: Since the effective rate will be lower than the expected spot rate, the company may choose to not opt for this hedge.

13. AZAD LIMITED – MODEL PAPER (Q 10)**(a) Financial risk and its management strategies**

(i) Credit risk arises from the possibility that customers may not fulfil their payment obligations. The financial crunch of some customers and the potential bankruptcy of a major customer increases the chances of credit risk for AL.

(ii) AL can use any one of the following strategies to manage the credit risk:

a. Different credit limits for different customers

AL can have a broader credit policy to set varying credit limits for different customers based on predefined criteria. For example, maximum credit can be given to a listed company with minimum B credit rating and no credit can be offered to partnerships and individuals.

The credit limit for a particular customer is set within the maximum limit given in the policy based on other factors. The data analytics tools have enabled the companies to use big data to have a predictive analysis of a particular customer to set the credit limit.

b. Regular monitoring of customer's risk profile

Risk profile of a customer depends on various variables, such as, business performance, financial ratios, credit rating and debt burden. Regular monitoring of changes in these variables helps the companies to manage the risk specific to a particular customer. Risk can be managed by adjusting the credit limit, asking for further securities or in extreme case discontinuing business with the customer.

c. Guarantees from third party

Asking for credit guarantee is a risk sharing strategy whereby customer arranges a third party's guarantee (usually banks offer these services).

d. Credit insurance

Credit risk can be managed by shifting the risk to insurer. The credit insurance is arranged by the company offering credit to customers, for which cost of premium is incurred.

(b) Hedging through currency futures**Step 1 – Open position in future market**

No. of contracts = $\text{USD}1,600,000 \div \text{USD}125,000 = 12.8$ or 13 contracts

Sell 13 USD futures contracts for 31st July 202X expiry at a price of Rs. 175.50/USD.

Step 2) Close position in futures market

Sell future price (Rs. per USD)	175.500	175.500
Less: Buy future price (Rs. per USD)	(174.155)	(176.225)
= Gain/(loss) per contract (Rs. per USD)	1.345	(0.725)

Total gain in LCY = $1.345/\$ \times 13 \text{ contracts} \times \$125,000 = \text{Rs. } 2,185,625$

Total loss in LCY = $(0.725)/\$ \times 13 \text{ contracts} \times \$125,000 = (\text{Rs. } 1,178,125)$

Buy 13 US\$ futures contracts for 31st July 202X expiry at a price of Rs. 174.155/\$ or Rs. 176.225/\$ to realize gain of Rs. 2,185,625 or loss of Rs. 1,178,125.

Step 3) Net cash outcome

(i) Spot rate of PKR 174.155 per USD	Rs.
Sell US\$ 1,600,000 in open market at spot rate (US\$ 1,600,000 x Rs. 174.155 per \$)	278,648,000
Gain from futures market	2,185,625
= Total receipt in local currency	280,833,625
(ii) Spot rate of PKR 176.225 per USD	Rs.
Sell US\$ 1,600,000 in open market at spot rate (US\$ 1,600,000 x Rs. 176.225 per \$)	281,960,000
Loss in futures market	(1,178,125)
= Total receipt in local currency	280,781,875

14. COMMODITY FUTURES

The trader cannot buy contracts in fractions and has to buy 13 or 14 contracts as the total demand is 13.68. Trader should buy 14 contracts because it is closer to 13.68 tons.

The futures position will be closed.

Open futures position: purchase at	58,000
Close position: sell at	61,000
Gain	3,000

The total gain on futures (14 contracts X 3,000) Rs. 42,000

The effective rate of wheat worked out as follows:

Trader buys wheat in spot market (13.68 X 61,000) Rs. 834,480

Less: Gain on futures Rs. 42,000

Net payment Rs. 792,480

Effective rate /ton (Rs. 792,480/13.68) Rs. 57,929/ton

IN THIS CHAPTER

1. Basics of budgeting
2. Types of budgets
3. Approaches to budgeting
4. Budgeting in non-profit organisations
5. Human and motivational aspects of budgeting
6. Self-test questions

1. BASICS OF BUDGETING

1.1 Introduction to budgets

A budget is a quantitative estimation of costs, revenues and resources of an entity for a defined period of time. Budgeting has always been part of the activities of any business organization as it helps the business in better understanding of its business environment to navigate its position and direction.

Budgets help organizations to plan in advance about what resources they shall need and the time when such resources will be required. This helps the management to have a better understanding of resources to be arranged and managed, resulting in a smooth flow of operations and avoiding unfavourable surprises.

1.2 Forecasting vs. budgeting

Budgeting and Forecasting are two important constituents of managerial decision-making process. To avoid crises in the business, managers and owners make use of two essential tools – forecasting and budgeting. Budgeting refers to preparing a list of guidelines for expenditures for future and it is usually done a year in advance. It is used as a benchmark in analysing the financial health of a business, whereas forecasting uses accumulated historical data to predict financial outcomes for future months or years.

Even though both of these functions are distinct and are not same but their use and their dependency on each other make them inseparable and thus many confuse the two as same and use them interchangeably. Let's understand the technical difference between these two.

Forecasting	Budgeting
Forecasts are statements of probable events.	Budgets relate to planned events.
Forecast is only a tentative estimate.	Budget is a target fixed for a period.
Forecasting results in planning.	Planning results in budgeting.
Forecasting does not act as a tool to control.	Budgets serves as controlling tools.

Let's understand the difference between a forecast and a budget with the help of an example.

At the start of a financial period, a company expected to produce 200,000 units at the end of first quarter. Information gathered at the end of the first month in the quarter revealed that labour's learning rate was faster than expected and thus they have become more efficient and effective. If the process keeps its current pace as experienced in the first month then it is expected that at the end of the quarter the output would be 230,000.

In this example, 200,000 is the **budgeted figure**. This is the amount which the management established before starting production. During the production process however based on month end information it is predicted that output will be 230,000. This is the forecast amount which has been **forecasted** based on the latest information. And now this forecast will be used to prepare a revised budget to see its effect on different aspects.

1.3 Purposes of budgeting

Budgeting serves various purposes in an organization. Few purposes of budgets are as follows:

- **Planning:** is an important and integral part of any organization. Planning helps organizations set targets for the upcoming period so that everyone across the organization can work towards the achievement of such targets. An organization without a plan is just like a football team in the ground without a goal post. Budgets assist an organization in the planning process as through the formulation of budget an organization has a plan in hand about quantity of goods that they shall be producing and the number of units that will be sold etc. A properly structured planning process provides a suitable opportunity for the company to analyse its environment and how its business strategy fits with the same.

- **Control:** Performance cannot be measured and reviewed without giving targets at first place. Budgets when compared to actual results help in controlling the performance so that factors which might hinder the attainment of objectives can be identified. Managers are held accountable for controlling costs and revenues of their departments and they are asked to take remedial actions in case of discrepancies. There is no point in setting targets if actual performance is not compared with them. Likewise, there is no point in controlling actual performance if targets are not set before hand to compare.
- **Decision making:** One of the key purposes of management accounting is to provide information useful for decision making. Budgeting is important for decision making as it gives business a sense of direction, an estimation of revenues, cost and resources. From where these resources will be arranged and where they are consumed.

For instance, a company sets an objective to increase profits by 10% over five years' term. Sales, production and purchases budgets are set up and cash requirements are also stated accordingly. Cash budget shows negative balance over next four months. Now here decision has to be made on how to make up for this deficiency. Either money has to be borrowed or asset has to be sold. A decision is required here so overall objectives are not affected. Thus, budgeting MCG serves as a guiding post illuminating the pitfalls that the company might encounter in trying to achieve its objectives.

- **Resource allocation:** is an area of conflict amongst departmental managers. They often complain that resources assigned to them are not enough for the requirements. While preparing budgets, needs of each department are evaluated and resources are assigned to them accordingly. This process is usually performed with the participation of managers, however, in case of disagreements the decision is imposed. Organizations want to ensure that resources have been utilized to the maximum and reduce wastage of resources to the minimum. Because strategic level has got better understanding on the availability of resources and needs of each department, and it is the responsibility of the strategic management to make fair allocation of the available resources. There is a strong possibility that manager may not be satisfied with what they get but their grievances can be reduced by negotiations and counselling.
- **Coordination and communication:** Each employee in the organization wants to know what he or she is supposed to do. Budgets form a key to communicate organization's goals to its employees in monetary form. If an employee has been told that organization wants to increase shareholders' wealth, then he must ask what he has to do in order to increase it. Then budgets translate it and define them their task.

An organization is often divided into many departments and divisions but the activities of these departments are somehow dependent on each other. The system cannot work properly without proper coordination and communication amongst these departments. If sales department doesn't coordinate with production department then customers' orders might not be met. The situation gets even worse when production department is out of stock because purchasing department did not know the quantity of material that has to be purchased. So, while preparing budgets all department managers are required to coordinate and are assigned their responsibilities. The budgeting exercise serves as the occasion when the roles and responsibilities of each department are defined and communicated.

1.4 Stages in the budgeting process

Important terminologies that may need to be understood for the budgeting process are as follows:

Budget committee is a team comprising of senior level management and heads of departments that approves budgets and reviews the performance on periodic basis. It is not necessary that they are the ones who prepare budget. They have the responsibility to ensure that the objectives have been embedded into the budgets.

Budget manual is a document to provide useful information on how budgets will be prepared, how they are presented, to whom they are presented and when. It sets out the responsibilities of person connected with the budgets.

Budget period is time frame for which budget is prepared and used.

Planning Department is responsible for developing the budget after consulting with other departments and functions and the approval of the budget committee. In larger organizations, there might be a separate planning department, however, in smaller organizations the process may be delegated to the finance department in addition to their day-to-day activities.

Stages

- **Communicating details of budget policy:** First step is to communicate policies and manual to those responsible for preparation of budgets. Objectives and long-term goals must be communicated to them. They must know the basis on which goals have been set.
- **Identify principal budget factor:** Principal budget factor refers to the resource that is restricted in supply, therefore before planning for the entire organization, budgeting is required for the Principal Budget Factor. For instance, if material is limited in supply so it has to identify how many kilograms of material can be available. On the basis of its availability production quantity will be determined and sales will then be calculated.
- **Preparation of budgets:** If all resources are in full supply, sales budget will be prepared first and then on the basis of sales remaining budgets will be prepared including production, labour, and overheads budgets.
- **Final acceptance:** After all negotiation and documentation, budgets will be presented in front of budget committee for final approval. If there are any objections raised, necessary amendments will be made accordingly. Once budget has been improved, responsibilities are assigned to departmental managers to achieve targets mentioned in budgets.
- **Ongoing review of budgets:** The process is not ended up here. Periodic review is necessary so that managers must be focused and do not take budgets for granted. Performance should be compared with actual results on periodic basis and deviations from the budgets both negative and positive are investigated.

1.5 Budgeting for profitability

Planning and budgeting process for profit aids companies to forecast profit and loss from the expected expenses and revenues. Targeted sales and estimated costs are matched with the desired profit in order to analyse financial implications. This means that companies would benefit from setting profit objectives or forecast profits based on expected operations. Usually, profit objectives are set and then sales and operational planning is done while at other times planning phase leads to projected profits decisions.

2. TYPES OF BUDGETS

2.1 Sales budget

Sales budget is the first and basic component of master budget and it shows the expected number of sales units of a period and the expected price per unit. If there is no restriction of resources, sales budget is the foundation of all other budgets, since all expenditure is ultimately dependent upon volume of sales.

Usually, the sales forecast is the first step towards preparing a sales budget. A sales budget may be the same as the sales forecast if no interventions are planned to impact the demand. However, organizations may plan marketing campaigns in the light of initial sales forecast to achieve a higher sales target which is then reflected in the sales budget.

► *Illustration:*

An extract from a sample sales budget is as under:

Product	A	B	C	D
No. of units	45,000	54,000	20,000	60,000
Selling price per unit (Rs.)	45	40	65	80
Total Sales (Rs.)	2,025,000	2,160,000	1,300,000	4,800,000

2.2 Production budget

Production budget is a schedule showing planned production in units which must be made by a manufacturer during a specific period to meet the expected demand for sales and the planned finished goods inventory. Normally the production budget lags the sales budget by one month. E.g. Stocks to be sold in May will be produced in April, however, this is dependent on production scheduling and storage needs.

► *Illustration:*

A sample of production budget is as under:

Product	A	B	C	D
Budgeted Sales (Qty)	45,000	54,000	20,000	60,000
Budgeted Closing inventory (Qty)	5,000	10,000	2,500	8,000
Total Production Required	50,000	64,000	22,500	68,000
Less: Opening Inventory	(3,000)	(5,000)	-	(2,500)
Products to be Manufactured	47,000	59,000	22,500	65,500

2.3 Direct materials budget

Direct material purchases budget shows budgeted beginning and ending direct material inventory, the quantity of direct material that will be used in production, the amount of direct material that must be purchased and its cost during a specific period. This forms the basis of the procurement plan.

► *Illustration:*

Direct materials budget

A sample of direct Material Purchases Budget is mentioned as under:

Product	A	B	C	D
Budgeted Production Units	47,000	59,000	22,500	65,500
Material Required / Unit (Kg)	3.00	4.50	8.00	4.00
Material Required for Production (Kg)	141,000	265,500	180,000	262,000
Budgeted Closing Material (Kg)	12,000	15,000	20,000	40,000
Budgeting Opening Material (Kg)	(4,500)	(6,000)	(12,000)	(22,000)
Budgeted Material Purchases (kg)	148,500	274,500	188,000	280,000
Cost / Kg	2.5	3.5	2.1	4
Budgeted Purchases (Rs.)	371,250	960,750	394,800	1,120,000

2.4 Direct labour budget

Direct labour budget shows the total direct labour cost and number of direct labour hours needed for production. It helps the management to plan its labour force requirements. This serves as the basis of recruitment plan.

► *Illustration:*

A sample Direct Labour Budget is as follows:

Product	A	B	C	D
Budgeted Production Units	47,000	59,000	22,500	65,500
Budgeted Labour / Unit (Hrs.)	1.50	2.50	3.00	1.00
Budgeted Labour Hours	70,500	147,500	67,500	65,500
Cost / Labour Hour (Rs.)	8	8	8	8
Budgeted Direct Labour Cost (Rs.)	564,000	1,180,000	540,000	524,000

2.5 Manufacturing overhead budget

The factory overhead budget shows all the planned manufacturing costs which are needed to produce the budgeted production level of a period, other than direct costs.

► *Illustration:*

A sample of the overhead budgets is as under:

Product	A	B	C	D
Budgeted Production Units	47,000	59,000	22,500	65,500
Variable OH / Unit (Rs.)	2.00	1.80	2.40	0.56
Total Variable OH (Rs.)	94,000	106,200	54,000	36,680
Allocated Fixed OH (Rs.)	65,000	25,000	35,000	84,500
Budgeted Direct Labour Cost (Rs.)	159,000	131,200	89,000	121,180

► **Example 06:**

Following data is available from the production records of Flamingo Limited (FL) for the quarter ended 30 June 20X1.

	Rupees
Direct material	120,000
Direct labour @ Rs. 4 per hour	75,000
Variable overhead	70,000
Fixed overhead	45,000

The management's projection for the quarter ended 30 September 20X1 is as follows:

- Increase in production by 10%.
- Reduction in labour hour rate by 25%.
- Decrease in production efficiency by 4%.
- No change in the purchase price and consumption per unit of direct material.

Variable overheads are allocated to production on the basis of direct labour hours.

Preparation of a production cost budget for the quarter ended 30 September 20X1, would be as follows

Production Cost Budget	Actual (30-06-20X1)	Budget (30-09-20X1)
	Rupees	
Direct material cost	120,000	132,000
Direct labour cost (W-1)	75,000	64,350
Prime Cost	195,000	196,350
Production Overhead:		
Variable	70,000	80,080
Fixed	45,000	45,000
Total cost	310,000	321,430

W-1:

The labour hours will increase by 10%. Also, there will be increase in labour hours as production efficiency has decreased by 4%. Therefore, increased total labour hours will be:

$$(75,000 \div 4) = 18,750 \times \frac{110}{100} \times \frac{104}{100} = 21,450$$

Rate is decreased to Rs. 3. Therefore, direct labour cost will be $21,450 \times 3 = \text{Rs. } 64,350$.

2.6 Ending finished goods inventory budget

The ending finished goods inventory budget calculates the cost of the finished goods inventory at the end of every budget period. It also includes the unit quantity of finished goods at the end of every budget period; the real basis of this information is the production budget. The principal aim of inventory budget is to provide for the amount of the inventory asset that appears in the budgeted balance sheet. When a company needs to closely monitor its fund balances on an ongoing basis, the ending finished goods inventory budget should be reviewed on a regular basis.

The ending finished goods inventory budget contains an itemization of three major costs that are required to be included in the inventory asset in the balance sheet. These costs are:

- **Direct materials:** The cost of materials per unit (as listed in the direct materials budget), multiplied by the number of ending units in inventory (as listed in the production budget).
- **Direct labour:** The direct labour cost per unit (as listed in the direct labour budget), multiplied by the number of ending units in inventory (as listed in the production budget).

- **Overheads:** The amount of overhead cost per unit (as listed in the manufacturing overhead budget), multiplied by the number of ending units in inventory (as listed in the production budget).

► *Illustration*

XYZ Corporation sells a product “S” and has derived its main cost components. Its ending finished goods inventory budget would be as follows:

	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4
Cost per unit:				
Direct materials cost	Rs.12.50	Rs.12.50	Rs.12.75	Rs.12.75
Direct labour cost	4.00	4.50	4.50	4.50
Manufacturing Overhead cost	<u>6.50</u>	<u>6.50</u>	<u>6.50</u>	<u>6.75</u>
Total cost per unit	Rs.23.00	Rs.23.50	Rs.23.75	Rs.24.00
Ending finished goods units	8,000	12,000	10,000	9,000
x Total cost per unit	<u>Rs.23.00</u>	<u>Rs.23.50</u>	<u>Rs.23.75</u>	<u>Rs.24.00</u>
= Ending finished goods inventory	<u>Rs.184,000</u>	<u>Rs.282,000</u>	<u>Rs.237,500</u>	<u>Rs.216,000</u>

2.7 Cost of goods manufactured budget

Cost of goods manufactured is the cost incurred to manufacture the finished goods and includes elements of all the costs including material, purchases and manufacturing overheads.

The cost of goods manufactured budget outlines the total budgeted cost of units manufactured for a period.

► *Illustration:*

Product	A	B	C	D
Direct Material Purchases	371,250	960,750	394,800	1,120,000
Opening Direct Material	11,250	21,000	25,200	88,000
Closing Direct Material	<u>(30,000)</u>	<u>(52,500)</u>	<u>(42,000)</u>	<u>(160,000)</u>
Direct Material Cost	352,500	929,250	378,000	1,048,000
Direct Labour Cost	564,000	1,180,000	540,000	524,000
Manufacturing Overhead	<u>159,000</u>	<u>131,200</u>	<u>89,000</u>	<u>121,180</u>
Budgeted Cost of Goods manufactured	1,075,500	2,240,450	1,007,000	1,693,180

2.8 Cost of goods sold budget

Cost of goods sold is the accumulated total of all costs used to create a product or service, which has been sold.

The cost of goods sold budget outlines the total budgeted cost of units sold for a period. Once the cost of goods manufactured budget and cost of goods sold budget are drawn up, information from these budgets appear in other budgets for the same period as well. For example, the budgeted income statement uses the value of cost of goods sold to determine the gross profit for the period and the balance sheet includes the finished goods ending inventory in total assets.

► *Illustration:*

Product	A	B	C	D
Budgeted Cost of Goods manufactured	1,075,500	2,240,450	1,007,000	1,693,180
Finished goods beginning inventory	<u>90,000</u>	<u>140,000</u>	<u>190,000</u>	<u>90,000</u>
Total cost of goods available for sale	1,165,500	2,380,450	1,197,000	1,783,180
Finished goods ending inventory	<u>(130,000)</u>	<u>(120,000)</u>	<u>(260,000)</u>	<u>(290,000)</u>
Cost of goods sold	1,035,500	2,260,450	937,000	1,493,180

2.9 Selling and administrative expenses budget

Selling and administrative expense budget provides details of budgeted costs for the sales of the products and for managing affairs of the business.

Selling and administrative expenses can be both either fixed or variable. For example, sales staff may be paid commission on every unit sold by them or they can get a fixed salary, furthermore administrative expenses could be fixed like rent, depreciation or it could vary depending upon entertainment expense incurred etc.

The selling and administrative budget is dependent upon the sales and production budget, for example the number of salesmen may be directly correlated with the sales figure and the space rentals may be determined on the basis of production requirements.

► *Illustration:*

Sample Selling and Administrative budget is as under:

Product	A	B	C	D
Budgeted Selling Expenses				
Sales Commission (Rs.)	26,200	43,550	2,410	3,590
Budgeted Admin. Expenses:				
Office Rent	76,000	25,400	8,000	8,000
Office Salaries	45,000	45,000	10,000	10,000
Total Selling & Admin. Expense	147,200	113,950	20,410	21,590

2.10 Capital expenditure budget

Capital expenditure budgeting is the process of establishing a financial plan for purchases of long-term business assets.

This is the budget that provides for the acquisition of non-current assets necessitated by the following factors:

- Replacement of existing non-current assets
- Purchase of additional non-current assets to meet increased production
- Installation of improved type of machinery to reduce costs

The capital expenditure budget should take account of the principal budget factor. If available funds are limiting the organization's activities, then they will more than likely limit capital expenditure. As part of the overall budget coordination process, the capital expenditure budget must also be reviewed in relation to the other budgets.

This is in some respect the riskiest element of any budget, as its long-term impact would be greater than the other budget types e.g. Investing in a technology that subsequently becomes obsolete might imperil the very survival of the company.

► *Illustration*

Project	Description/detail of capital investment items	Month	Rs. '000
LV 45	Installation of new personal computers and flat screen monitors throughout office and factory	April	10,000
LV46	Plant replacement of obsolete packing equipment by new automated and electronic machinery	October	50,000
Budgeted capital expenditure			60,000

2.11 Cash budget

Cash budget is a summary statement of the firm's expected cash inflows and outflows over a projected time period. It helps in determining the future cash needs of the firm and also assists in planning for financing of those needs. It acts as a tool to exercise control over cash and liquidity of the firm. The overall objective is to enable the firm to meet all its commitments in time and preventing accumulation of unnecessary large cash balances with it as well.

Functions of cash budget

Functions of a cash budget may include:

- **Assists with the identification of required cash when commitments are due:** If debts are not paid in time, poor reputation will affect the credit rating of the business. Cash budgets ensure that cash is available when commitments fall due.
- **Reveals periods of excess/shortage of funds:** Businesses avoid keeping idle funds in cash and bank accounts as these amounts do not generate income except for nominal interest on bank balances. Cash budgets help businesses identify idle funds in advance so that the same can be utilized or invested. Similarly, the periods where shortages of funds may occur can be identified ahead of time. This can help businesses make arrangements with banks to meet shortfalls. Cash budgets are often demanded by banks as well when businesses seek loans, to find if the business is capable of meeting repayments.
- **Reveals weaknesses in business's debt collection policy:** Cash budgets can locate the weaknesses in business's debt collection policy by comparing the trends that the debtors follow in making payments with the credit period allowed.
- **Cash forecasts for seasonal fluctuations:** Some businesses experience high/low sales during different seasons of the year, e.g. Tourism, farming etc. Cash budgets can help in making adjustments based on cash forecasts for such seasonal fluctuations.

► *Illustration:*

A cash budget for January, February and March 20X6 is to be prepared from the following information.

	January	February	March
	Rs.	Rs.	Rs.
Cash Sales	100,000	200,000	150,000
Cash Purchases	60,000	80,000	100,000
Expenses	10,000	15,000	20,000
Collection from debtors	30,000	50,000	20,000
Payment to creditors	20,000	10,000	70,000

*Opening balance for 1st January is Rs. 15,000.

	January	February	March
	Rs.	Rs.	Rs.
Opening Balance	15,000	55,000	200,000
Add: Receipts			
Cash sales	100,000	200,000	150,000
Collection from debtors	30,000	50,000	20,000
	145,000	305,000	370,000
Less: Payments			
Cash Purchases	60,000	80,000	100,000
Expenses	10,000	15,000	20,000
Payment to creditors	20,000	10,000	70,000
Closing balance	55,000	200,000	180,000

Budgeted collections from debtors need to be worked out based on the organization's credit policy and credit terms offered to customers, together with customers payment history and habits. Similarly, budgeted payments to creditors may have to be worked out based on credit terms allowed by the creditors and the organization's intentions to avail the discounts if any. End of the day, all these numbers are after all estimates which can turn wrong. In the case of cash budget, it is advisable to keep some cushion (excess cash reserves) to meet such situations.

► **Example 07:**

During the year ending June 30, 20X1 Abdul Habib Company Limited has planned to launch a new product which is expected to generate a profit of Rs. 9.3 million as shown below:

	Rs. in '000'
Sales revenue (24,000 units)	51,600
Less: cost of goods sold	37,500
Gross profit	14,100
Less: operating expenses	4,800
Net profit before tax	9,300

The following additional information is available:

- 75% of the units would be sold on 30 days credit. Credit prices would be 10% higher than the cash price. It is estimated that 70% of the customers will settle their account within the credit term while rest of the customers would pay within 60 days. Bad debts have been estimated @ 2% of credit sales. All cash and credit receipts are subject to withholding tax @ 6%.
- 80% of the expenses forming part of cost of goods sold are variable. These are to be paid one month in arrears.
- The production will require additional machinery which will be purchased on July 1, 20X0 at a cost of Rs. 60 million. The machine is expected to have a useful life of 15 years and salvage value of Rs. 7.5 million. The company has a policy to charge depreciation on straight line basis. The depreciation on the machinery is included in the cost of goods sold as shown above.
- Variable operating expenses excluding bad debts are Rs. 105 per unit. These are to be paid in the same month in which the sale is made.

- v. 50% of the fixed costs would be paid immediately when incurred while the remaining 50% would be paid 15 days in arrears.
- vi. The management has decided to maintain finished goods stock of 1,000 units.

If it is required to calculate the cash requirements for the first two quarters, following solution may be considered

Cash Management

Total sales	Units	Weight	Sales Ratio
Cash sales – 25%	6,000	1.0	6,000
Credit sales – 75%	18,000	1.1	19,800
	24,000		25,800
Sales Revenue (Rs. in '000)			51,600
Cash Selling price per unit			2,000
Credit selling price per unit			2,200

Cash Requirement 20X1

Particulars	Qtr. 1	Qtr. 2
	--- Rs. in '000 ---	
Purchase of machinery	(60,000)	-
Sale receipts		
Cash sales ($2,000 \times 6,000 / 4 \times 94\%$)	2,820	2,820
Receipts from credit sales – as per working below	5,211	9,120
Cost of goods sold – variable ($37,500 \times 80\%$) / 12×2 and 3	(5,000)	(7,500)
Variable cost of finished stock $30,000 / 24,000 \times 1,000$	(1,250)	-
Variable operating expenses ($105 \times 3 \times 2,000$)	(630)	(630)
Payment of fixed costs (457×2.5) / (457×3.0)	(1,143)	(1,372)
	(59,992)	2,438

	Month			1 st Qtr.	Month			2 nd Qtr.
	1	2	3		4	5	6	
	----- Rs. in '000 -----							

Working for credit sales

Credit sales ($18,000 \div 12 \times 2,200$)	3,30	3,300	3,300		3,300	3,300	3,300	
Settlement – 70%		2,310	2,310		2,310	2,310	2,310	
28%			924		924	924	924	
Gross receipts		2,310	3,234	5,544	3,234	3,234	3,234	9,702
Tax @ 6%				(333)				(582)
Receipts net of tax				5,211				9,120

Operating expenses	
Total operating expenses – given	4,800
Less: Variable cost per unit ($105 \times 24,000$)	(2,520)
Bad debt expense ($2,200 \times 18,000 \times 2\%$)	(792)
Fixed operating expenses	1,488
Fixed cost	
Fixed factory overheads	7,500
Less: Depreciation ($60m - 7.5m$) / 15	(3,500)
Fixed operating overheads	1,488
	5,488
Fixed cost per month	457

2.12 Master budget

As demonstrated above, budgeting is a collective process in which various departments / divisions of the organization prepare their plans for the upcoming periods, which in turn are aggregated into a corporate budget. Corporate Budget is also termed as Master Budget.

Master Budgets are in the form of Projected Financial Statements and they help an organization plan in advance about its targets for the upcoming periods.

Preparation of Master Budget in any organization would require an organisation to prepare various components of operational budgets which could then be aggregated into the master budget. It can be referred to as the end product of the budgeting process. It takes the macro view of the business and coordinates with production, raw materials, manpower and other resources with production targets. It cuts across divisional boundaries to coordinate firms' diverse activities. The operating budgets are the building blocks that complete the master budget.

3. APPROACHES TO BUDGETING

3.1 Flexible and fixed budgets

Flexible budgets

Flexible budgets are, as their names suggest variable and flexible depending on the variability in the results expected in the future. Such budgets are most useful for businesses that operate in an ever changing business environment, and have the need to prepare budgets that are able to reflect the many outcomes that are possible. The use of a flexible budget ensures that a firm is prepared to some extent to deal with the unexpected turn around in events, and able to better guard itself against losses arising from such scenarios. A possible disadvantage of this form of budgeting is known to be the fact that they may be complicated to prepare, especially when the scenarios being considered are numerous in number, and complex in nature. Another issue is that they may confuse the employees as to their ultimate targets and goals.

► *Illustration*

Activity Level: Direct Labour hours	8000	9000	10,000	11,000	12,000
Variable Costs					
Indirect materials (Rs. 1.50)	Rs. 12,000	Rs. 13,500	Rs. 15,000	Rs. 16,500	Rs. 18,000
Indirect labour (Rs. 2.00)	16,000	18,000	20,000	22,000	24,000
Utilities (Rs. 0.50)	4,000	4,500	5,000	5,500	6,000
Total Variable Costs	32,000	36,000	40,000	44,000	48,000
Fixed Costs					
Depreciation	15,000	15,000	15,000	15,000	15,000
Supervision	10,000	10,000	10,000	10,000	10,000
Property taxes	5,000	5,000	5,000	5,000	5,000
Total Fixed costs	30,000	30,000	30,000	30,000	30,000
Total Costs	Rs. 62,000	Rs. 66,000	Rs. 70,000	Rs. 74,000	Rs. 78,000

Fixed budgets

Fixed budgets are used in situations where the future level of activity is known, with a higher degree of certainty, and have been quite predictable over time. These types of budgets are commonly used by organizations that do not expect much variability in the business or economic environment, or where associated costs are independent of activity levels (are fixed). Fixed budgets are simpler to prepare and less complicated.

3.2 Incremental budgeting

It is a simple approach towards budgeting which starts by taking the budgets from previous budget period and then adds (or subtracts) any incremental amount for the next budget period. For example, incremental amounts will be added for:

- Inflation in costs next year
- Any other changes like tax rates
- Possibly, the cost of additional activities that will be carried out next year

Incremental budgeting may be appropriate for certain costs. For example, in a stable environment it may be sufficient to budget salary costs by taking current year plus wage inflation.

Traditionally this type of budgeting would have been very evident in the public sector. This would often result in departments becoming locked in to public expenditure.

Advantages of incremental budgeting

- It is a simple, quick and easy approach towards budgeting.
- Suitable in a stable environment where historic figures are reliable and are not expected to change.
- Information does not need to be searched, it is readily available.

Disadvantages of incremental budgeting

- The deficiencies which were incorporated in previous period is likely to be carried forward for the next budget period.
- Non-feasible economic activities may continue for the next period, for example a company may continue to make parts in-house when it might be cheaper to outsource.
- Amount of increment (inflation or growth) may be difficult to estimate.

► Example 09:

Falcon (Private) Limited (FPL) is in the process of preparing its annual budget for the next year. The available information is as follows:

- i. Budgeted and actual production and sales for the current year:

	Budgeted	Actual
	----- Units -----	
Production	25,000	23,760
Sales	24,000	22,800

- ii. Current year's actual production cost per unit:

		Rupees
Raw material input	(49 kg)	980
Direct labour		800
Variable production overheads		500
Fixed production overheads		400
		2,680

- iii. Inventory balances:

FPL maintains the following inventory levels:

Raw material	Average two months' consumption based on budgeted production
Finished goods	Average one month's budgeted sales
Work in process (opening as well as closing)	1,500 units (100% complete as to material and 60% as to conversion cost)

FPL follows absorption costing and uses FIFO method for valuation of inventory.

- iv. Impact of inflation:

	Inflation %
Raw material and variable overheads	8
Direct labour	10
Fixed overheads (excluding depreciation)	5

- v. Sales volume would increase by 10%.
- vi. Balancing and modernization of plant would be carried out at a cost of Rs. 20 million which would:
- increase depreciation from Rs. 5,800,000 to Rs. 7,016,800;
 - reduce raw material wastages from 5% to 2% of input; and
 - increase labour efficiency by 7%.

For the above example, budgeted statement of cost of sales for the next year may be as follows:

Falcon (Private) Limited		Rupees
Opening work in process:		
Raw material cost	1,500×980	1,470,000
Conversion cost	1,500×60%×(800+500+400)	1,530,000
	A	3,000,000
Manufacturing expenses:		
Raw material cost	(W-4)	25,497,753
Conversion cost	25,170(W-1)×1,791(W-2)	45,079,470
	B	70,577,223
Closing work in process:		
Raw material cost	1,500×1,026(W-2)	(1,539,000)
Conversion cost	1,500×60%×1,791(W-2)	(1,611,900)
	C	(3,150,900)
Finished goods:		
Opening stock	2,000(W-1)×2,680 D	5,360,000
Closing stock	2,090(W-1) ×2,817(W-2) E	(5,887,530)
Cost of sales	(A+B+C+D+E)	69,898,793

W-1: Budgeted production for the next year		Units
Sales for the next year	22,800×1.1	25,080
Finished goods inventory: Closing	25,080÷12	2,090
Opening	24,000÷12	(2,000)
Work in progress: Closing (100% to material and 60% to conversion)		1,500
Opening (100% to material and 60% to conversion)		(1,500)
		25,170

W-2: Budgeted cost per unit for the next year		Rupees
Raw material	980×0.95÷0.98×1.08	1,026
Direct labour	800×93%×1.1	818
Variable overheads	500×1.08	540
Fixed overheads	10,906,000(W-3)÷25,170(W-1)	433
		1,791
		2,817

W-3: Budgeted fixed overheads for the next year		Rupees
Current year's fixed overheads (excluding depreciation)	$(400 \times 23,760) - 5,800,000$	3,704,000
5% increase for next year's fixed overheads (excluding depreciation)	$3,704,000 \times 1.05$	3,889,200
Depreciation for the next year		7,016,800
		10,906,000

W-4: Budgeted raw material consumption for the next year		Kg
Required raw material including 2% wastage	$25,170 \text{ (W-1)} \times (49 \times 0.95 \div 0.98)$	1,195,575
Opening raw material inventory	$(25,000 \times 49 \div 2 \div 12)$	204,167

Raw material issues on FIFO basis from:		Rupees
- Opening raw material inventory	$204,167 \times (980 \div 49)$	4,083,340
- Current purchases at revised price	$(1,195,575 - 204,167) \times (980 \div 49) \times 1.08$	21,414,413
		25,497,753

3.3 Zero based budgeting

A simple idea of preparing a budget from a zero base each time i.e. as though there is no expectation of current activities to continue from one period to the next. In Zero based budgeting, every single piece of budget item, especially cost, is to be justified a fresh. For example, if DM cost of a product last year was budgeted at Rs120 per unit, this cannot be simply replicated (or incremented) this year. It has to be justified as to why it is still Rs120 and not less. This approach, as such, is contrary to the incremental budgeting in which only the increments have to be justified.

Zero Based Budgeting poses great amount of work on the part of the people preparing the budget. However, it inherently stops the overestimations of costs and inefficiencies of the last period to be carried forward. Learnings from previous periods may still be accommodated. As such, this approach of budgeting is more effective in terms of costs control. However, the cost savings need to overweight the associated cost of the budgeting process.

A simple idea of preparing a budget from a zero base each time i.e. as though there is no expectation of current activities to continue from one period to the next. ZBB is normally found in **service** industries where costs are more likely to be **discretionary**. A form of ZBB is used in local government. There are four basic steps to follow:

- **Prepare decision packages:** Identify all possible services (and levels of service) that may be provided and then cost each service or level of service, these are known individually as **decision packages**.
- **Rank:** Rank the decision packages in order of importance, starting with the mandatory requirements of a department. This forces the management to consider carefully what their aims are for the coming year.
- **Funding:** Identify the level of funding that will be allocated to the department.
- **Utilize:** Use up the funds in order of the ranking until exhausted.

Advantages (as opposed to incremental budgeting)

- Emphasis on future need not past actions.
- Eliminates past errors that may be perpetuated in an incremental analysis.
- A positive disincentive for management to introduce slack into their budget.
- A considered allocation of resources.
- Encourages cost reduction.

Disadvantages

- Can be costly and time consuming.
- May lead to increased stress for management.
- Only really applicable to a service environment.
- May “re-invent” the wheel each year.
- May lead to loss continuity of action and short term planning.

3.4 Continuous budgeting (Rolling budgets)

In a periodic budgeting system, the budget is normally prepared for one year, a totally separate budget will then be prepared for the following year. In continuous budgeting the budget from is “rolled on” from one period to the next.

Typically, the budget is prepared for one year, only the first quarter in detail, the remainder in outline. After the first quarter is expired, the budget is revised for the following three quarters and a further quarter is budgeted for. This means that the budget will again be prepared for 12 months in advance. This process is repeated each quarter (or month or half year) so that at every given point in time, the organization have a plan for next year to come

► **Example**

Nishat Plastic Company makes its annual budget for the next financial year by adding 5% in the actual revenue/expenses for last year.

The company's annual expenses budget for a period of July 20X1 to June 20X2 is as follows:

Account head	Jul 20X1	Aug 20X1	Sept 20X1	Oct 20X1	Nov 20X1	Dec 20X1	Jan 20X2	Feb 20X2	Mar 20X2	Apr 20X2	May 20X2	June 20X2
	Rs.	Rs.	Rs.	Rs.								
Employees	1,630,000	1,630,000	1,630,000	1,630,000	1,630,000	1,630,000	1,630,000	1,630,000	1,630,000	1,630,000	1,630,000	1,630,000
Maintenance expenses	6,000	10,000	8,000	12,000	15,000	13,000	14,500	16,000	11,000	15,500	14,000	12,500
Office supplies	30,000	40,000	44,000	143,000	130,000	110,000	125,000	127,000	131,000	142,000	148,000	152,000
Freight	24,000	28,600	28,900	30,200	25,200	27,000	30,000	28,000	32,000	27,500	31,000	29,000
Establishment expenses	223,000	220,000	216,000	200,000	225,000	225,000	250,000	232,000	236,000	242,000	278,000	269,000
Agency charges	8,000	7,000	6,800	9,600	10,600	11,500	12,000	10,000	9,500	8,000	7,500	9,000
Financing charges	3,500	3,900	4,000	114,000	114,000	114,000	114,000	114,000	114,000	114,000	114,000	114,000
Other expenses	2,200	3,000	3,300	3,700	5,500	5,000	6,300	7,100	6,500	8,000	7,200	6,100
	1,926,700	1,942,500	1,941,000	2,142,500	2,149,806	2,016,505	2,067,800	2,194,100	2,056,000	2,073,000	2,115,700	2,107,600

After the month of July 20X1 is complete, the following developments take place in the company:

A special export order to UK, on which manufacturing was expected to take place from October 20X1, is cancelled due to COVID related trade restrictions.

Following were the related account heads and amounts:

- i. Monthly Salary of Project coordinator: Rs. 25,000
- ii. Monthly financing charges: Rs. 100,000

The revised budget of the company is as follows:

Account head	Aug 20X1	Sept 20X1	Oct 20X1	Nov 20X1	Dec 20X1	Jan 20X2	Feb 20X2	Mar 20X2	Apr 20X2	May 20X2	June 20X2	July 20X2
	Rs.											
Employees	1,630,000	1,630,000	1,605,000	1,605,000	1,605,000	1,605,000	1,605,000	1,605,000	1,605,000	1,605,000	1,605,000	1,605,000
Maintenance expenses	10,000	8,000	12,000	15,000	13,000	14,500	16,000	11,000	15,500	14,000	12,500	13,000
Office supplies	40,000	44,000	143,000	130,000	110,000	125,000	127,000	131,000	142,000	148,000	152,000	145,000
Freight	28,600	28,900	30,200	25,200	27,000	30,000	28,000	32,000	27,500	31,000	29,000	25,000
Establishment expenses	220,000	216,000	200,000	225,000	225,000	250,000	232,000	236,000	242,000	278,000	269,000	260,000
Agency charges	7,000	6,800	9,600	10,600	11,500	12,000	10,000	9,500	8,000	7,500	9,000	8,500
Financing charges	3,900	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	20,000
Other expenses	3,000	3,300	3,700	5,500	5,000	6,300	7,100	6,500	8,000	7,200	6,100	5,500
	1,942,500	1,941,000	2,007,500	2,014,806	1,995,505	2,046,800	2,173,100	2,035,000	2,052,000	2,094,700	2,086,600	2,082,000

Advantages (as opposed to periodic budgeting)

- The budgeting process should be more accurate.
- Much better information upon which to appraise the performance of management.
- The budget will be much more relevant by the end of the traditional budgeting period.
- It forces management to take the budgeting process more seriously.

Disadvantages

- More costly and time consuming.
- An increase in budgeting work may lead to less control of the actual results.

3.5 Performance budgeting

Performance budgeting is a system of planning, budgeting and evaluation that emphasizes the relationship between money budgeted and results expected. Performance budgeting focuses on results as departments are held accountable to certain performance standards. By focusing the relationship between strategic planning and resource allocation, performance budgeting focuses more attention on longer time horizons. These budgets are established in such a way that each item of expenditure is related to specific responsibility centre and is closely linked with the performance of that standard. This type of budget is commonly used by the government to show the link between the funds provided to the public and the outcome of these services. Decisions made on these types of budgets focus more on outputs or outcomes of services than on decisions made based on inputs. In other words, allocation of funds and resources are based on their potential results.

4. BUDGETING IN NON-PROFIT ORGANISATIONS

4.1 Budgeting needs of Non – profit organizations

As we know that the objectives of an organization form the basis of its budgets. Budgets in profit oriented and non-profit organizations have same characteristics, except for the fact that the budgets for non-profit organizations are not designed with a focus on profitability.

Non-profit organizations normally face difficulty in arranging finances because they don't have access to several sources of finances like profit oriented businesses. They are more dependent on charities, donations, ministry funds which cannot be predicted with reasonable accuracy. Moreover, performance of non-profit organizations relies heavily on external stakeholders, so under such circumstances forecasting future results becomes a challenge.

In a non-profit organization the budgeting process is initiated with an exercise by the managers where they calculate the expected costs of the activities being supervised by them. Any desirable changes are also accommodated if needed. The available resources to fund the budgeted level of public services should be enough to cover the overall costs of such services.

The difficulty central to the budgeting process of non-profit organizations is the issue of defining “specific quantifiable objectives”, besides, the actual accomplishments are even more difficult to be measured. This is because at many occasions the outputs cannot be measured in monetary terms. In organizations driven by profit motive sales revenues reflect the outputs. This explains well the concept that budgets in non-profit organizations tend to be mainly concerned with the input resources (i.e. expenditure) whereas in profit oriented organizations the budgets focus on the relationship between inputs and outputs. However, in recent years' efforts have been put in to overcome the deficiencies and attempts are being made to develop measures to be used for the comparison of budgeted and actual accomplishments.

4.2 Traditional format: Line item budgets

A line item budget is considered as the traditional format of budgeting in non-profit organizations. In such budgets the expenditures are presented in detail, but the activities undertaken are given less attention. It shows the nature of the expenses but not the purpose. Any anticipated or expected changes in costs and activity levels are reflected in the budget. These budgeted figures when compared with the actual expenditure show if the authorized budgeted expenditure has been exceeded or under-spending was witnessed. Moreover, the spending pattern too can be analysed by comparing the data of the current year and for the previous year.

Line item budgets though fail to recognize the cost of activities and the programs to be executed. Moreover, line item budgets do not guarantee the efficient and effective use of the resources.

► Illustration

	Actual 20X4	Original budget 20X5	Revised budget 20X5	Proposed budget 20X6
	Rs.	Rs.	Rs.	Rs.
Employees	1,200,000	1,350,000	1,360,000	1,630,000
Maintenance expenses	6,000	10,000	8,000	12,000
Office supplies	30,000	40,000	44,000	143,000
Freight	24,000	28,600	28,900	30,200
Establishment expenses	223,000	220,000	216,000	200,000
Agency charges	8,000	7,000	6,800	9,600
Financing charges	3,500	3,900	4,000	114,000
Other expenses	2,200	3,000	3,300	3,700
	1,496,700	1,662,500	1,671,000	2,142,500

5. HUMAN AND MOTIVATIONAL ASPECTS OF BUDGETING

5.1 Budgetary slack

Success of budgets depend upon how motivated employees are to meet budget targets. Two employees might have different perception about a single budget. It is very difficult to involve each of them. If a very large number of employees have been involved in budget making process, there is a likelihood of budgetary slack to result as a consequence. Budgetary slack (or bias) is a deliberate overestimation of expenditure and/or underestimation of revenues in the budgeting process. This can happen because managers want easy targets (e.g. for an “easy life” or to ensure targets are exceeded and bonuses won) or simply to “play the system”. Either way, this results in a budget that is poor for control purposes and gives rise to meaningless variances.

5.2 Dysfunctional behaviour

Budgets may also lead to dysfunctional behaviour. Dysfunctional behaviour is when individual managers seek to achieve their own objectives at the expense of the objectives of the organization i.e. Abetting a “silo culture” in the organization whereby departmental goals and objectives are prioritized over those of the organization. A key performance management issue is to ensure that the system of targets and measures used do not encourage such behaviour but rather encourages goal congruence.

5.3 Budgetary styles

In order to motivate employees to take targets seriously, commitment from senior level management to implement budgetary control and system must be shown. In many organizations, targets are duly set but these are not used to compare the actual performance. As a result, in such cases, employees after getting targets show relax attitude as they know they would not be held accountable against the targets.

Many managers seek budgets as a punitive device, which basically aims at punishing them on their poor performance rather than to reward them. It happens when employees have lower confidence on senior level management and they think that budgets are set up in such a way that makes it impossible to achieve those set targets, such a scenario would result in a severe dysfunctional organization.

Level of participation and budgetary style also affects human behaviour. Two common budgetary styles are:

- **Imposed style of budgeting:** A budget that is set without allowing the ultimate budget holder to have the opportunity to participate in the budgeting process. Also called “top-down” budgeting.
- **Participative style of budgeting:** A system in which budget holders have the opportunity to participate in setting their own targets. Also called “bottom up” budgeting.

Advantages of participation	Disadvantages of participation
Increased motivation to the budget holders.	Senior managers may not be able to give up control.
Should contain better information due to participation by those who are closer to the action.	Poor decision making due to inexperienced staff.
Increases managers' understanding.	Lack of goal congruence and wastage of resources.

5.4 Motivation

Budgets represent a target and aiming for target is itself a strong motivator. Managers and employees know in advance what level of performance is expected from them. What if managers have been told that ‘good’ performance is expected from you. Next question they ask is ‘define good’? They want targets in quantified terms and time frame in which these targets are to be attained. Level of motivation depends upon how easy or difficult they perceive that target. If target becomes too easy, there is no motivation to perform well or task is no more challenging. If it's too difficult, motivation still goes down because they might take targets to be un-attainable. So, the aim is to set budgets which are perceived as being possible, but which motivate employees to try harder than they otherwise might have done.

6. SELF-TEST QUESTIONS

1. ARMAAN KHAN – AUTUMN 2023 (Q7)

Armaan Khan recently registered a small spice exporting business and will begin exporting Biryani Masala to customers in the USA starting from October 2023. He managed to secure a cash injection of Rs. 0.5 million from his friends. He has promised to repay this loan by the end of 2023. Additionally, he has brought his personal car, valued at Rs. 1.5 million, into the business.

While formulating the planning and budgeting strategy, he developed the following estimates:

- (i) An immediate investment of Rs. 1 million will be required to purchase the packaging machinery.
- (ii) The month-wise projected sales (in rupee equivalence) from October 2023 to January 2024 are as follows:

Month	October 23	November 23	December 23	January 24
Amount in Rs.	7,500,000	10,500,000	13,500,000	15,000,000

- (iii) 20% of sale receipts from customers are received in the month before sale, 60% during the month of sale, and the remaining in the following month.
- (iv) The bank deducts a 1.5% tax at source from all customer receipts.
- (v) To timely process the spices for export, Armaan must purchase the spices a month before the expected sales. Packing materials are readily available and can be purchased in the month of sales.
- (vi) Further details regarding sales and purchase are as follows:

	Rupees
Sales price per carton	1,500
Spices required per carton (Rs. 400 per kg)	1,000
Packing material required per carton (Rs. 40 per foot)	60

- (vii) 60% of the spice purchases are paid in the month of purchase, with the remaining amount settled in the following month. Packing material suppliers are paid in the month of purchase.
- (viii) A 2% agency commission is payable to the agents in the month of sale.
- (ix) Projected administrative expenses amount to Rs. 300,000 per month for the quarter ending 31 December 2023. The related payment is made in the month of its incurrence.
- (x) Armaan has arranged a running finance facility of Rs. 3 million with a local bank at a mark-up of 25% per annum. The mark-up is payable at each month-end on the outstanding closing balance.

Required:

Prepare a month-wise cash budget for the quarter ending 31 December 2023.

2. DOUBLE CROWN LIMITED

Double Crown Limited (DCL) is engaged in manufacturing of a product Zee. Sales projections according to DCL's business plan for the year ending 31 December 2017, are as follows:

	May	June	July	August
	----- Rs. in million -----			
Sales	60	55	70	68

Additional information includes:

- Goods are sold at a gross margin of 40% on sales.
- Ratio of direct material, direct wages and overheads is 6:3:1 respectively.
- Normal loss is 5% of the units completed.
- Inventory levels maintained by DCL are as under:

Direct materials	Next month's budgeted consumption
Finished goods	50% of next month's budgeted sales

- 10% of all purchases are in cash. Remaining purchases are paid in the following month.
- Direct wages include DCL's contribution at 5% of the direct wages, towards canteen expenses. An equal amount is deducted from the employees' wages. Direct wages are paid on the last day of each month. Both contributions are paid to the canteen contractor in the following month.
- Overheads for each month include depreciation on plant and machinery and factory building rent, amounting to Rs. 0.2 million and Rs. 0.1 million respectively. The rent is paid on half yearly basis in advance on 30 June and 31 December each year.

Required:

- Prepare budget for material purchases, direct wages and overheads, for the month of June 2017.
- Prepare cash payment budget for the month of June 2017.

3. TENNIS TRADING LIMITED

Tennis Trading Limited (TTL) was incorporated on 1 September 2018 and would start trading from the month of October 2018. As part of planning and budgeting process, the management has developed the following estimates:

- During the month of September 2018, TTL would pay Rs. 5 million, Rs. 2 million and Rs. 1.2 million for purchase of a property, equipment and a motor vehicle respectively.
- Projected sales for October is Rs. 12 million. The sales would increase by Rs. 2.5 million per month till January 2019. From February 2019 and onwards, sales would be Rs. 25 million per month.
- Cash sales is estimated at 30% of the total sales.
- Credit customers are expected to pay within one month of the sales.
- 80% of the credit sales would be generated by salesmen who would receive 5% commission on sales. The commission is payable in the following month after sales.
- Gross profit margin would be 30%.

- viii. TTL would maintain inventory at 80% of the projected sale of the following month, up to December 2018 and thereafter, 85% of the projected sale of the following month.
- ix. All purchases of inventories would be on two months' credit.
- x. Salaries would be Rs. 1.5 million in September and Rs. 2 million per month, thereafter. Other administrative expenses would be Rs. 1 million per month from September till January 2019 and Rs. 1.3 million per month thereafter. Both types of expenses would be paid in the same month in which they are incurred.
- xi. An aggressive marketing scheme would be launched in September 2018. The related expenses are estimated at Rs. 7 million. 50% of the amount would be payable in September and 50% in October 2018.
- xii. Marketing expenses from October 2018 would consist of 65% variable and 35% fixed expenses. Total expenses in October 2018 would be Rs. 2 million. All expenses would be paid in the month in which they occur.

Bank balance as of 1 September 2018 is Rs. 12 million. TTL has arranged a running finance facility from a local bank at a mark-up of 10% per annum. The mark-up is payable at the end of each month on the closing balance.

Required: Prepare a cash forecast (month-wise) from September 2018 to February 2019.

4. ZINC LIMITED (ZL)

Zinc Limited (ZL) is engaged in trading business. Following data has been extracted from ZL's business plan for the year ended 30 September 20X2:

Sales	Rs. '000
Actual:	
January 20X2	85,000
February 20X2	95,000

Sales	Rs. '000
Forecast:	
March 20X2	55,000
April 20X2	60,000
May 20X2	65,000
June 20X2	75,000

Following information is also available:

- i. Cash sale is 20% of the total sales. ZL earns a gross profit of 25% of sales and uniformly maintains stocks at 80% of the projected sale of the following month.
- ii. 60% of the debtors are collected in the first month subsequent to sale whereas the remaining debtors are collected in the second month following sales.
- iii. 80% of the customers deduct income tax @ 3.5% at the time of payment.

- iv. In January 20X2, ZL paid Rs. 2 million as 25% advance against purchase of packing machinery.

The machinery was delivered and installed in February 20X2 and was to be operated on test run for two months. 50% of the purchase price was agreed to be paid in the month following installation and the remaining amount at the end of test run.

- v. Creditors are paid one month after purchases.
- vi. Administrative and selling expenses are estimated at 16% and 24% of the sales respectively and are paid in the month in which they are incurred. ZL had cash and bank balances of Rs. 100 million as at 29 February 20X2.

Required: Prepare a month-wise cash budget for the quarter ending 31 May 20X2.

5. QUEEN JEWELS (QJ)

Queen Jewels (QJ) deals in imitated ornaments and operates its business on-line through a web-portal. Orders are received through the website and dispatched through a courier.

The mode of payments available to customers are as follows:

Mode of payments	% of sales
Cash on delivery which is collected by the courier	60%
Advance payments through credit cards	40%

Cash collected by the courier is settled after every 7 days. The courier company's charges are Rs. 300 per order which are deducted on a monthly basis from the first payment due in the subsequent month. Payments through credit cards are credited by the bank in 7 days.

High value items which represent 25% of the sales through credit cards are dispatched after 15 days of receipt of payment. All other dispatches are made immediately and delivered on the same day.

Following further information is available:

- i. Sales are made at cost plus 30%.
- ii. Sales and sales orders are projected as under:

	Sep. 2015	Oct. 2015	Nov. 2015	Dec. 2015	Jan. 2016
Sales (Rs.)	4,600,000	5,000,000	4,200,000	5,800,000	6,000,000
Sales orders (Nos.)	400	450	470	490	520

- iii. High value items are purchased on receipt of the order. Stock level of other goods is maintained at 25% of projected sales of the next month. 40% of all purchases are paid in the same month whereas balance is paid in the next month.
- iv. Purchases during the month of September 2015 amounted to Rs. 3.2 million.
- v. Selling and administrative expenses are estimated at Rs. 50 million per annum and include depreciation of tangible and amortization of intangible assets amounting to Rs. 8 million and Rs. 2 million respectively.
- vi. Cash and bank balances as at 30 September 2015 amounted to Rs. 5.5 million.
- vii. Purchases/sales occur evenly throughout the quarter.

Required: Prepare a cash budget of QJ for the quarter ending 31 December 2015 (Month-wise cash budget is not required)

6. WASI LIMITED (WL) – AUTUMN 2024 (Q6)

Wasi Limited (WL), engaged in the production and sale of a wide range of consumer goods, is scheduled to commence commercial production of its new product, 'Sisool', on 1 October 2024.

In this respect, a cash budget for the nine months ending 30 June 2025 is currently being prepared, and the following information has been gathered:

- (i) Sisool's cost per unit is estimated as under:

Direct material – A	2 kg at Rs. 270 per kg (inclusive of normal loss)
Direct material – B	1.5 kg at Rs. 150 per kg (inclusive of normal loss)
Direct labour – Skilled	2 hours at Rs. 500 per hour
Direct labour – Unskilled	3 hours at Rs. 300 per hour
Variable factory overheads	Rs. 200 per direct labour hour
Fixed factory overheads	Rs. 16 million per annum (inclusive of Rs. 2.5 million depreciation)

- (ii) Direct material is purchased at the start of every quarter based on budgeted requirement for that quarter. Material A is purchased from supplier ZT Limited, which offers 3-month credit period, and Material B is purchased from Zia Enterprises on advance payment. Normal loss is estimated at 5% of direct materials, 40% of the loss results in solid waste, which will be sold for cash at Rs. 800 per kg.
- (iii) WL maintains an average inventory of raw materials and finished goods equivalent to 15 days' consumption/Production of next quarter.
- (iv) Sisool will be sold with a mark-up of 20%. Cash sales represents 40% of total sales and attract a 12% discount. 60% of credit customers pay within 2 months from the date of sale, while the remaining customers take an extra month to settle the account.
- (v) Production for the first quarter ending 31 December 2024 is budgeted at 28,000 units, while production would be 12,000 units per quarter for the following two years.
- (vi) WL has acquired a building on rent for this project at an annual cost of Rs. 5 million, payable in equal monthly instalment at the start of each month.
- (vii) All labour and variable factory overheads are paid at the end of the month, while fixed factory overheads are paid in the first week of the next month.

Note: All transactions would occur evenly throughout the period unless otherwise specified. Assume 30 days in a month.

Required: Compute the budgeted net cash inflows/ (outflows) for the nine months ending 30 June 2025.

(A month-wise/quarter-wise working is not required)

7. SADIQ LIMITED

Sadiq Limited (SL) is in the process of preparation of budget for the year ending 31 December 2018. Following are the extracts from the statement of profit or loss for the year ended 31 December 2017:

	Rs. in million
Sales (30% cash sales)	7,500
Cost of goods sold	(4,000)
Gross profit	3,500
Operating expenses	(1,250)
Net profit before tax	2,250

Raw material inventory as on 1 January 2017 amounted to Rs. 152 million. There were no opening and closing inventories of work in process and finished goods. SL follows FIFO method for valuation of inventories.

Following are the projections to be used in the preparation of the budget:

- Selling price would be reduced by 5%. Further, credit period offered to customers would be reduced from 45 days to 30 days. As a result, volumes of cash and credit sales are expected to increase by 10% and 5% respectively.
- Ratio of manufacturing cost was 5:3:2 for raw material, direct labour and factory overheads respectively.
- All operating expenses and 20% of factory overheads are fixed. Total depreciation for the year 2017 amounted to Rs. 100 million and was apportioned between manufacturing cost and operating expenses in the ratio of 7:3. Depreciation for the next year would remain the same.
- Raw material inventory would be maintained at 30 days of consumption. Up to 31 December 2017, it was maintained at 45 days of consumption.
- Raw material prices and direct labour rate would increase by 10% and 6% respectively.
- Impact of inflation on all other costs would be 5%.
- The existing policy of payment to raw material suppliers in 30 days is to be changed to 15 days. Other costs are to be paid in the month of incurrence.

Required: Compute the budgeted net cash inflows/(outflows) for the year ending 31 December 2018. (Assume there are 360 days in a year)

8. LOTUS ENTERPRISES

The following information has been extracted from the projected financial statements of Lotus Enterprises (LE) for the year ending 30 September 2016:

	Rs. in million
Sales (100% credit sales)	3,000
Raw material consumption	900
Raw material inventory (including imports of Rs. 98 million)	158
Conversion cost: Variable	570
Fixed (including depreciation of Rs. 16 million)	40
Operating cost: Variable	730
Fixed (including depreciation of Rs. 27 million)	120
Trade creditors (local purchases)	95
Advance to suppliers for import of raw material	30

LE is in the process of preparing its budget for the next year. The relevant information is as under:

- i. Sale volume is projected to increase by 30%. In order to finance the additional working capital, the management has decided to adopt the following measures:
 - Introduce cash sales at a discount of 2%. It is estimated that 20% of the customers would avail the discount.
 - The present average collection period is 45 days. LE has decided to improve follow-ups which would ensure collection within 40 days.
 - 40% of the raw material consumed is imported which is paid in advance on placement of purchase order. The delivery is made within 30 days after the placement of order. LE has negotiated with the foreign suppliers and agreed that from the next year, payments would be made on receipt of the goods.
 - Local purchases would be paid in 50 days.
- ii. As a result of increased production, economies of scale would reduce variable conversion cost per unit by 5%.
- iii. Due to price increases, cost of raw material and all other costs (excluding depreciation) would increase by 10% and 8% respectively.
- iv. Average days for payment of other costs would remain the same i.e. 25 days.
- v. There is no opening and closing finished goods inventory.
- vi. Quantity of closing local and imported raw material as a percentage of raw material consumption would remain the same.
- vii. LE uses FIFO method of valuation of inventory.

Required: Prepare cash budget for the next year. (Assume that all transactions occur evenly throughout the year (360 days) unless otherwise specified)

9. SHAHID LIMITED

Shahid Limited is engaged in manufacturing and sale of footwear. The company sells its products through company operated retail outlets as well as through distributors. The management is in the process of preparing the budget for the year 20X0-X1 on the basis of following information:

- i. The marketing director has provided the following annual sales projections:

	No. of units	Retail price range
Men	1,200,000	Rs. 1,000 – 4,000
Women	500,000	Rs. 800 – 2,500

The previous pattern of sales indicates that 60% of units are sold at the minimum price; 10% units are sold at the maximum price and remaining 30% at a price of Rs. 2,000 and Rs. 1,200 per footwear for men and women respectively.

- ii. It has been estimated that 30% of the units would be sold through distributors who are offered 20% commission on retail price. The remaining 70% will be sold through company operated retail outlets.
- iii. The company operates 22 outlets all over the country. The fixed costs per outlet are Rs. 1.2 million per month and include rent, electricity, maintenance, salaries etc.
- iv. Sales through company outlets include sales of cut size footwears which are sold at 40% below the normal retail price and represent 5% of the total sales of the retail outlets.
- v. The company keeps a profit margin of 120% on variable cost (excluding distributors' commission) while calculating the retail price.
- vi. Fixed costs of the factory and head office are Rs. 45 million and Rs. 15 million per month respectively.

Required: Prepare budgeted profit and loss account for the year 20X0 – 20X1.

10. BETA (PRIVATE) LIMITED

Beta (Private) Limited (BPL) deals in manufacturing and marketing of bed sheets. The management of the company is in the phase of preparation of budget for the year 20X3-X4. BPL has production capacity of 4 million bed sheets per annum. Currently the factory is operating at 68% of the capacity. The results for the recently concluded year are as follows:

	Rs. in million
Sales	3,400
Cost of goods sold	
Material	(1,493)
Labour	(367)
Manufacturing overheads	(635)
Gross profit	905
Selling expenses (60% variable)	(287)
Administration expenses (100% fixed)	(105)
Net profit before tax	513

Other relevant information is as under:

- The raw material and labour costs are expected to increase by 5%, while selling and distribution costs will increase by 4% and 8% respectively. All overheads and fixed expenses except depreciation will increase by 5%.
- Manufacturing overheads include depreciation of Rs. 285 million and other fixed overheads of Rs. 165 million. During the year 20X3-X4 major overhaul of a machine is planned at a cost of Rs. 35 million which will increase the remaining life from 5 to 12 years. The current book value of the machine is Rs. 40 million and it has a salvage value of Rs. 5 million. At the end of 12 years, salvage value will increase on account of general inflation to Rs. 9 million. The company uses straight line method for depreciating the assets.
- Variable manufacturing overheads are directly proportional to the production volume of production.
- Selling expenses include distribution expenses of Rs. 85 million, which are all variable
- Administration expenses include depreciation of Rs. 18 million. During 20X3-X4, an asset having book value of Rs. 1.5 million will be sold at Rs. 1.8 million. No replacement will be made during the year. Depreciation for the year 20X3-X4 would reduce to Rs. 17 million.

The management has planned to take following steps to increase the sale and improve cost efficiency:

- Increase selling price by Rs. 150 per unit.
- The sales are to be increased by 25%. To achieve this, commission on sales will be introduced besides fixed salaries. The commission will be paid on the entire sale and the rate of commission will be as follows:

No. of sale units per person	Commission % on total sales
Less than 35,000	1.00%
35,000 – 40,000	1.25%
40,000 – 50,000	1.50%
Above 50,000	1.75%

- Currently the sales force is categorized into categories A, B and C. Number of persons in each category is 20, 30 and 40 respectively. Previous data shows that total sales generated by each category is same.

Moreover, sales generated by each person in a particular category is also the same. The trend is expected to continue in future.

- The overall efficiency of the workforce can be increased by 15% if management allows a bonus of 20%. Further increase in production can be achieved by hiring additional labour at Rs. 180 per unit.

Required: Prepare profit and loss budget for the year 20X3–X4.

11. ROSE INDUSTRIES LIMITED

Rose Industries Limited (RIL) is in process of preparation of its budget for the year ending 31 March 2020. In this respect, following information has been extracted from RIL's projected financial statements for the year ending 31 March 2019:

Information and projections for the budget year ending 31 March 2020:

- The management estimates that profitability can be increased by employing the following measures:
 - Introduction of cash sales at 5% less than the credit sales price. This would increase the total sales volume by 30% whereas credit sales volume would reduce by 20% as some of the existing customers would shift to cash sales.
 - Installation of a software that would automatically generate follow-up emails to the customers and relevant reports for the management. The software having useful life of 10 years would be operational from 1 April 2019. The software would cost Rs. 2.5 million and its maintenance cost is estimated at Rs. 0.15 million per quarter. It is expected that as a result of the use of this software, RIL would be able to reduce its fixed operating costs by 15%.
 - As the purchases increase, RIL would negotiate with the suppliers and receive 2% trade discount.
 - Cost reduction measures would be taken which would save 5% of the variable conversion and variable operating costs.
- The increase in working capital requirements would be met by arranging a running finance facility of Rs. 100 million at a mark-up of 10% per annum. It is estimated that on an average, 90% of the facility would remain utilized during the budget year.
- Effect of inflation on price of raw material and all other costs (excluding depreciation) would be 10%.
- Closing raw material and finished goods inventories would increase by 8%.

RIL uses marginal costing and follows FIFO method for valuation of inventory.

Required: Prepare budgeted profit and loss account for the first year.

12. MAZAHIR (PAKISTAN) LIMITED

Mazahir (Pakistan) Limited manufactures and sells a consumer product Zee. Relevant information relating to the year ended June 30, 20X3 is as under:

Raw material per unit	5 kg at Rs. 60 per kg
Actual labour time per unit (same as budgeted)	4 hours at Rs. 75 per hour
Actual machine hours per unit (same as budgeted)	3 hours
Variable production overheads	Rs. 15 per machine hour
Fixed production overheads	Rs. 6 million
Annual sales	19,000 units
Annual production	18,000 units
Selling and administration overheads (70% fixed)	Rs. 10 million

Salient features of the business plan for the year ending June 30, 20X4 are as under:

- i. Sale is budgeted at 21,000 units at the rate of Rs. 1,100 per unit.
- ii. Cost of raw material is budgeted to increase by 4%.
- iii. A quality control consultant will be hired to check the quality of raw material. It will help improve the quality of material procured and reduce raw material usage by 5%. Payment will be made to the consultant at Rs. 2 per kg.
- iv. The management has negotiated a new agreement with labour union whereby wages would be increased by 10%. The following measures have been planned to improve the efficiency:
 - 30% of the savings in labour cost would be paid as bonus.
 - A training consultant will be hired at a cost of Rs. 300,000 per annum to improve the working capabilities of the workers.

On account of the above measures, it is estimated that labour time will be reduced by 15%.

- v. Variable production overheads will increase by 5%.
- vi. Fixed production overheads are expected to increase at the rate of 8% on account of inflation. Fixed overheads are allocated on the basis of machine hours.
- vii. The company has a policy of maintaining closing stock at 5% of sales. In order to avoid stock-outs, closing stock would now be maintained at 10% of sales. The closing stocks are valued on FIFO basis.

Required

- (a) Prepare a budgeted profit and loss statement for the year ending June 30, 20X4 under marginal and absorption costing.
- (b) Reconcile the profit worked out under the two methods.

13. UMAIR ENTERPRISES

The home appliances division of Umair Enterprises assembles and markets television set. The company has a long-term agreement with a foreign supplier for the supply of electronic kits for its television sets.

Relevant details extracted from the budget for the next financial year are as follows:

	Rupees
C&F value of each electronic kit	9,500
Estimated cost of import related expenses, duties etc.	900
Variable cost of local value addition for each set	3,500
Variable selling and admin expenses per set	900
Annual fixed production expenses	12,000,000
Annual fixed selling and admin expenses	9,000,000

Fixed production overheads are allocated on the basis of budgeted production which is 5,000 units.

The present supply chain is as follows:

- i. The company sells to distributors at cost of production plus 25% mark-up.
- ii. Distributors sell to wholesalers at 10% margin.
- iii. Wholesalers sell to retailers at 4% margin.
- iv. Retailers sell to consumers at retail price i.e. at 10% mark-up on their cost.

Performance of the division had not been satisfactory for the last few years. A business consulting firm was hired to assess the situation and it has recommended the following steps:

- Reduce the existing supply chain by eliminating the distributors and wholesalers.
- Reduce the retail price by 5%.
- Offer sales commission to retailers at 15% of retail price.
- Provide after sales services.
- Launch advertisement campaign; expected cost of campaign would be around Rs. 5 million.

It is expected that the above steps will increase the demand by 1,500 sets. The average cost of providing after sales service is estimated at Rs. 450 per set.

Required:

- Compute the total budgeted profit:
 - under the present situation; and
 - if the recommendations of the consultants are accepted and implemented.
- Briefly describe what other factors would you consider while implementing the consultants' recommendations.

14. RS ENTERPRISES

RS Enterprises is a family concern headed by Mr. Rameez. It is engaged in manufacturing of a single product but under two brand names i.e. A and B. Brand B is of high quality and over the past many years, the company has been charging a 60% higher price as compared to brand A. As the company has progressed, Mr. Rameez has felt the need for better planning and control. He has compiled the following data pertaining to the year ended November 30, 20X8:

	Rupees	Rupees
Sales		5,522,400
Production costs:		
Raw materials	2,310,000	
Direct labour	777,600	
Overheads	630,000	3,717,600
Gross profit		1,804,800
Selling and administration expenses		800,000
		1,004,800

	A	B
No. of units sold	5400	3600
Labour hours required per unit	5	6

Other information is as follows:

- 20% of B was sold to a corporate buyer who was given a discount of 10%. The buyer has agreed to double the purchases in 20X9 and Mr. Rameez has agreed to increase the discount to 15%.
- In view of better margins in B, Mr. Rameez has decided to promote its sale at a cost of Rs. 250,000. As a result, its sales to customers other than the corporate customer, are expected to increase by 30%. However, the production capacity is limited. He intends to reduce the production/sale of A if necessary. Mr. Rameez has ascertained that 90% capacity was utilized during the year ended November 30, 20X8 whereas the time required to produce one unit of B is 20% more than the time required to produce a unit of A.

- iii. 2.4 kgs of the same raw material is used for both brands but the process of manufacturing B is slightly complex and 10% of all raw material is wasted in the process. Wastage in processing A is 4%.
- iv. The price of raw material has remained the same for the past many years. However, the supplier has indicated that the price will be increased by 10% with effect from March 1, 20X9.
- v. Direct labour per hour is expected to increase by 15%.
- vi. 40% of production overheads are fixed. These are expected to increase by 5%. Variable overheads per unit of B are twice the variable overheads per unit of A. For 20X9, the effect of inflation on variable overheads is estimated at 10%.
- vii. Selling and administration expenses (excluding the cost of promotional campaign on B) are expected to increase by 10%.

Required: Prepare a profit forecast statement for the year ending November 30, 20X9.

ANSWERS

1. ARMAAN KHAN

	Sept.	Oct.	Nov.	Dec.
	----- Rupees -----			
Cash injection	500,000			
Vehicle injection (capital in kind)	-			
Packing equipment	(1,000,000)			
Receipts from debtors (W-1)	1,477,500	6,501,000	10,342,500	13,002,000
Payments to spice suppliers (W-2)	(3,000,000)	(6,200,000)	(8,200,000)	(9,600,000)
Payments to packing material supplier		(300,000)	(420,000)	(540,000)
Admin expenses		(300,000)	(300,000)	(300,000)
Agent commission (2% of sales amount)		(150,000)	(210,000)	(270,000)
Repayment of friends' loan				(500,000)
Cash from operations	(2,022,500)	(449,000)	1,212,500	1,792,000
Bal. brought forward	-	(2,064,635)	(2,566,003)	(1,381,701)
Bal. carried forward before mark-up	(2,022,500)	(2,513,635)	(1,353,503)	410,299
Mark-up @ 25%	(42,135)	(52,367)	(28,198)	-
Ending Balance after mark-up	(2,064,635)	(2,566,003)	(1,381,701)	410,299

W-1: Receipt from debtors

Sales	A	7,500,000	10,500,000	13,500,000	15,000,000
Receipts					
Advance: 20%	1,500,000	2,100,000	2,700,000	3,000,000	
In the month of sales: 60%		4,500,000	6,300,000	8,100,000	
In the following month: 20%		-	1,500,000	2,100,000	
	1,500,000	6,600,000	10,500,000	13,200,000	
Less: Tax deducted at source (@1.5%)	22,500	99,000	157,500	198,000	
Net receipts	1,477,500	6,501,000	10,342,500	13,002,000	

W-2: Payments to spice suppliers

Sale price per carton	B	1,500	1,500	1,500	1,500
Volume of sales (in carton) [Sales / sale price per carton] $C=A/B$		5,000	7,000	9,000	10,000
Material required for each carton:					
– Spices (per carton) D		1,000	1,000	1,000	1,000
– Packing (per carton) E		60.00	60.00	60.00	60.00
Cost of spice C×D		5,000,000	7,000,000	9,000,000	10,000,000
Cost of packing material C×E		300,000	420,000	540,000	600,000
Timing of spices purchased					
Purchase of spice	5,000,000	7,000,000	9,000,000	10,000,000	
Payments to spice suppliers:					
– in the month of purchase 60%	3,000,000	4,200,000	5,400,000	6,000,000	
– in the following month 40%		2,000,000	2,800,000	3,600,000	
Total payments	3,000,000	6,200,000	8,200,000	9,600,000	

2. DOUBLE CROWN LIMITED

If required to prepare budget for material purchases, direct wages and overheads, for the month of June 2017, working would involve:

Budget for material purchases, direct wages and overheads for the month June 2017			May	Jun	Jul	Aug
			----- Rs. in million -----			
Sales	(A)		60.00	55.00	70.00	68.00
Cost of sales	A×60% (B)		36.00	33.00	42.00	40.80
Finished goods: Opening stock	B÷2		(18.00)	(16.50)	(21.00)	
Closing stock			16.50	21.00	20.40	
Cost of goods manufactured			34.50	37.50	41.40	
5% Normal loss - no effect, as being normal loss it is already included in cost of goods produced			-	-	-	
Cost of goods produced	(C)		34.50	37.50	41.40	
Budgeted direct material purchases - (as opening inventory is equal to current month consumption, purchases would be equal to the next month consumption) (37.5×60%),(41.4×60%) (D)			22.50	24.84		
Budgeted direct wages	C×3÷10 (E)			11.25		
Budgeted overheads	C×1÷10 (F)			*3.75		
* (Including fixed overheads – Depreciation and Rent amounted to Rs. 0.2 million and Rs. 0.1 million respectively)						

The TTL wants now a cash forecast (month-wise) from September 2018 to February 2019 to analyse sustainability over the period.

In order to forecast cash inflows and outflows first of all working for sales (W-1) and purchases (W-2) is done as follows:

W-1: Monthly sales	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
	----- Rs. in million -----					
Sales		12.00	14.50	17.00	19.50	25.00
			(12+2.5)	(14.50+2.5)	(17+2.5)	

W-2: Purchases	Sep-18	Oct - 18	Nov-18	Dec-18	
	----- Rs. in million -----				
Cost of sale (70% of sales)	-	8.40	10.15	11.90	13.65
Less: Opening stock	-	(6.72)	(8.12)	(9.52)	
Add: Closing stock (80% of cost of sales of next month till Dec.)	6.72	8.12	9.52	10.92	
Total purchases	6.72	9.80	11.55	13.30	

3. TENNIS TRADING LIMITED

Cash budget for the period from September 2018 to February, 2019

		Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19
		----- Rs. in million -----					
Collections							
- From cash sales (Sales of current month(W-1)×30%)		-	3.60	4.35	5.10	5.85	7.50
- From credit customers (Sales of previous month (W-1)×70%)		-	-	8.40	10.15	11.90	13.65
Total cash inflows	A	-	3.60	12.75	15.25	17.75	21.15
Payments							
Cash paid to suppliers	W-2	-	-	6.72	9.80	11.55	13.30
Wages and salaries		1.50	2.00	2.00	2.00	2.00	2.00
Other administrative expenses		1.00	1.00	1.00	1.00	1.00	1.30
Commission (Last month sale × 70% ×80%×5%)		-	-	0.34	0.41	0.48	0.55
Marketing expenses – Fixed		-	0.70	0.70	0.70	0.70	0.70
Marketing expenses - Variable {(2×65%/12(W-1))×Sales}		-	1.30	1.57	1.84	2.11	2.71
Initial promotion and advertisement expenses (7×50%)		3.50	3.50	-	-	-	-
Property		5.00	-	-	-	-	-
Equipment		2.00	-	-	-	-	-
Motor vehicle		1.20	-	-	-	-	-
Total cash outflows	B	14.20	8.5	12.33	15.75	17.84	20.56
Net cash inflows / (outflows)	(A-B)	(14.20)	(4.90)	0.42	(0.50)	(0.09)	0.59
Opening balance		12.00	(2.22)	(7.18)	(6.82)	(7.38)	(7.53)
Closing balance for mark-up calculation		(2.20)	(7.12)	(6.76)	(7.32)	(7.47)	(6.94)
Mark-up @ 10% p.a. (Closing balance × 10%/12)		(0.02)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Closing balance		(2.22)	(7.18)	(6.82)	(7.38)	(7.53)	(7.00)

4. ZINC LIMITED (ZL)

A month-wise cash budget for the quarter ending 31 May 20X2, would be as follows.

Month-wise Cash Budget	Rs. in '000		
	Mar	Apr	May
Opening balance	100,000	108,204	104,828
Collections (Net of tax receipts)	81,454	66,874	57,737
Payments:			
Purchases	(47,250)	(44,250)	(48,000)
Selling expenses	(13,200)	(14,400)	(15,600)
Administrative expenses	(8,800)	(9,600)	(10,400)
Packing machinery	(4,000)	(2,000)	-
Closing balance	108,204	104,828	88,565

Working notes:			
W-1: Collections - Jan Sales			85,000
Feb Sales			95,000

	Mar	Apr	May
Sales Gross	55,000	60,000	65,000
Collections:			
Cash sales	11,000	12,000	13,000
1st month after sale	45,600	26,400	28,800
2nd month after sale	27,200	30,400	17,600
	83,800	68,800	59,400
Tax withheld by 80% of customers @ 3.5%	(2,346)	(1,926)	(1,663)
Net Receipts	81,454	66,874	57,737

W-2 Purchases:					
Sales Gross (June)					75,000
		Feb	Mar	Apr	May
Sales Gross		95,000	55,000	60,000	65,000
Cost of sales [75% of sales]	A	71,250	41,250	45,000	48,750
Less: Opening stock [80% of cost of sale]	B	(57,000)	(33,000)	(36,000)	(39,000)
Add: Closing stock [80% of next month's cost of sales]	C	33,000	36,000	39,000	45,000
Purchases (A+C-B)		47,250	44,250	48,000	54,750
Payment to creditors			47,250	44,250	48,000

5. QUEEN JEWELS (QJ)

A cash budget of QJ for the quarter ending 31 December 2015 is as follows (Month-wise cash budget is not required)

Receipts:		Rs. in '000'
Collection from sales excluding 10% sales of high valued items:		
- 7 days sale in September received in October	$(4,600 \div 30 \times 7 \times 90\%)$	966
- Sales for the quarter ending 31 December 2015	$(5,000 + 4,200 + 5,800) \times 90\%$	13,500
- 7 days sale in December collected in January 2015	$(5,800 / 30 \times 7 \times 90\%)$	(1,218)
		13,248

Receipts:		Rs. in '000'
Collection in advance from 10% sales of high valued items:		
- 8 days(15-7) sales in October received in September	$(5,000 / 30 \times 8 \times 10\%)$	(133)
- Sales for the quarter ending 31 December 2015	$(5,000 + 4,200 + 5,800) \times 10\%$	1,500
- 8 days sale of Jan. 2016 collected in Dec. 2015	$(6,000 \div 30 \times 8 \times 10\%)$	160
		1,527
Deduction of courier charges from collection		
- No. of orders recorded in the previous month	$(400 + 450 + 470)$	1,320
- No. of high value orders of Aug. delivered in Sep. 2015		-
- No. of high value orders of Nov. delivered in Dec. 2015	$(470 \times 10\% \div 2)$	(24)
No. of orders delivered previous month		1,296
Courier charges at Rs. 300 per order	$1,296 \times 300$	(389)
Total collection for the quarter		14,386

Receipts:		Rs. in '000'
Payments:		
Cost of sales for the quarter (cost plus 30%)	$(5,000+4,200+5,800) \div 1.3$	11,538
Opening stock 1 October 2015	$5,000 \times 90\% \times 25\% \div 1.3$	(865)
Closing stock 31 December 2015	$6,000 \times 90\% \times 25\% \div 1.3$	1,038
Purchases		11,712
60% of Sept. purchases paid in Oct.	$(3,200 \times 60\%)$	1,920
60% of Dec. purchases to be paid in Jan. 2016	(W.1) $4,496 \times 60\%$	(2,698)
Payments for purchases		10,934
Expenses paid excluding depreciation and amortization	$(50,000-8,000-2,000) \div 4$	10,000
Net outflow for the quarter ended 31 December 2015		(6,548)
Cash and bank balances as at 1 October 2015		5,500
Cash and bank balances as at 31 December 2015 - Overdraft		(1,048)
W.1: Purchases for December 2015		
Cost of sales for Dec. 2015 (cost plus 30%)	$5,800 \div 1.3$	4,462
Opening stock 1 December 2015	$4,462 \times 90\% \times 25\%$	(1,004)
Closing stock 31 December 2015	$6,000 \times 90\% \times 25\% \div 1.3$	1,038
Purchases		4,496

6. WASI LIMITED

CASH INFLOWS:		Rupees
Cash sales	20,000 $(10,400+4,800+4,800)(W-1) \times 4,631(W-3) \times 0.88$	81,505,600
Credit sales	24,240 $(15,600+7,200+1,440)(W-1) \times 4,631(W-3)$	112,250,440
Sale proceeds from solid waste	52,000 $(28,000+12,000+12,000) \times 56(W-3)$	2,912,000
		196,668,040
CASH OUTFLOWS:		Rupees
Material A	84,000 $(60,000+24,000)(W-2) \times 270$	(22,680,000)
Material B	81,000 $(45,000+18,000+18,000)(W-2) \times 150$	(12,150,000)
Skilled labour	52,000 $(28,000+12,000+12,000)(W-1) \times 1,000(W-3)$	(52,000,000)
Unskilled labour	52,000 $(28,000+12,000+12,000)(W-1) \times 900(W-3)$	(46,800,000)
Variable FOH	52,000 $(28,000+12,000+12,000)(W-1) \times 1,000(W-3)$	(52,000,000)
Fixed overheads	$(16,000,000-2,500,000) \div 12 \times 8 \text{ months}$	(9,000,000)
Rent	$(5,000,000 \times 9 \div 12)$	(3,750,000)
		(198,380,000)
Net Cashflow - Shortfall		(1,711,960)

W-1: Sales quantity

	Quarter 1 Oct to Dec	Quarter 2 Jan to Mar	Quarter 3 Apr to Jun	Quarter 4 Jul to Sep
Production	28,000	12,000	12,000	12,000
Opening inventory	-	2,000	2,000	
Units available for sale	28,000	14,000	14,000	
Closing inventory	2,000	2,000	2,000	
Total units to be sold	26,000	12,000	12,000	
Cash sales	10,400	4,800	4,800	
Credit sales	15,600	7,200	7,200	
W-1.1: Credit sales receipt of 3rd quarter			Quarter 3	Quarter 4
Sales in April 2025 received ($7,200 \div 3$)			2,400	
– 60% of the monthly sales in 2 months			1,440	

W-2: Raw material purchases quantity

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Required for production - A	56,000	24,000	24,000	24,000
Opening inventory A	-	(4,000)	(4,000)	
Required closing inventory - A	4,000	4,000	4,000	
Purchases	60,000	24,000	24,000	-
Required for production - B	42,000	18,000	18,000	18,000
Opening inventory B	-	(3,000)	(3,000)	-
Closing Inventory B	3,000	3,000	3,000	-
Purchases	45,000	18,000	18,000	

W-3: Selling price per unit

		Rupees
Direct material – A	2×270	540
Direct material – B	1.5×150	225
Direct labour – Skilled	2×500	1,000
Direct labour – Unskilled	3×300	900
Variable factory overheads	5×200	1,000
Proceeds from solid waste	$3.5 \times 0.05 \times 0.4 \times 800$	(56)
Total variable cost per unit		3,609
Fixed overheads	$16m \div 64,000$	250
Total cost		3,859
Selling price – Mark-up @ 20%	$3,859 \times 1.2$	4,631

7. SADIQ LIMITED

The budgeted net cash inflows/(outflows) for the year ending 31 December 2018 (Assuming there are 360 days in a year), would be as follows:

Inflows		Rs. in million
Cash sales	$(7,500 \times 30\%) \times 1.1 \times 95\% - A$	2,351.25
Budgeted credit sales 2018	$(7,500 \times 70\%) \times 95\% \times 1.05$	5,236.88
Trade debtor (Opening)	$(7,500 \times 70\%) \times (45/360)$	656.25
Trade debtor (Closing)	$5,236.88 \times 30/360$	(436.41)
Collections from debtors	B	5,456.72
Total inflows	A+B	7,807.97

Outflows		
Payment to suppliers	(W-1)	2,343.78
Direct labour	$4,000 \times \{(70\% \times 1.05) + (30\% \times 1.1)\} \times 30\% \times 1.06$	1,354.68
Variable factory overheads	$4,000 \times \{(70\% \times 1.05) + (30\% \times 1.1)\} \times \{(20\% - (20\% \times 20\%)) \times 1.05$	715.68
Fixed factory overheads	$\{[4,000 \times (20\% \times 20\%)] - [(100 \times 70\%)]\} \times 1.05$	94.50
Operating expenses	$\{1,250 - (100 \times 30\%)\} \times 1.05$	1,281.00
Total outflows		5,789.64
Net cash inflows		2,018.33

W-1: Payments to material suppliers

Consumption of raw material 2018 at 2017 price	$(4,000 \times 50\%) \times \{(70\% \times 1.05) + (30\% \times 1.1)\}$	2,130.00
Opening raw material at 2017 price	$(4,000 \times 50\%) \times (45/360)$	(250.00)
Closing raw material at 2017 price	$2,130 \times 30/360$	177.50
Purchases of 2018 at 2017 price		2,057.50
Purchases of 2018 – at increased price	$2,057.50 \times 1.1$	2,263.25
Trade creditor (Opening)	$2,098(W-2) \times 30/360$	174.83
Trade creditor (Closing)	$2,263.25 \times 15/360$	(94.30)
Payment to suppliers		2,343.78

W-2: Purchases 2017

Consumption of raw material 2017	$4,000 \times 50\%$	2,000.00
Opening raw material	Given	(152.00)
Closing raw material	(W-1)	250.00
Purchases 2017		2,098.00

8. LOTUS ENTERPRISES

Cash budget for the next year would be prepared as follows. (Assuming that all transactions occur evenly throughout the year (360 days) unless otherwise specified)

Inflows:		Rs. in million
Sale proceeds from:		
– Cash sales (net of cash discount)	$(3,000 \times 1.3) \times 20\% \times 98\%$	764.40
– Credit sales:		
Credit sales for the year	$(3,000 \times 1.3) \times 80\%$	3,120.00
Trade debtors – closing balance	$3,120 \times 40 \div 360$	(346.67)
		2,773.33
Trade debtors – opening balance	$3,000 \times 45 \div 360$	375.00
Collection from credit sales		3,148.33
	(A)	3,912.73

Outflows:			
Payments for raw material imports and local purchases:	Imports	Local purchases	
Imports and local purchases for the year W.1	544.14	792.00	1,336.14
Trade creditors - closing balance $792 \times 50 \div 360$	-	(110.00)	(110.00)
	544.14	682.00	1,226.14
Adjustment of advance for imports	(30.00)	-	(30.00)
Trade creditors - opening balance	-	95.00	95.00
	514.14	777.00	
	(B)		1,291.14

Payments for expenses:					
	Conversion cost		Operating cost		
	Variable	Fixed	Variable	Fixed	
Cost for the year	760.27	25.92	1,024.92	100.44	1,911.55
	$570 \times 1.3 \times 95\% \times 1.08$	$(40-16) \times 1.08$	$730 \times 1.3 \times 1.08$	$(120-27) \times 1.08$	
Closing–payables	(52.80)	(1.80)	(71.18)	(6.97)	(132.75)
	$(760.27 \div 360 \times 25)$	$(25.92 \div 360 \times 25)$	$(1,024.92 \div 360 \times 25)$	$(100.44 \div 360 \times 25)$	
	707.47	24.12	953.74	93.47	1,778.80
Opening–payables	39.58	1.67	50.69	6.46	98.40
	$570 \div 360 \times 25$	$(40-16) \div 360 \times 25$	$730 \div 360 \times 25$	$(120-27) \div 360 \times 25$	
Payments	747.05	25.79	1,004.43	99.93	
			(C)		1,877.20
Net cash inflows			(A-B-C)		744.39

W-1: Imports/purchases for the next year:	Imports	Local purchases
	----- Rs. in million -----	
Raw material consumption using FIFO:		
- From current year's import : at old price	30.00	-
at revised price $[(900 \times 1.3 \times 40\%) - (98 + 30)] \times 1.1$	374.00	-
- Current year's purchases: at revised price $[(900 \times 1.3 \times 60\%) - 60] \times 1.1$	-	706.20
	404.00	706.20
Closing raw material inventory $(98 \times 1.3 \times 1.1), (60 \times 1.3 \times 1.1)$	140.14	85.80
Total imports/local purchases for the next year	544.14	792.0

9. SHAHID LIMITED

In preparing budgeted profit and loss account for the year 20X0 – 20X1, considering above conditions, working may be done as follows:

	Price		Units		Amount (Rs. '000s)	
	Men	Women	Men	Women	Men	Women
Minimum	1,000	800	720,000	300,000	720,000	240,000
Maximum	4,000	2,500	120,000	50,000	480,000	125,000
Average	2,000	1,200	360,000	150,000	720,000	180,000
Total			1,200,000	500,000	1,920,000	545,000

	Rs. 000s
Sales revenue – gross $(1,920,000 + 545,000)$	2,465,000
Less : Commission to distributors $20\% \times 30\%$ of above	147,900
Cut size discount $40\% \times (5\% \text{ of } 70\%)$	34,510
	182,410
Sales – net	2,282,590
Variable cost $100/220$ of gross revenue	1,120,455
	1,162,135
Less : Factory overheads $12 \times 45\text{m}$	540,000
Gross profit	622,135
Less : Admin overheads $12 \times 15\text{m}$	180,000
Cost of retail outlets $12 \times 22 \times 1.2\text{m}$	316,800
	496,800
Net profit	125,335

10. BETA (PRIVATE) LIMITED

In order to prepare profit and loss budget for the year 20X3–X4 step by step calculations are as follows:

Production capacity	4,000,000
Actual production ($4,000,000 \times 68\% = 2,720,000 \times 1.25$)	3,400,000
Selling price / unit $[(3,400 \div 2.72) + 150]$	Rs. 1,400

	Rs.in million
Sales ($1,400 \times 3,400,000$)	4,760.00
Less: sales commission (W-1)	(63.50)
	4,696.50
Cost of goods sold (W-2)	(3,170.70)
Gross profit	1,525.80
Selling expenses	
Distribution expenses ($1.08 \times 1.25 \times 85\text{m}$)	(114.75)
Selling expenses -Variable $[(287 \times 60\% - 85\text{m}) \times 1.04 \times 1.25]$	(113.36)
Selling expenses - Fixed $[(287 \times 40\%) \times 1.05]$	(120.50)
	(348.61)
Administration expenses	
Admin expenses - other than depreciation $[(105 - 18)\text{m} \times 1.05]$	(91.40)
Admin expenses - depreciation $(18 - 1)\text{m}$	(17.00)
	(108.40)
Other income (Gain on sale of asset) $(1.8 - 1.5)\text{m}$	0.30
Net profit / (loss)	1,068.49

W-1: Sales commission

Categories	Ratio	Units to be sold (A)	No. of persons	Avg. unit sale/ person	Commission % (B)	Commission (Rs.'000) $A \times B \times \text{Rs. } 1,400$
A	33.33%	1,133,333	20	56,667	1.75%	27,767
B	33.33%	1,133,333	30	37,778	1.25%	19,833
C	33.33%	1,133,334	40	28,333	1.00%	15,867
	100%	3,400,000	90			63,467

W-2: Cost of goods sold

	Rs. in million
Material ($1,493 \times 1.05 \times 1.25$)	1,959.6
Labour (W-2.2)	511.5
Variable overheads $[(635 - 285 - 165) \times 1.05 \times 3,400 \div 2,720]$	242.8
Overheads fixed - other than depreciation (165×1.05)	173.3
Overheads fixed - depreciation (W-2.1)	283.5

		3,170.7
W-2.1: Depreciation		
Existing depreciation		285.0
Less: depreciation on machine to be overhauled $[(40 - 5)m \div 5]$		7.0
		278.0
Add: Depreciation on machine after overhauling $[(40+35-9)m \div 12]$		5.5
		283.5
W-2.2: Labour Cost	Units	Total cost
Cost of existing units (367×1.05)	2,720,000	385.4
15% increase in production by paying bonus @ 20% $(2,720,000 \times 15\%) (385.4 \times 20\%)$	408,000	77.1
Existing labour cost with increased efficiency	3,128,000	462.5
Cost of remaining units by hiring additional labour @ Rs. 180 $(3,400,000 - 2,720,000 - 408,000)$	272,000	49.0
	3,400,000	511.5

11. ROSE INDUSTRIES LIMITED

Budgeted profit or loss statement for the year ending 31 March 2020, assuming that except stated otherwise, all transactions are evenly distributed over the year (360 days), would be prepared as follows:

Budgeted profit or loss statement for the year ending 31 March 2020		Rs. in million
Sales - credit	$2,800 \times 0.8$	2,240.00
Sales - cash	$[(2,800 \times 1.3) - 2,240] \times 0.95$	1,330.00
		3,570.00
Variable cost of goods sold:		Rs. in million
Raw material consumption	(W-1)	(1,574.84)
Variable conversion cost	$[280 \div 360,000 \times 471,200(W-2)] \times 0.95 \times 1.1$	(382.98)
Manufacturing cost		(1,957.82)
Opening finished goods		(110.00)
Closing finished goods	(W-3)	179.99
Variable cost of goods sold		(1,887.83)
Gross contribution margin		1,682.17
Variable operating cost	$(190 \times 1.30) \times 0.95 \times 1.1$	(258.12)
Net contribution margin		1,424.05
Fixed conversion cost	$(160 - 24) \times 1.1 + 24$	(173.60)
Fixed operating cost	$[(45 - 16) \times 0.85 \times 1.1 + 16] + (2.5 \times 10\%) + (0.15 \times 4)$	(43.97)
10% mark-up on running finance facility	$100 \times 90\% \times 10\%$	(9.00)
Net profit		1,197.48

W-1: Budgeted raw material consumption		Rs. in million
Consumption at last year's price	$1,120 \div 360,000 \times 471,200$ (W-2)	1,465.96
Use of opening raw material		70.00
Use of current purchases	$[(1,465.96 - 70) \times 1.10] \times 0.98$	1,504.84
		1,574.84
W-2: Budgeted production quantity		Units
Sales	$360,000 \times 1.3$	468,000
Finished goods inventory	- closing $40,000 \times 1.08$	43,200
	- opening	(40,000)
		471,200
W-3: Finished goods inventory valuation using marginal costing and FIFO		Rs. in million
Raw material cost	$43,200 \times (1,120 \div 360,000) \times 1.1 \times 0.98$	144.88
Variable conversion cost	$43,200 \times (280 \div 360,000) \times 1.1 \times 0.95$	35.11
		179.99

12. MAZAHIR (PAKISTAN) LIMITED

A budgeted profit and loss statement for the year ending June 30, 20X4 under marginal and absorption costing would be as follows:

	Units	Marginal Costing	Absorption Costing	Marginal Costing	Absorption Costing
		Cost per unit	Cost per unit	Rupees	
Sales	21,000	1,100		23,100,000	23,100,000
Cost of goods sold					
Opening stock	950	$300 + 300 + 45$	$300 + 300 + 45 + 333.33$	612,750	929,414
Production for the year	22,150	648.5	$648.5 + 306.09$	14,364,275	21,144,169
Closing inventory	2,100	648.5	$648.5 + 306.09$	(1,361,850)	(2,004,639)
				13,615,175	20,068,944
Variable selling and administration cost	21,000	157.89		3,315,690	
Contribution margin / Gross profit				6,169,135	3,031,056
Selling and administration costs $\{(21,000 \times 157.89) + 7,000,000\}$					10,315,690
Fixed cost - production			W -2	6,780,000	
Fixed cost - Selling & administration		$(70\% \times 10,000,000)$		7,000,000	
Net loss				(7,610,865)	(7,284,634)

Profit reconciliation:			
In absorption costing fixed costs:			
- Brought forward from the last year through opening inventory	950×333.33	(316,664)	
- Carried forward to the next year through closing inventory	$2,100 \times 306.09$	642,789	
- Rounding of difference		106	
		(7,284,634)	(7,284,634)

W-1: Variable cost per unit for 20X3-X4		
Raw material	$(5 \times 0.95 \times 60 \times 1.04)$	296.40
Raw material inspection	$(5 \times 0.95 \times 2)$	9.50
Labour	$(4 \times 0.85 \times 75 \times 1.1)$	280.50
Labour incentive cost	$30\% \times (4 \times 0.15 \times 75 \times 1.1)$	14.85
Variable production overheads	$15 \times 1.05 \times 3$	47.25
Variable production costs		648.50
Variable selling and admin. costs	$(30\% \times 10,000,000) / 19,000$	157.89
		806.39

W-2: Fixed production cost for 20X3-X4		
Annual fixed production overheads	$(6,000,000 \times 1.08)$	6,480,000
Training consultant cost		300,000
		6,780,000

W-3: Fixed production cost per unit		
Year ended June 30, 20X3	$6,000,000 / 18,000$	333.33
Year ended June 30, 20X4	$6,780,000 / 22,150$	306.09

W-4: Production for the year		Units
Sales		21,000
Opening inventory	$19,000 \times 5\%$	(950)
Closing inventory	$21,000 \times 10\%$	2,100
Production for the year		22,150

13. UMAIR ENTERPRISES

The total budgeted profit under the present situation; and if the recommendations of the consultants are accepted and implemented are as follows:

Budgeted cost and sales price per set	Rupees
C & F value	9,500
Import related costs and duties	900
Variable cost of local value addition	3,500
Variable cost per set	13,900
Fixed production overheads (Rs. 12,000,000/5,000 sets)	2,400
Budgeted cost of production per set	16,300
Add: Gross profit (Rs. 16,300 × 25%)	4,075
Budgeted sales price per set to distributor	20,375
	Rupees
Budgeted gross profit (Rs 4,075 × 5,000 sets)	20,375,000
Less: Admin & selling expenses	
Variable (Rs. 900 × 5,000 sets)	(4,500,000)
Fixed	(9,000,000)
Budgeted annual profit	6,875,000
Computation of budgeted consumer price of each set	
Budgeted sales price of the company	20,375.00
Add: distributor margin (Rs. 20,375 × 10/90)	2,263.88
Budgeted sales price of the distributor	22,638.88
Add: wholesaler margin (Rs. 22,638.88 × 4/96)	943.29
Budgeted sales price of wholesaler	23,582.17
Add: retailer's mark-up (Rs. 23,582.17 × 10%)	2,358.21
Budgeted retail price	25,940.39
Revised retail price (Rs. 25,940.39 × 95%)	24,643.37

Revised profit forecast after considering consultants' recommendation:	
	Rupees
Sales (6,500 sets × Rs. 24,643.37)	160,181,905
Less: Cost of goods sold for 6,500 units	
Electronic Kits @ Rs 9,500	61,750,000
Cost of import and duty @ Rs 900	5,850,000
Local value addition @ Rs 3,500	22,750,000
Fixed overhead cost	12,000,000
	(102,350,000)
Gross Profit	57,831,905

	Rupees
Less: Selling & Admin expenses	
Variable (6,500 sets × Rs 900)	5,850,000
Fixed	9,000,000
Cost of advertisement campaign	5,000,000
Cost of after-sale service (6,500 × Rs. 450)	2,925,000
Retailers commission (Rs. 160,181,905 × 15%)	24,027,285
	(46,802,285)
Profit by implementing the proposal of consultant	11,029,620
Based on above results, management should accept the recommendation of the consultant.	

- a) Description of what other factors would you consider while implementing the consultants' recommendations are as follows.

In the light of the changes recommended by the consultant, the company will have to consider whether it has the necessary infrastructure to:

- deal with a far larger number of retailers as against the present few distributors.
- produce and sell extra 30% TV sets.
- attend to after sale activities on its own. The question is silent as to who presently attends to this activity.
- conduct effective advertisement campaign.

Fixed expenses related to manufacturing as well as selling and admin are likely to increase but no such increase has been anticipated.

14. RS ENTERPRISES

A profit forecast statement for the year ending November 30, 20X9 would be prepared as follows.

Computation of Sales for 20X8				
	A	B Normal	B Corporate	Total
Ratio of sale price	1.00	1.60	1.44	
Actual sale Qty	5,400.00	2,880.00	720.00	
Ratio of sale value	5,400.00	4,608.00	1,036.80	11,044.80
Sales value	2,700,000.00	2,304,000.00	518,400.00	5,522,400.00

	A	B
Current year's production (at 90% capacity)	5,400.00	3,600.00
Production at full capacity	6,000.00	4,000.00

If only B is produced the company can produce 9,000 units (4,000 + 6,000 / 1.2).

Required production of B in the next year = (2,880 × 1.3) + (2 × 720) = 3744 + 1440 = 5,184 units

Remaining capacity can be utilized to produce 4,579 units of A [(9,000 - 5,184) × 1.2].

Computation of Sales for 20X9	Rupees
Sales of A (4,579 x 500)	2,289,500
Sales of B (5,184 x 800)	4,147,200
	6,436,700
Discount to Corporate customer (1,440 x 800 x 15%)	172,800
	6,263,900
Consumption of Raw Material	Kgs
Consumption of raw material in 20X8 (A: 5,400 x 2.4 / 0.96)	13,500.00
Consumption of raw material in 20X8 (B: 3,600 x 2.4 / 0.90)	9,600.00
Total	23,100.00
Price per kg of raw material (2,310,000 / 23,100)	100.00
Total expected consumption in 20X9 (A: 4,579 x 2.4 / 0.96)	11,447.50
Total expected consumption in 20X9 (B: 5,184 x 2.4 / 0.90)	13,824.00
Total consumption for 20X9	25,271.50
Average price for 20X9 ((100 x 3) + (110 x 9)) / 12	107.50
Total cost of raw material for 20X9	2,716,686.25
Computation of Direct Labour	Hours
Labour hours used in 20X8 (A: 5,400 x 5)	27,000
Labour hours used in 20X8 (B: 3,600 x 6)	21,600
	48,600
Labour hours forecast for 20X9 (A: 4,579 x 5)	22,895
Labour hours forecast for 20X9 (B: 5,184 x 6)	31,104
	53,999
Increase in labour hours	5,399
Labour cost for 20X9 (1.15 x (777,600 x 53,999 / 48,600))	Rs. 993,582
Production overheads for 20X8 :	Rupees
Fixed overheads (40% x 630,000)	252,000.00
Variable overheads (630,000-252,000)	378,000.00

	A	B	Total
Ratio of variable overheads	1.00	2.00	
Total units produced	5,400.00	3,600.00	
Product (units) (K)	5,400.00	7,200.00	12,600.00
Total variable overheads (Rs.) (L)	162,000.00	216,000.00	378,000.00
Per unit variable overheads (Rs.) (L / K)	30.00	60.00	

Production overheads for 20X9:	A	B	Total
Fixed overheads (1.05 x 252,000) (Rs.)			264,600.00
Per unit variable overheads (Rs.)	33.00	66.00	
Total units	4,579	5,184	
Total variable overheads (Rs.)	151,107.00	342,144.00	493,251.00
Total overheads (Rs.)			757,851.00

PROFIT FORECAST STATEMENT FOR 20X9	Rupees	
Sales		6,263,900.00
Material	2,716,686.25	
Labour	993,582.00	
Overheads	757,851.00	4,468,119.25
Gross margin		1,795,780.75
Selling and administration expenses (800,000 x 1.1) + 250,000		1,130,000.00
		665,780.75

WORKING CAPITAL MANAGEMENT

IN THIS CHAPTER

1. Introduction
2. Evaluating working capital management
3. Working capital requirement
4. Working capital financing
5. Debtors management
6. Creditors management
7. Self-test questions

1. INTRODUCTION

1.1 The nature and elements of working capital

Working capital is the amount of capital available to support day-to-day operations of any entity. It is typically defined as the excess of current assets over current liabilities.

Working capital (WC) = Current assets – Current liabilities

Current assets are those assets that a business entity intends to realise, sell or consume within its normal accounting period (i.e., 12 months). These include inventories, trade receivables, cash and cash equivalents. Investment in current assets *requires funds*, so excessive investment can tie up capital. Therefore, the entity should consider reducing or optimising the level of current assets. Cash is needed to purchase inventory and it remains tied up in accounts receivable when company sells its products on credit. Sometimes, minimum cash is held for operational use and to settle liabilities.

Current liabilities are short term obligations that a business entity intends to settle within its normal accounting period (i.e., 12 months). These include trade payables and bank overdrafts. Current liabilities provide *a source of funds*; therefore, entity should consider increasing or optimising their levels. Some of the finance required for operations is obtained through credit from suppliers. This means that the suppliers to an entity are helping to support the business operations of that entity. Some short-term operating finance might also be obtained by securing a bank overdraft.

► *Illustration: Working capital*

	Rs.
Current assets:	
Inventory	x
Accounts receivables	x
Short term investments	x
Cash	x
	x
Less: Current liabilities:	
Accounts payable	(x)
Bank overdraft	(x)
Other current liabilities	(x)
Working capital	x

Working capital can alternatively be defined as that part of the current assets which are financed by the company by using long term funds such as long-term debt and equity.

1.2 – Working capital management and its objectives

Working capital management involves managing all aspects of both current assets and current liabilities to achieve the entity's objective of:

- minimising the risk of insolvency (liquidity) while
- maximising the return on assets (profitability).

1.2.1 Liquidity

Liquidity refers to having sufficient cash to meet short-term obligations as they become due. Maintaining sufficient working capital is necessary to support operations of the entity such as:

- production of goods or provision of services,
- paying wages and other expenses and
- servicing debt obligations

Surplus liquidity. For entities with surplus cash, there is also the management problem of how to use the surplus. If the surplus is only temporary, it might be invested in short-term financial assets. The aim should be to select investments that provide a suitable return without undue risk, and that can be converted back into cash without difficulty when the money is eventually required.

Avoiding liquidity problems

On the other hand, a shortage of working capital might result in liquidity problems due to having insufficient operational cash flows to pay liabilities when payment is due. Operational cash flows come into a business from the sale of inventories and payment by customers: inventory and trade receivables are therefore a source of future cash income. These must be sufficient for the payment of liabilities.

A company that has insufficient working capital might find that it has to make payments to suppliers (or other short-term liabilities) but does not have enough cash or bank overdraft facility to do so, because its current assets are insufficient to generate the cash inflows that are needed and when payment falls due.

Liquidity problems, when serious, can result in insolvency.

1.2.2 Profitability

Profitability refers to earning sufficient return on assets based on effective management of working capital. Excessive investment in working capital generates little to no return and incurs costs such as holding expenses, bad debt risks, and lost investment opportunities. Holding too much cash results in missed potential returns, excess inventory ties up capital and increases storage costs, and prolonged trade receivables raise the risk of bad debts. Inefficient use of capital can reduce profitability and fail to meet the return expectations of shareholders.

The conflict of objectives with working capital management

A conflict of objectives therefore exists with working capital management. Over-investment should be avoided, because it reduces profits or returns to shareholders. Under-investment should be avoided because it creates a liquidity risk. These issues are explained in more detail below.

1.3 Factors determining the level of investment in working capital

The target level of working capital investment in an organisation is a policy decision which is dependent on several factors including:

- the length of the working capital cycle; and
- management attitude to risk

1.3.1 The length of the working capital cycle

Different industries will have different working capital requirements. The working capital cycle measures the time taken from the payment made to suppliers of raw materials to the payments received from customers. In a manufacturing company this will include the time that:

- raw materials are held in inventory before they are used in production;
- the product takes in the production process;
- finished goods are held in inventory before being purchased by a customer; and
- time taken by customers to pay the amount owed by them

The level of working capital in manufacturing industry is likely to be higher than in retailing where goods are bought in for re-sale and may not be held in inventory for a very long period and where most sales are for cash rather than on credit terms.

1.3.2 Management attitude to risk

Risk-seeking managers adopt an *aggressive working capital policy* seeking to keep working capital at a minimum level, believing that lower levels of working capital are cheaper to finance and if managed effectively can increase the profitability. However:

- Maintaining low finished goods inventory carries the risk that company may fail to meet demand of customers, causing them to switch towards competitors.
- Low raw material inventory may lead to stock-outs (or 'inventory-outs') resulting in high costs of idle time or the need for expensive replacement from suppliers.
- Tight credit control may alienate customers and taking long periods of credit from suppliers may run the risk of them refusing to supply on credit basis at all.

Risk-averse managers adopt a more *conservative working capital policy* which aims to keep adequate working capital for the organisation's needs. They believe that high levels of working capital reduce risk but can be costly. Inventories are held at a level to ensure customers will be supplied and stock-outs will not occur. Generous terms are given to customers which may attract more customers. Suppliers are paid on time.

2. EVALUATING WORKING CAPITAL MANAGEMENT

The previous section explored the nature and elements of working capital, the objectives of working capital management along with their conflict, and the factors influencing the level of investment in working capital of any entity.

In this section, we will use different working capital ratios to assess whether a company has too much or too little working capital, and whether it has adequate liquidity. The liquidity of a business entity can be assessed by analysing:

- Its liquidity ratios; and
- The length of its cash operating cycle
- Other working capital ratios

2.1 Liquidity Ratios

2.1.1. Definition of liquidity

Liquidity for an entity means having access to sufficient cash to meet all payment obligations when they fall due.

2.1.2. Sources of liquidity

The main sources of liquidity for a business are:

- Cash flows from operations: a business expects to make its payments for operating expenditures out of the cash that it receives from operations. Cash comes in when customers eventually pay what they owe (and from cash sales).
- Holding 'liquid assets': these are assets that are either in the form of cash already (money in a bank account) or are in the form of investments that can be sold quickly and easily for their fair market value.
- Access to a 'committed' borrowing facility from a bank (a 'revolving credit facility'). Large companies are often able to negotiate an arrangement with a bank whereby they can obtain additional finance whenever they need it.

2.1.3. Importance of liquidity

A key element of managing working capital is to make sure the organisation has sufficient liquidity to meet its payment commitments as they fall due. Having sufficient liquidity is a key to survival in business.

If there is insufficient liquidity, then even if the entity is making profits, it will go out of business. If the entity cannot pay what it owes when the payment is due, legal action will probably be taken to recover the unpaid money and the entity will be put into liquidation. In practice, banks are usually the unpaid creditors who put illiquid entities into liquidation.

2.1.4. 2 Key Liquidity ratios

The purpose of a liquidity ratio is to compare the amount of liquid assets held by a company with its current liabilities. This is because the money to pay the current liabilities should be expected to come from the cash flows generated by the liquid assets.

There are two main liquidity ratios to assess the liquidity position of business.

(i) Current ratio

Current ratio measures how much the current assets are available to cover and make payment of current liabilities of the business over the period of 12 months horizon.

► *Formula: Current ratio*

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

Key assumptions and aspects of the current ratio

- Focuses on a 12 months horizon and does not deal with immediate liquidity, assuming all current assets can be liquidated within this period.
- Assumes that inventory will be converted into cash within 12 months.
- Affected by maturity mismatch problem which means liabilities, due in 12 months, may mature early before the corresponding assets are realised.
- Closing balance sheet values should be used to calculate these two ratios.

(ii) Quick ratio

Quick ratio measures how much the quick assets (highly liquid assets) are available to cover and make payment of current liabilities of the business over the period of 12 months horizon.

► *Formula: Quick ratio*

$$\text{Quick ratio} = \frac{\text{Current assets excluding inventory}}{\text{Current liabilities}}$$

Key assumptions and aspects of the quick ratio

- Focuses on a 12 months horizon and does not deal with immediate liquidity, assuming all quick assets can be liquidated within this period.
- Assumes that inventory will not be quickly convertible into cash within 12 months.
- Affected by maturity mismatch problem which means liabilities, due in 12 months, may mature early before the corresponding assets are realised.
- Closing balance sheet values should be used to calculate these two ratios.

2.1.5 Which liquidity ratio is more important?

The answer to this question is that it depends on the normal speed of turnover for inventory.

- If inventory is held only for a short time before it is used or sold (means fast moving inventory), the current ratio is probably a more useful ratio, because inventory is a liquid asset (convertible into cash within a short time).
- On the other hand, if inventory is slow moving, and so fairly illiquid, the quick ratio is probably a better guide to an entity's liquidity position.

2.1.6 Analysing the liquidity ratios

If the liquidity ratios are too high, this indicates that there is too much investment in working capital. If the liquidity ratios are low, this indicates that the company might not have enough liquidity, and might be at risk of being unable to settle its liabilities when they fall due.

So how is such an assessment made?

The liquidity ratios of a company may be compared with:

- the *liquidity ratios of other companies in the same industry*, to assess whether the company's liquidity ratios are higher or lower than the industry average or norm and
- changes in the company's liquidity ratios *over time* and whether its current assets are rising or falling in proportion to its current liabilities.

The 'normal' or 'acceptable' liquidity ratios vary significantly between different industries. The ideal liquidity ratios depend to a large extent on the 'ideal' or 'normal' turnover periods for inventory, collections and payments to suppliers.

A high ratio might be attributable to an unusually large holding of cash. When a company has surplus cash or short-term investments, this might be temporary and the company might have plans for how the cash will be used in the near future.

The most appropriate way of using liquidity ratios is probably to monitor changes in the ratio over time. When the ratios fall below a 'safe level', and continue to fall, the entity might well have a serious liquidity problem.

2.2 – Cash Operating Cycle

In addition to liquidity ratios, length of cash operating cycle can be used as another method to assess liquidity position and working capital management of the business.

2.2.1 Definition of the cash operating cycle

Cash operating cycle is the average length of time between paying cash to suppliers for goods and services and receiving cash from customers from the sales of finished goods or services. It is also known as

- Cash conversion cycle
- Working capital cycle
- Net operating cycle
- Cash to cash cycle

2.2.2. Purpose of cash operating cycle

Cash operating cycle is an important way of assessing the adequacy of working capital and the efficiency of working capital management.

2.2.3. Factors affecting the length of cash operating cycle

Nature of the business and type of industry

A cash operating cycle differs significantly for different types of business. For example, a company in a service industry such as a holiday tour operator does not have much inventory, and it might collect payments for holidays from customers in advance. The time between paying suppliers and receiving cash from customers might be very short.

In contrast a manufacturing company might have to hold large inventories of raw materials and components, work in progress and finished goods, and most of its sales will be on credit so that it has substantial trade receivables too. The time between paying for raw materials and eventually receiving payment for finished goods could be lengthy.

Retail companies have differing cash operating cycles. Major supermarkets have a very short cash operating cycle, because they often sell goods to customers before they have even paid their suppliers for them. This is because supermarkets enjoy very fast turnover of most items and their sales are for cash. In contrast a furniture retailer might hold inventory for a much longer time before selling it, and some customers might arrange to pay for their purchases in instalments.

Practices of the competitors

Length of cash operating cycle depends upon the norms of the industry and practices used by competitors. If competitors offer longer credit period to customers then it may be very difficult for a business to reduce its receivable days without losing sales.

Efficiency of working capital management

Sometimes, length of cash operating cycle depends upon the ability of entity to manage its working capital efficiently. Weak credit control and collection policies, excessive inventory holding and premature payments to suppliers may extend the length of cycle.

Terms of trade

The working capital cycle is also affected by the *terms of trade*. This is the amount of credit given to customers compared to the credit taken from suppliers. In a manufacturing company it may be normal practise to give customers lengthy periods of credit. This also reflects the relative bargaining position of the entity vis-a-vis its suppliers and customers.

- A higher credit period from suppliers and a lower credit period to customers shows that the customers are dependent on the company while the company is not dependent on its suppliers. This generally happens when a company has a good and profitable track record.
- The opposite situation indicates the weak bargaining position of an entity, a situation that is generally faced by a company when it is new in a business.

2.2.4. Cash operating cycle and working capital requirements

The cash operating cycle is a key factor in deciding the minimum amount of working capital required by a company. A longer cash operating cycle means a larger investment in working capital.

The cash operating cycle, and each of the elements in the cycle, must be managed to ensure that the investment in working capital is not excessive (i.e. the cash cycle is not too long) nor too small (i.e. the cash cycle is too short, perhaps because the credit period taken from suppliers is too long).

2.2.5. Measuring the cash operating cycle: a retail business

There are three main elements in the cash operating cycle of a retail sector business:

- The average length of time that inventory is held before it is sold; plus
- The average length of credit period taken by (or given to) credit customers; minus
- The average credit period taken from suppliers.

A cash cycle or operating cycle is measured as follows.

► *Illustration: Cash operating cycle*

	Days/weeks/ months
Average inventory holding period	X
Add: Average trade receivables collection period	X
Less: Average period of credit taken from suppliers	(X)
Operating cycle	X

The length of the cash cycle should be monitored over time. The cycle should not be allowed to become unreasonable in length, with a risk of over-investment or under-investment in working capital.

(a) Calculating the average inventory holding period

Formula: Average time for holding inventory (Inventory holding period or average inventory days)

For a company in the **retail sector or service sector** of industry, the average inventory holding period is normally calculated as follows:

$$\text{Average inventory days} = \frac{\text{Average Inventory}}{\text{Cost of sales}} \times 365 \text{ days}$$

If possible, average inventory should be used to calculate the ratio because the year-end inventory level might not be representative of the average inventory in the period. Average inventory is usually calculated as the average of the inventory levels at the beginning and end of the period. However, the year-end inventory should be used when opening inventory is not given and average inventory cannot be calculated.

Average inventory holding period and Inventory turnover

► *Formula: Inventory turnover*

Inventory turnover is calculated as follows:

$$\text{Inventory turnover} = \frac{\text{Cost of sales}}{\text{Average inventory}} = \text{times}$$

► *Formula: Average time for holding inventory*

Average time for holding inventory may be computed by using inventory turnover as follows:

$$\text{Average Inventory days} = \frac{365 \text{ days}}{\text{Inventory turnover (in times)}} = \text{days}$$

Inventory turnover is the inverse of the average inventory holding period. For example:

- If the average inventory holding period is 2 months, this means that inventory is 'turned over' (used) on average six times each year (= 12 months/2 months).
- If the inventory turnover is 8 times each year, we can calculate the average inventory turnover period as 1.5 months (= 12 months/8) or 46 days (= 365 days/8).

(b) Calculating the average collection period

► *Formula: Average time to collect (average collection period or average receivables days)*

The average period for collection of receivables can be calculated as follows:

$$\text{Average time to collect} = \frac{\text{Average Trade receivables}}{\text{Credit sales}} \times 365 \text{ days} = \text{days}$$

When normal credit terms offered to customers are 30 days (i.e. the customer is required to pay within 30 days of the invoice date), the average collection period should be about 30 days. If it exceeds 30 days, this would indicate that some customers are taking longer to pay than they should, and this might indicate inefficient collection procedures for receivables.

Receivables turnover and the average collection period

► *Formula: Receivables turnover*

Receivables turnover is calculated as follows:

$$\text{Receivables turnover} = \frac{\text{Credit sales}}{\text{Average trade receivables}} = \text{times}$$

Receivables turnover is the inverse of the average collection period. For example,

- If the average collection period is 2 months, this means that receivables are 'turned over' on average six times each year (= 12 months/2 months).
- If the receivables turnover is 8 times each year, we can calculate the average collection period as 1.5 months (= 12 months/8) or 46 days (= 365 days/8).

(c) Calculating the average payables period

The average period of credit taken from suppliers before payment of trade payables can be calculated as follows:

► *Formula: Average time to pay suppliers (Average payables days)*

$$\text{Average time to pay} = \frac{\text{Trade payables}}{\text{Purchases}} \times 365 \text{ days} = \text{days}$$

The average payment period should be close to the normal credit terms offered by suppliers in the industry.

- If the average payment period is much shorter than the industry average, this might suggest that the company has not negotiated reasonable credit terms from suppliers or that invoices are being paid much sooner than necessary, which is inefficient working capital management. This could also be due to the fact that the company is new to the business and is not getting a reasonable credit period from the suppliers due to perceived credit risk
- If the average payment period is much longer than the industry average, this might indicate that the company has succeeded in obtaining very favourable credit terms from its suppliers. Alternatively, it means that the company is taking much longer credit than it should, and is failing to comply with its credit terms. This might be an indication of either cash flow problems or (possibly) unethical business practice. This may also be because the company enjoys a sound bargaining position on the back of a sound and profitable past track record.

► *Example 1: Operating cycle of retail business*

Arif Limited has the following figures from its most recent accounts:

	Rs.'m
Receivables	4
Trade payables	2
Finished goods inventory	4.3
Sales (80% on credit basis)	30
Purchases (all on credit basis)	18
Cost of sales	25

Required: Calculate cash operating cycle of Arif Limited.

► *Solution:*

Operating cycle	Days
Finished goods inventory holding period	
$(Rs. 4.3 m \div Rs. 25 m) \times 365 \text{ days}$	62.78
Add: Receivable collection period	
$(Rs. 4 m \div Rs. 24 m) \times 365 \text{ days}$	60.83
Less: Payable's payment period	
$(Rs. 2 m \div Rs. 18 m) \times 365 \text{ days}$	(40.56)
= Cash operating cycle	83.06

2.2.6. Measuring the cash operating cycle: a manufacturing business

There are five main elements in the cash operating cycle of a manufacturing business:

- the average time raw materials and purchased components are held in inventory before they are issued to production (raw materials inventory turnover period), plus
- the production cycle (which relates to inventories of work-in-progress), plus
- the average time that finished goods are held in inventory before they are sold (finished goods inventory holding period), plus
- The average length of credit period taken by (or given to) credit customers; minus
- The average credit period taken from suppliers.

A cash cycle or operating cycle for manufacturing business is measured as follows.

► *Illustration: Cash operating cycle*

	Days/weeks/ months
Average Raw material inventory holding period	
$(\text{Average raw material inventory} / \text{Annual raw material usage}) \times 365 \text{ days}$	x
Add: WIP production period	
$(\text{Average WIP} / \text{Equivalent annual production cost}) \times 365 \text{ days}$	x
Add: Finished goods inventory holding period	
$(\text{Average finished goods inventory} / \text{Annual production cost}) \times 365 \text{ days}$	x

	Days/weeks/ months
Add: Average trade receivables collection period	
<i>(Average trade receivables/Annual credit sales) x 365 days</i>	x
Less: Average period of credit taken from suppliers	
<i>(Average trade payables/Annual credit purchase of material) x 365 days</i>	(x)
Operating cycle	X

Notes:

- When raw material usage is not available then raw material purchase may be used.
- When cost of sales is not available then production cost may be used.

► **Example 2: Cash Operating cycle of manufacturing business**

Rehman Limited has provided the following information:

	Days
Receivables collection period	56
Raw material inventory holding period	21
WIP production period	14
Suppliers' payment period	42
Finished goods holding period	28

Required: Calculate the length of operating cycle for Rehman Limited.

► **Solution:**

Operating cycle	Days
Raw material inventory holding period	21
Add: WIP production period	14
Add: Finished goods holding period	28
Add: Receivables collection period	56
	119
Less: Suppliers' payment period	(42)
= Cash operating cycle	77

► **Example 3: Cash Operating cycle of manufacturing business**

Mehran Limited estimates the following figures for coming year:

	Rs.
Sales – all on credit	3,600,000
Receivables	306,000
Finished goods inventory	200,000
Work in progress	350,000
Raw material inventory	150,000
Trade payables	130,000

	Rs.
Other information	
• Gross profit margin is 25% of sales	
• Raw materials are 80% of cost of sales – all on credit	
• Inventory levels are constant	

Required: Calculate the length of operating cycle for Rehman Limited.

► **Solution:**

Operating cycle	Days
Average Raw material inventory holding period	
$(Rs. 150,000 / Rs. 2,160,000) \times 365 \text{ days}$	25
Add: WIP production period	
$(Rs. 350,000 / Rs. 2,700,000) \times 365 \text{ days}$	48
Add: Finished goods inventory holding period	
$(Rs. 200,000 / Rs. 2,700,000) \times 365 \text{ days}$	27
Add: Average trade receivables collection period	
$(Rs. 306,000 / Rs. 3,600,000) \times 365 \text{ days}$	21
Less: Average period of credit taken from suppliers	
$(Rs. 130,000 / Rs. 2,160,000) \times 365 \text{ days}$	(22)
Operating cycle	109

(W1) Statement of profit or loss

	Rs.	Rs.
Sales revenue		3,600,000
Cost of sales:		
Material usage cost – 80% (given)	2,160,000	
Other production costs (Balancing Figure)	540,000	(2,700,000)
Gross profit – 25% of sales (given)		900,000

2.2.7 Analysing the cash operating cycle

The cash operating cycle can be analysed to assess whether the total investment in working capital is too large or possibly too small. The analysis can be made by comparing each element of the cash operating cycle, and the cash operating cycle as a whole, with:

- the cash operating cycle of other companies in the same industry
- the company's own cash operating cycle in previous years, to establish whether it is getting longer or shorter.

Comparisons with other companies in the industry

As a general rule, the inventory turnover period, average collection period and average payment period should be about the same for all companies operating in the same industry. If there are differences, there might be reasons. For example, a company with an unusually large proportion of sales to other countries might have a longer average collection period because of the longer time that it takes to deliver goods to customers.

If it is not possible to explain significant differences in any ratio between a company's own turnover periods and the industry average, the differences might be due to inefficient working capital management (or possibly efficient management). For example, an unusually long inventory turnover period compared with the industry average might indicate inefficiency due to excessive holding of inventory. Slow-moving inventory might also indicate that a write off of obsolete inventory might be necessary at some time in the near future.

Comparisons with previous years: trends

There might be a noticeable trend over time in a company's turnover ratios from one year to the next. A trend towards longer or shorter turnover and cycle times should be investigated.

A particular cause for concern might be a trend towards longer inventory turnover periods and longer average collection times, which might be an indication of excessive inventories (inefficient inventory management) or inefficient collection procedures for trade payables.

2.2.8 Changes in the cash cycle and implications for operating cash flow

When there are changes in the length of the cash operating cycle, this has implications for cash flow as well as working capital investment.

- A longer cash operating cycle, given no change in sales or the cost of sales, increases the total investment in working capital. An increase in the inventory turnover period means more inventory, and an increase in the average collection period means more trade receivables. A reduction in the average payables period means fewer trade payables, which also increases working capital.
- An increase in working capital reduces operational cash flows in the period.

The reverse is also true. A shorter cash operating cycle results in less working capital investment, and the fall in working capital increases operating cash flows in the period.

► Example 4: Cash operating cycle of manufacturing business

Extracts from the statement of financial position (Balance Sheet) and income statement of a company are set out below:

	Rs.
Inventories:	
Raw material inventory	864,000
Finished goods inventory	1,567,893
Work in progress	448,128
Trade receivables	1,425,600
Trade payables	604,800
Annual material cost	1,745,000
Annual cost of sales	5,272,128
Annual sales revenue	5,802,400

Required:

Calculate the length of operating cycle and interpret the results.

► *Solution:*

Operating cycle	Days
Average Raw material inventory holding period	
$(Rs. 864,000 / Rs. 1,745,000) \times 365 \text{ days}$	181
Add: WIP production period	
$(Rs. 448,128 / Rs. 5,272,128) \times 365 \text{ days}$	31
Add: Finished goods inventory holding period	
$(Rs. 1,567,893 / Rs. 5,272,128) \times 365 \text{ days}$	109
Add: Average trade receivables collection period	
$(Rs. 1,425,600 / Rs. 5,802,400) \times 365 \text{ days}$	90
Less: Average period of credit taken from suppliers	
$(Rs. 604,800 / Rs. 1,745,000) \times 365 \text{ days}$	(127)
Cash operating cycle	284

Interpretation of result

It takes the company 284 days on average from paying for the goods and services that go into making its products, before it gets the cash from the sales. If the cash cycle gets longer, this would mean having to find ever-increasing amounts to finance the investment in inventory and trade receivables, and it could result in serious cash flow and liquidity problems for the business.

► *Example 5: Assessment of liquidity position by using liquidity ratios*

Gamma Limited has provided following information for three years to assess liquidity position of the company:

	2022 Rs.'m	2023 Rs.'m	2024 Rs.'m
Inventory	130	240	225
Trade receivables	245	312	400
Cash	100	54	23
Current assets	475	606	648
Current liabilities	(200)	(300)	(450)
Net current assets	275	306	198

In addition, the following information is available

Credit sales	-	1,500	1,530
Cost of goods sold	-	1,120	1,200

Required: Assess the entity's liquidity position, using:

- Inventory turnover period of 2023 and 2024
- Average collection time of 2023 and 2024
- Liquidity ratios of 2022, 2023 and 2024

► **Solution:****Computation of liquidity ratios**

	2022	2023	2024
Inventory turnover period			
Average inventory			
$(130 + 240)/2, (240 + 225)/2$		185.0	232.5
Average inventory holding period			
$[(185/1,120) \times 365 \text{ days}], [(232.5/1,200) \times 365 \text{ days}]$		60 days	71 days
Average collection period			
Average trade receivables			
$(245 + 312)/2, (312 + 400)/2$		278.5	356.0
Average receivable collection period			
$[(278.5/1,500) \times 365 \text{ days}], [(356/1,530) \times 365 \text{ days}]$		68 days	85 days
Liquidity ratios			
Current ratio			
Current assets	475	606	648
÷ Current liabilities	200	300	450
= Current ratio (time)	2.38	2.02	1.44
Quick ratio			
Current assets (other than inventory)	345	366	423
÷ Current liabilities	200	300	450
= Quick ratio (times)	1.73	1.22	0.94

Analysing the liquidity position of entity**Inventory turnover**

Inventory turnover is slower in 2024 than in 2023. This could be an indication of problems with inventory management, as well as deteriorating liquidity. The slower inventory turnover implies that we are not converting inventory into sale as quickly as before. As a result, more money is being tied up in working capital.

Average time for customers to pay (average collection period)

As with inventory turnover, the average collection time for trade receivables is worsening and trade receivables are also not converting into cash as quickly as before. This implies that liquidity position is deteriorating.

Current ratio

The liquidity position of business, as measured by the current ratio, has become much worse in year 2024 compared with year 2023. Current liabilities were covered by 2.38 times in 2022. By the year 2024, the cover had shrunk to 1.44 times. This indicates a potential problem for the business, possible in near future.

However, before making this judgement, we should want to know the reasons for the deterioration in inventory turnover time and average time for customers to pay, because these will be linked to the deterioration in current ratio.

Quick ratio

This ratio confirms the analysis. The liquidity position is getting worse. However, a ratio of 0.94 is only just below the ideal quick ratio of 1.0 times; therefore further analysis should be carried out to assess the problem, and what must be done to resolve it. It might be appropriate to prepare cash flows forecast for next few months, to assess the possible need for cash in near future.

2.3 Sales revenue: net working capital ratio

The sales revenue: net working capital ratio is another ratio that might be used to assess whether the investment in working capital is too large or insufficient. This is because it might be assumed that the amount of working capital should be proportional to the value of annual sales, because there should be a certain amount of working capital to 'support' a given quantity of sales.

'Net working capital' is simply total current assets less total current liabilities.

3. WORKING CAPITAL REQUIREMENT

3.1 Introduction

Working capital requirement of any business or any project can be estimated for future accounting periods. Current assets and current liabilities are the two main elements which are estimated by using production/sale volume, income statement figures and working capital ratios such as:

- inventory days,
- receivable days and
- payable days.

The working capital requirement is based on the assumption that the production/sale is carried on evenly throughout the year and similarly all costs accrue evenly as well. Working capital requirement is also known as working capital financing requirement because it indicates part of the current assets which are financed by the company through long term funds such as long-term debt and equity.

3.2 Estimating the working capital requirement: a manufacturing business

Working capital requirement for a manufacturing business is estimated as follows:

► *Illustration: Working capital requirement of a manufacturing business*

	Notes	Rs.
Current assets:		
Minimum desired cash/bank balance – given		x
Raw material inventory	N1	x
WIP inventory	N2	x
Finished goods inventory	N3	x
Trade receivables	N4	x
Short term investments – given		x
		x
Minus Current liabilities:		
Trade payables – material cost	N5	(x)
Trade payables – wages cost of labour	N6	(x)
Trade payables – variable production overheads cost	N7	(x)
Trade payables – variable selling and distribution cost	N8	(x)
Trade payables – fixed overheads (excluding depreciation)	N9	(x)
Sales tax payable	N10	(x)
Working Capital Requirement / Investment in Working Capital		x

N1: Investment in raw material inventory is estimated as:

- Step 1 - Cost of raw material usage = Material cost per unit x production units
- Step 2 - Material inventory = Cost of material usage x Material inventory days / 365 days

N2: Investment in WIP inventory is estimated as:

Step 1 – Equivalent production cost

Equivalent production cost	Rs.
Material cost (material cost per unit x Completion % x production units)	x
Conversion cost (Conversion cost per unit x Completion % x production units)	x
= Equivalent production cost	x

➤ Step 2 - WIP inventory = Equivalent production cost x WIP inventory days / 365 days

N3: Investment in Finished goods inventory is estimated as:

➤ Step 1 - Production cost = Product cost per unit x Production units

➤ Step 2 - Finished goods inventory = Production cost x Finished goods inventory days / 365 days

N4: Trade receivables are estimated as:

➤ Step 1 - Credit sales revenue = Sale price per unit x Sale units

➤ Step 2 - Trade receivables = Credit sales revenue x Trade receivable days/365

N5: Trade payables for material cost are estimated as:

➤ Step 1 - Material purchase cost = Material usage cost + Ending inventory - Beginning inventory

➤ Step 2 - Trade payables = Material purchase cost x Trade payable days / 365 days

N6: Labour cost payable is estimated as:

➤ Step 1 - Labour wages cost = Labour cost per unit x production units

➤ Step 2 - Labour cost payable = Labour wages cost x Labour cost payable days/365

N7: Payables for variable production overheads cost are estimated as:

➤ Step 1 - Variable overheads cost = Variable overheads cost per unit x production units

➤ Step 2 - Variable OH payables = Variable overheads cost x Variable OH payable days/365

N8: Payables for variable selling and distribution overheads cost are estimated as:

➤ Step 1 - Variable selling cost = Variable selling cost per unit x sale units

➤ Step 2 - Variable selling cost payables = Variable selling cost x Variable selling cost payable days/365

N9: Payables for fixed overheads cost (excluding depreciation) are estimated as:

➤ Step 1 - Total fixed overheads cost = Fixed overheads cost per unit x Normal capacity units

➤ Step 2 - Total fixed overheads cost (excluding dep) = TFC - Depreciation expense

➤ Step 3 - Fixed OH payables = TFC (excluding dep.) x Fixed OH payable days/365

N10: Sales Tax payable is estimated as:

➤ Step 1 - Compute output tax on sales

➤ Step 2 - Compute input tax on purchases

➤ Step 3 - Compute the amount of sales tax = Output tax on sale - Input tax on purchases

➤ Step 4 - Sales tax payable = Amount of Sales tax x Sales tax payable days/365

Exam Notes:

- When completion rate of WIP units is not given then only production cost may be used to estimate WIP inventory.
- Production cost will be determined according to absorption costing system or marginal costing system whichever system is used by the company. In absence of information, absorption costing will be used.
- When production cost cannot be computed then we may use cost of sales and vice versa.
- When purchase cost of material is unable to compute then we may use cost of material usage and vice versa.
- Total fixed overheads cost is computed by using the normal capacity or any level of capacity at which current fixed overheads cost per unit is already determined by the entity.

► **Example 6: Working capital requirement**

X Limited has following expectations for the upcoming period:

Statement of profit and loss	Rs.'m
Sales Revenue	10
Less: Cost of sales	
Material cost	(6)
Conversion cost	(2)
Gross profit	2
The following working capital ratios are expected to apply:	
Material inventory days	30 days
Trade receivable days	60 days
Trade payable days	40 days

Required: Compute working capital requirement for upcoming period.

► **Solution:**

We need to use the working capital ratios and income statement figures to calculate statement of financial position values in order to construct the projected working capital position.

	Rs.'000
Current assets:	
Material inventory (Rs. 6 million x 30 days/365)	493
Trade receivables (Rs. 10 million x 60 days/365)	1,644
Less: Current liabilities:	
Trade payables – material (Rs. 6 million x 40 days/365)	(658)
= Working capital requirement	1,479

► *Example 7: Working capital requirement*

The following data relates to Majid Limited, a manufacturing company, for the year ending 31st December 2024:

Sales Revenue	1,500,000
Costs as a percentage of sales:	
Direct material cost	30% of sale
Direct labour cost	25% of sales
Variable production overheads cost	10% of sales
Fixed production overheads	15% of sales
Selling and distribution overheads	5% of sales
Other information related to working capital is as follows:	
• Trade receivables take 2.5 months to pay	
• Raw material inventory is kept for 3 months	
• WIP represents 2 months' half produced goods	
• Finished goods represent one month's production	
• Credit is taken:	
○ Material cost	2 months
○ Direct labour cost	1 week
○ Variable production overheads	1 month
○ Fixed production overheads	1 month
○ Selling and distribution overheads	0.5 month

WIP and finished goods inventories are valued by using marginal costing principles.

Required:

Compute working capital requirement of Majid Limited for the year ending 31st December 2024 assuming that the labour force is paid for 50 weeks in each year.

► *Solution:*

We need to use the working capital ratios and income statement figures to calculate statement of financial position values in order to construct the projected working capital position.

	Rs.
Current assets:	
Material inventory (Rs. 450,000(W-1) x 3/12 months)	112,500
WIP inventory (Rs. 975,000(W-1) x 50% x 2/12 months)	81,250
Finished goods inventory (Rs. 975,000(W-1) x 1/12 months)	81,250
Trade receivables (Rs. 1,500,000 x 2.5/12 months)	312,500
Less: Current liabilities:	
Trade payables – material (Rs. 450,000 x 2/12 months)	(75,000)
Trade payables – labour cost (Rs. 375,000(W-1) x 1/50 weeks)	(7,500)
Trade payables – Variable overheads (Rs. 150,000(W-1) x 1/12 months)	(12,500)
Trade payables – Fixed overheads (Rs. 225,000(W-1) x 1/12 months)	(18,750)
Trade payables – Selling and distribution (Rs. 75,000(W-1) x 0.5/12 months)	(3,125)
= Working capital requirement	470,625

(W1) Production and non-production costs

Direct material costs (Rs. 1,500,000 x 30%)	Rs. 450,000
Direct labour costs (Rs. 1,500,000 x 25%)	Rs. 375,000
Variable overheads (Rs. 1,500,000 x 10%)	Rs. 150,000
= Variable production cost	Rs. 975,000
Fixed overheads (Rs. 1,500,000 x 15%)	Rs. 225,000
Selling and distribution cost (Rs. 1,500,000 x 5%)	Rs. 75,000

3.3 Estimating the annual cost of investment in working capital

The annual cost of investment in working capital is computed to assess financial burden of maintaining current assets such as inventory, trade receivables, which require funding either through internal sources or external borrowing. Since working capital is a continuous and fluctuating requirement that is why average investment in working capital is used to reflect a more accurate picture of the capital tied up over time. Annual cost of funds refers to the cost of funds associated with investment in working capital. It may be

- the cost of equity (K_E) if investment in working capital is fully financed through shares,
- the cost of debt (K_D) if investment in working capital is fully financed through long term borrowing, or
- weighted average cost of capital (WACC) if a combination of debt and equity is used.

The cost of investing in working capital can be stated simply as follows:

Formula: Annual cost of investment in working capital

$$\text{Average investment in working capital} \times \text{Annual cost of funds (\%)} = \text{Annual cost of working capital investment}$$

► **Example 8: Annual Cost of investment in working capital**

Using the data provided in Example 7 for Majid Limited, the company is planning to implement following changes for year ending December 31, 2024:

- Customers will now be allowed 3 months to make payments instead of 2.5 months, leading to a 20% increase in sales revenue.
- The company will hold raw material inventory for 2 months instead of 3 months.
- The holding period for WIP inventory, finished goods inventory, and trade payables, as well as the cost structure (costs as a percentage of sales) will remain same as in Example 7
- Annual finance cost of the company is 10%.

Required: Recalculate the working capital requirement of Majid Limited for year ending 31st December 2024 considering the above changes. Also determine the change in annual finance cost of investment in working capital.

► **Solution:**

We need to use the revised working capital ratios and revised sales value in order to construct the revised working capital position.

	Rs.
Current assets:	
Material inventory (Rs. 540,000(W-1) x 2/12 months)	90,000
WIP inventory (Rs. 1,170,000(W-1) x 50% x 2/12 months)	97,500
Finished goods inventory (Rs. 1,170,000(W-1) x 1/12 months)	97,500
Trade receivables (Rs. 1,800,000(Rs. 1500,000 x 120%) x 3/12 months)	450,000
Less: Current liabilities:	
Trade payables – material (Rs. 540,000(W-1) x 2/12 months)	(90,000)
Trade payables – labour cost (Rs. 450,000(W-1) x 1/50 weeks)	(9,000)
Trade payables – Variable overheads (Rs. 180,000(W-1) x 1/12 months)	(15,000)
Trade payables – Fixed overheads (Rs. 270,000(W-1) x 1/12 months)	(22,500)
Trade payables – Selling and distribution (Rs. 90,000(W-1) x 0.5/12)	(3,750)
= Revised working capital requirement	594,750

Changes in annual finance cost

	Rs.
Revised finance cost of working capital (Rs. 594,750 x 10%)	59,475
Less: Original finance cost of working capital (Rs. 470,625 x 10%)	(47,063)
Incremental finance cost	12,412

(W1) Revised production and non-production costs

Direct material costs (Rs. 1500,000 x 120% x 30%)	Rs. 540,000
Direct labour costs (Rs. 1,500,000 x 120% x 25%)	Rs. 450,000
Variable overheads (Rs. 1,500,000 x 120% x 10%)	Rs. 180,000
= Variable production cost	Rs. 1,170,000
Fixed overheads (Rs. 1,500,000 x 120% x 15%)	Rs. 270,000
Selling and distribution cost (Rs. 1,500,000 x 120% x 5%)	Rs. 90,000

3.4 External Financing Requirement (EFR)**3.4.1 Introduction**

As a business grows, additional financing becomes necessary to meet the increasing working capital requirements. Initially, companies attempt to finance these needs through internal sources, such as retained earnings. However, if internal funds are insufficient to fully support the expansion, external financing becomes essential.

External Financing Requirement (EFR) or External Funds Needed (EFN), also referred to as Additional Funds Needed (AFN), represents the shortfall that must be covered through external debt or equity, beyond the internally generated funds. Retained earnings play a critical role in funding working capital requirements before a company resorts to external financing, thereby reducing reliance on external financing.

3.4.2 Approach to EFR computation

External Financing Requirement (EFR) can be calculated by using following systematic approach:

- Identify the expected sale growth based on historical trends, present market conditions and strategic business plans;
- Determine additional working capital requirements
 - Compute the expected increase in current assets (e.g., inventory and accounts receivables) to support the sales growth
 - Compute the corresponding increase in current liabilities (trade payables and accruals) that naturally grow with sales.
 - Estimate the additional working capital requirement as:

$$\text{Additional Working Capital Req.} = \text{Increase in current assets} - \text{Increase in current liabilities}$$

- Estimate internally generated funds (retained earnings) as:

$$\text{Retained earnings} = \text{Projected Sales Revenue} \times \text{net profit margin} \times (1 - \text{dividend pay-out ratio})$$

- Calculate External Financing Requirement (EFR)

$$\text{EFR} = \text{Additional working capital requirement} - \text{Internal equity funds (retained earnings)}$$

► *Example 9: External Financing Requirement (EFR)*

A company had sales of Rs. 15 million during year 2023, with a profit margin of 12% on sales and a dividend pay-out ratio of 25%. The company expects sales to grow by 15% in year 2024. The changes in working capital components due to additional sales are as follows:

- Increase in inventory = 75% of additional sales
- Increase in trade receivables = 50% of additional sales
- Increase in trade creditors = 30% of additional sales

Required: Calculate the external financing requirement to support the increase in working capital for the year 2024.

► *Solution:*

Additional working capital requirement	Rs.
Current assets:	
Increase in inventory (Rs. 15 million x 15%) x 75%	1,687,500
Increase in trade receivables (Rs. 15 million x 15%) x 50%	1,125,000
Less: Current liabilities	
Increase in trade creditors (Rs. 15 million x 15%) x 30%	(675,000)
Additional working capital requirement	2,137,500

Internally generated Equity funds through Retained Earnings

(Rs. 15 million x 1.15) x 12% x (1 – 0.25) = Rs. 1,552,500

External Financing Requirement (EFR)

= Working capital Requirement – Retained Earnings

= Rs. 2,137,500 – Rs. 1,552,500 = Rs. 585,000

► *Example 10: Growth in sale*

The most recent financial statements for Farhan & Co. are shown here:

Income Statement	Rs.'000
Sales Revenue	64,800
Less: Costs	(48,600)
Net profit before tax	16,200
Less: Taxation (40%)	(6,480)
Net profit after tax	9,720

Balance Sheet

Assets	Rs.'000	Liabilities and owners' equity	Rs.'000
Non-current assets	123,000	Equity	80,000
Current assets	31,000	Long term debt	64,000
		Current liabilities	10,000
	154,000		154,000

The company expect a 25% increase in sales for the next year. As a result:

- Current assets will increase by 120% of additional sales revenue
- Current liabilities will increase by 50% of additional sales revenue
- The company maintains a constant profit margin ratio and a constant dividend pay-out ratio of 40%.

Required:

- Calculate the additional working capital requirement for the next year.
- Determine the amount of additional retained earnings available by the end of next year
- Compute the amount of external financing required to meet additional working capital needs of next year.
- Determine the maximum growth rate of sales in the next year under each of the following assumptions?
 - No external funds are available
 - Only debt finance is available up to the extent that existing debt/equity ratio is maintained for the next year
 - Debt and equity finance both are available externally. New shares of Rs. 1 million can be issued but debt finance is available up to the extent that existing debt/equity ratio is maintained for the next year.

► **Solution:**

(i) Additional working capital requirement for next year

Additional working capital requirement	Rs.'000
Increase in Current assets (Rs. 64.8 million x 25%) x 120%	19,440
Increase in current liabilities (Rs. 64.8 million x 25%) x 50%	(8,100)
Additional working capital requirement	11,340

(ii) Equity funds - Internally generated Retained Earnings

$$(\text{Rs. } 64.8 \text{ million} \times 125\%) \times 15\% \times (1 - 0.40) = \text{Rs. } 7,290,000$$

(iii) External Financing Requirement (EFR)

$$= \text{Working capital Requirement} - \text{Retained Earnings}$$

$$= \text{Rs. } 11,340,000 - \text{Rs. } 7,290,000 = \text{Rs. } 4,050,000$$

(iv) Maximum growth rate of sales

(a) No external financing is available

Let suppose x = Growth rate of sales

Additional working capital requirement	Rs.'000
Increase in Current assets (Rs. 64.8 million. $X\%$) x 120%	77760x
Increase in current liabilities (Rs. 64.8 million x $X\%$) x 50%	(32,400x)
Additional working capital requirement	45,360x

Internal equity funds – Retained earnings

$$[64800 (1 + x)] \times 0.15 \times 0.60$$

$$5,832 + 5,832x$$

Additional working capital requirement = Equity + Long-term debt

Additional working capital requirement = (Retained earning + New shares) + Long term debt

$$45,360x = (5,832 + 5,832x + 0) + 0$$

$$X = 5,832/39,528 = 0.147541 \text{ or } 14.7541\%$$

(b) Only debt financing is available up to existing debt/equity ratio

Existing debt/equity ratio = Long-term debt/equity = 64 million/80 million = 0.80 or 80%

Additional working capital requirement = Equity + Long-term debt

Additional working capital requirement = (Retained earning + New shares) + Long term debt

$$45,360x = (5,832 + 5,832x + 0) + (5,832 + 5,832x + 0) \times 0.80$$

$$45,360x = 5,832 + 5,832x + 0 + 4,665.6 + 4,665.6x + 0$$

$$34,862.4 x = 10,497.6$$

$$X = 10497.6/34,862.4 = 0.301107 \text{ or } 30.11\%$$

(c) New shares of Rs. 1 million can be issued and debt finance is available up to existing debt/equity ratio

Additional working capital requirement = Equity + Long-term debt

Additional working capital requirement = (Retained earning + New shares) + Long term debt

$$45,360x = (5,832 + 5,832x + 1,000) + (5,832 + 5,832x + 1,000) \times 0.80$$

$$45,360x = 5,832 + 5,832x + 1,000 + 4,665.6 + 4,665.6x + 800$$

$$34,862.4 x = 12297.6$$

$$X = 12297.6/34,862.4 = 0.352747 \text{ or } 35.27\%$$

4. WORKING CAPITAL FINANCING

4.1 Types of working capital

Working capital may be permanent or fluctuating:

- **Permanent working capital** refers to the minimum level of working capital which is required all of the time. It includes minimum levels of inventories, trade receivables and trade payables.
- **Fluctuating working capital** refers to working capital which is required at certain times in the trade cycle. For example, it may be economic for companies to purchase raw materials in bulk. The finance required to fund the purchase of the bulk order will be a temporary requirement because eventually the raw material will be made into a product and sold to customers. The levels of fluctuating working capital may be higher if companies have seasonal demand. For example, manufacturers of skiing equipment might build up inventories of products before the winter season.

4.2 Working capital financing policies

Long-term finance, such as equity and debt, is expensive but low risk. Short-term finance is less expensive but there is a higher risk of it being withdrawn. The type of financing used within the business may depend on management attitude to risk.

- **Conservative financing policy:** This is where all of the permanent assets (i.e. both non-current assets and the permanent part of the current assets, in other words the core level of investment in inventory and receivables, etc.) are financed by long-term funding, as well as part of the fluctuating current assets. Short-term financing is only used for part of the fluctuating current assets. The conservative policy is the least risky but also results in the lowest expected return. The following balance sheet illustrates conservative financing structure:

Balance Sheet				
Assets	Rs.	Liabilities and owners' equity	Rs.	
Non-current assets	500,000	Equity	500,000	Long term Finance
<u>Current assets:</u>		Long term debt	320,000	
Permanent current assets	300,000			Short-term Finance
Fluctuating current assets	100,000	Current liabilities	80,000	
	<u>900,000</u>		<u>900,000</u>	

Explanation: Out of total Rs. 400,000 in current assets, the entire permanent current assets amounting to Rs. 300,000, along with Rs. 20,000 of fluctuating current assets, are financed through long term funds. The remaining Rs. 80,000 of fluctuating current assets are financed through short term funds.

- **Aggressive financing policy:** An aggressive policy for financing working capital uses short-term financing to fund all the fluctuating current assets as well as some of the permanent part of the current assets. This policy carries the greatest risk of illiquidity, however it results into greatest return (because short-term debt costs are typically less than long-term costs).

Balance Sheet				
Assets	Rs.	Liabilities and owners' equity	Rs.	
Non-current assets	500,000	Equity	400,000	Long term Finance
<u>Current assets:</u>		Long term debt	200,000	
Permanent current assets	300,000			Short-term Finance
Fluctuating current assets	100,000	Current liabilities	300,000	
	<u>900,000</u>		<u>900,000</u>	

Explanation: Out of total Rs. 400,000 in current assets, the entire fluctuating current assets amounting to Rs. 100,000, along with a significant portion of permanent current assets amounting to Rs. 200,000 are financed through short term funds. The remaining Rs. 100,000 of permanent current assets are financed through long-term funds.

- **Moderate financing policy:** A moderate (or maturity matching) policy matches the short-term finance to the fluctuating current assets, and the long-term finance to the permanent part of current assets plus non-current assets. This policy falls between the two extremes.

Balance Sheet

Assets	Rs.	Liabilities and owners' equity	Rs.	
Non-current assets	500,000	Equity	450,000	Long term Finance
<u>Current assets:</u>		Long term debt	350,000	
Permanent current assets	300,000			Short-term Finance
Fluctuating current assets	100,000	Current liabilities	100,000	
	<u>900,000</u>		<u>900,000</u>	

Explanation: Out of total Rs. 400,000 in current assets, the entire fluctuating current assets amounting to Rs. 100,000 are financed through short term funds whereas permanent assets (non-current and current assets) amounting to Rs. 800,000 are financed through long-term funds.

4.3 Benefits and risks of short-term finance

The benefits of using short-term finance (trade payables and a bank overdraft) rather than long-term finance are as follows:

- **Lower cost.** Trade credit is the cheapest form of short-term finance – it costs nothing. The supplier has provided goods or services but the entity has not yet had to pay.
- **Much more flexible.** A bank overdraft is variable in size, and is only used when needed.

However, although there are the benefits of low cost and flexibility with short-term finance, there are also risks in relying too much on short-term finance.

- Short-term finance runs out more quickly and has to be renewed. Suppliers must be asked for trade credit every time goods or services are bought from them.
- A bank overdraft facility is risky, because the bank has the right to demand immediate repayment of an overdraft at any time. When an entity needs a higher bank overdraft, this can often be the time that the bank decides to withdraw the overdraft facility.

5. DEBTORS MANAGEMENT

5.1 Introduction

Business entities sell their products or provide services to its customers on cash as well as on credit basis according to the agreed credit terms. Often 'standard' credit terms are applied for most business transactions, such as 30 days or 60 days from the date of the invoice. The term receivables or debtors is defined as the amount owed to the firm by customers arising from credit sale of goods or services in the ordinary course of business.

5.2 Objective of debtors' management

The objective of debtors' management is to promote sales and profitability of company while ensuring timely collection of due amounts from credit customers to have sufficient liquidity.

5.3 Benefits and costs of granting credit

5.3.1 Benefit of giving credit

By giving credit, sales volume will be higher. Higher sales volumes result in higher contribution, and higher profit. If a business does not give credit to customers, customers are likely to buy from competitors who do offer credit.

Additional contribution due to increase in sale volume

Additional contribution = Additional Sales Revenue x C/M ratio

Where

C/M ratio = (Sales Revenue – Total variable cost) ÷ Sales Revenue

5.3.2 Costs of giving credit

There are several costs of giving credit.

Bad debts costs

Selling on credit creates a risk that the customer might never pay for the goods supplied. The cost of bad debts is usually measured as the amount of sales revenue due from the customers, that is written off as non-collectable.

Cost of bad debts

Bad debts costs = Credit sales x Rate of bad debts

Collection and administration costs

Administration costs might be incurred in negotiating credit terms with customers, and monitoring the credit position of customers and timely collection of the amount of credit. In dealing with problems about the cost of trade receivables, you should consider only the incremental administration costs incurred as a consequence of providing credit.

Finance costs

There is a finance cost. Trade receivables must be financed. The longer the period of credit allowed to customers, the bigger the investment in working capital must be. The cost of investing in trade receivables is usually calculated as:

Finance cost of trade receivables

Finance cost = Average trade receivables x cost of capital

► Example 11: Extension of credit period

Green Company currently offers customers 30 days' credit. Annual credit sales are Rs.12 million, the contribution/sales ratio is 25% and bad debts are 1% of sales. The company has estimated that if credit period

is increased to 60 days, total annual sales would increase by 10%, but bad debts would rise to 1.5% of sales. The cost of capital for Green Company is 9%.

Assume that a year has 360 days.

Required: Estimate the effect on annual profit of increasing the credit period from 30 to 60 days.

► **Solution:**

Annual sales will increase from Rs.12 million to Rs.13.2 million.

Evaluation of credit period from 30 to 60 days	Rs.'000	Rs.'000
Annual contribution with 30 days (Rs. 12 m x 25%)	3,000	
Annual contribution with 60 days (Rs. 13.2 m x 25%)	3,300	
Increase in annual contribution		300
Bad debts with 30 days (Rs. 12 m x 1%)	120	
Bad debts with 60 days (Rs. 13.2 m x 1.5%)	198	
Increase in bad debts		(78)
Annual interest cost of extra accounts receivables (Rs. 1.2 million(W-1) x 9%)		(108)
Net annual gain from increasing credit to 60 days		114

(W1) – Increase in average receivables

Increase in average receivables		Rs.'000
Current average receivables	Rs. 12 million x 30/360	1,000
Revised average receivables	Rs. 13.2 million x 60/360	2,200
Increase in average receivables		1,200

► **Example 12: Reduction in credit period**

A company has annual sales of Rs. 20 million and all customers are given credit of 60 days. Gross profit on sales is 40%. Currently bad debts are 1.5% of sales. The cost of capital for the company is 10%.

Management is concerned about the high level of bad debts and they estimate that by reducing credit terms to 30 days for all customers, bad debts can be reduced to 0.5% of sales. However total sales revenue is likely to fall by 5% as a consequence of making the credit terms less generous.

Required: Calculate the estimated effect on annual profit of reducing the credit terms from 60 days to 30 days.

► **Solution:**

Annual sales will decrease from Rs. 20 million to Rs. 19 million.

Evaluation of credit period from 60 to 30 days	Rs.'000	Rs.'000
Annual gross profit with 60 days (Rs. 20 m x 40%)	8,000	
Annual gross profit with 30 days (Rs. 19 m x 40%)	7,600	
Decrease in annual gross profit		(400)
Bad debts with 60 days (Rs. 20 m x 1.5%)	300	
Bad debts with 30 days (Rs. 19 m x 0.5%)	95	
Decrease in bad debts		205
Saving in annual interest cost of accounts receivables (Rs. 1726,000(W-1) x 10%)		173
Net annual cost or reduction in profit		(22)

(W1) – Decrease in average receivables

Decrease in average receivables		Rs.'000
Current average receivables	Rs. 20 million x 60/365	3,288
Revised average receivables	Rs. 19 million x 30/365	1,562
Decrease in average receivables		1,726

5.4 Factoring of Receivables**5.4.1 Introduction**

Companies might use a factoring organisation to assist with the management of receivables and also to help with the financing of receivables. Debt factors are specialist organisations and they specialise in:

- Assisting client firms to administer their trade receivables ledger;
- Providing short-term finance to client firms, secured by the trade receivables;
- In some cases, providing insurance against bad debts.

5.4.2 When to use factor company

The services of a debt factor can be particularly useful for a small-to-medium-sized company that:

- Has a large number of credit customers;
- Does not have efficient debt collection procedures and therefore has a fairly high level of bad debts; and
- Does not have sufficient finance for its working capital.

5.4.3 Services of a factor company

A factor company offers three types of services to a client business:

(a) Trade receivables administration

A factor will take over the administration of trade receivables on behalf of a client. It sends out invoices on behalf of the client. Each invoice shows that the factor has issued the invoice, and the invoice asks for payment to be made to a bank account under the control of the factor. The factor collects the payments, and chases customers who are late with payment. The factor is also responsible for the client's trade receivables ledger, recording details of invoices and payments received in the ledger on behalf of the client.

The factor makes a charge for this service, typically an agreed percentage of the value of invoices sent out.

(b) Credit insurance

If the factor company is given the task of trade receivables administration, it may also agree (for an additional fee) to provide insurance against bad debts for the client. This is known as *without recourse factoring* or *non-recourse factoring*. If a customer of the client fails to pay an invoice that was issued by the factor, the factor will accept the bad debt loss itself, and the factor will pay the client the full amount of the unpaid invoice.

A factor will only provide without recourse factoring for invoices that are approved in advance by the factor. This is to prevent the client from giving credit to high-risk customers and exposing the factor to the risk of bad debts.

However, factors also provide *with recourse factoring*. With this type of arrangement, if a customer of the client fails to pay an invoice, the factor will not pay anything to the client, and the client must suffer the bad debt loss. (If the factor has already made a payment to the client against the security of the receivable, the client must repay the money it has received.)

(c) Advance funds

The factor will provide advances of up to 80% of the face value of the client's trade receivables, for all receivables that are approved by the factor. The finance is provided at an agreed rate of interest, and is repayable when the customers' invoices are eventually paid. In effect, this means that when a customer pays the factor will remit the remaining 20% of the money to the client, less the interest (and other fees).

5.4.4 The costs of factoring services

The costs of a factoring service might therefore consist of:

- A service fee for the administration and collection of trade receivables;
- A commission charge, based on the total amount of trade receivables, for a non-recourse factoring service; and
- Interest charges for finance advanced against the trade receivables.

5.4.5 Advantages and disadvantages of factoring arrangement

The benefits of using a factor are as follows:

- There should be *savings in internal administration costs*, because the factor administers the trade receivables ledger.
- With non-recourse factoring, there is a *reduction in the cost of bad debts*.
- A factor is a *source of finance* for trade receivables.

The disadvantages of using a factor are as follows.

- **Costly:** Interest charges on factor finance are likely to be higher than other sources of finance.
- **Effect on customer goodwill:** The factor is unlikely to treat the client's customers with the same degree of care and consideration that the client's own sales ledger administration team would.
- **Reputational damage:** The client's reputation may be affected by the need to use a factor. Customers might believe that using a factor is a sign of financial weakness.

5.4.6 Evaluation of factor's services

To assess the cost of using the services of a factor, you need to compare the total costs of the alternative policies. As indicated above, the costs you will probably need to consider are:

- Fees and commission of factor company
- Costs of bad debts
- Financing costs for trade receivables.

► Example 13: Non-recourse factoring

Apex Limited has annual credit sales of Rs. 1,000,000. Credit customers take 45 days to pay. Bad debts are 2% of sales. The company finances its trade receivables with a bank overdraft, on which interest is payable at an annual rate of 15%.

A factor has offered to take over administration of the receivable's ledger and collections for a fee of 2.5% of the credit sales. This will be a non-recourse factoring service. It has also guaranteed to reduce the payment period to 30 days. It will provide finance for 80% of the trade receivables, at an interest cost of 8% per year.

Apex Limited estimates that by using the factor, it will save administration costs of Rs. 8,000 per year.

Required: What would be the effect on annual profits if Apex Limited decides to use the factor's services? (Assume a 365-day year).

► Solution:

Evaluation of non-recourse factoring	Rs.	Rs.
Saving in administration cost		8,000
Saving in bad debts cost due to non-resource factoring (Rs. 1,000,000 x 2%)		20,000
Saving in annual interest costs:		
Current: (Rs. 1 million x 45/365) = Rs. 123,288 x 15%	18,493	
With factor: (Rs. 1 million x 30/365) = Rs. 82,192		
(Rs. 82,192 x 80% x 8%) + (Rs. 82,192 x 20% x 15%)	(7,726)	10,767
Annual fees of factor company (Rs. 1 million x 2.5%)		(25,000)
Net increase in profit by using factor company		13,767

5.5 Early Settlement Discount

5.5.1 Purpose of early settlement discounts

A company might try to minimise its investment in trade receivables. One way of doing this is to ensure that collection procedures are efficient. Another policy for reducing trade receivables is to offer a discount for early payment of an invoice. This type of discount is called a settlement discount (or early settlement discount, or cash discount).

For example, a company might offer its customers normal credit terms of 60 days, but a discount of 2% for payment within ten days of the invoice date. If customers take the discount, there will be a reduction in average trade receivables and company will bear discount cost.

5.5.2 Evaluating the early settlement discounts

The benefit of a settlement discount is that it reduces average trade receivables, and this reduces the annual interest cost of investing in trade receivables.

On the other hand, the discounts taken by customers reduce annual profit.

Evaluating a proposal to offer settlement discounts to customers therefore involves comparing the improvements in cash flow and reductions in interest cost with the cost of the discounts allowed.

Cost of discount allowed

$$\text{Discount cost} = \text{Credit sales} \times \% \text{ of customers availing discount} \times \text{Rate of discount}$$

► Example 14: Evaluation of early-settlement discount

Entity X borrows on overdraft at an annual interest rate of 15%. It has annual credit sales of Rs. 5 million, and all customers buy on credit. Customers are normally required to pay within 45 days. Entity X offers a 1.5% discount if payment is made within ten days. 60% of customers take the discount.

Required: What is the annual cost of the discount policy?

► Solution:

Evaluation of early settlement discount	Rs.	Rs.
Cost of annual discount (Rs. 5 m x 60%) x 1.5%		(45,000)
Saving in finance cost due to early settlement discount		
Without discount (Rs. 5 m x 45/365) x 15%	92,466	
With discount: (Rs. 5 m x 24(W-1)/365) x 15%	(49,315)	43,151
Net annual cost of discount		(1,849)

(W1) Average collection period with early settlement discount

$$\text{Average collection period} = (45 \text{ days} \times 40\%) + (10 \text{ days} \times 60\%) = 24 \text{ days}$$

6. CREDITORS MANAGEMENT

6.1 Trade creditors as a source of finance

Trade credit is an excellent source for financing short-term working capital needs. The supplier has provided goods or services that have not yet been paid for, and which may or may not already have been used.

Trade credit allows the buyer to hold or make use of goods obtained from suppliers without yet having to pay for them. It therefore postpones the need to find the cash to make payments for goods and services purchased.

Unlike other sources of finance, including a bank overdraft or a bank loan, trade credit does not have any cost.

However, goods are supplied on agreed credit terms. The supplier expects to receive payment at the end of the agreed credit period. If a buyer tries to take advantage of trade credit, and delay payment until after the agreed credit period has ended, the trading relationship between supplier and buyer could become difficult and unfriendly.

A company should therefore take advantage of the trade credit terms it is offered, and negotiate the best credit terms that it can get, because it is a free source of finance for working capital. However, it should not exceed the amount of credit allowed.

6.2 Settlement discount from suppliers

A supplier might offer a settlement discount for early payment. The value of a settlement discount from a supplier should be assessed in the same way as the cost of a settlement discount to customers. If the value of taking the settlement discount is higher than the cost of having to finance the payment by bank overdraft, the discount should be taken and the trade credit should be paid at the latest time possible in order to obtain the discount.

► Example 14: Evaluation of early-settlement discount

Plot Co purchases and sells a Product Q, with sales of product occurring evenly throughout the year. The annual demand for Product Q is 456,000 units per year and Plot Co buys this product at Rs. 2 per unit on 60 days credit.

The supplier has offered an early settlement discount of 1% for settlement of invoices within 30 days.

Plot Co finances working capital with short-term finance costing 5% per year. Assume that there are 365 days in each year

Required: Calculate the net value in rupees to Plot Co of accepting the early settlement discount for Product Q.

► Solution:

Evaluation of early settlement discount	Rs.	Rs.
Benefit of discount (Rs. 2 x 456,000 units) = 912,000 x 1%		9,120
<u>Extra finance cost due to early settlement discount</u>		
Without discount (Rs. 912,000 x 60/365) x 5%	7,496	
With discount: (Rs. 912,000 x 30/365) x 5%	(3,748)	(3,748)
Net annual benefit of discount		5,372

7. SELF-TEST QUESTIONS

1. Spring 2024 Q1 (xi):

Following is the data extracted from the books of Zadran Limited (ZL). Assuming a 365 days' year, what is the length of ZL's cash operating cycle (in days)?

Inventory turnover	7.5 times
Trade receivables turnover	6.5 times
Trade payables turnover	5.0 times

- (a) 177.82 days (b) 19.81 days (c) 31.82 days (d) 40.56 days **(02)**

2. Autumn 2024 Q1 (ix):

A company has an average payment period of 2 months and a payable balance of Rs. 2.5 million. What are the annual credit purchases of the company?

- (a) Rs. 30 million (b) Rs. 5 million (c) Rs. 15 million (d) Rs. 10 million
(01)

3. Autumn 2024 Q1 (x):

A company with an aggressive working capital policy is likely to:

- (a) maintain low levels of raw materials and finished goods
- (b) offer extended credit terms to attract more customers
- (c) invest heavily in long-term assets to boost profitability
- (d) ensure high liquidity by holding large cash reserves

4. Autumn 2024 Q1 (xi):

Which of the following best explains the trade-off between high and low levels of working capital?

- (a) High levels of working capital are inexpensive but offer low returns, while low levels reduce cost and increase liquidity
- (b) High levels of working capital are costly but ensure operational stability, while low levels reduce costs but increase the risk of financial difficulties
- (c) High levels of working capital increase profitability but reduce flexibility, while low levels enhance liquidity but decrease profitability
- (d) High levels of working capital reduce the need for external financing, while low levels increase the need for long-term investments

5. Autumn 2024 Q1 (xii):

Which of the following factors is LEAST likely to influence the required level of working capital investment in a company?

- (a) The length of the working capital cycle
- (b) The company's risk management strategy
- (c) The industry's standard credit terms and payment practices
- (d) The company's long-term growth prospects and capital expenditure plans

6. CASH OPERATING CYCLE

The working capital (or cash operating) cycle of a business is the length of time between the payment for purchased materials and the receipt of payment from selling the goods made with the materials.

The table below gives information extracted from the annual accounts of Entity M for the past three years.

Entity M - Extracts from annual account

	Year 1	Year 2	Year 3
Inventory:	Rs.	Rs.	Rs.
Raw materials	108,000	145,800	180,000
Work in progress	75,600	97,200	93,360
Finished goods	86,400	129,600	142,875
Purchases	518,400	702,000	720,000
Cost of goods sold	756,000	972,000	1,098,360
Sales	864,000	1,080,000	1,188,000
Trade receivables	172,800	259,200	297,000
Trade payables	86,400	105,300	126,000

Required

- calculate the length of the working capital cycle (assuming 365 days in the year) for each year; and **(10)**
- list the actions that the management of Entity M might take to reduce the length of the cycle. **(10)**

7. DÉCOR LIMITED - SPRING 2022 (Q 8)

Decor Limited (DL) is engaged in selling home decoration items. DL has provided you the following information based on its latest management accounts:

	Rs. in '000
Average inventory	6,000
Average trade debtors	7,500
Average trade creditors	3,800
Sales	50,000
Cost of sales	35,000

The management of DL is concerned over increasing working capital requirement that is centrally managed through bank overdraft facility. As per arrangement with the bank, DL has overdraft limit of Rs. 10 million.

For the next year, it is projected that sales and cost of sales would increase by 25% and 15% respectively. This would result in:

- average inventory to increase by 30%
- average trade debtors to increase by 20%
- average trade creditors to increase by 10%

The CFO is of the view that DL would not be able to manage its working capital requirement within the bank overdraft limit for next year. He has suggested that DL should take certain actions to follow industry average ratios which are given below:

Industry average ratios	*Number of days
Inventory holding period	50
Trade debtors' collection period	45
Trade creditors payment period	30

**Based on 365 days a year*

Required:

- Determine the cash operating cycle for the next year.
- Validate CFO's view regarding management of working capital requirement if:
 - DL does not follow industry average ratios
 - DL follows industry average ratios
- List down any two actions that management of DL may take to reduce the length of its cash operating cycle. Also, mention any two risks associated with those actions of management.

8. WORKING CAPITAL REQUIREMENT

Go Travel Limited manufactures a popular brand of travel cases in Pakistan. CEO of the company wants to encash the growing demand and popularity of the brand by expanding the manufacturing facilities of the company. Prior to expansion, the current level of production is estimated at 300,000 travel cases on an annual basis, whereas post expansion expected level of production is estimated at 420,000 travel cases.

The senior accountant has reported selling price and **cost per unit** for the current level of production as follows:

	Rupees
Selling price	12,180
Raw materials – ballistic nylon (inclusive of 10% import duty)	3,300
Packing material	350
Direct labour cost	1,500
Fixed manufacturing overheads	1,850
Variable manufacturing overheads	600
Total administrative overheads	420
Fixed selling and distribution expenses	280
Variable selling and distribution expenses	500

Following information is available in respect of the above:

- (i) Approximately 70% of sales are made on cash. Remaining sales are made to corporate clients on a credit period of 90 days. The management believes that after expansion, sales to corporate customers would be 20% of total sales.
- (ii) Selling price is inclusive of sales tax @ 16%. Payment of sales tax is made with an average time-lag of 30 days.
- (iii) Raw materials – ballistic nylon is imported from a foreign supplier who allows 30 days credit. Import duty is paid on arrival of the materials at 10% of the C&F value.
- (iv) Packing materials are purchased locally on 30 days credit.
- (v) The average time-lag in payment of overheads () is 30 days whereas wages are paid in the same month.
- (vi) Production process requires 15 days. Raw material – ballistic nylon is added in the beginning of manufacturing process, packing material is added at the end of production process while conversion costs are incurred evenly throughout the production process. The estimated completion is 50% at any point of time.
- (vii) The company has a policy to maintain raw material inventory equivalent to production requirement of 60 days while for packing material and finished goods the requirement is 30 days.
- (viii) The company maintains minimum cash balance of Rs. 2.75 million at all times.
- (ix) The existing working capital requirement is approximately Rs. 489.50 million.

The following changes are expected as a result of the expansion:

- (i) Fixed manufacturing overheads would increase by Rs. 75 million.
- (ii) Additional sales promotion expenses amounting to Rs. 16.80 million would be incurred to boost the sales
- (iii) Requirement of maintaining minimum cash balance would increase to Rs. 4 million.

Required: Compute the additional working capital required if the company decides to increase the production capacity. **(16)**

Note: Assume 360 days in a year

9. WORKING CAPITAL REQUIREMENT

Punjnad Juice Company is launching a new product. The annual capacity of this product is 24,000 units and per unit cost has been estimated at this activity level as follows:

	Rupees
Material cost	80
Labour cost	30
Variable overheads	10
Fixed overheads	20
Depreciation	10
	150

The selling price would be Rs. 200 per unit. Selling expenses are estimated at Rs. 10 per unit. 80% of the selling expenses are considered variable. Projections related to the first two years are as follows:

	Year 1	Year 2
Production units	15,000	20,000
Sale units	14,000	18,000

Other related estimates are given below:

• Stock of raw material	3 months' average consumption
• Stock of finished goods	To be valued at average cost on the basis of absorption costing
• Debtors	1 months' sale
• Creditors for supply of material	2 months' average purchases
• Creditors for variable and fixed overheads	1 months' average
• Provision for doubtful debts	0.75% of receivables balance

Required: Prepare a statement showing projected working capital requirements for both the years related to the new product. (15)

10. ESTIMATION OF SALES GROWTH

Waseem Limited is engaged in manufacture and sale of consumer products. Its management is in the process of developing the sales plan for the next year.

The sales director is of the view that the main hurdle in increasing the sales is the availability of finance.

The summarized statement of financial position as of November 30, 2016 is shown below:

	Rs. in million
ASSETS	
Fixed assets	950
Current assets	730
	1,680
LIABILITIES AND EQUITY	
Ordinary share capital	250
Retained earnings	450
Long term debts	465
Current liabilities	515
	1,680

Following additional information is available:

- It has been established from the company's past record that any increase in sales require an investment of 140% of the additional sales amount, in inventories and accounts receivable. Further, the accounts payable of the company also increase by 25% of the additional sales amount.
- The current sales of the company are Rs. 1,100 million while the net profit after tax is 10% of sales.
- It is the policy of the company to distribute 20% of its profit after tax among the shareholders of the company.

Required

Assuming that you are the Chief Financial Officer of the company, advise the management on the following:

- a) How much additional finance would be required to achieve 20% increase in sales in the next year?
- b) What would be the maximum growth in sales that the company can achieve if:
 - external finances are not available?
 - the additional financing is limited to an amount which will maintain the existing debt equity ratio?

11. FARAN LIMITED - SPRING 2023 (Q8)

Faran Limited (FL) manufactures and sells a specialised machine. It is currently in the process of finalizing its sales plan for 2023. According to the sales director, the main obstacle to increasing sales is the availability of working capital finance. The finance director informed that any increase in sales would increase:

- the trade receivables by 80% of the additional sales amount;
- the inventories by 60% of the additional sales amount; and
- the trade payables by 35% of the additional sales amount.

Following is the summary of FL's financial position as at 31 December 2022:

Assets	Rs. in million	Equity and Liabilities	Rs. in million
Plant and machinery	950	Long-term debt	465
		Current liabilities:	
Current assets:		Trade payables	405
Inventory	500	Other payables	110
Trade receivables	300	Equity:	
Cash and bank balance	30	Share capital	350
		Retained earnings	450
	1,780		1,780

The sales for the year ended 31 December 2022 was Rs. 2,200 million, and the net profit after tax was 15% of the sales amount. FL distributes 25% of profit after tax as dividend to its shareholders. It is expected that profit after tax and dividend distribution for the year 2023 will be in line with 2022.

All receipts and payments except dividend can be assumed to occur evenly throughout the year. Dividend is paid on the last day of the financial year.

Required

- a) Determine the amount of additional working capital finance required to achieve a 25% increase in sales next year.
- b) Estimate the maximum growth in sales that FL can achieve under each of the following independent assumptions:
 - (i) No external financing is available.
 - (ii) Only debt financing is available to the extent that existing debt equity ratio is maintained at the end of 2023.

12. DEBTORS MANAGEMENT

Entity M is reviewing its credit policy. It is estimated that if the period of credit allowed to customers is reduced to 60 days, there will be a 25% reduction in annual sales, but bad debts would be reduced by Rs. 30,000 each year. It would also be necessary to spend an extra Rs. 20,000 each year on credit control. Entity M has cash flow difficulties and relies on overdraft finance, for which the interest rate is 9%.

Entity M - Extracts from annual accounts	Year 3
Inventory	Rs.
Raw materials	180,000
Work in progress	93,360
Finished goods	142,875
Material purchase cost	720,000
Cost of goods sold	1,098,360
Sales Revenue	1,188,000
Trade receivables	297,000
Trade payables	126,000

Required: Calculate the effect of these changes on the annual profit. Base your answer on the level of sales in Year 3, and assume that purchases and inventory would be reduced in the same proportion as the reduction in sales.

13. DEBTORS MANAGEMENT

Bahawalpur Builders Limited makes annual credit sales of Rs. 4,800,000. Credit period was 30 days but due to poor credit administration, the average collection period has been 45 days with 1% sales resulting in bad debts which is normally written off.

A factor is being considered to take up the administration of the debts and trade credits at an annual fee of 2.5% of credit sales. In this respect, the company would save administrative costs of Rs. 96,000 annually and the payment period is expected to be 30 days.

The factor would provide 80% of invoiced debts in advance at an interest rate of 12% per annum (base rate). The company can obtain overdraft facility to finance its debtors at a rate of 2.5% over base rate.

Required

- Advise the company's management on whether or not to accept the services of a factor.
- "Factoring is one of the popular ways of managing accounts receivable in corporate organizations".

When should factoring be used for debt collection?

14. DEBTORS MANAGEMENT

Entity C has monthly sales of Rs.100,000. A factor has offered to take over the administration of Entity C's trade receivables, on a non-recourse basis (or without recourse basis). It would charge a fee of 4% of the value of invoices processed. If the factor takes over this work, Entity C would save monthly administration costs of Rs.2,000 and would avoid its bad debts, which are 0.75% of sales.

Entity C has been informed by the factor that the average collection period (the time between issuing an invoice and receiving payment from the customer) will be reduced from 2 months to 1 month.

The factor will also provide finance by lending 80% of the value of unpaid invoices, charging interest at an annual rate of 8% on the cash that it lends. At the moment, Entity C finances its trade receivables with bank overdraft finance at 9% per year interest.

Required: Calculate the net effect on annual profits of Entity C if the factor took over the administration of the trade receivables and provided finance on the terms described above.

15. VEHARI IT SOLUTIONS

Vehari IT Solutions Limited is a software business owned and managed by two computer software specialists. Although, sales have remained stable at Rs. 40,000,000 per annum in recent years, the level of trade receivable has increased significantly. A recent financial report submitted to the owners indicates an average settlement period of 60 days for trade receivable compared with an industry average of 40 days. The level of bad debts has also increased in recent years and the company now writes off approximately Rs. 40,000 bad debts each year.

The recent problems experienced in controlling credit have led to a liquidity crisis for the company. At present, the company finances its trade receivables by a bank overdraft on an interest rate of 14% a year. However, the overdraft limit has been exceeded on several occasions in recent months and the bank is now demanding a significant decrease in the size of the overdraft.

To meet this demand, the owners of the company have approached a factor who has offered to make an advance payment equivalent to 85% of trade receivables based on the assumption that the level of receivables will be in line with the industry average.

The factor will charge a rate of interest of 12% a year for this advance. The factor will take over the sales records of the Company and, for this service, will charge a fee based on 2% of sales. The company believes that the services offered by the factor should eliminate bad debts and lead to administrative cost savings of Rs. 52,000 per year.

Required

- a) Calculate the effect of employing a debt factor on the profit of Vehari IT Solutions Limited. Comment on your findings.

Note: You may assume 360 days in a year.

- b) State **FIVE** potential advantages and **TWO** disadvantages of using the services of a debt factor by a business organisation.

ANSWERS

- Option (c) is correct answer i.e., 31.82 days
- Option (c) is correct answer i.e., Rs. 15 million
- Option (a) is correct answer i.e., maintain low levels of raw materials and finished goods
- Option (b) is correct answer i.e., High levels of working capital are costly but ensure operational stability, while low levels reduce costs but increase the risk of financial difficulties.
- Option (d) is correct answer i.e., The company's long-term growth prospects and capital expenditure plans

6. CASH OPERATING CYCLE

(a) Working capital cycle:			
	Year1	Year2	Year3
	days	days	days
Raw materials inventory cycle			
(Raw material inventory/Material usage) × 365 days	76	76	91
Minus Credit from suppliers			
(Trade payables /Credit purchases) × 365 days	(61)	(55)	(64)
	15	21	27
Production cycle			
(Work-in-progress/Production cost) × 365 days	37	37	31
Finished goods inventory cycle			
(Finished goods/Cost of sales) × 365 days	42	49	47
Credit to customers			
(Trade receivables/Credit sales) × 365 days	73	88	91
Total length of working capital cycle	167	195	196

Notes:

- All sales and purchases are considered to be on credit.
 - When material usage is not available then material purchase can be used for each year.
 - When production cost is not available then cost of goods sold can be used for each year.
- (b) A long working capital cycle means that a large amount of capital will be tied up in working capital.
- Actions to reduce the length of the cycle
- Reduce raw materials inventory cycle – review the inventory levels and quantities purchased.
Possible disadvantages of reducing inventory levels:
 - Risk of stock-outs and production hold-ups
 - Loss of bulk discounts.
 - Delay payment to suppliers (increase finance from creditors) Possible disadvantages of delaying payments
 - Loss of cash discounts
 - A bad business relationship with suppliers

- Possible loss of reliable suppliers of supply
- Suppliers might decide to charge higher prices.
- Speed up the production cycle (reducing production cycle) Possible disadvantages of making the production cycle shorter
 - Investment may be required in new technology and training
 - Higher rates of pay may be necessary
 - More efficient production should not be allowed to lead to a build-up of finished goods inventories.
- Reduce inventories of finished goods (Inventory level management).
 - Possible disadvantage of reducing finished goods inventories
 - Possible loss of profit due to stock-outs
- Reduce the period of credit allowed to customers (receivables(debtors) management)

Possible disadvantage of reducing credit

 - Improved credit control will cost more
 - Cash discounts may be expensive to encourage prompt payment
 - Some loss of sales, because customers might buy from competitors offering better credit terms.

7. DÉCOR LIMITED

(a) Cash operating cycle for next year

Inventory days $[7,800/40,250(\mathbf{W-1})] \times 365$	70.73
Trade debtors day $[9,000/62,500(\mathbf{W-1})] \times 365$	52.56
Trade creditors day $[4,180/40,250] \times 365$	(37.91)
Cash operating cycles	85.38

W-1: Projections for the next year	Rs. in '000
Sales $[50,000 \times 1.25]$	62,500
Cost of sales $[35,000 \times 1.15]$	40,250
Average inventory $[6,000 \times 1.3]$	7,800
Average trade debtors $[7,500 \times 1.2]$	9,000
Average trade creditors $[3,800 \times 1.1]$	4,180

(b) (i) If DL does not follow industry average ratios:

Projected average inventory + Projected average trade debtors – Projected average creditors $[7,800 + 9,000 - 4,180] (\mathbf{W-1})$	12,620

CFO has rightfully pointed out that DL would not be able to maintain its working capital requirement within the bank overdraft limit next year.

(ii) If DL follows industry average ratios:

Average inventory $[40,250(\mathbf{W-1})/365] \times 50$	5,514
Average trade debtors $[62,500(\mathbf{W-1})/365] \times 45$	7,705
Average trade creditors $[40,250(\mathbf{W-1})/365] \times 30$	(3,308)
	9,911

CFO has rightfully pointed out that DL would be able to maintain its working capital requirement within the limit of bank overdraft if it follows industry average ratios.

(c) Actions and related risks are listed down below:

Action	Risk
Reduce the inventory level of finished goods.	The probability of stock-out would increase which could adversely impact the overall profitability of DL.
Reduce the period of credit allowed to customers.	DL might not be able to sell at the existing sales price as it would have to offer early payment discount or else customers might switch to competitor offering better credit terms.
Delay the payment to suppliers.	DL is already taking higher credit period as compared to industry average. Further delaying the payment could significantly affect the existing relationship with the suppliers who might not be ready to offer their products at the existing terms.

8. WORKING CAPITAL MANAGEMENT**Go Travel****Additional working capital requirement after expansion**

	Rs.'m
Post expansion current assets:	
Material inventory – Ballistic Nylon (Rs. 1,386 million(W-1) x 60/360 days)	231.00
Material inventory – Packing material (Rs. 147 million(W-1) x 30/360 days)	12.25
WIP inventory ((W2) Rs. 2,142 million x 15/360 days)	89.25
Finished goods inventory ((W1) Rs. 3,045 million x 30/360 days)	253.75
Trade receivables (Rs. 12,180 x 0.42 million units x 20% x 90/360 days)	255.78
Minimum cash balance	4.00
Less: Post expansion current liabilities:	
Trade payables – all costs (Rs. 2,725.8 million(W-3) x 30/360 days)	(227.15)
Sales tax payable ((Rs. 12,180 x 0.42 million units) x 16/116 x 30/360 days))	(58.80)
Post expansion working capital requirement	560.08
Less: Existing working capital requirement	(489.50)
Additional working capital requirement	70.58

(W1) Production cost

	Rupees
Material cost – Ballistic Nylon (Rs. 3,300 per unit x 0.42 million units)	1,386 m
Conversion cost:	
Labour cost (Rs. 1,500 per unit x 0.42 million units)	630 m
Variable manufacturing overheads (Rs. 600 per unit x 0.42 million units)	252 m
Fixed manufacturing overheads (Rs. 1,850 per unit x 0.30 million units) + Rs. 75 m	630 m
	1,512 m
Material cost – Packing material (Rs. 350 per unit x 0.42 million units)	147 m
Production cost	3,045 m

(W2) Equivalent production cost

	Rupees
Material cost – Ballistic Nylon (Rs. 1,386 million x 100% complete)	1,386 m
Conversion cost (Rs. 1,512 million x 50% complete)	756 m
Equivalent production cost	2,142 m

(W3) All costs for trade payables

	Rupees
Material cost – Ballistic Nylon (Rs. 1,386 million ÷ 110%) x 100%	1,260 m
Conversion cost:	
Labour cost (Rs. 1,500 per unit x 0.42 million units)	630 m
Variable manufacturing overheads (Rs. 600 per unit x 0.42 million units)	252 m
Fixed manufacturing overheads (Rs. 1,850 per unit x 0.30 million units) + Rs. 75 m	630 m
	1,512 m
Material cost – Packing material (Rs. 350 per unit x 0.42 million units)	147 m
Variable selling overheads (Rs. 500 per unit x 0.42 million units)	210 m
Fixed selling and distribution expenses (Rs. 280 per unit x 0.30 million units)	84 m
Total administrative overheads (Rs. 420 per unit x 0.30 million units)	126 m
Sales promotion expenses	16.80 m
	2,725.8 m

9. WORKING CAPITAL REQUIREMENT

		No of Units		
		Year 1		Year 2
Opening stock	A			1,000
Production	B	15,000		20,000
Sales	C	14,000		18,000
Closing stock	D	1,000		3,000
		----- Rupees -----		
Current Assets:				
Stock – Raw material (B X 80 X 3/12)		300,000		400,000
Finished goods	W-1	168,000		469,714
Debtors net of provision (200 X C/12) X 0.9925		231,583		297,750
		699,583		1,167,464
Current Liabilities				
Creditors for supply of raw material	W-2	250,000		283,333
Creditors for expenses	W-3	65,833		72,667
		315,833		356,000
Working Capital required – Net		383,750		811,464

W-1 Finished goods

Materials (B X 80)		1,200,000		1,600,000
Labour & Variable overheads (B X 40)		600,000		800,000
Fixed overheads (20 X 24,000)		480,000		480,000
Depreciation (10*24,000)		240,000		240,000
Cost of goods manufactured	E	2,520,000		3,120,000
Finished goods				
{E/B X 1,000} and {(E+168,000)/(B+A)XD}		168,000		469,714

W-2 Creditors for raw material

Material consumed (B X 80)		1,200,000		1,600,000
Closing stock (1,200,000 X 3/12)		300,000		400,000
Opening Stock		-		-300,000
Purchase during the year	F	1,500,000		1,700,000
Creditors outstanding (F X 2/12)		250,000		283,333

W-3 Creditors for expenses

Variable overheads (10 X B/12)		12,500		16,667
Fixed overheads (20 X 24,000/12)		40,000		40,000
Fixed selling expenses (2 X 24,000/12)		4,000		4,000
Variable selling expenses (8 X C/12)		9,333		12,000
		65,833		72,667

10. ESTIMATION OF SALES GROWTH

(a) Additional finance required:

	Rupees in million
Expected increase in assets (1,100 x 20% x 140%)	308.00
Expected increase in liabilities (1,100 x 20% x 25%)	(55.00)
Retained earnings for the year (1,100 x 120% x 10% x 80%)	(105.60)
Additional finances required	147.40

(b) In this case, increase in assets less liabilities must be equal to the increase in retained earnings.

(i) Let x be the required growth rate

$$(1,100x \times 140\%) - (1,100x \times 25\%) = 1,100 \times (1+x) \times 10\% \times (1 - 20\%)$$

$$1,540x - 275x - 88x = 88$$

$$x = 7.48\%$$

- (ii) Existing debt equity ratio = $465 / 700 = 66.43\%$

In this case, the company must obtain an additional loan of 66.43% of the additional earnings in order to maintain the current debt equity ratio.

Now, the revised equation is as follows:

$$\begin{aligned} (1,100x \times 140\%) - (1,100x \times 25\%) &= [1,100 \times (1+x) \times 10\% (1 - 20\%)] + [1,100 \times (1+x) \times 10\% \times (1 - 20\%) \times 66.43\%] \\ 1,540x - 275x - 88x - 58.46x &= 88 + 58.46 \\ x &= 13.09\% \end{aligned}$$

11. FARAN LIMITED

a)	Additional finance required	Rs. in million
	Current sales	2,200.0
	Additional sales – 25% increase	550.0
		2,750.0
	Expected increase in:	
	– trade receivable (550×80%)	440.0
	– inventory (550×60%)	330.0
	– payables (550×35%)	(192.5)
	Retained profit for the year (2,750 × 15% × 75%)	(309.4)
	Additional finance required	268.1
b)		

- (i) Maximum growth in sales in case no external financing available

That would mean that any increase in net assets should be equal to increase in retained earnings:

Let x be the required growth rate:

$$\begin{aligned} (2200x \times 80\%) + (2200x \times 60\%) - (2200x \times 35\%) &= 2200 \times (1+x) \times 15\% \times 75\% \\ \Rightarrow 1760x + 1320x - 770x - 247.5x &= 247.5 \\ \Rightarrow 2062.5x &= 247.5 & x = 247.5 \div 2062.5 &= 12.00\% \end{aligned}$$

- (ii) Maximum growth limited up to the current debt equity ratio:

$$D/E \text{ Ratio} = 465 \div 800 = 58.13\%$$

A loan of 58.13% of the additional earning must be obtained so that this ratio is maintained:

$$\begin{aligned} (2200x \times 80\%) + (2200x \times 60\%) - (2200x \times 35\%) &= [2200 \times (1+x) \times 15\% \times 75\%] + \{2200 \times (1+x) \times 15\% \times 75\% \} \times 58.13\% \\ \Rightarrow 1760x + 1320x - 770x - 247.5x - 143.87x &= 247.5 + 143.87 \\ \Rightarrow 1918.63x &= 391.37 \\ x &= 391.37 \div 1918.63 \\ x &= 20.40\% \end{aligned}$$

12. DEBTORS MANAGEMENT**ENTITY M**

Loss of sales based on Year 3 = $25\% \times \text{Rs.}1,188,000 = \text{Rs.}297,000$

However, the cost of these sales will be avoided.

Gross profit percentage = $(1,188,000 - 1,098,360) / 1,188,000 = 0.755$. Gross profit is 7.55% of sales.

It is assumed that the loss from the reduction in sales will be: $7.55\% \times \text{Rs.}297,000 = \text{Rs.}22,424$

	Rs.
Loss of profit from fall in sales	(22,424)
Additional cost of credit control	(20,000)
	(42,424)
Reduction in bad debts	30,000
Reduction in profit, before savings in interest	(12,424)

Working capital changes

Reduction in inventories		Rs.
Raw materials	$(25\% \times 180,000)$	45,000
Work in progress	$(25\% \times 93,360)$	23,340
Finished goods	$(25\% \times 142,875)$	35,719
		104,059
Reduction in trade payables	$(25\% \times 126,000)$	(31,500)
Reduction in trade receivables		
Current trade receivables	297,000	
Receivables after the change = $(60/365) \times 75\% \times \text{Rs.}1,188,000$	146,466	
		150,534
Reduction in working capital		223,093
Cost of financing working capital		9%
Saving per year in interest from reduction		Rs.20,078

Net effect on annual profit	Rs.
Reduction in profit, before savings in interest (see above)	(12,424)
Reduction in interest cost	20,078
Net increase in annual profit	7,654

Reducing the credit period to 60 days will result in annual savings of Rs.7,654.

To achieve these savings, there would have to be a fall in sales by 25%.

Senior management might decide that the size of the savings does not justify such a large fall in annual sales, because of the longer-term consequences this might have for the business.

13. DEBTORS MANAGEMENT**BAHAWALPUR BUILDERS LIMITED**

(a) Credit sales	Rs.4,800,000 per annum
Average credit period	45 days
The annual cost is as follows:	Rs.
$\frac{45}{365} \times \text{Rs.}4,800,000 \times 14.5\%$	85,808
Bad debts: $1\% \times \text{Rs.}4,800,000$	<u>48,000</u>
	<u>133,808</u>

The cost of the factor

80% of credit sales financed by the factor would be 80% of Rs.4,800,000 = Rs.3,840,000. For a consistent comparison, we must assume that 20% of credit sales would be financed by a bank overdraft. The average credit period would be only 30 days.

The annual cost would be as follows,

		Rs.
Factor's finance	$\frac{30}{365} \times \text{Rs.3,840,000} \times 12\%$	37,874
Overdraft	$\frac{30}{365} \times \text{Rs.960,000}(\text{Note}) \times 14.5\%$	11,441
		49,315
Cost of factor's services: $2.5\% \times \text{Rs.4,800,000}$		120,000
Less savings in company's administrative costs		(96,000)
Net cost/(benefit) of the factor		73,315

Conclusion

The factor option is cheaper by Rs.60,493 (Rs.133,808 – Rs.73,315) based on the above calculations. Management is therefore advised to accept the services of the factor.

NOTE:

**Rs.3,840,000 = 80% of Rs.4,800,000

* Rs.960,000 = Rs.20% of Rs.4,800,000

(b) Factoring can be used under the following situations

- When a company has a substantial amount of its working capital tied up in debtors which it cannot collect easily.
- When a company is faced with liquidity problems due to failure of customers to meet the credit period allowed to them.
- When the credit control system is becoming increasingly expensive to maintain.
- When the company's fixed assets are limited and it cannot obtain additional finance without offering security.
- When a company wishes to raise finance without further borrowing or diluting equity.

14. DEBTORS MANAGEMENT

Entity C

Annual sales = Rs.100,000 × 12 months = Rs.1,200,000.

Average trade receivables without the factor = Rs.1,200,000 × 2 months/12 months = Rs.200,000.

Average trade receivables with the factor = Rs.1,200,000 × 1 month/12 months = Rs.100,000.

Annual costs	Rs.		Rs.
Without the factor			
Administration (12 × Rs.2,000)	24,000		
Bad debts (0.75% × Rs.1,200,000)	9,000		
Interest cost of finance (9% × Rs.200,000)	18,000		
			51,000
With the factor			
Fees (4% × Rs.1,200,000)	48,000		
Interest cost of finance			
Factor finance (8% × 80% × Rs.100,000)	6,400		
Overdraft finance (9% × 20% × Rs.100,000)	1,800		
			56,200
Net extra cost of the factor per year			5,200

15. VEHARI IT SOLUTIONS

(a)

(i) **Cost of current policy**

Credit sales Rs.40 million per annum
 Average credit period 60 days

The annual cost is as follows:	Rs.
Cost of financing receivables: $\frac{60}{360} \times \frac{40 \text{ million} \times 0.14}{1} =$	933,333
Bad debts (given)	40,000
Total cost	973,333

(ii) **Cost of using a factor**

80 percent of credit sales financed by the factor would be 85 percent of Rs.40,000,000 = Rs.34,000,000. For a consistent comparison, we must assume that 15% of credit sales would be financed by a bank overdraft.

The average period would be only 60 days (but 40 days – industry average-is to be adopted)

In view of the above, the annual cost of using a factor would be as follows:

	Rs.
Factor's finance charges: $\frac{40}{360} \times \frac{(0.85 \times 40 \text{m}) \times 0.12}{1}$	453,333
Bank overdraft (interest) $\frac{40}{360} \times \frac{(0.15 \times 40 \text{m}) \times 0.14}{1}$	93,333
	546,666
Factor's service charge: 0.02 x Rs.40m	800,000
	1,346,666
Less: Savings in company's administration cost	52,000
Cost of using a factor	1,294,666

Comment:

Factoring is more expensive in this case because of the 2 percent charge on sales that is Rs.800,000. This appears too high. However, since the service charge cannot be eliminated or reduced (in this case), the resulting difference of Rs.321,333 (Rs.1,294,666- Rs.973,333) makes factoring of the company's debt unattractive hence it is not advisable for Vehari IT Solutions Limited to engage the services of a factor.

(b) Potential advantages of using the services of a debt factor include the following:

- Savings in the cost of credit administration
- Releasing key staff engaged in debt recovery exercise for other tasks
- Greater certainty in cash inflow.
- Receiving advice on the credit worthiness of customers.
- In the case of full-service non-recourse factoring, the company will be provided with full or partial protection against bad debts.
- The fear customers have for factors may prompt the debtors to pay up.
- Receiving information on market trends, competitors and customers.

Potential disadvantages of using the services of a debt factor include the following:

- It is an indication that the business is experiencing financial difficulties which may have an adverse effect on the confidence of customers, suppliers and staff.
- It may increase the operating cost of the company.
- In the case of full-service recourse factoring, the company is not protected against the risk of bad debts.

INTRODUCTION TO PROJECT APPRAISAL

IN THIS CHAPTER

1. Introduction
2. Payback period
3. Introduction to DCF methods
4. Net present value method
5. Internal rate of return
6. DCF and inflation
7. DCF & Taxation
8. Asset Replacement Cycle
9. Capital Rationing
10. Self-test questions

1. INTRODUCTION

1.1. Introduction to capital investment projects

Capital investment projects refer to investment in assets that provide *future economic benefit for more than one year*. Examples of capital investments may include acquiring a machine or plant for manufacturing a new product, establishing a new factory or business, expanding current production capacity, replacing existing machinery or any other asset or acquiring any well establish existing business.

The primary objectives of capital investment projects are to sustain the existing profitability of a business, enhance profitability through expansion or the introduction of new products, reduce costs by investing in more efficient technologies, or achieve intangible benefits such as improving the organization's public image. For instance, investing in a charitable hospital or a school in a remote area to provide free education which can contribute to corporate social responsibility and enhance the entity's reputation.

1.2. Characteristics of capital investment projects

Capital investment projects share common characteristics.

- They typically involve purchase of assets which have an expected lifespan of several years.
- These projects often require a significant initial capital outlay at the start of the project.
- The returns of capital investment project primarily consist of net income generated from additional profits over the project's lifespan.
- The asset may have a residual value at the end of its useful life.
- Furthermore, a capital investment project may also require an investment in working capital, which involves the allocation of cash to support day to day needs of project.

1.3. Project appraisal

Project appraisal or capital investment appraisal or capital budgeting is the *process of evaluating and selecting long-term investment projects* that are consistent with the firm's goal of maximizing shareholders' wealth.

To ensure that the selected investment projects have the best chance of increasing the market value of company and wealth of its shareholders; finance managers use different tools to evaluate the financial viability of individual projects and to rank competing ones such as:

- i. Payback period
- ii. Net present value (NPV)
- iii. Internal rate of return (IRR)

2. PAYBACK PERIOD

2.1. Definition of payback period

Payback period is the *time period to recover initial outlay* of capital investment project. It is also known as recovery period of the project.

2.2. Computation of payback period

Payback period is computed according to the nature of annual cash inflows. In case of even annual cash inflows, payback period will be computed by using following formula:

$$\text{Payback period} = \frac{\text{Initial capital investment}}{\text{Annual net cash inflows (after tax)}} = \text{Ans (in years)}$$

For example, a company is planning to make a capital investment of Rs. 100,000 and expects to have annual cash inflows of Rs. 20,000 per annum for next 8 years. Company will be able to recover its entire investment of Rs. 100,000 within 5 years so payback period will be 5 years.

In case of uneven annual cash inflows, payback period will be computed by using table of cumulative cashflows. For example, a company in planning to make a capital investment of Rs. 100,000 but having mixed annual cash inflows as follows:

Years	Cash Flows (Rs.)	Cumulative Cash Flows (Rs.)
0	(100,000)	(100,000)
1	20,000	(80,000)
2	30,000	(50,000)
3	35,000	(15,000)
4	25,000	10,000
5	20,000	30,000
6	15,000	45,000

If annual cash inflows occur at the end of each year, then payback will be 4 years but if annual cash inflows occur evenly throughout the year, then payback period will be more than 3 years but less than 4 years. So, payback period will be computed as follows:

$$\text{Payback period} = 3 \text{ years} + (\text{Remaining investment} \div \text{cash inflow})$$

$$\text{Payback period} = 3 \text{ years} + (15,000 \div 25,000) = 3.6 \text{ years}$$

Note: In payback period, net annual cash flows after tax will be used. If annual accounting profit is given then annual depreciation expense is already deducted to determine profit so we have to add back depreciation expense to find out annual cash inflows:

$$\text{Annual net cash inflows} = \text{Annual profit} + \text{Annual depreciation expense}$$

2.3. Decision making rule for payback period

When evaluating multiple investment projects, the one with the shortest payback period is generally considered the most favourable. For a single project evaluation, the calculated payback period should be compared to the target payback period; if the project's payback period is equal to or shorter than the target, the project is deemed acceptable, otherwise it should be rejected.

► Example 01:

A company is considering an investment with an initial outlay of Rs 100,000. The net annual cash inflows for the next 10 years will be 9,500 per annum.

Required: Find the payback period?

Payback period = Initial investment ÷ Annual cash inflows

Payback period = Rs. 100,000 ÷ Rs. 9,500 p.a. = 10.53 years

► **Example 02:**

Consider the following three projects "A, B and C" having expected investment and benefits as under:

Project A	Project B	Project C
(Rs. 5000,000)	(Rs. 2000,000)	(Rs. 4000,000)
Cash Flows (Rs.)	Profits (Rs.)	Cash Flows (Rs.)
1000,000 p.a.	Y 1: 200,000	Y1: 800,000
Life: 8 Years	Y2: 400,000	Y2: 1200,000
	Y3: 200,000	Y3: 1000,000
	Y4: 100,000	Y4: 2000,000
	Y5: 50,000	Y5: 2200,000

Required: Calculate payback period of all projects and state which one is better assuming company uses straight line method of depreciation.

Payback period of project A

Payback period = Initial investment ÷ Annual cash inflows

Payback period = Rs. 5,000,000 ÷ Rs. 1,000,000 p.a. = 5 years

Payback period of project B

Years	Profit (Rs.'000)	Depreciation expense	Cash Flows (Rs.'000)	Cumulative Cash Flows (Rs.'000)
0			(2,000)	(2,000)
1	200	400	600	(1,400)
2	400	400	800	(600)
3	200	400	600	0
4	100	400	500	
5	50	400	450	

Payback period = 3 years

(W1) Annual depreciation expense

Annual Depreciation = $\frac{\text{Cost of asset} - \text{Scrap value}}{\text{Life}}$

= $\frac{\text{Rs. 2000,000} - 0}{5 \text{ years}}$ = Rs. 400,000 p.a.

Payback period of project C

Years	Cash Flows (Rs.'000)	Cumulative Cash Flows (Rs.'000)
0	(4,000)	(4,000)
1	800	(3,200)
2	1,200	(2,000)
3	1,000	(1,000)
4	2,000	1,000
5	2,200	

Payback period = 3 years + 0.5 years $(1,000,000 \div 2,000,000)$ = 3.5 years

3. INTRODUCTION TO DCF METHODS

The core principles of evaluating investment projects involving capital expenditures using time value of money concept is based on discounted cash flows methods (DCF). Using DCF techniques like Net present value method (NPV) and internal rate of return, an entity can decide whether investment project should be undertaken or not.

The core principle is defined in following four steps model framework:

Step 1: The estimation of expected future cash flows from projects (cash receipt & cash payments) using relevant costing principles.

Step 2: The determination of timing where estimated expected future cash flows (cash inflows & cash outflows) will be occurred.

Step 3: Apply the time value of money concept and discount future cash flows to present values using discount factor or cost of capital.

Step 4: To make decision for acceptance or rejection of proposed investment project using discount cash flows techniques (DCF). There are two techniques involving DCF concepts for evaluation of investment projects that are:

- a) Net Present Value Method (NPV)
- b) Internal rate of return (IRR)

3.1 Step 1: Estimation of expected future cash flows

The expected future cash flows related to investment project are measured using relevant costing principles.

3.1.1 Relevant costing principles:

As investment appraisal of capital expenditures based on decision making techniques so relevant costs and revenues should be used in decision of acceptance or rejection of investment projects.

3.1.2 Definition of relevant cost and benefits

Relevant costs are cash flows. Any items of cost that are not cash flows must be ignored for the purpose of decision. For example, depreciation expenses are not cash flows and must always be ignored.

Relevant costs are future cash flows. Costs that have already been incurred are not relevant to a decision that is being made now. The cost has already been incurred, whatever decision is made, and it should therefore not influence the decision. For example, a company might incur initial investigation costs of Rs. 20,000 when looking into the possibility of making a capital investment. When deciding later whether to undertake the project, the investigation costs are irrelevant, because they have already been spent and are not recoverable if the investment is not undertaken.

Relevant costs are those costs that will arise as a direct consequence of the decision, even if they are future cash flows. If the costs will be incurred whatever decision is taken, they are not relevant to the decision.

Relevant costs can also be measured as an opportunity cost. An opportunity cost is a benefit that will be lost by taking one course of action instead of the next-most profitable course of action.

► Example 03:

A company is considering an investment in a major new information system. The investment will require the use of six of the company's IT specialists for the first one year of the project.

These IT specialists are each paid Rs. 100,000 each per year. IT specialists are difficult to recruit. If the six specialists are not used on this project, they will be employed on other projects that would earn a total contribution of Rs. 500,000. The relevant cost of the IT specialist in Year 1 of the project would be:

	Rs.
Basic salaries	600,000
Contribution forgone	500,000
Total relevant cost	1,100,000

► **Example 04:**

A company has been asked by a customer to carry out a special job. The work would require 20 hours of skilled labour time. There is a limited availability of skilled labour, and if the special job is carried out for the customer, skilled employees would have to be moved from doing other work that earns a contribution of Rs.60 per labour hour.

A relevant cost of doing the job for the customer is the contribution that would be lost by switching employees from other work. This contribution forgone (20 hours × Rs.60 = Rs. 1,200) would be an opportunity cost. This cost should be taken into consideration as a cost that would be incurred as a direct consequence of a decision to do the special job for the customer. In other words, the opportunity cost is a relevant cost in deciding how to respond to the customer's request.

Conclusion:

- Variable cost is normally relevant for decision making like incremental, differential, avoidable, opportunity, cost is example of relevant cost.
- Fixed cost is normally irrelevant (other than incremental fixed cost) like Sunk or past cost, unavoidable, committed cost are examples of irrelevant cost.

3.1.3 Relevant cost of materials

As explained earlier in the text, relevant costs of materials are the additional cash flows that will be incurred (or benefits that will be lost) by using the materials for the purpose that is under consideration.

If **none of the required materials are currently held as inventory**, the relevant cost of the materials is simply their purchase cost and if the required materials are currently held as inventory, the relevant costs are identified by applying the certain rules.

Note that the historical cost of materials held in inventory cannot be the relevant cost of the materials, because their historical cost is a sunk cost.

The relevant costs of materials can be described as their 'deprival value'. The deprival value of materials is the benefit or value that would be lost if the company were deprived of the materials currently held in inventory.

3.1.4 Relevant cost of labour

The relevant cost of labour for any decision is the additional cash expenditure (or saving) that will arise as a direct consequence of the decision. If the cost of labour is a variable cost, and labour is not in restricted supply, the relevant cost of the labour is its variable cost. If labour is a fixed cost and there is spare labour time available, the relevant cost of using labour is 0. The spare time would otherwise be paid for idle time, and there is no additional cash cost of using the labour to do extra work. If labour is in limited supply, the relevant cost of labour should include the opportunity cost of using the labour time for the purpose under consideration instead of using it in its next-most profitable way.

3.1.5 Relevant cost of overheads

Relevant costs of expenditures that might be classed as overhead costs should be identified by applying the normal rules of relevant costing. Relevant costs are future cash flows that will arise as a direct consequence of making a particular decision.

3.1.6 Relevant cost of existing equipment

When new capital equipment will have to be purchased for a project, the purchase cost of the equipment will be a part of the initial capital expenditure, and so a relevant cost.

However, if an investment project will also make use of equipment that the business already owns, the relevant cost of the equipment will be the higher of:

- The current disposal value of the equipment, and
- The present value of the cash flows that could be earned by having an alternative use for the equipment.

► *Example 05:*

A company bought a machine six years ago for Rs. 125,000. Its written down value is now Rs. 25,000. The machine is no longer used for normal production work, and it could be sold now for Rs. 17,500. A project is being considered that would make use of this machine for six months. After this time the machine would be sold for Rs. 10,000.

Relevant cost = Difference between sale value now and sale value if it is used. This is the relevant cost of using the machine for the project.

Relevant cost = Rs. 17,500 - Rs. 10,000 = Rs. 7,500.

3.1.7 Relevant cost of investment in working capital

It is important that you should understand the relevance of investment in working capital for cash flows. This point has been explained previously.

Strictly speaking, an investment in working capital is not a cash flow but as we include profits and not cash flows in our revenues and costs discussions, these changes indirectly measure the associated cash flows from revenues and expenditures. For example:

- When capital investment projects are evaluated, it is usual to estimate the cash profits for each year of the project.
- However, actual cash flows will differ from cash profits by the amount of the increase or decrease in working capital.
- You should be familiar with this concept from cash flow statements.
- If there is an increase in working capital, cash flows from operations will be lower than the amount of cash profits. The increase in working capital can therefore be treated as a cash outflow, to adjust the cash profits to the expected cash flow for the year.
- If there is a reduction in working capital, cash flows from operations will be higher than the amount of cash profits. The reduction in working capital can therefore be treated as a cash inflow, to adjust the cash profits to the expected cash flow for the year.
- The investment in working capital is assumed to be recovered at the end of project. Unless it is stated that it may be recovered straight line basis.

► *Example 06:*

A company is considering whether to invest in the production of a new product. The project would have a six-year life. Investment in working capital would be Rs. 30,000 at the beginning of Year 1 and a further Rs. 20,000 at the beginning of Year 2.

It is usually assumed that a cash flow, early during a year, should be treated as a cash flow as at the end of the previous year.

The relevant cash flows for the working capital investment would therefore be as follows:

Year	Rs.
1 (cash outflow)	(30,000)
2 (cash outflow)	(20,000)
6 (cash inflow)	50,000

3.2 Step 2: Timing of Cash flows

The identification of timing of future estimated cash flows is very important. It must be clear at what time the cash flows whether cash outflows or cash inflows related to project will be occurred.

As the investment decision is based on discounting future cash flows to their present values using the time value of money concept, the discount factor for discounting future cash flows will be used so determination of exact timing of future cash flows is very critical for choosing and applying exact discount factors.

The following assumptions are made about the timing of cash flows during each year:

- All cash flows for the investment are assumed to occur at a discrete point in time (usually the end of the year).
- If a cash flow will occur early during a particular year, it is assumed for the sake of simplicity that it will occur at the end of the previous year. Therefore, cash expenditure early in Year 1, for example, is assumed to occur at time 0.

Time 0 cash flows

Often cash flows are described as occurring in a particular year (e.g. year 1, year 2 etc.). The project commences at time 0. Sometimes time 0 is described as year 0 but this is misleading. There is no year 0, it can be assumed to be the present time. The first year (year 1) starts at time 0 and ends one year after this.

Cash flows at the beginning of the investment (at time 0) are already stated at their present value.

► Example 07:

A company is considering a new large project. It owns a piece of land that it bought for Rs. 6,000 over forty years ago. This land is currently not being used but could be sold now for Rs. 1.2 million. If it is used it could be sold in three years' time for Rs. 1.3 million.

The company will spend Rs. 500,000 building a work processing plant for the project. The company finances the plant with a three-year bank loan at 5%. The resale value of the plant is Rs. 50,000 at the end of year 3.

The raw material requirements for the project output of 100 tons of Product X together with information about amounts already held are as follows:

Raw material	A	B
Current amounts in inventory (tons)	100	100
Cost (per ton)	Rs.95	Rs.80
Scrap value (per ton)	Rs.30	Toxic
Replacement cost (per ton)	Rs.100	Rs.90
Used elsewhere?	Yes	No
Contribution per ton used on other products**		
(**contribution = after deduction of current replacement cost)	Rs.40	Rs.400
Annual requirement (tons)	200	100

Notes

Raw material B is toxic. No further supplies are available until the end of the first year. Material B is also being used in another product, for which 50 tons are required annually. This other product is being discontinued from the end of year 1.

There are no other uses for Material B. To dispose of material B would cost the company Rs.125 per ton.

The standard cost card prepared by the management accountant shows a cost for Product X of Rs.450 per ton produced. This includes a direct labour cost of Rs.100 per unit of Product X.

There is spare capacity in the labour force – no extra personnel or overtime will be needed to produce the new product.

Receipts from sales will be:

Year 1	Rs. 500,000
Year 2	Rs. 500,000
Year 3	Rs. 300,000

The project will last three years. Assume that all cash flows occur at the end of the relevant year.

The expected future cash outflows and inflows for calculation of Net Cash Flows are:

1. Land

By undertaking the project, the company will forgo the immediate sale of the land, for which it could obtain Rs. 1,200,000. This revenue forgone is an opportunity cost. However, if the project is undertaken, the land can be sold at the end of Year 3 for Rs. 1,300,000

2. Plant

The relevant cash flows are its current cost (the Rs. 500,000 is assumed to be a cash cost) and its eventual disposal value. The 5% financing of the plant is irrelevant and must be ignored: interest costs are implied in the cost of capital, which is 10%, not 5%.

3. Labour costs

Labour costs are irrelevant because they are not incremental cash flows. The wages or salaries will be paid whether or not the project goes ahead.

4. Material A costs

Material A is in regular use; therefore, its relevant cost is its replacement cost. Annual cost = 200 tons × Rs.100 = Rs. 20,000.

5. Material B costs

100 tons are currently in inventory and no additional units can be obtained until Year 2. The choices are to use all 100 tons to make Product X, or to use 50 tons to make the other product and dispose of the remaining 50 tons.

The other product earns a contribution of Rs.400 per ton of Material B used, and the contribution is after deducting the replacement cost of the material. The opportunity cost of using the 50 tons to make Product X instead of this other product in Year 1 is therefore Rs.490 per ton. The total opportunity cost of lost cash flow is therefore 50 tons at Rs.490 each = Rs. 24,500, but in Year 1 only.

However, by making Product X, the company will also avoid the need to dispose of 50 tons of Material B at a cost of Rs.25 per ton. It is assumed that these costs would be incurred early in Year 1 (T0). Making and selling Product X will therefore save the company disposal costs of 50 tons × Rs.25 = Rs. 6,250 at t0.

Based on above analysis the calculation of Net cash flow is as under:

Year	0	1	2	3
	Rs.	Rs.	Rs.	Rs.
Land	(1,200,000)			1,300,000
Plant	(500,000)			50,000
Sales		500,000	500,000	300,000
Material A		(20,000)	(20,000)	(20,000)
Material B: disposal costs saved	6,250			
Material B: cash profits forgone		(24,500)		
Material B: purchase costs			(9,000)	(9,000)
Net cash flow	(1,693,750)	455,500	471,000	1,621,000

3.3 Step 3: Discounting Cash flows using time value of money concept

One of the basic principles of finance is that a sum of money today is worth more than the same sum in the future. If offered a choice between receiving Rs 10,000 today or in 1 years' time a person would choose today.

A sum today can be invested to earn a return. This alone makes it worth more than the same sum in the future. This is referred to as the time value of money.

The impact of time value can be estimated using one of two methods:

Compounding which estimates future cash flows that will arise as a result of investing an amount today at a given rate of interest for a given period. An amount invested today is multiplied by a compound factor to give the amount of cash expected at a specified time in the future assuming a given interest rate.

Discounting which estimates the present-day equivalent (present value which is usually abbreviated to PV) of a future cash flow at a specified time in the future at a given rate of interest. An amount expected at a specified time in the future is multiplied by a discount factor to give the present value of that amount at a given rate of interest. The discount factor is the inverse of a compound factor for the same period and interest rate. Therefore, multiplying by a discount factor is the same as dividing by a compounding factor. Discounting is the reverse of compounding.

Money has a time value, because an investor expects a return that allows for the length of time that the money is invested. Larger cash returns should be required for investing for a longer term.

These methods are further explained as under:

3.3.1. The time value of money compounding & Annuities

Compound interest

Compound interest is where the annual interest is based on the amount borrowed plus interest accrued to date. The interest accrued to date increases the amount in the account and interest is then charged on that new amount.

Compounding is used to calculate the future value of an investment, where the investment earns a compound rate of interest. If an investment is made 'now' and is expected to earn interest at $r\%$ in each time period, for example each year, the future value of the investment can be calculated as follows.

► *Formula:*

$$S_n = S_0 \times (1 + r)^n$$

Where:

S_n = final cash flow at the end of the investment period.

S_0 = initial investment

r = period interest rate

n = number of periods

Note that the $(1 + r)^n$ term is known as a compounding factor

► *Example 08:*

A person borrows Rs 10,000 at 10% to be repaid after 3 years.

The calculation for final cash flow would require:

$$S_n = S_0 \times (1 + r)^n$$

$$S_n = 10,000 \times (1.1)^3 = 13,310$$

► *Example 09:*

A company is investing Rs. 200,000 to earn an annual return of 6% over three years. If there are no cash returns before the end of Year 3, the return from the investment after three years is:

$$\text{Future value} = \text{Amount today} \times (1 + r)^n$$

$$\text{Future value} = 200,000 \times (1.06)^3 = 238,203$$

Annuities

An annuity is a series of regular periodic payments of equal amount.

► *Examples of annuities are:*

- Rs. 30,000 each year for years 1 – 5
- Rs.500 each month for months 1 – 24.

There are two types of annuity:

- Ordinary annuity – payments (receipts) are in arrears i.e. at the end of each payment period
- Annuity due – payments (receipts) are in advance i.e. at the beginning of each payment period.

► *Illustration:*

Assume that it is now 1 January 2013

A loan is serviced with 5 equal annual payments.

Ordinary annuity The payments to service the loan would start on 31 December 2013 with the last payment on 31 December 2017.

Annuity due The payments to service the loan would start on 1 January 2013 with the last payment on January 2017.

All payments (receipts) under the annuity due are one year earlier than under the ordinary annuity.

Calculating the final value of an annuity

The following formula can be used to calculate the future value of an annuity.

► *Formula:*

Future value of an annuity

$$\text{Ordinary annuity } S_n = \frac{X(1+r)^n - 1}{r}$$

$$\text{Annuity due } S_n = \frac{X(1+r)^n - 1}{r} \times (1 + r)$$

Where:

S_n = final cash flow at the end of the loan (the amount paid by a borrower or received by an investor or lender).

X = Annual investment

r = period interest rate

n = number of periods

► *Example 10:*

A savings scheme involves investing Rs. 100,000 per annum for 4 years (on the last day of the year).

If the interest rate is 10% the sum to be received at the end of the 4 years is:

$$S_n = \frac{X(1+i)^n - 1}{i} \quad S_n = \frac{100,000(1.1)^4 - 1}{0.1}$$

$$S_n = \frac{100,000(1.4641 - 1)}{0.1}$$

$$S_n = \frac{46,410}{0.1} = \text{Rs. } 464,100$$

► *Example 11:*

A savings scheme involves investing Rs. 100,000 per annum for 4 years (on the first day of the year).

If the interest rate is 10% the sum to be received at the end of the 4 years is:

$$S_n = \frac{X(1+r)^n - 1}{r} \times (1 + r) \quad S_n = \frac{100,000(1.1)^4 - 1}{0.1} \times 1.1$$

$$S_n = \frac{100,000(1.4641 - 1)}{0.1} \times 1.1$$

$$S_n = \frac{46,410}{0.1} \times 1.1 = \text{Rs. } 510,510$$

Sinking funds

A business may wish to set aside a fixed sum of money at regular intervals to achieve a specific sum at some future point in time. This is known as a sinking fund.

An examination question might ask you to calculate the fixed annual amount necessary to build to a required amount at a given interest rate and over a given period of years.

The calculations use the same approach as above but this time solving for X as S_n is known.

► *Example 12:*

A company will have to pay Rs. 5,000,000 to replace a machine in 5 years.

The company wishes to save up to fund the new machine by making a series of equal payments into an account which pays interest of 8%.

The payments are to be made at the end of the year and then at each year end thereafter.

What fixed annual amount must be set aside so that the company saves Rs. 5,000,000?

$$S_n = \frac{X(1+i)^n - 1}{i} \quad 5,000,000 = \frac{X(1.08)^5 - 1}{0.08}$$

$$5,000,000 = \frac{X(1.469 - 1)}{0.08}$$

$$5,000,000 = \frac{X(0.469)}{0.08}$$

$$X = \frac{5,000,000 \times 0.08}{0.469} = \text{Rs. } 852,878$$

3.3.2 The time value of Money-Discounting & Annuities

Discounting

Discounting is the reverse of compounding. Future cash flows from an investment can be converted to an equivalent present value amount.

Present value of future return is the future cash flow multiplied by the discount factor.

► **Formula:**

$$\text{Discount factor} = \frac{1}{(1+r)^n}$$

Where:

r = the period interest rate (cost of capital)

n = number of periods

► **Example 13:**

A person expects to receive Rs 13,310 in 3 years.

If the person faces an interest rate of 10% what is the present value of this amount?

$$\text{Present value} = \text{Future cash flow} \times \frac{1}{(1+r)^n}$$

$$\text{Present value} = 13,310 \times \frac{1}{(1.1)^3}$$

$$\text{Present value} = 10,000$$

Discount tables

Discount factors can be calculated as shown earlier but can also be obtained from discount tables. These are tables of discount rates which list discount factors by interest rates and duration.

► **Illustration:**

Discount rates (r)						
(n)	5%	6%	7%	8%	9%	10%
1	0.952	0.943	0.935	0.926	0.917	0.909
2	0.907	0.890	0.873	0.857	0.842	0.826
3	0.864	0.840	0.816	0.794	0.772	0.751
4	0.823	0.792	0.763	0.735	0.708	0.683

(Full tables are given as an appendix to this text).

Where:

n = number of periods

► **Example 14:**

The present value of Rs 60,000 received in 4 years assuming a cost of capital of 7%.

$$\text{From formula} \quad PV = 60,000 \times \frac{1}{(1.07)^4} = 45,773$$

$$\text{From table (above)} \quad PV = 60,000 \times 0.763 = 45,780$$

The difference is due to rounding. The discount factor in the above table has been rounded to 3 decimal places whereas the discount factor from the formula has not been rounded.

Interpreting present value

It is important to realize that the present value of a cash flow is the equivalent of its future value after taking time value into account. Using the above example to illustrate this, Rs 10,000 today is exactly the same as Rs 13,310 in 3 years at an interest rate of 10%. The person in the example would be indifferent between the two amounts. He would look on them as being identical.

Also, the present value of a future cash flow is a present-day cash equivalent. The person in the example would be indifferent between an offer of Rs 10,000 cash today and Rs 13,310 in 3 years.

The present value of a future cash flow is the amount that an investor would need to invest today to receive that amount in the future. This is simply another way of saying that discounting is the reverse of compounding.

► Example 15:

If an investor needs to invest now in order to have Rs. 1,000 after 12 months, and the compound interest on the investment is 0.5% each month then present value is:

$$\text{Present value} = \text{Rs.}1,000 \times [1 / (1.005)^{12}] = \text{Rs.}1,000 \times 0.942 = \text{Rs.}942.$$

Using present values

Discounting cash flows to their present value is a very important technique. It can be used to compare future cash flows expected at different points in time by discounting them back to their present values thereby aiding in their comparison.

► Example 16:

A borrower is due to repay a loan of Rs 120,000 in 3 years.

He has offered to pay an extra Rs 20,000 as long as he can repay after 5 years.

The lender faces interest rates of 7%. Is the offer acceptable?

$$\text{Existing contract} \quad PV = 120,000 \times \frac{1}{(1.07)^3} = \text{Rs } 97,955$$

$$\text{Client's offer} \quad \text{Present value} = 140,000 \times \frac{1}{(1.07)^5} = \text{Rs } 99,818$$

The client's offer is acceptable as the present value of the new amount is greater than the present value of the receipt under the existing contract.

► Example 17:

An investor wants to make a return on his investments of at least 7% per year.

He has been offered the chance to invest in a bond that will cost Rs 200,000 and will pay Rs 270,000 at the end of four years.

In order to earn Rs 270,000 after four years at an interest rate of 7% the amount of his investment now would need to be:

$$PV = 270,000 \times \frac{1}{(1.07)^4} = \text{Rs } 206,010$$

The investor would be willing to invest Rs 206,010 to earn Rs 270,000 after 4 years.

However, he only needs to invest Rs 200,000.

This indicates that the bond provides a return in excess of 7% per year.

► Example 18:

How much would an investor need to invest now in order to have Rs 100,000 after 12 months, if the compound interest on the investment is 0.5% each month?

The investment 'now' must be the present value of Rs 100,000 in 12 months, discounted at 0.5% per month.

$$PV = 100,000 \times \frac{1}{(1.005)^{12}} = \text{Rs } 94,190$$

Annuities

An annuity is a constant cash flow for a given number of time periods. A capital project might include estimated annual cash flows that are an annuity.

Examples of annuities are:

- Rs. 30,000 each year for years 1 – 5
- Rs. 20,000 each year for years 3 – 10
- Rs.500 each month for months 1 – 24.

The present value of an annuity can be computed by multiplying each individual amount by the individual discount factor and then adding each product. This is fine for annuities of just a few periods but would be too time consuming for long periods. An alternative approach is to use the annuity factor.

An annuity factor for a number of periods is the sum of the individual discount factors for those periods.

► Example 19:

The present value of Rs. 50,000 per year for years 1 – 3 at a discount rate of 9%.

Year	Cash flow	Discount factor at 9%		Present value
1	50,000	$\frac{1}{(1.09)}$	= 0.917	45,850
2	50,000	$\frac{1}{(1.09)^2}$	= 0.842	42,100
3	50,000	$\frac{1}{(1.09)^3}$	= 0.772	38,600
NPV				126,550
or:				
1 to 3	50,000		2.531	126,550

Annuity discount factors can be used in DCF investment analysis, mainly to make the calculations easier and quicker.

An annuity factor can be constructed by calculating the individual period factors and adding them up but this would not save any time.

In practice a formula or annuity factor tables are used.

► Formula:

Annuity factor (discount factor of an annuity)

There are two version of the annuity factor formula:

$$\text{Annuity factor} = \frac{1}{r} \left(1 - \frac{1}{(1+r)^n} \right) = \left(\frac{1 - (1+r)^{-n}}{r} \right)$$

Method 1 Method 2

Where:

r = discount rate, as a proportion

n = number of time periods

► *Example 20:*

Year	Cash flow	Discount factor	Present value
1 to 3	50,000	2.531 (W)	126,550

Working: Calculation of annuity factor

Method 1:	Method 2:
$= \frac{1}{r} \left(1 - \frac{1}{(1+r)^n} \right)$ $= \frac{1}{0.09} \left(1 - \frac{1}{(1.09)^3} \right)$ $= \frac{1}{0.09} \left(1 - \frac{1}{1.295} \right)$ $= \frac{1}{0.09} (1 - 0.7722)$ $= \frac{1}{0.09} (0.2278) = 2.531$	$= \left(\frac{1 - (1+r)^{-n}}{r} \right)$ $= \left(\frac{1 - (1.09)^{-3}}{0.09} \right)$ $= \left(\frac{1 - 0.7722}{0.09} \right)$ $= \frac{0.2278}{0.09}$ $= 2.531$

► *Illustration:*

	Discount rates (r)					
(n)	5%	6%	7%	8%	9%	10%
1	0.952	0.943	0.935	0.926	0.917	0.909
2	1.859	1.833	1.808	1.783	1.759	1.736
3	2.723	2.673	2.624	2.577	2.531	2.487
4	3.546	3.465	3.387	3.312	3.240	3.170
5	4.329	4.212	4.100	3.993	3.890	3.791

(Full tables are given as an appendix to this text).

Where:

n = number of periods

► *Example 21:*

The present value of the cash flows for a project, if the cash flows are Rs. 60,000 each year for years 1 – 5, and the cost of capital is 9%.

Rs. 60,000 × 3.890 (annuity factor at 9%, n = 5) = Rs. 233,400.

Note that if an annuity starts at time zero (rather than t1) the annuity factor is adjusted by adding 1 to it.

► *Example 22:*

Year	Cash flow	Annuity factor (9%)	Present value
1 to 3	50,000	2.531 (as before)	126,550
0 to 3	50,000	3.531	176,550

Gap annuities and annuities that start after t1

There may be a gap in the pattern of annuities. The approach in this case is to construct an annuity factor by removing the discount factors that relate to the gap (remembering that the objective is to arrive at a sum of the discount factors that relate to each period in which there is a cash flow).

► **Example 23:**

The present value of a cash flow of Rs 60,000 each year for years 1 – 3 and 5 – 7, if the cost of capital is 10%.

	Discount factor (10%)
Annuity factor for t1–7	
$\text{Annuity factor} = \frac{1}{0.1} \left(1 - \frac{1}{(1.1)^7} \right)$	4.868
Less: discount factor that relates to the gap (t4)	
$\text{Discount factor} = \frac{1}{(1.1)^4}$	0.683
Discount factor for 1–3 and 5–7	4.185

Therefore, the PV of 60,000 per annum every year from t1 to t7 except t4:

$$\text{PV} = 60,000 \times 4.185 = 251,100$$

An annuity might be expected to start at some point in the future other than at t1.

There are two approaches to dealing with this.

Method 1: Remove the discount factors that relate to the gap (as above).

Method 2: Apply the annuity factor for the actual number of payments. This will produce a cash equivalent value at a point in time one period before the first cash flow. This is then discounted back to the present value.

► **Example 24:**

The annuity factor for a series of cash flows from t4 to t15 at a cost of capital of 12%

Method 1	Discount factor (12%)
Annuity factor for t1–15	
$\text{Annuity factor} = \frac{1}{0.12} \left(1 - \frac{1}{(1.12)^{15}} \right)$	6.811
Less: discount factor that relates to the gap (t1 to 3)	
$\text{Annuity factor} = \frac{1}{0.12} \left(1 - \frac{1}{(1.12)^3} \right)$	2.402
Discount factor for t4 to t15.	4.409
Method 2	Discount factor (12%)
Annuity factor for t1–12 (as there are 12 cash flows)	
$\text{Annuity factor} = \frac{1}{0.12} \left(1 - \frac{1}{(1.12)^{12}} \right)$	6.194
When this is applied to an annuity which starts at t4 it produces a cash equivalent at t3. Therefore, it must be discounted back to t0	
$\text{Discount factor} = \frac{1}{(1.12)^3}$	0.712
Discount factor for t4 to t15	4.410
The small difference is due to rounding	

Present value of a perpetuity

Perpetuity is a constant annual cash flow 'forever', or into the long-term future. Some countries notably United Kingdom in the times of war have issued bonds without a maturity date.

In investment appraisal, an annuity might be assumed when a constant annual cash flow is expected for a long time into the future.

► *Formula:*

$$\text{Perpetuity factor} = \frac{1}{r}$$

Where:

r = the cost of capital

► *Example 25:*

Cash flow Present value

2,000 in perpetuity, starting in Year 1

$$\begin{aligned} \text{Cost of capital} = 8\% &= \frac{1}{r} \times \text{Annual cash flow} \\ &= \frac{1}{0.08} \times 2,000 = 25,000 \end{aligned}$$

Perpetuity factors that start after t_1 or have a gap in the sequence of cash flows are constructed in the same way as those for annuities.

Method 1

Remove the discount factors that relate to the gap.

Method 2

Apply the perpetuity factor to the actual number of payments. This will produce a cash equivalent value at a point in time one period before the first cash flow. This is then discounted back to the present value by using the individual period discount factor.

► *Example 26:*

The present value of Rs. 5,500 in perpetuity, starting in Year 4 at a cost of capital of 11% is:

Method 1	Discount factor (12%)
Annuity factor for $t_1 - \infty$	
Perpetuity factor $= \frac{1}{0.11}$	9.091
Less: discount factor that relates to the gap (t_1 to 3)	
Annuity factor $= \frac{1}{0.11} \left(1 - \frac{1}{(1.11)^3} \right)$	2.444
Discount factor for t_4 to ∞ .	6.647

Method 2	Discount factor (10%)
Annuity factor for $t1 - \infty$	
Perpetuity factor = $\frac{1}{0.11}$	9.091
When this is applied to an annuity which starts at $t4$ it produces a cash equivalent at $t3$. Therefore, it must be discounted back to $t0$	
Discount factor = $\frac{1}{(1.11)^3}$	0.731
Discount factor for $t4$ to $t15$	6.646
The small difference is due to rounding	
Present value	$= 6.646 \times 5,500 = 36,553$

Application of annuity

Equivalent annual costs

An annuity is multiplied by an annuity factor to give the present value of the annuity.

This can work in reverse. If the present value is known, it can be divided by the annuity factor to give the annual cash flow for a given period that would give rise to it.

► Example 27:

For example, the present value of 10,000 per annum from $t1$ to $t5$ at 10% is:

Time	Cash flow	Discount factor	Present value
1 to 5	10,000	3.791	37,910

The annual cash flow from $t1$ to $t5$ at 10% would give a present value of 37,910 is:

37,910

Divide by the 5-year, 10% annuity factor

3.791

10,000

This can be used to address the following problem.

► Example 28:

A company is considering an investment of Rs. 70,000 in a project. The project life would be five years.

What must be the minimum annual cash returns from the project to earn a return of at least 9% per annum?

Investment = Rs. 70,000

Annuity factor at 9%, years 1 – 5 = 3.890

Minimum annuity required = Rs. 17,995 (= Rs. 70,000/3.890)

Loan repayments

► Example 29:

A company borrows Rs 10,000,000.

This to be repaid by 5 equal annual payments at an interest rate of 8%.

The calculation of the payments is as under:

The approach is to simply divide the amount borrowed by the annuity factor that relates to the payment term and interest rate

	Rs
Amount borrowed	10,000,000
Divide by the 5-year, 8% annuity factor	3.993
Annual repayment	2,504,383

Sinking funds (alternative approach to that seen earlier)

A person may save a constant annual amount to produce a required amount at a specific point in time in the future. This is known as a sinking fund.

► *Example 30:*

A man wishes to invest equal annual amounts so that he accumulates 5,000,000 by the end of 10 years.

The annual interest rate available for investment is 6%.

The equal annual amounts that should he set aside are

Step 1: Calculate the present value of the amount required in 10 years.

$$PV = 5,000,000 \times \frac{1}{(1.06)^{10}} = 2,791,974$$

Step 2: Calculate the equivalent annual cash flows that result in this present value

	Rs
Present value	2,791,974
Divide by the 10-year, 6% annuity factor	7.36
Annual repayment	379,344

If the man invests 379,344 for 10 years at 6% it will accumulate to 5,000,000.

Amount invested to earn a return

Annuity factors express the value of a stream of future cash into a present value. The approach can be used in reverse to show what stream of future cash flows would provide a given return (the discount rate) if an amount was invested today.

► *Example 31:*

A company is considering an investment of Rs. 70,000 in a project. The project life would be five years.

So, the minimum cash returns from the project to earn a return of at least 9% per annum is:

	Rs
Present value (Investment)	70,000
Divide by the 5-year, 9% annuity factor	3.89
Minimum annuity required	17,995

3.4 Step 4: Investment decision based on discounting cash flows methods

For making decision for acceptance or rejection of investment is based on involving capital expenditures is based on discounted cash flows techniques that are:

- Net present value (NPV) method
- Internal rate of return (IRR) method

These techniques are explained in detail in next section as under:

4. NET PRESENT VALUE(NPV) METHOD

4.1 Calculating the NPV of an investment project

In NPV analysis, all future cash flows from a project are converted into a present value, so that the value of all the annual cash outflows and cash inflows can be expressed in terms of 'today's value'.

The net present value (NPV) of a project is the net difference between the present value of all the costs incurred and the present value of all the cash flow benefits (savings or revenues).

Approach

Step 1: List all cash flows expected to arise from the project. This will include the initial investment, future cash inflows and future cash outflows.

Step 2: Discount these cash flows to their present values using the cost that the company has to pay for its capital (cost of capital) as a discount rate. All cash flows are now converted and expressed in terms of 'today's value'.

Step 3: The net present value (NPV) of a project is difference between the present value of all the costs incurred and the present value of all the cash flow benefits (savings or revenues).

- If the present value of benefits exceeds the present value of costs, the NPV is positive.
- If the present value of benefits is less than the present value of costs, the NPV is negative.

The decision rule is that, ignoring other factors such as risk and uncertainty, and non-financial considerations, a project is worthwhile financially if the NPV is positive. It is not worthwhile if the NPV is negative.

The net present value of an investment project is a measure of the value of the investment. For example, if a company invests in a project that has an NPV of Rs.2 million, the company could have the benefit of Rs.2 million in overall business.

4.2 Assumptions about the timing of cash flows

In DCF analysis, the following assumptions are made about the timing of cash flows during each year:

- All cash flows for the investment are assumed to occur at a discrete point in time (usually the end of the year).
- If a cash flow will occur early during a particular year, it is assumed for the sake of simplicity that it will occur at the end of the previous year. Therefore, cash expenditure early in Year 1, for example, is assumed to occur at time 0.

Time 0 cash flows

Often cash flows are described as occurring in a particular year (e.g. year 1, year 2 etc.). The project commences at time 0. Sometimes time 0 (t_0) is described as year 0 but this is misleading. There is no year 0, it can be assumed to be the present time. The first year (year 1) starts at time 0 and ends one year after this.

Cash flows at the beginning of the investment (at time 0) are already stated at their present value.

The discount factor for a cash flow in time 0 is $1 / (1 + r)^0$.

Any value to the power of 0 is always = 1. Therefore, the discount factor for time 0 is always = 1.000, for any cost of capital.

This means that the present value of Rs.1 in time 0 is always Rs.1, for any cost of capital.

4.3 Advantages and Disadvantages of the NPV method

The **advantages** of the NPV method of investment appraisal are that:

- NPV takes account of the timing of the cash flows by calculating the present value for each cash flow at the investor's cost of capital.

- DCF is based on cash flows and not costs and revenues. This is an advantage in the sense that recognizing costs and revenues in a period is arbitrary based on accounting principles but cash inflows and outflows are real and objective to determine in any period.
- It evaluates all cash flows from the project.
- It gives a single figure, the NPV, which can be used to assess the value of the investment project. The NPV of a project is the amount by which the project should add to the value of the company, in terms of 'today's value'.
- The NPV method provides a decision rule which is consistent with the objective of maximization of shareholders' wealth. In theory, a company ought to increase in value by the NPV of an investment project (assuming that the NPV is positive).

The main **disadvantages** of the NPV method are:

- The time value of money and present value are concepts that are not easily understood.
- There might be some uncertainty about what the appropriate cost of capital or discount rate should be for applying to any project.
- It does not take into account the risk and uncertainty of estimates and scarcity of resources.
- It fails to relate the return of the project to the size of the cash outlay.

4.4 Two methods of presentation

If you are required to present NPV calculations in the answer to an examination question, it is important that you should be able to present your calculations and workings clearly. There are two normal methods of presenting calculations, and you should try to use one of them.

The two methods of presentation are shown below, with illustrative figures.

► Illustration Format 1:

Year	Description of item	Cash flow	Discount factor at 10%	Present Value
		Rs.		Rs.
0	Machine	(40,000)	1.000	(40,000)
0	Working capital	(5,000)	1.000	(5,000)
1-3	Cash profits	20,000	2.487	49,740
3	Sale of machine	6,000	0.751	4,506
3	Recovery of working capital	5,000	0.751	3,755
			NPV	13,001

► Illustration Format 2:

Year	0	1	2	3
Description of item	Rs.	Rs.	Rs.	Rs.
Machine/sale of machine	(40,000)			6,000
Working capital	(5,000)			5,000
Cash receipts		50,000	50,000	50,000
Cash expenditures		(30,000)	(30,000)	(30,000)
Net cash flow	(45,000)	20,000	20,000	31,000
Discount factor at 10%	1.000	0.909	0.826	0.751
Present value	(45,000)	18,180	16,520	23,281
NPV	12,981			

For computations with a large number of cash flow items, the second format is probably easier. This is because the discounting for each year will only need to be done once.

Note that **changes in working capital** are included as cash flows. An increase in working capital, usually at the beginning of the project in Time 0, is a cash outflow and a reduction in working capital is a cash inflow. Any working capital investment becomes Rs.0 at the end of the project.

Investment decision is not a financing decision so financing cost like financial charges or interest cost are not include while calculating NPV

► **Example 32:**

A company with a cost of capital of 10% is considering investing in a project with the following cash flows.

Year	Rs (m)
0	(10,000)
1	6,000
2	8,000

The NPV calculation is:

Year	Cash flow	Discount factor (10%)	Present value
0	(10,000)	1	(10,000)
1	6,000	$\frac{1}{(1.1)}$	5,456
2	8,000	$\frac{1}{(1.1)^2}$	6,612
NPV			2,068

The NPV is positive so the project should be accepted.

► **Example 33:**

A company is considering whether to invest in a new item of equipment costing Rs. 53,000 to make a new product.

The product would have a four-year life, and the estimated cash profits over the four-year period are as follows:

Year	Rs.
1	17,000
2	25,000
3	16,000
4	12,000

The NPV of the project using a discount rate of 11%

NPV calculation would be as follows:

Year	Cash flow	Discount factor (11%)	Present value
0	(53,000)	1	(53,000)
1	17,000	$\frac{1}{(1.11)}$	15,315
2	25,000	$\frac{1}{(1.11)^2}$	20,291

Year	Cash flow	Discount factor (11%)	Present value
3	16,000	$\frac{1}{(1.11)^3}$	11,699
4	12,000	$\frac{1}{(1.11)^4}$	7,905
NPV			2,210

The NPV is positive so the project should be accepted.

► **Example 34:**

A company has estimated that its cost of capital is 8.8%. It is deciding whether to invest in a project that would cost Rs. 325,000.

The NPV if the net cash flows of the project after Year 0 are:

if cash flows from years 1 – 6: Rs. 75,000 per year is:

Present value of net cash flows of Rs. 75,000 in Years 1 – 6 =

$$\frac{\$75,000}{0.088} \left[1 - \frac{1}{(1.088)^6} \right]$$

$$= \text{Rs. } 852,273 (1 - 0.603)$$

$$= \text{Rs. } 338,352$$

Then the NPV is:

Year	Cash flow	Discount factor (8.8%)	PV
	Rs.		Rs.
0	(325,000)	1.000	(325,000)
1 – 6	75,000 per year		338,352
NPV			13,352

The project has a positive NPV and should be undertaken.

For example, if the company has following cash flows pattern

Year	Rs.
1	50,000
2 – 6	75,000

Then the calculation of NPV is:

The annuity PV formula can be used to calculate the 'present value' as at the end of Year 1 for annual cash flows from Year 2 onwards.

End-of-Year 1 'present value' of net cash flows of Rs. 75,000 in Years 2 – 6 =

$$\frac{\$75,000}{0.088} \left[1 - \frac{1}{(1.088)^5} \right]$$

$$= \text{Rs. } 852,273 (1 - 0.656)$$

$$= \text{Rs. } 293,182$$

Year	Cash flow	Discount factor (8.8%)	PV
	Rs.		Rs.
0	(325,000)	1.000	(325,000)
1	50,000	1/1.088	45,956
2 – 6	293,182	1/1.088	269,469
NPV			(9,575)

The project has a negative NPV and should not be undertaken.

For example, if the cash flow of the project after year 0 are Rs. 50,000 every year in perpetuity then calculation of NPV is:

Year	Cash flow	Discount factor (8.8%)	PV
	Rs.		Rs.
0	(325,000)	1.000	(325,000)
1 onwards in perpetuity	50,000	1/0.088	568,182
NPV			243,182

The project has a positive NPV and should be undertaken.

► **Example 35:**

Ali & Co. is a medium sized medical research company, engaged in the development of new medical treatments. To date company has invested Rs. 250,000 in the development of a new product called 'Gravia' which can be recovered by selling the formula to an outsider. It is estimated that it will take further two years of development and testing before 'Gravia' is approved by medical industry regulators.

The company believes that it can sell the patent for Gravia to a multinational pharmaceutical company for Rs. 1,000,000 when it has been fully developed. The directors of the Ali & co. are currently reviewing the Gravia projects as there is some concern about the size of the required finance to complete the development work.

Following information is relevant to the projects:

- To complete the development Ali & Co. will need to acquire additional type A material expected cost Rs. 150,000 per annum over the next two years.
- Type B material will also be required. Currently there is sufficient stock of type B material to last for the two years of the project. The material originally cost Rs. 50,000. Its replacement cost is Rs. 75,000. Instead of using it on this project, it could immediately be sold as scrap for Rs. 20,000. It has no further alternative use.
- If it is decided to continue with Gravia project, specialist equipment will need to be purchased immediately for Rs. 100,000. This equipment could eventually be sold at the end of the project for Rs. 25,000.
- Two chemists currently employed for an annual salary of Rs. 20,000 each will be made redundant whenever Gravia project ends. Redundancy payments are expected to be one full year's salary each.
- Laboratory technicians currently employed by Ali & Co. are working on Gravia project at a total annual cost of Rs. 85,000. The company has a variety of other projects to which the technicians could be transferred whenever the Gravia project ends.
- Annual fixed overheads are 100,000 of which Rs. 60,000 are general overheads, and remaining Rs. 40,000 are directly associated with the project.
- Interest cost on borrowed finance is Rs. 20,000 per annum.
- All cash flows occur at the end of the year unless otherwise stated.
- The discount rate used by Ali & Co. to appraise its projects is 10%.

The example relates to Ali Co., a medium sized medical research company. That is going to consider a project relating to complete development of product called Gravia that is partly completed to date.

- Firstly, the future expected cash flows (cash inflows and outflows) will be identified based on relevant costing principles excluding irrelevant cost.
- Following are irrelevant cost for projects.
 - a) Original cost and replacement of material B as it is not in regular use.
 - b) Current annual salary of two employees who have already employed being a past cost.
 - c) Annual fixed overheads other than directly attributable fixed cost.
 - d) Interest cost as its affect is automatically considered through discounting.
- Based on above analysis the calculation of net and discounted cash flows is as under:

	Year 0	Year 1	Year 2
Value of Gravia	(250,000)		1000,000
Material A		(150,000)	(150,000)
Material B	(20,000)		
Special list Equipment	(100,000)		25,000
Redundancy Payment			(40,000)
Investment Fixed cost		(40,000)	(40,000)
Net Cash flows	(370,000)	(190,000)	795,000
Discount factor	1.000	0.909	0.826
Discount factor	(370,000)	(172,710)	656,670
NPV:	113,960		

Decision:

The project has a positive NPV. The project should be undertaken because it will increase the value of the company and the wealth of its shareholders.

► Example 36:

Consolidated Oil wants to explore for oil near the coast of Ruritania. The Ruritanian government is prepared to grant an exploration license for a five-year period for a fee of Rs. 300,000 per annum. The license fee is payable at the start of each year. The option to buy the license must be taken immediately or another oil company will be granted the license.

However, if it does take the license now, Consolidated Oil will not start its explorations until the beginning of the second year.

To carry out the exploration work, the company will have to buy equipment now. This would cost Rs. 10,400,000, with 50% payable immediately and the other 50% payable one year later. The company hired a specialist firm to carry out a geological survey of the area. The survey cost Rs. 250,000 and is now due for payment.

The company's financial accountant has prepared the following projected income statements. The forecast covers years 2-5 when the oilfield would be operational.

Projected income statements

	Year			
	2	3	4	5
	Rs.'000	Rs.'000	Rs.'000	Rs.'000
Sales	7,400	8,300	9,800	5,800
Minus expenses:				
Wages and salaries	550	580	620	520
Materials and consumables	340	360	410	370
License fee	600	300	300	300
Overheads	220	220	220	220
Depreciation	2,100	2,100	2,100	2,100
Survey cost written off	250	-	-	-
Interest charges	650	650	650	650
	4,710	4,210	4,300	4,160
Profit	2,690	4,090	5,500	1,640

Notes

The license fee charge in Year 2 includes the payment that would be made at the beginning of year 1 as well as the payment at the beginning of Year 2. The license fee is paid to the Ruritania government at the beginning of each year.

The overheads include an annual charge of Rs. 120,000 which represents an apportionment of head office costs. The remainder of the overheads are directly attributable to the project.

The survey cost is for the survey that has been carried out by the firm of specialists.

The new equipment costing Rs. 10,400,000 will be sold at the end of Year 5 for Rs. 2,000,000.

A specialized item of equipment will be needed for the project for a brief period at the end of year 2. This equipment is currently used by the company in another long-term project. The manager of the other project has estimated that he will have to hire machinery at a cost of Rs. 150,000 for the period the cutting tool is on loan.

The project will require an investment of Rs. 650,000 working capital from the end of the first year to the end of the license period.

The company has a cost of capital of 10%. Ignore taxation.

The example relates to a consolidated oil company that is going to consider a project regarding the exploration of oil near the coast of Ruritania.

The project will be evaluated on Net Present Value (NPV) method.

Firstly, the future expected cash flows (cash inflows and out flows) will be identified using relevant costing principles.

Following cost will be irrelevant in the example and should be excluded while considering expected future cash flows.

- Survey cost that is past cost
- Depreciation that is non-cash flows cost
- Apportioned overheads that are not real cash flows

- Interest charges because its affect is automatically considered through discounting of cash flows
- The working capital incurred at start of project assumed to recovered at end of project

Based on above analysis the calculation of discounted cash flows and NPV is as under

Year	0	1	2	3	4	5
	Rs.000	Rs.000	Rs.000	Rs.00	Rs.000	Rs.000
Sales			7,400	8,300	9,800	5,800
Wages			(550)	(580)	(620)	(520)
Materials			(340)	(360)	(410)	(370)
Licence fee	(300)	(300)	(300)	(300)	(300)	
Overheads			(100)	(100)	(100)	(100)
Equipment	(5,200)	(5,200)				2,000
Specialised equipment			(150)			
Working capital		(650)				650
	(5,500)	(6,150)	5,960	6,960	8,370	7,460
Discount factor at 10%	1.000	0.909	0.826	0.751	0.683	0.621
Present value	(5,500)	(5,590)	4,923	5,227	5,717	4,633

NPV = + Rs. 9,409,000

Decision:

The project has a positive NPV. The project should be undertaken because it will increase the value of the company and the wealth of its shareholders.

5. INTERNAL RATE OF RETURN (IRR)

The internal rate of return method (IRR method) is another method of investment appraisal using DCF.

The internal rate of return of a project is the discounted rate of return on the investment.

- It is the average annual investment return from the project
- The NPV of the project cash flows is zero when those cash flows are discounted at the IRR.
- The internal rate of return is therefore the discount rate that will give a net present value = Rs.0.

5.1 The investment decision rule with IRR

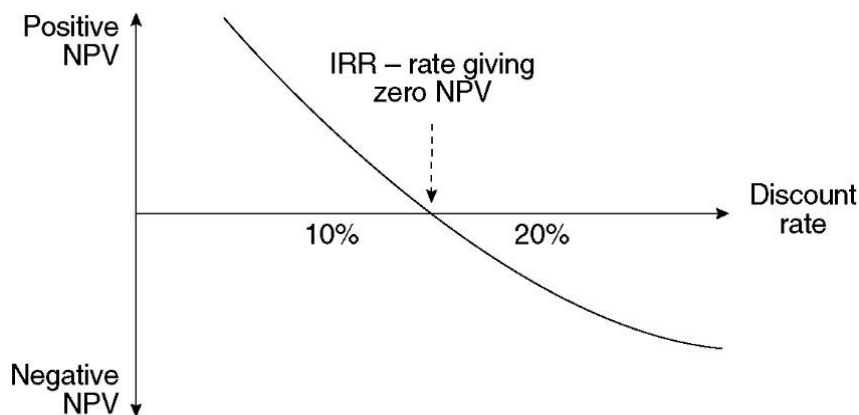
A company might establish the minimum rate of return that it wants to earn on an investment. If other factors such as non-financial considerations and risk and uncertainty are ignored:

- If a project IRR is equal to or higher than the minimum acceptable rate of return, it should be undertaken
- If the IRR is lower than the minimum required return, it should be rejected.

Since NPV and IRR are both methods of DCF analysis, the same investment decision should normally be reached using either method.

The internal rate of return is illustrated in the diagram below:

► *Illustration:*



5.2 Calculating the IRR of an investment project

The IRR of a project can be calculated by inputting the project cash flows into a financial calculator. In your examination, you might be required to calculate an IRR without a financial calculator. An approximate IRR can be calculated using interpolation.

To calculate the IRR, you should begin by calculating the NPV of the project at two different discount rates.

- One discount rate should yield a positive NPV, and the other should give negative NPV. (This is not essential. Both NPVs might be positive or both might be negative, but the estimate of the IRR will then be less reliable.)
- Ideally, the NPVs should both be close to zero, for better accuracy in the estimate of the IRR.

When the NPV for one discount rate is positive and the NPV for another discount rate is negative, the IRR must be somewhere between these two discount rates.

Although in reality the graph of NPVs at various discount rates is a curved line, as shown in the diagram above, using the interpolation method we assume that the graph is a straight line between the two NPVs that we have calculated. We can then use linear interpolation to estimate the IRR, to a reasonable level of accuracy.

► *Formula:*

IRR interpolation formula

$$\text{IRR} = L\% + \left(\frac{\text{NPV}_L}{\text{NPV}_L - \text{NPV}_H} \right) \times (H - L)\%$$

Ideally, the NPV at L% should be positive and the NPV at H% should be negative.

Where:

NPV_L = NPV at L%

NPV_H = NPV at H%

5.3 Advantages and Disadvantages of the IRR method

The main **advantages** of the IRR method of investment appraisal are:

- As a DCF appraisal method, it is based on cash flows, not accounting profits.
- Like the NPV method, it recognizes the time value of money.
- It is easier to understand an investment return as a percentage return on investment than as a money value NPV in Rs.
- For accept/reject decisions on individual projects, the IRR method will reach the same decision as the NPV method.

The **disadvantages** of the IRR method are:

- It is a relative measure (% on investment) not absolute measure in Rs... Because it is a relative measure, it ignores the absolute size of the investment. For example, which is the better investment if the cost of capital is 10%:
 - an investment with an IRR of 15% or
 - an investment with an IRR of 20%?
- If the investments are mutually exclusive, and only one of them can be undertaken the correct answer is that it depends on the size of each of the investments. This means that the IRR method of appraisal can give an incorrect decision if it is used to make a choice between mutually exclusive projects.
- Unlike the NPV method, the IRR method does not indicate by how much an investment project should add to the value of the company.

► *Example 37:*

A business requires a minimum expected rate of return of 12% on its investments.

A proposed capital investment has the following expected cash flows.

Year	Cash flow	Discount factor at 10%	Present value at 10%	Discount factor at 15%	Present value at 15%
0	(80,000)	1.000	(80,000)	1.000	(80,000)
1	20,000	0.909	18,180	0.870	17,400
2	36,000	0.826	29,736	0.756	27,216
3	30,000	0.751	22,530	0.658	19,740
4	17,000	0.683	11,611	0.572	9,724
NPV			+ 2,057		(5,920)

$$\begin{aligned}
 \text{Using } \text{IRR} &= L\% + \left(\frac{\text{NPV}_L}{\text{NPV}_L - \text{NPV}_H} \right) \times (H - L)\% \\
 \text{IRR} &= 10\% + \left(\frac{2,057}{2,057 - (-5,920)} \right) \times (15 - 10)\% \\
 \text{IRR} &= 10\% + \left(\frac{2,057}{2,057 + 5,920} \right) \times 5\% \\
 \text{IRR} &= 10\% + \left(\frac{2,057}{7,977} \right) \times 5\% \\
 \text{IRR} &= 10\% + 0.258 \times 5\% = 10\% + 1.3\% \\
 \text{IRR} &= 11.3\%
 \end{aligned}$$

Conclusion The IRR of the project (11.3%) is less than the target return (12%).

The project should be rejected.

► **Example 38:**

A company is considering whether to invest in a new item of equipment costing Rs. 45,000 to make a new product. The product would have a four-year life, and the estimated cash profits over the four-year period are as follows.

Year	Rs.
1	17,000
2	25,000
3	16,000
4	04,000

The project would also need an investment in working capital of Rs. 8,000, from the beginning of Year 1.

The company uses a discount rate of 11% to evaluate its investments.

The expected calculation of IRR is:

The cash outflow in Year 0 = cost of equipment + working capital investment = Rs. 45,000 + Rs. 8,000 = Rs. 53,000.

The cash inflow for year 4 = project's net cash profits + working capital recovered = Rs. 4,000 + Rs. 8,000 = Rs. 12,000.

Year	Cash flow Rs.	Cost of capital 11%		Cost of capital 15%	
		Discount factor	PV Rs.	Discount factor	PV Rs.
0	(53,000)	1.000	(53,000)	1.000	(53,000)
1	17,000	0.901	15,317	0.870	14,790
2	25,000	0.812	20,300	0.756	18,900
3	16,000	0.731	11,696	0.658	10,528
4	12,000	0.659	7,908	0.572	6,864
NPV			+ 2,221		(1,918)

NPV at 11% cost of capital = + Rs. 2,221

$$\text{IRR} = 11\% + \left[\frac{2,221}{(2,221 + 1,918)} \times (15 - 11)\% \right]$$

$$= 11\% + 2.1\% = 13.1\%$$

► **Example 39:**

Sona Limited (SL) is considering investment in a joint venture. The entire cash outlay of the project is Rs. 175 million which would require to be invested by SL immediately. The joint venture partner, Chandi Limited (CL) would provide all the necessary technical support.

The other details of the project are estimated as follows:

The project would extend over a period of four years.

Sales are estimated at Rs. 155 million per annum for the first two years and Rs. 65 million per annum during the last two years.

Cost of sales and operating expenses excluding depreciation would be 50% and 10% of sales respectively.

CL would be entitled to share equal to 5% of sales and the remaining profit would belong to SL.

At the end of the project, SL would be able to recover Rs. 100 million of the invested amount.

Assume that all cash flows other than the initial cash outlay arise annually in arrears.

The example relates to Sona Limited (SL) that is considering investment in joint venture. The joint venture partner is Chandi Limited (CL). The company that will provide all necessary technical details in return of 5% share in sales.

- The duration of project is 4 years and all future expected cash flows with timing occurrence are given.
- Based on above the calculation of Net cash flows and discounted cash flows on two discount rate 12% and 15% are given as under:

Project's Internal rate of return		Year 0	1	2	3	4
		----- Rs. in million -----				
Sales		-	155.00	155.00	65.00	65.00
Cost of sales (50%)		-	(77.50)	(77.50)	(32.50)	(32.50)
Operating expense (10%)		-	(15.50)	(15.50)	(6.50)	(6.50)
5% of sales for technical support by CL		-	(7.75)	(7.75)	(3.25)	(3.25)
Investment		(175.00)	-	-	-	100.00
Net cash flows		(175.00)	54.25	54.25	22.75	122.75
Discount factor (15%)		1.00	0.87	0.76	0.66	0.57
Present value		(175.00)	47.20	41.23	15.02	69.97
Net present value at 15%	NPV _A	(1.58)				
Discount factor (12%)		1.00	0.89	0.79	0.71	0.63
Present value		(175.00)	48.28	42.86	16.15	77.33
Net present value at 12%	NPV _B	9.62				
After calculation of NPV values at two discount rates that are 12% and 15%, the expected calculation of IRR using interpolation formula is:						
$L\% + \frac{NPV_L}{NPV_L - (NPV_A - NPV_H)} \times (H\% - L\%)$						
Internal rate of return (IRR) = $15\% + \frac{-1.58}{-1.58 - 9.62} \times (12\% - 15\%)$						
14.58%						

5.4 Summary: comparison of the two investment appraisal methods

The key points to note are that:

- It is often equally as good to use NPV or IRR
- However, NPV has few advantages over IRR
- The NPV method indicates the value that the investment should add (if the NPV is positive) or the value that it will destroy (if the NPV is negative).
- When there are two or more mutually exclusive projects, the NPV will always identify the project that should be selected. This is the project that will provide the highest value (NPV).
- The IRR method has the advantage of being more easily understood by non-accountants
- Another disadvantage of the IRR method is that a project might have two or more different IRRs, when some annual cash flows during the life of the project are negative. (The mathematics that demonstrate this point are not shown here.)

6. DCF AND INFLATION

6.1 Inflation and long-term projects

When a company makes a long-term investment, there will be costs and benefits for a number of years. In all probability, the future cash flows will be affected by inflation in sales prices and inflation in costs.

Inflation increases the return on investments required by investors. In a world without inflation an investor might be content with a 10% return on an investment. With inflation the investor knows that the purchasing power of future cash flows received will be less due to inflation and so wants a higher return to compensate for that.

Inflation should be incorporated in financial planning and decision making.

6.2 General and specific rates of inflation

Inflation is measured by measuring the prices of a set of goods and services (often described as a basket of goods and services having different weightings) at various points in time, and then seeing by how much they have increased or decreased. Some may rise, and some may fall, but the overall change in the price level is an indication of the inflation level.

Within that basket each good and service will inflate at its own specific rate. For example, the rate of inflation specific to fuel oil might be 10% whereas the rate specific to rice might be 1%.

General inflation is the overall change in the price of a basket of goods and services calculated as an average of the specific rates weighted in some way to reflect the relative importance of the good or service in the economy.

6.2.1 Inflation rates for different cash flows

The inflation can be:

- Specific: Different for each cash flow item (e.g. sales price may be increasing by 5% whereas variable costs are subject to an inflation rate of 4%.
- General: a single inflation rate for all cash flows

Inflation rates might be:

- Specific for each coming year (e.g. 5% for year 1, 8% for year 2, 10% for year 3 and so on.
- General: A single rate for all coming years (e.g. Materiel cost is expected to increase by 6% per annum over the life of project

6.3 Definitions: Real cash flows and money (nominal) cash flows

Real cash flows are cash flows expressed in today's price terms. (They ignore the expectation of inflation).

Money (nominal) cash flows are cash flows that include expected inflation. They are the actual amount of cash received at a point in time.

Money cash flows can be derived from real cash flows by inflating the real cash flow by the rate of inflation specific to that cash flow and vice versa.

► Example 40:

A vendor sells ice creams. He knows that a bowl of ice cream sells for Rs. 50 today. He is planning future sales and expects to sell 1,000 bowls next year and the year after.

He expects inflation to be 10%.

These future sales can be expressed in real terms or in money terms.

	Real cash flows
Year 1 cash sales (1,000 bowls × Rs. 50)	50,000
Year 2 cash sales (1,000 bowls × Rs. 50)	50,000

	Money cash flows
Year 1 cash sales (1,000 bowls × Rs. 50 × 1.1)	55,000
Year 2 cash sales (1,000 bowls × Rs. 50 × 1.1 ²)	60,500

6.4 Definitions: Real cost of capital and money (nominal) cost of capital

Real cost of capital is the return required by investors measured in terms of a constant price level. It excludes the expectation of inflation.

Money (nominal) cost of capital the return required by investors measured in terms of a changing price level. It includes the expectation of inflation

The real cost of capital and the money cost of capital are linked together by the following equation.

► **Formula:**

The Fisher equation

$$1 + m = (1 + r) \times (1 + i)$$

Where:

m = money rate

r = real rate

i = rate of inflation

The rate of inflation used above is the general rate of inflation.

► **Example 41:**

A company has a money cost of capital of 12% and inflation is 5%.

The real rate can be found as follows:

$$1 + m = (1 + r) \times (1 + i) \quad 1.12 = (1 + r) (1.05)$$

$$\text{Therefore,} \quad r = (1.12/1.05) - 1 = 0.0666 \text{ or } 6.67\%$$

Available information

There are models that can be used to estimate cost of capital in practice. These models provide a money cost of capital.

When performing DCF analysis a company will know current prices. Cash flow information is available in real terms.

Possible methods

There are two possible approaches to incorporating the expectation of inflation into NPV calculations. Either:

- real cash flows should be discounted at the real cost of capital; or
- money cash flows should be discounted at the money cost of capital.

In order to use one of these approaches and given the information that is likely to be available (real cash flows and money cost of capital) either the real cost of capital has to be derived from the money cost using the Fisher equation or the future cash flows have to be inflated to give the money flows.

The most common approach is to adjust the real cash flows to the money cash flows and discount these by the money cost of capital.

6.5 Discounting money cash flows at the money cost of capital

The cost of capital used in DCF analysis is normally a 'money' cost of capital. This is a cost of capital calculated from current market returns and yields.

When estimates are made for inflation in future cash flows, the rules are as follows:

- Estimate all cash flows at their inflated amount. Since cash flows are assumed to occur at the year-end, they should be increased by the rate of inflation for the full year.
- To estimate a future cash flow at its inflated amount, you can apply a formula.

► **Formula:**

CF at time n at inflated amount = CF at current price level $\times (1 + i)^n$

Where:

CF = cash flow

i = the annual rate of inflation

All the cash flows must be re-stated at their inflated amounts. The inflated cash flows are then discounted at the money cost of capital, to obtain present values for cash flows in each year of the project.

These are netted to find the NPV of the project.

► **Example 42:**

A company is considering an investment in an item of equipment costing Rs. 150,000. The equipment would be used to make a product. The selling price of the product at today's prices would be Rs. 10 per unit, and the variable cost per unit (all cash costs) would be Rs. 6.

The project would have a four-year life, and sales are expected to be:

Year	Units of sale
1	20,000
2	40,000
3	60,000
4	20,000

At today's prices, it is expected that the equipment will be sold at the end of Year 4 for Rs. 10,000. There will be additional fixed cash overheads of Rs. 50,000 each year as a result of the project, at today's price levels.

The company expects prices and costs to increase due to inflation at the following annual rates:

Item	Annual inflation rate
Sales	5%
Variable costs	8%
Fixed costs	8%
Equipment disposal value	6%

The company's money cost of capital is 12%.

The NPV of the project is calculated as follows:

- The example involves real cash flows that needs to be inflated at given rates so that they become money cash flows.
- The cost to capital given in the question is 12% that is money cost of capital.
- The NPV of the project by discounting money cash flows with money cost of capital is

Item	Time 0	Year 1	Year 2	Year 3	Year 4
	Rs.	Rs.	Rs.	Rs.	Rs.
Equipment purchase	(150,000)				
Equipment disposal					
(Rs. 10,000 × (1.06) ⁴)					12,625
Revenue					
At today's prices		200,000	400,000	600,000	200,000
At inflated prices (5% per year)		210,000	441,000	694,575	243,101
Costs					
Variable, today's prices		120,000	240,000	360,000	120,000
Fixed, today's prices		50,000	50,000	50,000	50,000
Total, today's prices		170,000	290,000	410,000	170,000
At inflated prices (8% per year)		183,600	338,256	516,482	231,283
Net cash profit		26,400	102,744	178,093	11,818
Net cash flows	(150,000)	26,400	102,744	178,093	24,443
Discount factor (12%)	1	0.893	0.797	0.712	0.636
	(150,000)	23,575	81,887	126,802	15,546
Net present value					+ 97,810

Discounting real cash flows at the real cost of capital

Instead of calculating the NPV of a project by discounting 'money' cash flows at the money cost of capital, NPV can be calculated using a real cost of capital applied to cash flows at today's prices.

Discounting real cash flows using a real cost of capital will give the same NPV as discounting money cash flows using the money cost of capital, where the same rate of inflation applies to all items of cash flow.

► Example 43:

A company is considering an investment in an item of equipment costing Rs. 150,000. Contribution per unit is expected to be Rs.4 and sales are expected to be:

Year	Units of sale
1	20,000
2	40,000
3	60,000
4	20,000

Fixed costs are expected to be Rs. 50,000 at today's price levels and the equipment can be disposed of in year 4 for Rs. 10,000 at today's price levels. The inflation rate is expected to be 6% and the money cost of capital is 15%.

- The example involves real cash flows that need to be discounted using real cost of capital
- The cost to capital given in the question is 15% that is money cost of capital and inflation rate is 6%. This needs to be converted in real cost of capital as:
- The real discount rate = $\frac{1.15}{1.06} - 1 = 0.085 = 8.5\%$

The NPV of the project by discounting real cash flows with real cost of capital is:

Item	Time 0	Year 1	Year 2	Year 3	Year 4
	Rs.	Rs.	Rs.	Rs.	Rs.
Equipment purchase	(150,000)				
Equipment disposal					10,000
Contribution		80,000	160,000	240,000	80,000
Fixed costs		(50,000)	(50,000)	(50,000)	(50,000)
Net cash flow at today's prices	(150,000)	30,000	110,000	190,000	40,000
Discount factor (8.5%)	1	1/1.085	1/1.085 ²	1/1.085 ³	1/1.085 ⁴
Present values	(150,000)	27,650	93,440	148,753	28,863
Net present value					148,706

- The example involves real cash flows that need to be converted into money cash flows using inflation rate.
- The cost to capital given in the question is 15% that is money cost of capital.
- This needs to be converted in real cost of capital as:

The NPV of the project by discounting money cash flows with money cost of capital is

Item	Time 0	Year 1	Year 2	Year 3	Year 4
	Rs.	Rs.	Rs.	Rs.	Rs.
Equipment purchase	(150,000)				
Equipment disposal					10,000
Contribution		80,000	160,000	240,000	80,000
Fixed, today's prices		(50,000)	(50,000)	(50,000)	(50,000)
Net cash flow at today's prices	(150,000)	30,000	110,000	190,000	40,000
Inflation adjustment	×1	×1.06	×1.06 ²	×1.06 ³	×1.06 ⁴
Money cash flows	(150,000)	31,800	123,596	226,293	50,499
Discount factor (15%)	1	0.870	0.756	0.658	0.572
Present values	(150,000)	27,666	93,439	148,901	28,885
Net present value					148,891

► **Example 44:**

Badger plc., a manufacturer of car accessories is considering a new product line. This project would commence at the start of Badger plc.'s next financial year and run for four years. Badger plc.'s next year end is 31st December 2013.

The following information relates to the project:

A feasibility study costing Rs.8 million was completed earlier this year but will not be paid for until March 2013. The study indicated that the project was technically viable.

Capital expenditure

If Badger plc. proceeds with the project it would need to buy new plant and machinery costing Rs.180 million to be paid for at the start of the project. It is estimated that the new plant and machinery would be sold for Rs.25 million at the end of the project.

If Badger plc. undertakes the project it will sell an existing machine for cash at the start of the project for Rs.2 million. This machine had been scheduled for disposal at the end of 2016 for Rs.1 million.

Market research

Industry consultants have supplied the following information:

Market size for the product is Rs. 1,100 million in 2012. The market is expected to grow by 2% per annum.

Market share projections should Badger plc. proceed with the project are as follows:

	2013	2014	2015	2016
Market share	7%	9%	15%	15%
Cost data:	2013	2014	2015	2016
	Rs. m	Rs. m	Rs. m	Rs. m
Purchases	40	50	58	62
Payables (at the year-end)	8	10	11	12
Payments to sub-contractors,	6	9	8	8
Fixed overheads (total for Badger plc)				
With new line	133	110	99	90
Without new line	120	100	90	80

Labour costs

At the start of the project, employees currently working in another department would be transferred to work on the new product line. These employees currently earn Rs. 3.6 million per annum. An employee currently earning Rs. 2 million per annum would be promoted to work on the new line at a salary of Rs. 3 million per annum. A new employee would be recruited to fill the vacated position.

As a direct result of introducing the new product line, employees in another department would have to be made redundant at the end of 2013 resulting in a redundancy payment of Rs. 6 million at the end of 2014.

Material costs

The company holds a stock of Material X which cost Rs.6.4 million last year. There is no other use for this material. If it is not used the company would have to dispose of it at a cost to the company of Rs.2 million in 2013. This would occur early in 2013.

Material Z is also in stock and will be used on the new line. It cost the company Rs.3.5 million some years ago. The company has no other use for it, but could sell it on the open market for Rs.3 million early in 2013.

Further information

The year-end payables are paid in the following year.

The company's cost of capital is a constant 10% per annum.

It can be assumed that operating cash flows occur at the year end.

Time 0 is 1st January 2013 (t1 is 31st December 2013 etc.)

The example relates to Badger Plc. A company that is considering investment in new product line. The project life is 4 years and it will be evaluated on NPV model incorporating inflation:

- Firstly, the future expected cash flows (cash inflows and out flows) are identified based on relevant costing principles excluding irrelevant cost.

Following costs are irrelevant:

- Current earning of employees is being past cost.
- The original cost of material X being past cost.
- The original cost of material Z being past cost.

Based on above analysis the calculation of Net, discounted cash flows and NPV (work to the nearest millions) is as under:

	01/01/13	31/12/13	31/12/14	31/12/15	31/12/16
	Rs. m	Rs. m	Rs. m	Rs. m	Rs. m
	0	1	2	3	4
Machine	(180)				25
Existing machine	2				(1)
Operating flows					
Sales W1		79	103	175	179
Purchases W2		(32)	(48)	(57)	(73)
Payments to subcontractors		(6)	(9)	(8)	(8)
Fixed overhead		(13)	(10)	(9)	(10)
Labour costs:					
Promotion		(3)	(3)	(3)	(3)
Redundancy			(6)		
Material					
X	2				
Y	(3)				
Net operating flows	(1)	25	27	98	109
	(179)	25	27	98	109
Discount factor (10%)	1.000	0.909	0.826	0.751	0.683
	(179)	23	22	74	74
NPV					14

Working:

1. Sales

	2012	2013	2014	2015	2016
	Rs. m	Rs. m	Rs. m	Rs. m	Rs. m
Market size	1,100	1,122	1,144	1,167	1,191
Market share		0.07	0.09	0.15	0.15
Sales		79	103	175	179

2. Purchases

	2013	2014	2015	2016
Opening payables	-	8	10	11
Add purchases	40	50	58	62
Less closing payables	(8)	(10)	(11)	-
Cash for purchases	32	48	57	73

Decision: The project has a positive NPV. The project should be undertaken because it will increase the value of the company and the wealth of its shareholders.

► **Example 45:**

Clear Co. specializes in the production of UPVC windows and doors. It is considering whether to invest in a new machine with a capital cost of Rs. 4 million. The machine would have an expected life of five years at the end of which it would be sold for Rs. 450,000.

If the new machine would be purchased the existing machine could either be sold immediately for Rs. 250,000 or hired out to another company at a rental amount of Rs. 100,000 per annum, payable in advance for three years. If the machine is hired out rather than sold it will have no residual value at the end of three years' period. The existing machine generates annual revenues of Rs.8 million and its running costs are Rs. 840,000 per annum.

If the new machine is purchased revenues are expected to increase by 20 %. In Addition to this, however machine running costs are also expected to increase. Estimate have shown that, in the first year with the new machine, running costs will increase by 18%. In every subsequent year thereafter, running costs will continue to 18% higher than each previous year's costs.

The company's cost of capital is 10%. All workings should be in Rs.'000'.

The example relates to Clear & Co. with two options:

- Selling of existing machinery immediately
- Hiring of existing machinery for three years receiving rent in advance.

The project will be evaluated on NPV and IRR model after allowing for inflation.

- All future cash flows (cash inflows & cash out flows) are given based on relevant costing principles with their timing of occurrence.
- Based on above analysis the calculation on Net cash flows, discounted cash flows and NPV under both option is given as under:

Option (a) Selling of existing machinery

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
	Rs.(000)	Rs.(000)	Rs.(000)	Rs.(000)	Rs.(000)	Rs.(000)
New machinery cost	(4000)					450
Selling price of existing machinery	250					
Revenues (20% income)		9600	9600	9600	9600	9600
Running cost (18% in cash subsequent year)		(991)	(1170)	(1380)	(1629)	(1,922)
Net cash flows	(3,750)	8609	8430	8220	7971	8,128
Discount factor (10%)	1.000	0.909	0.826	0.751	0.683	0.621
Discounted cash flows	(3,750)	7826	6963	6173	5444	5,047
NPV	27,703					

Option (b) Hiring of existing machinery

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
	Rs.(000)	Rs.(000)	Rs.(000)	Rs.(000)	Rs.(000)	Rs.(000)
New machinery cost	(4000)					450
Rentals of existing machine	100	100	100			
Revenues (20% income)		9600	9600	9600	9600	9600
Running cost (18% in cash subsequent year)		(991)	(1170)	(1380)	(1629)	(1,922)
Net cash flows	(3900)	8709	8530	8220	7971	8,128
Discount factor (10%)	1.000	0.909	0.826	0.751	0.683	0.621
Discounted cash flows	(3900)	7916	7046	6173	5444	5,047
NPV	27,727					

Decision: The company should invest in new machinery and should rent out the existing machinery because with this option NPV is 27,727(000) that is higher than the NPV of option 1 relates to selling of existing machinery

► **Example 46:**

Tropical Juices (TJ) is planning to expand its production capacity by installing a plant in a building which is owned by TJ but has been rented out at Rs. 6 million per annum. The relevant details are as under:

- The cost of the building is Rs. 40 million and it is depreciated at 5% per annum.
- The rent is expected to increase by 5% per annum.
- Cost of the plant and its installation is estimated at Rs. 60 million. TJ depreciates plant and machinery at 25% per annum on a straight line basis. Residual value of the plant after four years is estimated at 10% of cost.
- Additional working capital of Rs. 25 million would be required on commencement of production.
- Selling price of the juices would be Rs. 350 per litre. Sales quantity is projected as under:

	Year 1	Year 2	Year 3	Year 4
Litres	250,000	300,000	320,000	290,000

- Variable cost would be Rs. 180 per litre. Fixed cost is estimated at Rs. 100 per litre based on normal capacity of 280,000 litres. Fixed cost includes yearly depreciation amounting to Rs. 16 million.
- Rate of inflation is estimated at 5% per annum and would affect the revenues as well as expenses.
- TJ's cost of capital is 15%.

The example to Tropical Juices (TJ) that is considering to expand its production capacity by installing a plant which has been currently rented out. The decision will be evaluated on NPV model incorporating inflation.

- The relevant cash inflows and out flows with their timing of occurrence are given in question except depreciation of machinery being non cash flows cost.
- Based on above analysis the calculation of net cash flows, discounted cash flows and NPV is as under:

	Year 0	Year 1	Year 2	Year 3	Year 4
	Cash inflows/(outflows)				
	----- Rs. in million -----				
Loss of opportunity (Bldg. rent)	-	(6.30)	(6.62)	(6.95)	(7.29)
Cost of plant and its Installation	(60.00)				6.00
Working capital	(25.00)	-	-	-	25.00
Sales		87.50	110.25	123.48	117.50
		(0.25×350)	(0.3×350 ×1.05)	(0.32×350 ×1.05 ²)	(0.29×350 ×1.05 ³)
Variable cost		(45.00)	(56.70)	(63.50)	(60.43)
		(0.25×180)	(0.3×180 ×1.05)	(0.32×180 ×1.05 ²)	(0.29×180 ×1.05 ³)
Fixed cost		(12.00)	(12.60)	(13.23)	(13.89)
		(0.28×100)-16	(12×1.05)	(12×1.05 ²)	(12×1.05 ³)
Net cash flows	(85.00)	24.20	34.33	39.80	66.89
Present value factor at 15%	1.000	0.870	0.756	0.658	0.572
Present value at 15%	(85.00)	21.05	25.95	26.19	38.26
Net present value (NPV) at 15%					26.45

Decision: The project has a positive NPV. The project should be undertaken because it will increase the value of the company and the wealth of its shareholders.

7. DCF & TAXATION

7.1 Taxation cash flows in investment appraisal

In project appraisal, cash flows arise due to the effects of taxation. When an investment results in higher profits, there will be higher taxation. Tax cash flows should be included in DCF analysis. In DCF analysis it is normally assumed that tax is payable on the amount of cash profits in any year.

For example, if taxation on profits is 32% and a company earns Rs. 10,000 cash profit each year from an investment, the pre-tax cash inflow is Rs. 10,000, but there is a tax payment of Rs. 3,200.

Similarly, if an investment results in lower profits, tax is reduced. For example, if an investment causes higher spending of Rs. 5,000 each year and the tax on profits is 32%, there will be a cash outflow of Rs. 5,000 but a cash benefit from a reduction in tax payments of Rs. 1,600.

Working capital flows are not subject to tax.

Where accounting measures are given remember that depreciation is not a tax allowable expense and does not represent cash flows. It should be ignored in drafting cash flows (or perhaps added back if already deducted).

7.2 Interest costs and taxation

Interest cash flows are not included in DCF analysis. This is because the interest cost is in the cost of capital (discount rate).

Interest costs are also allowable expenses for tax purposes; therefore, present values are estimated using the post-tax cost of capital. The post-tax cost of capital is a discount rate that allows for the tax relief on interest payments. This means that because interest costs are allowable for tax purposes, the cost of capital is adjusted to allow for this and is reduced accordingly.

Briefly however, the following formula holds in cases where debt is irredeemable.

► *Formula:*

Post-tax interest cost

Post tax-cost of debt = Pre-tax interest cost (1 – tax rate)

► *Example 47:*

Post-tax interest cost Interest on debt capital is 10% and the rate of tax on company profits is 32%.

Post tax-cost of debt = Pre-tax interest cost (1 – tax rate)

= 10% (1 - 0.32) = 6.8%

7.3 Timing of cash flows for taxation

- When cash flows for taxation are included in investment appraisal, an assumption must be made about when the tax payments are made. The actual timing of tax payments depends on the tax rules that apply in the relevant jurisdiction. Usually, one or other of the following assumptions is used. Tax is payable in the same year as the profits to which the tax relates; or
- tax is payable one year later ('one year in arrears'). (For example, tax on the cash profits in Year 1 is payable in Year 2).

Either of these two assumptions could be correct.

► *Example 48:*

A project costing Rs. 60,000 is expected to result in net cash inflows of Rs. 40,000 in year 1 and Rs. 50,000 in year 2.

Taxation at 32% occurs one year in arrears of the profits or losses to which they relate.

The post-tax cost of capital is 8%.

Assume that the cost of the project is not an allowable cost for tax purposes (i.e. capital allowances should be ignored).

Year	0	1	2	3
Initial outlay	(60,000)			
Cash inflows		40,000	50,000	
Tax on inflows			(12,800)	(16,000)
Annual cash flows	(60,000)	40,000	37,200	(16,000)
Discount factors	1	0.926	0.857	0.794
Present values	(60,000)	37,040	31,880	(12,704)
NPV				(3,784)

The NPV of the project is negative so it should be rejected.

7.4 Tax-allowable depreciation (capital allowances)

- The nature of tax allowable depreciation
- Tax allowable depreciation in Pakistan
- Balancing charge or balancing allowance on disposal

7.5 The nature of tax allowable depreciation

Non-current assets are depreciated in the financial statements. However, depreciation in the financial statements is not an allowable expense for tax purposes.

Instead, the tax rules provide for 'tax-allowable depreciation' according to rules determined by the government.

Tax-allowable depreciation affects the cash flows from an investment by altering the tax payment and the tax effects must be included in the project cash flows.

7.6 Tax allowable depreciation in Pakistan

Tax rules in Pakistan are set out in the *Income Tax Ordinance, 2001 (as amended)*. Exam questions tend to specify the tax rates and allowance percentages to be used.

7.7 Initial allowance

Section 23 of the ordinance allows a deduction of an initial allowance in the year in which an asset used for business purposes is brought into use. This initial allowance is currently set at 25% of the cost of the asset.

7.8 Normal depreciation (written down allowance)

A further deduction of a percentage of the tax written down value on a reducing balance basis is also allowed in each period. The percentage depends on the type of asset as specified in the third schedule to the ordinance. The deduction that relates to machinery and plant is usually 10%. This written down allowance is claimed in addition to the initial allowance in the year in which an asset is purchased.

► Example 49:

An asset costs Rs. 80,000.

Allowable initial allowance is 25% and normal depreciation is 10% under the reducing balance method.

Tax on profits is payable at the rate of 29%.

The cash flow benefits from the tax depreciation are calculated as follows:

Year		TWDV	Tax allowable depreciation	Tax saved (29%)
		Rs.	Rs.	Rs.
0	Cost	80,000		
1	Initial allowance	<u>(20,000)</u>	20,000	5,800
		60,000		
1	Normal depreciation	<u>(6,000)</u>	6,000	1,740
		54,000		
2	Normal depreciation	<u>(5,400)</u>	5,400	1,566
		48,600		
3	Normal depreciation	<u>(4,860)</u>	4,860	1,409
		43,740		
4	Normal depreciation	<u>(4,374)</u>	4,374	1,268
		39,366		
5	Normal depreciation	<u>(3,937)</u>	3,937	1,142
	TWDV, end of Year 5	35,429		

- The tax cash flows (tax savings) should be treated as cash inflows in the appropriate year in the DCF analysis.
- Note that the relevant cash flow to be included in DCF analyses are the tax effects of the tax allowable depreciation not the tax allowable depreciation itself.
- The tax saved in the first year Rs. 7,540. This is the sum of the savings on the initial allowance (Rs. 5,800) and the normal depreciation in the first year (Rs. 1,740).

7.9 Balancing charge (Gain) or balancing allowance (Loss) on disposal

When an asset is scrapped or sold there might be a balancing charge or a balancing allowance. This is the difference between:

- the written-down value of the asset for tax purposes (TWDV); and
- Its disposal value (if any).

The effect of a balancing allowance or balancing charge is to ensure that over the life of the asset the total amount of tax allowable depreciation equals the cost of the asset less its residual value.

7.10 Balancing allowance (Loss on disposal of assets)

This occurs when the written-down value of the asset for tax purposes is higher than its disposal value.

The balancing allowance is an additional claim against taxable profits.

7.11 Balancing charge (Gain on disposal of assets)

This occurs when the written-down value of the asset for tax purposes is lower than the disposal value.

The balancing charge is a taxable amount, and will result in an increase in tax payments.

7.12 Impact on DCF analysis

The cash saving or cash payment is included in the cash flows for DCF analysis.

Note: An annual capital allowance is not claimed in the year of disposal of an asset. Instead, there is simply a balancing allowance (or a balancing charge).

► Example 50:

A company is considering an investment in a non-current asset costing Rs. 80,000. The project would generate the following cash inflows:

Year	Rs.
1	50,000
2	40,000
3	20,000
4	10,000

Allowable initial allowance is 25% and normal depreciation is 10% under the reducing balance method.

Tax on profits is payable at the rate of 32%.

It is expected to have a scrap value of Rs. 20,000 at the end of year 4. The post-tax cost of capital is 9%.

The calculation of NPV is as:

	0	1	2	3	4
	Rs.000	Rs.000	Rs.000	Rs.000	Rs.000
Capital flows	(80.0)				20.0
Tax saving on tax					
allowable depreciation (W2)		8.3	1.7	1.6	7.6
Cash inflows		50.0	40.0	20	10.0
Tax on cash inflows		(16.0)	(12.8)	(6.4)	(3.2)
Net cash flows	(80.0)	42.3	28.9	15.2	34.4
Discount factor	1.000	0.917	0.842	0.772	0.708
Present values	(80.0)	38.8	24.3	11.7	24.4
NPV					19.2

Note that the tax saving on tax allowable depreciation in year 1 of Rs. 8,320 is made up of is 6,400 + 1,920.

Working				
Year		TWDV	Tax allowable Depreciation	Tax saved (32%)
		Rs.	Rs.	Rs.
0	Cost	80,000		
1	Initial allowance	(20,000)	20,000	6,400
		60,000		
1	Normal depreciation	(6,000)	6,000	1,920
		54,000		
2	Normal depreciation	(5,400)	5,400	1,728
		48,600		
3	Normal depreciation	(4,860)	4,860	1,555
		43,740		
4	Cash proceeds	(20,000)		
	Balancing allowance	23,740	23,740	7,597

The impact of the balancing allowance (charge) is that the amount claimed in allowances is always equal to the cost of the asset less its disposal proceeds.

This means that the amount of tax saved is always the tax rate applied to this difference. Therefore, in the above example:

- Total tax allowable depreciation = $80,000 - 20,000 = 60,000$ ($20,000 + 6,000 + 5,400 + 4,860 + 23,740$).
- Total tax saved = $32\% * 60,000 = 19,200$ ($6,400 + 1,920 + 1,728 + 1,555 + 7,597$).

8. ASSET REPLACEMENT CYCLE

DCF method is also used for decisions regarding replacement of an existing asset with another one.

8.1 Introduction

An asset replacement decision involves deciding how frequently a non-current asset should be replaced, when it is in regular use, so that when the asset reaches the end of its useful life, it will be replaced by an identical asset. In other words, this type of decision is about identifying the most appropriate useful economic life of a non-current asset, and how frequently it should be replaced.

Here we are not dealing with a one-off decision about whether or not to acquire an asset. Instead we are deciding when to replace an asset we are currently using with another new asset; and then when the new asset has been used up, replacing it again with an identical asset; and so on in perpetuity. We are evaluating the cycle of replacing the machine – considering the various options for how long we should keep it before replacing it.

8.2 Assumptions

- i. The company capacity is assumed to be constant over the years. This assumption can't hold true in perpetuity due to growths in the markets and increased number of competitors.
- ii. Operating costs and residual values are assumed to be constant, whereas this might not be true due to changes in technology.
- iii. Efficiency of the users of the assets are considered constant over the time resulting in no abnormal cost in operations.

8.3 Relevant cash flows

The cash flows that must be considered when making the asset replacement decision are:

- The capital costs (purchase cost) of the asset.
- The maintenance and operating costs of the asset: these will usually increase each year as the asset gets older.
- Tax relief on the running costs (which are allowable expenses for tax purposes).
- Tax relief on the asset due to tax-allowable depreciation
- The scrap value or resale value of the asset at the end of its life.

The main problem with evaluating an asset replacement decision is comparing these costs over a similar time frame. For example, how can we compare the NPV of costs for asset replacement cycles of one, two, three, four and five years? For example, you cannot simply compare the NPV of cost over a two-year replacement cycle with the NPV of cost over a three-year replacement cycle, because you would be comparing costs over two years with costs over three years, which is not a fair comparison.

8.4 The equivalent annual cost (EAC) approach

The equivalent annual cost (EAC) approach of calculating the most cost-effective replacement cycle for assets is as follows:

- **Step 1:** Calculate the net present value (NPV) of cost for each replacement cycle.
- **Step 2:** For each replacement cycle, calculate the equivalent annual cost by dividing the NPV of cost of the life cycle by the annuity factor for the cost of capital, for the number of years in the life cycle.

Formula: Equivalent annual cost

$$\text{Equivalent annual cost for replacement (EAC)} = \frac{\text{NPV of costs over one replacement cycle}}{\text{Annuity factor (1 to n)}}$$

- **Step 3:** The replacement cycle with the *lowest equivalent annual cost* is selected as the least-cost replacement cycle.

► **Example 51:**

Rehman Limited (RL) is considering its replacement policy for an item of equipment which has a maximum useful life of four years. The machine has purchase cost of Rs. 30,000. The following information is also relevant:

Years	Running and Maintenance costs of equipment	Scrap value if sold at the end of year
	Rs.	Rs.
1	4,000	15,000
2	5,000	10,000
3	6,500	6,000
4	8,000	1,000

The cost of capital for RL is 12%.

Required: Using the EAC approach, suggest the optimum replacement cycle to RL? Ignore taxation.

► **Answer:****Step 1 – NPV of costs for each replacement cycle**

NPV of costs for replacement after every 4 years

NPV of costs	0	1	2	3	4
Cost of equipment	(30,000)				
Scrap value					1,000
Maintenance cost		(4,000)	(5,000)	(6,500)	(8,000)
Net cash flows	(30,000)	(4,000)	(5,000)	(6,500)	(7,000)
Discount at 12%	1.000	0.893	0.797	0.712	0.636
Present value	(30,000)	(3,572)	(3,985)	(4,628)	(4,452)

NPV of cost = (Rs. 46,637)

NPV of costs for replacement after every 3 years

NPV of costs	0	1	2	3
Cost of equipment	(30,000)			
Scrap value				6,000
Maintenance cost		(4,000)	(5,000)	(6,500)
Net cash flows	(30,000)	(4,000)	(5,000)	(500)
Discount at 12%	1.000	0.893	0.797	0.712
Present value	(30,000)	(3,572)	(3,985)	(356)

NPV of cost = (Rs. 37,913)

NPV of costs for replacement after every 2 years

NPV of costs	0	1	2
Cost of equipment	(30,000)		
Scrap value			10,000
Maintenance cost		(4,000)	(5,000)
Net cash flows	(30,000)	(4,000)	5,000
Discount at 12%	1.000	0.893	0.797
Present value	(30,000)	(3,572)	3,985

NPV of cost = (Rs. 29,587)

Step 2 – EAC for each replacement cycle

Replacement cycles	EAC = NPV of costs ÷ Annuity Factor
4 years	EAC = (Rs. 46,637) ÷ 3.037 = (Rs. 15,356) p.a.
3 years	EAC = (Rs. 37,913) ÷ 2.402 = (Rs. 15,784) p.a.
2 years	EAC = (Rs. 29,587) ÷ 1.690 = (Rs. 17,507) p.a.

Step 3 – Decision

Company should replace the equipment after every 4 years due to lowest EAC.

► **Example 52:**

Apex Institute of Business and Finance (Apex IBF) is considering replacement policy for an item of its equipment which has a maximum useful life of four years. The equipment has purchase cost of Rs. 17,000. The following information is also relevant:

Years	Running and Maintenance costs of equipment	Scrap value if sold at the end of year
	Rs.	Rs.
1	1,900	8,000
2	2,400	5,500
3	3,750	4,000

The cost of capital for Apex IBF is 10%.

Required: Using the EAC approach, recommend the optimum replacement cycle? Ignore taxation.

► **Answer:****Step 1 – NPV of costs for each replacement cycle**

NPV of costs for replacement after every 3 years

NPV of costs	0	1	2	3
Cost of equipment	(17,000)			
Scrap value				4,000
Maintenance cost		(1,900)	(2,400)	(3,750)
Net cash flows	(17,000)	(1,900)	(2,400)	250
Discount at 10%	1.000	0.909	0.826	0.751
Present value	(17,000)	(1,727)	(1,982)	188

NPV of cost = (Rs. 20,521)

NPV of costs for replacement after every 2 years

NPV of costs	0	1	2
Cost of equipment	(17,000)		
Scrap value			5,500
Maintenance cost		(1,900)	(2,400)
Net cash flows	(17,000)	(1,900)	3,100
Discount at 10%	1.000	0.909	0.826
Present value	(17,000)	(1,727)	2,561

NPV of cost = (Rs. 16,166)

NPV of costs for replacement after every year

NPV of costs	0	1
Cost of equipment	(17,000)	
Scrap value		8,000
Maintenance cost		(1,900)
Net cash flows	(17,000)	6,100
Discount at 10%	1.000	0.909
Present value	(17,000)	5,545

NPV of cost = (Rs. 11,455)

Step 2 – EAC for each replacement cycle

Replacement cycles	EAC = NPV of costs ÷ Annuity Factor
3 years	EAC = (Rs. 20,521) ÷ 2,487 = (Rs. 8,251) p.a.
2 years	EAC = (Rs. 16,166) ÷ 1.736 = (Rs. 9,312) p.a.
1 year	EAC = (Rs. 11,455) ÷ 0.909 = (Rs. 12,602) p.a.

Step 3 – Decision

Company should replace the equipment after every 3 years because a three-year replacement cycle has lowest equivalent annual cost (EAC).

9. CAPITAL RATIONING

9.1. Introduction

One of the key objectives of a business is to maximise shareholders' wealth by undertaking all investment opportunities that have a positive NPV. However, there are situations where company is unable to exploit all such investment opportunities due to problem of capital rationing.

Capital rationing means the shortage of capital or shortage of funds to the company and entity is unable to undertake all investment opportunities.

9.2. Reasons of Capital Rationing

Capital rationing occurs where sufficient financing is not available due to some internal or external reasons. Internal reasons are also known as soft capital rationing and external reasons are known as hard capital rationing.

9.2.1. Hard Capital Rationing

Hard capital rationing occurs when there is a real shortage of capital for investment projects. Although company intends to raise additional financing for its investment opportunities but some external factors restrict its capacity to acquire funds.

These external reasons may include:

- i. Sometimes, investors may be unwilling to provide funds for capital investments due to the *prevailing economic and political conditions* in the country. In such cases, they prioritize a precautionary approach over an investment-oriented approach to use their cash savings.
- ii. Investors of financial markets may perceive the *company as too risky due to its low credit rating*, leading to their reluctance to provide additional financing through shares or bonds.
- iii. The *crowding-out effect* occurs when high levels of government borrowing absorb a large portion of available funds in the financial markets, leading to a reduction in the supply of capital available for private sector investment. This makes it more difficult and expensive for companies to secure financing.
- iv. When a company plans to raise additional financing through debt, the lenders often demand appropriate assets as collateral; however, the *lack of an appropriate collateral* can hinder the company's borrowing capacity. This issue is further compounded by state-imposed restrictions on financing for some specific industries.
- v. When a company plans to raise additional financing through shares, investors may be reluctant to buy shares of company and provide funds due to lack of a *company's track record, poor past performance*, or weak dividend history.

9.2.2. Soft Capital Rationing

Soft capital rationing occurs when sufficient capital is available to invest in every project, but management has taken a policy decision that spending on capital investment should be limited to a budgeted maximum amount. This policy decision therefore sets a limit on the amount of capital available and can be changed anytime at discretion of management.

The internal reasons for soft capital rationing may include:

- i. When a company issues new shares to raise additional financing, the ownership and control of existing shareholders become diluted. The company's management may be unwilling to accept this dilution, as it could lead to dissatisfaction among existing investors. Furthermore, issue of new shares will also dilute EPS of the company immediately.
- ii. Although debt is generally cheaper than equity finance, raising funds through debt increases the financial risk for existing shareholders due to a higher gearing ratio and a lower interest coverage ratio. Consequently, management may be reluctant to accept increase in financial risk.

- iii. When the available funds are small relative to the cost of financing, the company may be reluctant to pursue new projects or investments, as the high cost of raising additional capital may outweigh the potential benefits. This can result in the company prioritising more conservative investments or delaying projects until it can secure more favourable financing terms or accumulate more funds.

9.3. Important Terminology

Terms	Explanation
Single period capital rationing	When funds are short immediately (T0) only then it is known as single period capital rationing.
Multiperiod capital rationing	When funds are short immediately (T0) as well as in subsequent years then it is known as multiperiod capital rationing.
Divisible projects	A divisible project refers to a project that can be executed in its entirety (100%) or scaled down to a smaller level if there is a shortage of funds. Conversely, it can also be scaled up (above 100%) beyond the initial plan if the potential returns are high.
Indivisible projects	An indivisible project refers to any project that cannot be scaled up or scaled down. It can only be undertaken in full (100%) if sufficient funds are available or not undertaken at all (0%) if funds are insufficient.
Mutually exclusive projects	Mutually exclusive projects refer to two or more projects that cannot be undertaken simultaneously due to competition for common resources such as land, labour, or other assets. Only one project can be selected for execution from a set of mutually exclusive projects,

9.4. Decision Making under Capital Rationing

When a company is facing shortage of funds then company has to decide how much proportion (%) of each investment project should be undertaken, within limited capital, to maximise total positive NPV.

Decision making under situation of capital rationing, can be performed by using following approaches:

- For single period capital rationing, profitability index approach will be used
- For multiperiod capital rationing, linear programming approach will be used

9.4.1 Single period Capital Rationing – Profitability Index Approach

For single period capital rationing, profitability index approach will be used as follows:

- Step 1:** Calculate NPV of each investment project.
- Step 2** – Calculate profitability index (PI) of each project and rank projects on basis of profitability index from highest PI to lowest PI

Formula: Profitability Index (PI)

$$\text{Profitability index (PI)} = \text{NPV of the project} \div \text{Initial investment of the project}$$

- Step 3** – Prepare optimal investment plan and total NPV.

In case of divisible projects, prepare an investment plan based on ranking and compute total NPV for all projects undertaken by the company.

In case of divisible but mutually exclusive projects, prepare different combinations for investment plans (based on ranking) and select the investment plan where total NPV is maximum.

In case of indivisible projects, prepare different investment plans (based on ranking) and select the investment plan where total NPV is maximum. Surplus funds are reinvested in market at a rate of return equal to cost of capital rate unless specified clearly.

► **Example 53:**

Capital for investment is limited at time 0 to Rs. 5,000,000. There are four investment projects available with a positive NPV. The investment required for each project and the project NPVs are as follows:

Projects	I	II	III	IV
NPV (Rs.'000)	6,250	4,200	1,540	1,950
Investment at T0 (Rs.'000)	5,000	2,100	1,400	1,500

Required: Using the profitability index approach, recommend which projects should be selected for investment, in order to maximise the total NPV assuming

- (a) All four projects are fully divisible
- (b) All four projects are non-divisible

► **Answer:**

Step 1 – NPV of each project is given

Step 2 – Profitability index for each project and Ranking of each project

Projects	I	II	III	IV
NPV (Rs.'000)	6,250	4,200	1,540	1,950
÷ Investment at T0 (Rs.'000)	÷ 5,000	÷ 2,100	÷ 1,400	÷ 1,500
Profitability index (PI)	1.25	2.00	1.10	1.30
Ranking of projects	3 rd	1 st	4 th	2 nd

a) Divisible projects

Step 3 – Optimal investment plan – Divisible projects

Projects		Investment (Rs.'000)	Total NPV (Rs.'000)
II		2,100	4,200
IV		1,500	1,950
I	(28%)	1,400	1,750
		5,000	7,900

Decision: Company should undertake 100% of project II, IV and 28% of project I to earn total NPV of Rs. 7.9 million.

b) Indivisible projects

Step 3 – Optimal investment plan – Indivisible projects

Possible combinations	Projects		Investment (Rs.'000)	Total NPV (Rs.'000)
(i)	II		2,100	4,200
	IV		1,500	1,950
	III		1,400	1,540
			<u>5,000</u>	<u>7,690</u>
(or)				
(ii)	I only		<u>5,000</u>	<u>6,250</u>

Decision: Company should undertake 100% of project II, III & IV to earn total NPV of Rs. 7.69 million.

► **Example 54:**

A company has Rs. 20 million to invest at time 0 thereafter funds are not limited. There are four projects available for investment, all similar in terms of risk. The amount of investment required and the NPV of each project are as follows:

Projects	A	B	C	D
NPV (Rs.'m)	3.0	2.0	2.5	4.2
Investment at T0 (Rs.'m)	8.0	5.0	6.0	10.0
Investment at T1 (Rs.'m)	-	1.0	-	2.0

Required: By using profitability index approach, advise which projects should be selected for investment, in order to maximise the total NPV assuming

- (a) All four projects are not divisible
- (b) All four projects are divisible

► **Answer:**

Step 1 – NPV of each project is given

Step 2 – Profitability index for each project and Ranking of each project

Projects	A	B	C	D
NPV (Rs.'m)	3.0	2.0	2.5	4.2
÷ Investment at T0 (Rs.'m)	÷ 8.0	÷ 5.0	÷ 6.0	÷ 10.0
Profitability index (PI)	0.375	0.400	0.417	0.420
Ranking of projects	4 th	3 rd	2 nd	1 st

a) Non-divisible projects

Step 3 – Optimal investment plan – Non-divisible projects

Possible combinations	Projects	Investment (Rs.'m)	Total NPV (Rs.'m)
(i)	D	10.0	4.2
	C	6.0	2.5
	Surplus	4.0	0
		<u>20.0</u>	<u>6.7</u>
(or)			
(ii)	D	10.0	4.2
	B	5.0	2.0
	Surplus	5.0	0
		<u>20.0</u>	<u>6.2</u>
(or)			
(iii)	D	10.0	4.2
	A	8.0	3.0
	Surplus	2.0	0
		<u>20.0</u>	<u>7.2</u>
(or)			
(iv)	C	6.0	2.5
	B	5.0	2.0
	A	8.0	3.0
	Surplus	1.0	0
		<u>20.0</u>	<u>7.5</u>

Decision: Company should undertake 100% of projects A, B and C to earn total NPV of Rs. 7.5 million.

b) Divisible projects*Step 3 – Optimal investment plan – Divisible projects*

Projects		Investment (Rs.'m)	Total NPV (Rs.'m)
D		10.0	4.2
C		6.0	2.5
B	(80%)	4.0	1.6
		20.0	8.3

Decision: Company should undertake 100% of project C, D and 80% of project B to earn total NPV of Rs. 8.3 million.

9.4.2 Multiperiod Capital Rationing – Linear Programming Approach**9.4.2.1 Introduction**

When funds are short immediately (T0) as well as in subsequent years such as T1, T2 and so on then it is known as multiperiod capital rationing. Linear programming is a mathematical approach used for maximisation problems or minimisation problems.

In multiperiod capital rationing, this approach is used to identify the proportion of each project to be undertaken to maximise total NPV within limited funds. In this approach, it is assumed that projects are divisible. Linear programming approach with graph is used when company is facing shortage only for multiple periods but two investment opportunities are under consideration.

9.4.2.2 Steps of Linear Programming Approach

Following are the main steps of linear programming approach:

- **Step 1 – Define variables**

Let,

X = Proportion of project 1 to be undertaken

Y = Proportion of project 2 to be undertaken

Z = Total maximum NPV

- **Step 2 – Formulate objective function**

To maximise shareholders wealth, NPV equation is formulated as objective function. For example, project 1 has NPV of Rs. 20,000 and project 2 has NPV of Rs. 25,000 so NPV equation will be prepared as follows:

$$20,000X + 25,000Y = Z$$

- **Step 3 – Identify shortage of funds for each year and formulate constraints in the form inequalities**

Shortage of funds for each year can be identified as:

Formula:

Shortage of funds = Required funds for investment – Available funds

Constraints means shortages or limitations or conditions given in the situation. In capital rationing, constraints mean shortage of funds. When company is facing shortage of funds, constraints can be formulated for each year by using following general pattern:

Formula:

Required investment for each project ≤ Total available funds

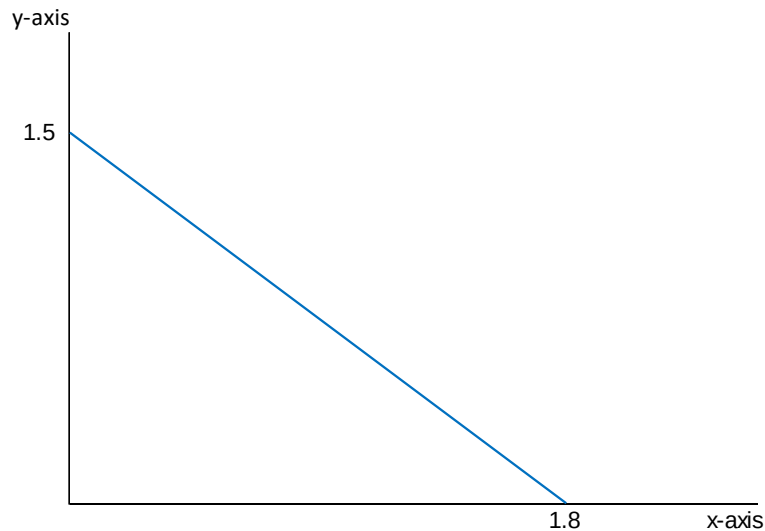
For example, following constraints can be formulated

Situation	Constraints
Funds are short at T0 and maximum funds of Rs. 70,000 are available for 2 projects. Investment of Rs. 45,000 will be required for project 1 and Rs. 38,000 will be required.	$T0: 45,000X + 38,000Y \leq 70,000$
Funds are short at T1 and maximum funds of Rs. 45,000 are available for 2 projects. Investment of Rs. 30,000 will be required for project 1 and Rs. 25,000 will be required.	$T1: 30,000X + 25,000Y \leq 45,000$
Project 1 can't be scaled up but can be scaled down which means project 1 can't be performed at more than 100% but project 2 can be scaled up to 25%.	$X \leq 1$ $Y \leq 1.25$
Answer of x and y can't be negative so non-negativity constraints are formulated.	$X \geq 0$ $Y \geq 0$

▪ **Step 4 – Plot constraints on graph**

All constraints are solved to find out their coordinates and then each constraint is plotted on graph. For instance, constraint ($T1: 30,000X + 25,000Y \leq 45,000$) can be solved for graph as follows:

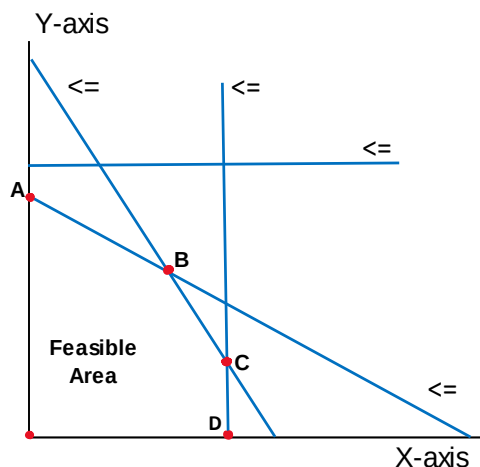
- Take $X = 0$ and find the value of Y which is equal to 1.5
- Take $Y = 0$, find the value of X which is equal to 1.8



▪ **Step 5 – Identify feasible area and its corner points**

After plotting all constraints on graph, feasible area and its corner points are determined by using following rules:

- For less than or equal to constraints ($\leq$), feasible area will fall on the line and below the line
- For greater than or equal to constraints ($\geq$), feasible area will fall on the line and above the line



▪ **Step 6 – Determine optimal investment plan and total NPV**

Solve all corner points of feasible area simultaneously to search optimal point which will indicate the proportion of each project to be undertaken and it will result in total maximum NPV.

► **Example 55:**

A company is considering two divisible projects – A and B. The cost of capital is 10%. The maximum capital for investment is Rs.25,000 at time 0 and Rs.30,000 at time 1. The expected project cash flows are as follows:

Projects	0	1	2	NPV at 10%
Project A (Rs.)	(25,000)	(15,000)	80,000	Rs. 27,445
Project B (Rs.)	(20,000)	(30,000)	70,000	Rs. 10,550

Projects can be scaled down but can't be scaled up.

Required: By using linear programming with graph, determine the optimal investment plan that will maximise the NPV. Also calculate total NPV at optimal investment plan.

► **Answer:**

Step 1 – Define variables

Let,

X = Proportion of project A to be undertaken

Y = Proportion of project B to be undertaken

Z = Total maximum NPV

Step 2 – Formulate objective function

To maximise shareholders wealth, NPV equation is formulated as objective function.

$$27,445X + 10,550Y = Z$$

Step 3 – Formulate Constraints (in form of inequalities)

Shortage of funds	0	1
Funds required for project A (Rs.)	25,000	15,000
Funds required for project B (Rs.)	20,000	30,000
Total required investment	45,000	45,000
Less: Total available funds	(25,000)	(30,000)
Shortage of funds	20,000	15,000

Constraints

Capital constraint at T0: $25,000X + 20,000Y \leq 25,000$ (1)

Capital constraint at T1: $15,000X + 30,000Y \leq 30,000$ (2)

Maximum scale of projects

Project A can't exceed $X \leq 1$ (3)

Project B can't exceed $Y \leq 1$ (4)

Non-negativity constraints:

Project A cannot be negative: $X \geq 0$

Project B cannot be negative: $Y \geq 0$

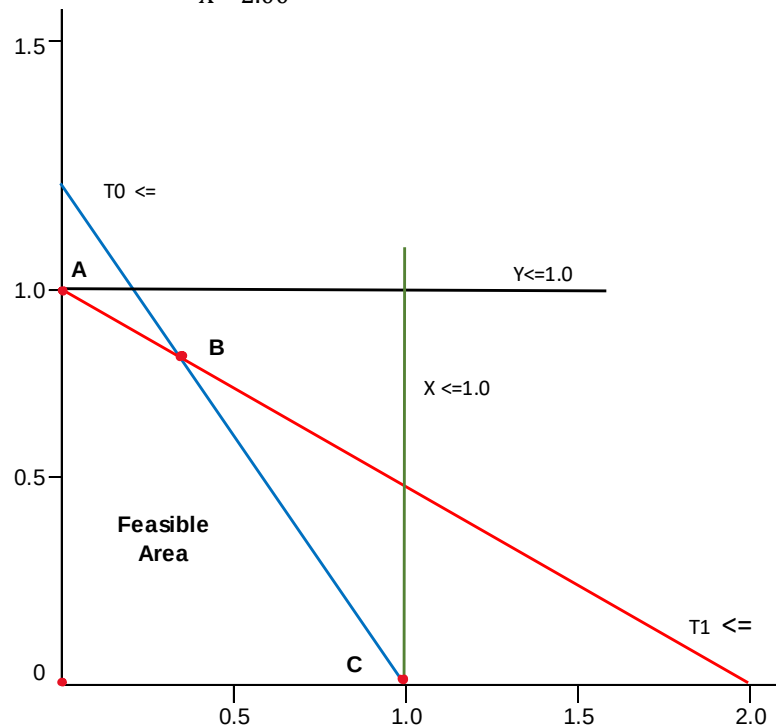
Step 4 – Plot constraints on graph

Constraint at T0: $25,000X + 20,000Y \leq 25,000$

When X = 0 then	When Y = 0 then
$25,000(0) + 20,000Y = 25,000$	$25,000X + 20,000(0) = 25,000$
$Y = 1.25$	$X = 1.00$

Constraint at T1: $15,000X + 30,000Y \leq 30,000$

When X = 0 then	When Y = 0 then
$15,000(0) + 30,000Y = 30,000$	$15,000X + 30,000(0) = 30,000$
$Y = 1.00$	$X = 2.00$

**Step 5 – Feasible area**

Feasible area is OABC

Step 6 – Optimal investment plan and total NPV

Solve all corner points of feasible area simultaneously to find out optimal point and resultant maximum NPV.

Points	X	Y	$27,445X + 10,550Y = Z$ (Total NPV)
A	0	1.0	$27,445 (0) + 10,550 (1) = 10,550$
B	0.333	0.8333	$27,445 (0.333) + 10,550 (0.8333) = 17,940$
C	1.0	0	$27,445 (1) + 10,550 (0) = 27,445$

Optimal point is C where total NPV is maximum.

Decision: Company should undertake 100% of project A but nothing for project B to maximize total NPV at Rs. 27,445.

(W1) Simultaneous solution of point B

Prepare optimal investment plan by solving constraints simultaneously:

Capital constraint at T0: $25,000X + 20,000Y = 25,000$ (1)

Capital constraint at T1: $15,000X + 30,000Y = 30,000$ (2)

Multiply the equation (1) with 1.5

$$1.5 (25,000X + 20,000Y = 25,000)$$

$$37,500X + 30,000Y = 37,500 \quad (1.1)$$

Subtract equation (2) from equation (1.1)

$$(1.1) \quad 37,500X + 30,000Y = 37,500$$

$$(2) \quad \pm 15,000X \pm 30,000Y = \pm 30,000$$

$$\hline 22,500X + 0 = 7,500$$

$$X = 7,500 \div 22,500 = 0.3333$$

Put value of X in equation (2) or (3) to find value of Y

$$15,000X + 30,000Y = 30,000$$

$$15,000 (0.3333) + 30,000Y = 30,000$$

$$Y = 0.8333$$

10. SELF-TEST QUESTIONS

1. Spring 2023 Q1 (xi):

While evaluating the financial feasibility of a new project, the finance director concluded that the project has a positive net present value (NPV) at the end of the project when discounted at the cost of capital of 18%. What would be the internal rate of return (IRR) of this project?

- (a) It would also be 18%
- (b) It would be lower than 18%
- (c) It would be higher than 18%
- (d) It would depend on a number of other factors and could be higher or lower

2. VALIKA LIMITED - SPRING 2018 (Q2b)

Valika Limited (VL) plans to introduce a new product AX which would be used in hybrid cars.

Following information is available in this regard:

- (i) Initial investment in the new plant including installation and commissioning is estimated at Rs. 50 million. The plant is expected to have a useful life of four years and would have annual capacity of 200,000 units.
- (ii) The demand of AX for the first year is expected to be 180,000 units which would increase by 10% per annum in year 2 and 3. However, in year 4 the demand is expected to decline by 10%.
- (iii) The contribution margin for the first year is estimated at Rs. 100 per unit which is expected to increase by 5% each year. The new plant would be installed at VL's premises which are presently rented out at Rs. 1.8 million per annum. As per the terms of rent agreement, the rent is received in advance and is subject to 7% increase per annum.
- (iv) Working capital of Rs. 10 million would be required at the commencement of the project. Working capital is expected to increase by 10% each year.
- (v) The new plant would be depreciated at the rate of 25% under the reducing balance method. Tax depreciation is to be calculated on the same basis. The residual value of the plant at the end of useful life is expected to be equal to its carrying value.
- (vi) VL's cost of capital is 10%.
- (vii) Tax rate is 30% and is paid in the year in which the tax liability arises.

Required: Evaluate the project using NPV.

3. DIAMOND INVESTMENT LIMITED - SPRING 2015 (Q2)

Diamond Investment Limited (DIL) is considering to set-up a plant for the production of a single product X-49. The details relating to the investment are as under:

- (i) The cost of plant amounting to Rs. 160 million would be payable in advance. It includes installation and commissioning of the plant.
- (ii) Working capital of Rs. 20 million would be required at the commencement of the commercial operations.
- (iii) DIL intends to sell X-49 at cost plus 25% (cost does not include depreciation on plant). Sales for the first year are estimated at Rs. 300 million. The sales quantity would increase at 6% per annum.
- (iv) The plant would be depreciated at the rate of 20% under the reducing balance method. Tax depreciation is to be calculated on the same basis. Estimated residual value of the plant at the end of its useful life of four years would be equal to its carrying value.

- (v) Tax rate is 34% and tax is payable in the year the liability arises.
- (vi) DIL's cost of capital is 18%. All costs and prices are expected to increase at the rate of 5% per annum.

Required: Compute the following:

- (a) Net present value of the project
- (b) Internal rate of return of the project

Assume that unless otherwise specified, all cash flows would arise at the end of the year.

4. CLOUDY COMPANY LIMITED (CCL) – AUTUMN 2017 (Q 4)

Cloudy Company Limited (CCL) manufactures and sells specialized machine X85. A newer version of the machine is gaining popularity in the market and CCL is therefore considering to introduce a similar version i.e. D44. Detailed research in this respect has been carried out during the last six months at a cost of Rs. 3.25 million.

The related information is as under:

- i. Initial investment in the new plant for manufacturing D44 would be Rs. 450 million including installation and commissioning of the plant. (ii) Projected production and sales of D44 are as follows:

Year 1	Year 2	Year 3	Year 4
----- No. of units -----			
20,000	25,000	27,000	29,000

Sales volume of X85 in the latest year was 30,000 units. It is estimated that introduction of D44 would reduce the sale of X85 by 2,000 units every year.

- ii. Estimated selling price and variable cost per unit of D44 in year 1 is estimated at Rs. 40,000 and Rs. 32,000 respectively. The contribution margin on X85 in year 1 is estimated at Rs. 5,500 per unit.
- iii. Fixed costs in year 1 are estimated at Rs. 45 million. However, if the new plant is installed these costs would increase to Rs. 75 million.
- iv. Impact of inflation on selling price, variable cost and fixed cost would be 10% for both the machines/plants.
- v. The new plant would be depreciated at the rate of 25% under the reducing balance method. Tax depreciation is to be calculated on the same basis. The residual value of the plant at the end of its useful life of four years is expected to be equal to its carrying value.
- vi. Applicable tax rate is 30% and tax is paid in the year in which the liability arises.
- vii. CCL's cost of capital is 12%.

Required: Compute internal rate of return (IRR) of the new plant and advise whether CCL should introduce D44. *(Assume that all cash flows would arise at the end of the year unless stated otherwise)*

5. MODERN TRANSPORT LIMITED (MTL) – SPRING 2017 (Q 7)

Modern Transport Limited (MTL) is considering an investment proposal from Burraq Cab Services (BCS). As per the proposal, MTL would provide branded cars to BCS under the following terms and conditions:

- i. BCS would pay rent of Rs. 1.8 million per annum per car to MTL. The cars would operate on a 24-hour basis. The payment would be made at the end of year.
- ii. Cost of the drivers and maintenance cost of the car would initially be paid by BCS but would be adjusted against car rentals payable to MTL at the end of each year.
- iii. MTL would provide a smart mobile to each driver.

MTL has estimated the following costs for deployment of a car with BCS:

Description	Rupees	Remarks
Car purchase price	2,000,000	Estimated useful life and residual value of the car is 4 years and Rs. 0.75 million respectively.
Car registration fee	35,000	One-time payment on registration of the car.
Mobile phone price per set	15,000	To be charged-off in the year of purchase.
Insurance premium	50,000	To be paid at the beginning of each year. It would reduce by Rs. 5,000 each year due to decrease in WDV of the car.
Annual salaries per driver	300,000	Would work in 8-hour shifts.
Annual maintenance cost	60,000	Due to ageing of cars, cost would increase by 10% each year.

Additional information:

- The car would be depreciated at the rate of 25% under the reducing balance method.
- Tax depreciation is to be calculated on the same basis.
- Applicable tax rate is 30% and tax is payable in the year in which the liability arises.
- Inflation is estimated at 5% per annum.
- MTL's cost of capital is 12% per annum.

Required: Advise whether MTL should accept BCS's proposal

6. GOLF LIMITED (GL) – AUTUMN 2018 (Q 5b)

Golf Limited (GL) is engaged in the manufacturing and sale of a single product 'Smart-X'. The existing manufacturing plant is being operated at full capacity but the production is not sufficient to meet the growing demand of Smart-X. GL is considering to replace it with a new Japanese plant. The production capacity of new plant would be 50% more than the existing capacity.

To assess the viability of this decision, the following information has been gathered:

- The purchase and installation cost of new plant would be Rs. 500 million and Rs. 25 million respectively. The supplier would send a team of engineers to Pakistan for final inspection of the plant before it is commissioned. 50% of the total cost of Rs. 12 million to be incurred on the visit, would be borne by GL.
- As a result of installation of the new plant, fixed costs other than depreciation would increase by Rs. 30 million.
- The existing plant has an estimated life of 10 years and is in use for the last 6 years. Plant's tax carrying value is Rs. 50 million. A machine supplier has offered to purchase the existing plant immediately at Rs. 45 million.
- During the latest year, 6 million units were sold at an average selling price of Rs. 550 per unit. Variable manufacturing cost was Rs. 450 per unit. GL expects that it can increase the sales volume by 25% in the first year after the plant's installation. Thereafter, the sales volume would increase by 4% per annum.
- The new plant would be depreciated under the straight line method. Tax depreciation is calculated on the same basis. The residual value of the plant at the end of its useful life of 4 years is estimated at Rs. 60 million.
- Applicable tax rate is 30% and tax is paid in the year in which the liability arises.
- Rate of inflation is estimated at 5% per annum and would affect the revenues as well as expenses.

- viii. GL's cost of capital is 12%.
- ix. All receipts and payments would arise at the end of the year except cost of setting up the plant which would arise at the beginning of the year. It may be assumed that the new plant would commence operations at the start of year 1.

Required: On the basis of internal rate of return (IRR), advise whether GL should acquire the new plant. **(17)**

7. OMEGA LIMITED (OL)

Omega Limited (OL) is the sole distributor of goods produced by ABC Limited which is a leading brand in the international market. OL is now planning to establish a factory in collaboration with ABC Limited. The factory would be established on a land which was purchased at a cost of Rs. 20 million in 2005. The existing market value of the land is Rs. 40 million. The cost of factory building and plant is estimated at Rs. 30 million and Rs. 100 million respectively.

The factory will produce goods which are presently supplied by ABC Limited. The sale for the first year of production is estimated at Rs. 300 million. The existing profit margin is 20% on sales. As a result of own production, cost per unit would decrease by 10%. The sale price and cost of production per unit (excluding depreciation) are expected to increase by 10% and 8% respectively, each year.

Following further information is available:

- ABC Limited would assist in setting up of the factory for which it would be paid an amount of Rs. 10 million at the time of signing the agreement. In addition, ABC Limited would be paid a royalty equal to 3% of sales.
- The factory building and installation of plant would be completed and commercial production would start one year after signing the agreement.
- 50% of the cost of plant would be financed through a five-year loan with interest payable annually at 10% per annum. Principal would be repaid at the end of 5th year.
- A working capital injection of Rs. 15 million would be required at the commencement of commercial production.
- OL charges depreciation on factory building and plant under the straight line method.
- OL uses a five-year project appraisal period. The residual value of the factory building and plant after five years is estimated at 50% and 10% of cost respectively.
- The market value of the land after five years is estimated at Rs. 70 million.
- OL's cost of capital is 12%.

Required: Calculate NPV of project.

8. COMFORT WEAR LIMITED - SPRING 2022 (Q10)

Comfort Wear Limited (CWL) is engaged in selling men activewear (units) through its retail outlets. The extracts from CWL's last year management accounts have been provided as follows:

	Rs. in '000
Sales [5,000 units @ Rs. 2,500]	12,500
Cost of goods sold	6,875
Gross profit	5,625

The management is considering setting up kiosks in four major shopping malls. The finance manager has gathered following data in this regard:

- (i) Kiosks will set-up at the cost of Rs. 250,000 each. Kiosks would have estimated useful life of three years, subject to a depreciation of 40% on reducing balance method. At the end of three years, kiosks would have no residual value.
- (ii) 4,000 units would be sold through all kiosks in the first year. It is estimated that 20% customers of retail outlets would shift to kiosks.
- (iii) The past trend of retail outlets sales has revealed an average 5% increase in units' sale each year. It is expected to continue for both retail outlets and kiosks.
- (iv) In the first year of kiosks' sales, a discount of 15% would be offered on retail price. However, discount would be reduced to 10% for subsequent years' sales.
- (v) The rent for each kiosk's space would be Rs. 150,000 per annum.
- (vi) The marketing campaign for kiosks would be carried out at Rs. 50,000 for the first year. However, it would be reduced to 50% for subsequent years.
- (vii) One sales person would be hired for each kiosk. He would be paid Rs. 20,000 per month in addition to 1% commission on retail price of each unit sold through kiosk.
- (viii) CWL's cost of capital is 18%.
- (ix) Applicable tax rate is 30% and tax is paid in the year in which the liability arises.
- (x) All revenues and costs are quoted on today's rate that is expected to remain same in the first year. Thereafter, the estimated annual inflation of 10% would be applicable for all future revenues and costs.

Required: By using net present value method, recommend whether CWL should set-up kiosks.

(All cash flows occur at the end of year except for cost of setting-up kiosks)

9. ISLAMABAD UNIVERSE (IU) - AUTUMN 2022 (Q6)

Islamabad Universe (IU) is engaged in production and sales of various consumer products. The management is in the process of launching a new product 'Gladiator'. You have been provided the following information in this regard:

- (i) IU has outsourced the due diligence of Gladiator at the cost of Rs. 250,000 which is payable shortly.
- (ii) A specialized machine costing Rs. 25 million would be needed for the production of Gladiator. The machinery would be financed by a bank loan that would carry interest rate of 12% per annum.
- (iii) The machine would be expected to produce 10,000 units in the first year of its operation. However, the production would reduce by 10% and 15% in the second and third years respectively. At the end of third year, an overhauling would be carried out at the cost of Rs. 2.5 million. This would result in continuation of third year's production in the fourth and fifth years.
- (iv) The selling price and cost of goods sold (other than depreciation) of Gladiator would be Rs. 1,600 and Rs. 750 per unit respectively.
- (v) The fixed operating cost of producing Gladiator would be Rs. 1 million per annum, whereas variable operating cost would be Rs. 100 per unit.
- (vi) The machine would have an estimated useful life of five years, after which it could be scrapped for Rs. 5 million. The machine and overhauling costs would be subject to tax depreciation of 25% on reducing balance method.
- (vii) The applicable tax rate would be 30% and tax would be payable/refundable in the year in which the liability/asset would occur.

- (viii) All revenues and costs are quoted on today's rate. The estimated annual inflation of 8% would be applicable for all revenues and costs that arise from first year and onwards.
- (ix) There are no opening or closing inventories of Gladiator in any of the five years.

Required: By using net present value method, determine the discount rate at which launching of Gladiator would be financially feasible. *(All cash flows occur at the end of year unless otherwise specified)*

10. CHERAT MOBILES (CM) - SPRING 2023 (Q7)

Cherat Mobiles (CM) produces and sells smart mobile accessories. It is planning to introduce a low-priced smart watch for the local market. Following information has been gathered in this respect:

- (i) Research and development team incurred an amount of Rs. 0.5 million on market and product research. However, only Rs. 0.2 million was paid as an advance and the remaining amount is due for payment in two months' time.
- (ii) Initial investment in the new plant for manufacturing the smart watch would be Rs. 250 million including installation and commissioning of the plant. The plant would be partly financed through a loan of Rs. 100 million at an interest rate of 18% per annum. The interest would be payable annually and the principal amount would have to be repaid at the end of 5th year.
- (iii) The plant would be installed in a building owned by CM which has been currently rented out at Rs. 0.5 million per month.
- (iv) CM expects to produce 3,000 watches per month. Sales volume is expected to increase by 5% per annum. Contribution margin is estimated to be Rs. 4,000 per watch, whereas the annual fixed cost is estimated to be Rs. 58 million.
- (v) Additional working capital requirements are estimated to be Rs. 15 million which would be realized at 80% of its value at the end of 5th year. No further investment in working capital is expected during the course of the project.
- (vi) The plant would be depreciated at the rate of 15% under the reducing balance method. The plant supplier has offered to repurchase the plant for Rs. 80 million (at current prices) at the end of 5th year. CM would have to incur dismantling costs of Rs. 1.2 million (at current prices) at the end of 5th year.
- (vii) All revenues and costs are quoted on today's rate and are expected to remain the same in the first year. Thereafter, the estimated annual inflation of 9% would be applicable on all future revenues and costs.
- (viii) Applicable tax rate is 30% and tax would be payable / refundable in the year in which it arises. Dismantling costs are allowed as an expense by the tax authorities when they are incurred.
- (ix) CM's cost of capital is 20%.

Required: By using the net present value method, recommend whether CM should launch the new smart watch. *(Assume that all cash flows arise at the end of each year unless otherwise specified)*

11. SANIA COSMETICS (SC) - AUTUMN 2023 (Q10)

Sania Cosmetics (SC) is considering the launch of a beauty product called Zinco. Following information has been gathered in this regard:

- (i) SC will need to spend Rs. 250 million on purchasing and installing the plant for the manufacturing of Zinco. At the end of year 4, the plant's resale value is expected to be Rs. 65 million. The plant will be subjected to accounting/tax depreciation at 25% using the reducing balance method.
- (ii) SC estimates immediate working capital requirement to be Rs. 75 million. A 15% increase, inclusive of inflation, in the working capital requirement (based on the previous balance) is anticipated at the start of years 2, 3, and 4. However, only 60% of the working capital is expected to be realised at the project's end. The remaining balance would be written off as unsaleable inventory at the end of year 4.

- (iii) Sales of Zinco are expected to be 30,000 units per annum, remaining constant over a 4-year period. The selling price is estimated to be Rs. 4,000 per unit.
- (iv) Raw material requirements for the year, along with current inventory details, are as follows:

	Raw Material	
	BW	SB
Annual requirement for Zinco (kg)	3,000	1,200
Current inventory (kg)	1,500	1,200
Cost per kg	Rs. 550	Rs. 4,200
Contribution margin if used on other products (per kg)	Rs. 200	Rs. 1,500

- (v) SB will not be available in the market until the end of the first year. Further, it is also used in another product, requiring 600 kg for the year. However, that product will be discontinued at the end of the year. SB is not used in any other product and can be sold in the market at 50% of its cost.
- (vi) SC estimates an annual labour requirement of 30,000 semi-skilled labour hours at Rs.150 per hour and 10,000 skilled labour hours at Rs. 250 per hour.
- (vii) The annual fixed cost (excluding depreciation) is estimated to be Rs. 1.8 million.
- (viii) The applicable tax rate would be 30%. Taxes will be payable or refundable in the year in which the tax liability or asset arises.
- (ix) All revenues and costs are quoted in today's rate. Annual inflation is estimated to be 11% and will apply to all revenues and costs (except where specified) from the first year onwards.
- (x) SC's cost of capital is 22%.

Required: Compute internal rate of return (IRR) of Zinco and advise whether SC should introduce it. *(Assume that all cash flows arise at the end of each year unless specified otherwise.)*

12. ZAID LIMITED (ZL) - SPRING 2024 (Q9)

Zaid Limited (ZL) launched a product called 'Zing' two years ago and prepared a five-year projection for it. In the first year, Zing performed well and achieved all milestones. However, in the second year, the machine used for production of Zing developed certain operational issues. While ZL was able to maintain the production of the originally estimated quantity, the quality of Zing was significantly affected, resulting in lost sales. ZL is now considering either replacing the machine and continuing with Zing's production or discontinuing Zing's production.

Following information is available in this respect:

Original estimates:

- (i) ZL purchased an old machine costing Rs. 120 million for production of Zing and had to incur an overhaul cost amounting to Rs. 25 million immediately and another overhaul of the same amount would have to be incurred at the end of third year.
- (ii) As per ZL's policy, the machine was depreciated at a rate of 25% using the reducing balance method. It was anticipated that the residual value of machine would be equal to its written down value at the end of the project i.e. the fifth year.
- (iii) Initial investment in working capital was assessed at Rs. 20 million, with no further additions required in subsequent years. ZL anticipated that only 25% of this investment would be realized at the end of the fifth year.

- (iv) A warehouse was rented for a 5-year period at an annual rent of Rs. 5 million, subject to an annual increase of 10%. Early termination of the agreement would incur a penalty equivalent to 6 months' rent.
- (v) Production and sales were estimated at 40,000 units per annum for all the years. However, in the second year, only 15,000 units were sold due to quality issues.
- (vi) The sales price for the first year was Rs. 1,500 per unit, with an annual increase of 10%.
- (vii) Variable costs were estimated at Rs. 650 per unit, with fixed costs (other than rent) associated with Zing at Rs. 1.5 million per annum. Both costs were subject to a 7% annual increase.
- (viii) The weighted average cost of capital is 18%.
- (ix) ZL operates in a tax-free environment.
- (x) All cash flows would arise at the end of the year, except where stated otherwise.

Option 1: Replace the machine and continue with the production of Zing

- (i) A Chinese supplier has offered ZL the opportunity to trade-in the old machine for Rs. 60 million and upgrade to the latest machine for an additional investment of Rs. 100 million. This would help ZL in maintaining the production of Zing at standard quality for the remaining period of project. At the end of the project, ZL expects selling this upgraded machine with a 15% profit above its written down value.
- (ii) ZL can negotiate a contract with an existing customer to sell the existing stock of Zing at 85% of the price based on the original estimates.
- (iii) The new machine is expected to reduce variable cost by 8% compared to the original estimates.
- (iv) All other information would remain consistent with the original estimates.

Option 2: Discontinue production of Zing

- (i) Under this option, the existing stock of Zing would be sold at 80% of the price based on the original estimates.
- (ii) Machine would be sold for Rs. 50 million on an 'as is where is' basis.
- (iii) 35% of the working capital would be realized.
- (iv) All other information would remain consistent with the original estimates.

Required: Evaluate both options by using net present value method. Recommend the best course of action for ZL to follow. *(Net present value based on original estimates is not required)*

13. ZAYD PACKAGING SOLUTIONS (ZPS) - AUTUMN 2024 (Q9)

Zayd Packaging Solutions (ZPS) is planning to setup a new packaging unit to meet the specific requirements of one of its customers and is considering the purchase of a customized machine. In this respect, the following two proposals are under consideration:

	Proposal 1	Proposal 2
Purchase cost including import duties	Rs. 15 million	Rs. 11.5 million
Useful life (years)	4	3
Annual production capacity (units)	50,000	35,000
Annual preventive maintenance cost at current prices	Rs. 200,000	Rs. 300,000

Additional information:

- (i) Under Proposal 1, the supplier would repurchase the machine for Rs. 2.5 million (at year 4 prices) at the end of its useful life.
- (ii) Under Proposal 2, a major overhaul at the end of year 2, costing Rs. 1.5 million (at year 2 prices), would be required. This overhaul would increase the machine's production capacity by 5,000 units from the 3rd year onward and extend its useful life by one year. This machine would be sold in the local market for Rs. 1.5 million (at year 4 prices).
- (iii) ZPS anticipates an annual demand of 35,000 units in the first year, with demand increasing by 7% each year. The production capacity of the new machine would be used to meet this demand. If the machine's production capacity falls short, ZPS would need to purchase additional units from the market at Rs. 1,200 per unit (at current prices).
- (iv) The variable cost of production at current price is Rs. 700 per unit under Proposal 1 and Rs.750 per unit under Proposal 2.
- (v) Depreciation would be calculated using the reducing balance method at a rate of 25%. It is assumed that accounting depreciation matches tax depreciation.
- (vi) Inflation rate is estimated at 10% per annum, starting from year 1.
- (vii) The applicable tax rate is 35% and is payable in the year in which the liability arises.
- (viii) The applicable discount rate is 14%.
- (ix) Assume that, unless stated otherwise, all cash flows arise at the end of the year.

Required: Evaluate both proposals using the net present value method and recommend the best proposal.

ANSWERS

1. Option (c) is correct answer i.e., it would be higher than 18%.

2. VALIKA LIMITED

The life of project is 4 years. The project will be evaluated on NPV model incorporating inflation and taxation. The plant will be installed in premises which are currently rented out. So sacrifice of rental income become opportunity cost for this decision net of tax.

1. Tax depreciation and tax payments would be considered in relevant cash flows of project.
2. The working capital of state of project is expected to increase 10% in subsequent year and full amount is assumed to record at end of project.
3. All other cash flows are straight forward according to their timing.
4. Based on above analysis calculation of net and discounted cash flows are as under:

	Year 0	Year 1	Year 2	Year 3	Year 4
	----- Rs. in million -----				
Contribution margin (W-1)	-	18.00	20.79	22.05	22.69
Tax/Accounting depreciation (50×0.25, 0.75)	-	(12.50)	(9.38)	(7.04)	(5.28)
Net profit before tax	-	5.50	11.41	15.01	17.41
Tax liability @ 30%.	-	(1.65)	(3.42)	(4.50)	(5.22)
Net profit after tax	-	3.85	7.99	10.51	12.19
Add back depreciation		12.50	9.38	7.04	5.28
Rent income lost 1.8×1.07	(1.93)	(2.07)	(2.21)	(2.36)	
Tax saved on rent income 1.93×30%		0.58	0.62	0.66	0.71
Residual value receipts (50–34.2 Total dep.)					15.80
Initial investment	(50.00)				
Working capital (W-2)	(10.00)	(1.00)	(1.10)	(1.21)	13.31
Net cash (outflows)/inflows	(61.93)	13.86	14.68	14.64	47.29
Discount rate @ 10%	1.0000	0.9091	0.8264	0.7513	0.6830
Present value	(61.93)	12.60	12.13	10.99	32.29
Net present value					6.08

W-1: Annual contribution margin	Year 1	Year 2	Year 3	Year 4
Contribution margin per unit (Rs.) A	100.00	105.00	110.25	115.76
	100	100×1.05	105×1.05	110.25×1.05
Annual demand (Units)	180,000	198,000	217,800	196,020
		180,000 ×1.10	198,000 ×1.10	217,800 ×90%
Production - Restricted to capacity (Units) (Up to 200,000 units p.a.) B	180,000	198,000	200,000	196,020
Annual CM (Rs. in million) (A×B)	18.00	20.79	22.05	22.69

W-2: Working capital requirement	Year 1	Year 2	Year 3	
Working capital current year	11.00	12.10	13.31	
	10×1.1	11×1.1	12.10×1.1	
Working capital last year	10.00	11.00	12.10	
(Increase)/Decrease	(1.00)	(1.10)	(1.21)	13.31

Decision:

The project has a positive NPV. The project should be undertaken because it will increase the value of the company and the wealth of its shareholders.

3. DIAMOND INVESTMENT LIMITED

The project will be evaluated on NPV and IRR model after incorporating inflation and taxation.

- The sale revenue will be increased yearly (volume 6% and price 5%)
- The cost of sales is calculated at cost plus 25% (sales 1.25)
- All other cash flows are straight forward according to their timings on assumption that all cash flows would arise at the end of the year unless otherwise specified.
- Based on above analysis calculation of net and discounted cash flows arrears under.

Net Present Value (NPV) of the project

	Year 0	Year 1	Year 2	Year 3	Year 4
	Cash inflows/(outflows) - Rupees in million				
Sales (yearly increase: volume 6% & price 5%)	-	300.00	333.90	371.63	413.62
Cost (Sales ÷ 1.25)	-	(240.00)	(267.12)	(297.30)	(330.90)
Plant depreciation at 25% of WDV	-	(32.00)	(25.60)	(20.48)	(16.38)
Net profit	-	28.00	41.18	53.85	66.34
Tax @ 34%	-	(9.52)	(14.00)	(18.31)	(22.56)
Add back depreciation	-	32.00	25.60	20.48	16.38
Cost of plant and its installation	(160.00)	-	-	-	65.54
Working capital	(20.00)	-	-	-	20.00
Projected cash flows	(180.00)	50.48	52.78	56.02	145.70
PV factor at 18%	1.00	0.85	0.72	0.61	0.52
Present value	(180.00)	42.91	38.00	34.17	75.76
NPV at 18% (NPV_L)		10.84			

Internal Rate of Return (IRR) of the project:

PV factor at 22%	1.00	0.82	0.67	0.55	0.45
PV at 22%					
(Projected cash flow × PV factor)	(180.00)	41.39	35.36	30.81	65.57
NPV at 22% (NPV_H)		(6.87)			

Based on above calculations the expected IRR using interpolation formula is:

$$IRR = L\% + \left(\frac{NPV_L}{NPV_L - NPV_H} \right) \times (H\% - L\%) = 18\% + \left(\frac{10.84}{10.84 - (-6.87)} \right) \times (22\% - 18\%) = 20.45\%$$

Decision: The project has a positive NPV. The project should be undertaken because it will increase the value of the company and the wealth of its shareholders.

The IRR is 20.45% the project should be accepted if the project IRR is more than expected IRR.

4. CLOUDY COMPANY LIMITED (CCL)

By computing Internal rate of return (IRR) of the new plant CCL may decide whether it should introduce D44. (Assume that all cash flows would arise at the end of the year unless stated otherwise) as follows:

	Year 0	Year 1	Year 2	Year 3	Year 4
Projected production and sales of D44 Units (A)	-	20,000	25,000	27,000	29,000
	----- Rs. in million -----				
Contribution margin of D44 (40,000-32,000)×1.1×A	-	160.00	220.00	261.36	308.79
Research cost To be ignored	-	-	-	-	-
Loss of CM of X85 (5,500×2,000×1.1)	-	(11.00)	(24.20)	(39.93)	(58.56)
Existing fixed cost To be ignored	-	-	-	-	-
Incremental fixed cost (75-45)×1.1	-	(30.00)	(33.00)	(36.30)	(39.93)
Tax/Accounting depreciation 450×0.25	-	(112.50)	(84.38)	(63.29)	(47.47)
Net profit before tax	-	6.50	78.42	121.84	162.83
Tax liability @ 30%	-	(1.95)	(23.53)	(36.55)	(48.85)
Net (loss)/profit after tax	-	4.55	54.89	85.29	113.98
Add back non-cash item of depreciation	-	112.50	84.38	63.29	47.47
Plant cost/residual value at the end of useful life	(450.00)	-	-	-	142.36
Total cash (outflows) / inflows	(450.00)	117.05	139.27	148.58	303.81
Net cash inflows	258.71				
Discount factor at 15%	1.0000	0.8696	0.7561	0.6575	0.5718
Present value	(450.00)	101.79	105.30	97.69	173.72
Net present value at 15% NPV _a	28.50				
Discount factor at 20%	1.0000	0.8333	0.6944	0.5787	0.4823
Present value	(450.00)	97.54	96.71	85.98	146.53
Net present value at 20% NPV _b	(23.24)				
IRR = L% + [NPV _L ÷ (NPV _L - NPV _H) × (H% - L%)] 15% + [28.50 ÷ {28.50 - (-23.24)} × {20% - 15%}]					17.7 %

Conclusion:

IRR 17.75% is higher than CCL's cost of capital (12%), therefore, CCL should introduce D44.

5. MODERN TRANSPORT LIMITED (MTL)

MTL's decision to accept or reject the proposal would require following analysis:

Evaluation of BRC's proposal

	Year 0	Year 1	Year 2	Year 3	Year 4
	----- [Cash inflows/(outflows)] -----				
	----- Rupees -----				
Car's (cost) / residual value	(2,000,000)	-	-	-	-
Registration charges	(35,000)	-	-	-	-
Initial investment (A)	(2,035,000)	-	-	-	-
Cost of three mobile phones (15,000×3)	(45,000)	-	-	-	-
Revenue (1,800,000×1.05)	-	1,800,000	1,890,000	1,984,500	2,083,725
Salaries/meals of drivers (3×300,000×1.05)	-	(900,000)	(945,000)	(992,250)	(1,041,863)
Maintenance cost (60,000×1.05×1.10)	-	(60,000)	(69,300)	(80,042)	(92,448)
Insurance premium (50,000-5,000)	(50,000)	(45,000)	(40,000)	(35,000)	-
(B)		795,000	835,700	877,208	949,414
Taxation 30% (B-W.1)× 30%	-	(70,875)	(134,741)	(175,811)	(241,769)
Residual value of car					750,000
Net cash flows	(2,130,000)	724,125	700,959	701,397	1,457,644
Discount factor @ 12%	1.0000	0.8929	0.7972	0.7118	0.6355
Present value	(2,130,000)	646,571	558,805	499,254	926,333
Net present value	500,963				

Conclusion: The net present value is positive; therefore, the proposal should be accepted.

W.1: Adjustment for tax liability

Accounting/tax depreciation (A×25%) (C)	-	(508,750)	(381,563)	(286,172)	(214,629)*
Profit on disposal of car 750 – (A–C)	-	-	-	-	106,114*
Mobiles' cost charged off	-	(45,000)	-	-	-
Insurance premium allowable for tax-next year	-	45,000	40,000	35,000	-
Insurance premium allowable for tax this year	-	(50,000)	(45,000)	(40,000)	(35,000)
	-	(558,750)	(386,563)	(291,172)	(143,515)

6. GOLF LIMITED (GL)

Please see below evaluation of IRR for the said requirement

Descriptions	Year 0	Year 1	Year 2	Year 3	Year 4
	----- Rs. in million -----				
Incremental contribution margin (W-1)	-	157.50	198.45	244.25	295.37
Incremental fixed cost (30×1.05)	-	(30.00)	(31.50)	(33.08)	(34.73)
Tax depreciation [500+25+(12×50%)-60] ×25%] - 12.5	-	(105.25)	(105.25)	(105.25)	(105.25)
Net profit / (loss) before tax	-	22.25	61.70	105.92	155.39
Tax @ 30%	-	(6.68)	(18.51)	(31.78)	(46.62)
Tax savings on loss of disposal of old plant (50m-45m)×30%	-	1.50	-	-	-
Net profit / (loss) after tax	-	17.08	43.19	74.14	108.77
Adding back depreciation (Non-cash item)	-	105.25	105.25	105.25	105.25
Initial investment [500m+25m+(12m×50%)-45m]	(486.00)	-	-	-	-
Receipts from residual value	-	-	-	-	60.00
Total cash (outflows) / inflows (A)	(486.00)	122.33	148.44	179.39	274.02
Discount factor at 12% (B)	1.0000	0.8929	0.7972	0.7118	0.6355
Present value (A×B)	(486.00)	109.22	118.34	127.69	174.15
Net present value at 12% NPV _L	43.39				
Discount factor @ 18% (C)	1.0000	0.8475	0.7182	0.6086	0.5158
Present value (A×C)	(486.00)	103.67	106.61	109.18	141.34
Net present value at 18% NPV _H	(25.20)				
IRR = $L\% + \frac{NPV_L}{(NPV_L - NPV_H)} \times (H\% - L\%) = 12\% + \frac{43.39}{(43.39 + 25.20)} \times \{18\% - 12\%\}$					15.80%

Conclusion: Since IRR is higher than the GL's cost of capital existing plant should be replaced.

W-1:	Year 1	Year 2	Year 3	Year 4
	----- Units in million -----			
Production with new plant (6×1.25), (LY×1.04)	7.50	7.80	8.11	8.43
Production with old plant	6.00	6.00	6.00	6.00
Incremental production (A)	1.50	1.80	2.11	2.43
Contribution margin per unit (550-450)×1.05 (B)	105.00	110.25	115.76	121.55
Incremental contribution margin (A×B)	157.50	198.45	244.25	295.37

7. OMEGA LIMITED (OL)

The net present value of the project assuming that unless otherwise specified, all cash inflows/outflows would arise at the end of year, would be calculated as follows. (taxation is ignored)

	Year 0	1	2	3	4	5	6
	Cash inflows/(outflows) – Rs. in million						
Land	(40.00)	-	-	-	-	-	70.00
Factory building	² (10.00)	¹ (20.00)					¹ 15.00
Plant installation		(100.00)					10.00
Loan (irrelevant CF)		-	-	-	-	-	-
Working capital		(15.00)	-	-	-	-	15.00
Sales (10% growth)	-	-	300.00	330.00	363.00	399.30	439.23
Cost of goods sold (8% growth)			W.1 (195.00)	(210.60)	(227.45)	(245.64)	(265.30)
Royalty (3% of sales)			(9.00)	(9.90)	(10.89)	(11.98)	(13.18)
Interest on loan			-	-	-	-	-
Net cash flows	(50.00)	(135.00)	96.00	109.50	124.66	141.68	270.75
PV factor at 12%	1.00	0.89	0.80	0.71	0.64	0.57	0.51
Present value	(50.00)	(120.54)	76.80	77.75	79.78	80.76	137.17
Net present value of the project							281.72

W.1 - Cost of goods sold:	Rs. in million
Cost of own production (Including depreciation)	(300×80%×90%) 216.00
Depreciation – factory building	(30×50%)÷5 (3.00)
Depreciation – Plant	(100×90%)÷5 (18.00)
	195.00

8. COMFORT WEAR LIMITED - SPRING 2022 (Q10)

Descriptions	0	1	2	3
	----- Rupees -----			
Kiosks - setup cost [250,000×4]	(1,000,000)	-	-	-
Revenue		8,500,000 [4000×2500×0.85]	10,395,000 [4000×2500×0.9 ×1.1×1.05]	12,006,225 [4000×2500×0.9 ×(1.1)2×(1.05)2]
Cost of goods sold		(5,500,000) [4000×1375]	(6,352,500) [4000×1375×1.1 ×1.05]	(7,337,138) [4000×1375×(1.1)2 ×(1.05)2]
Gross profit		3,000,000	4,042,500	4,669,087
Gross profit – lost (W-1)		(1,181,250)	(1,364,342)	(1,575,814)
Rent cost		(600,000) [150000×4]	(660,000) [150000×4×1.1]	(726,000) [150000×4×(1.1)2]

Descriptions	0	1	2	3
	----- Rupees -----			
Marketing cost		(50,000)	(27,500) [50000×0.5×1.1]	(30,250) [50000×0.5×(1.1) ²]
Staff cost - fixed cost		(960,000) [20000×4×12]	(1,056,000) [20000×4×12×1.1]	(1,161,600) [20000×4×12×(1.1) ²]
Staff cost – commission <i>1% of sale proceeds before discount</i>		(100,000) [4000×2500×0.01]	(115,500) [4000×2500×0.01×1.1×1.05]	(133,403) [4000×2500×0.01×(1.1) ² ×(1.05) ²]
Depreciation		(400,000) [1000000×0.4]	(240,000) [400000×0.6]	(144,000) [240000×0.6]
Loss on disposal [1,000,000– (400,000+240,000+144,000)]		-	-	(216,000)
Profit before tax		(291,250)	579,158	682,020
Tax @ 30%		87,375	(173,747)	(204,606)
Profit after tax		(203,875)	405,411	477,414
Add back depreciation		400,000	240,000	144,000
Add back loss on disposal		-	-	216,000
Net cash flows	(1,000,000)	196,125	645,411	837,414
Discount factor @ 18%	1.000	0.847	0.718	0.609
Present value	(1,000,000)	166,118	463,405	509,985
Net present value	139,508			

Recommendation: CWL should set-up kiosks as it would result in positive NPV.

(W-1) Gross profit forgone

	1	2	3
	----- Rupees -----		
Revenue lost	(2,625,000) [5000×0.2×2500 ×1.05]	(3,031,875) [5000×0.2×2500 ×(1.05) ² ×1.1]	(3,501,816) [5000×0.2×2500 ×(1.05) ³ ×(1.1) ²]
COGS saved	1,443,750 [5000×0.2×1375 ×1.05]	1,667,531 [5000×0.2×1375 ×(1.05) ² ×1.1]	1,925,999 [5000×0.2×1375 ×(1.05) ³ ×(1.1) ²]
Gross profit lost	(1,181,250)	(1,364,344)	(1,575,817)

9. ISLAMABAD UNIVERSE (IU) - AUTUMN 2022 (Q6)

Descriptions	0	1	2	3	4	5
Sales in units A		10,000	9,000	7,650	7,650	7,650
----- Inflation @ 8% per annum -----						
Sales price/unit B	1,600	1,728	1,866	2,016	2,177	2,351
Variable cost of sales/unit C	750	810	875	945	1,020	1,102
Variable operating cost/unit D	100	108	117	126	136	147
Descriptions	0	1	2	3	4	5
	----- Rs. in '000 -----					
Sales (A×B)	-	17,280	16,794	15,422	16,654	17,985
Cost of goods sold (A×C)	-	(8,100)	(7,875)	(7,229)	(7,803)	(8,430)
Operating costs – Variable (A×D)	-	(1,080)	(1,053)	(964)	(1,040)	(1,125)
Operating costs – Fixed	-	(1,080)	(1,166)	(1,260)	(1,360)	(1,469)
Machine purchase	(25,000)	-	-	-	-	-
Depreciation						
• Machine (W-1)	-	(6,250)	(4,688)	(3,516)	(2,637)	(1,978)
• Overhauling (W-1)	-	-	-	-	(787)	(591)
Loss on sale of machine (W-1)	-	-	-	-	-	(357)
Profit before tax	(25,000)	770	2,012	2,453	3,027	4,035
Less: Tax @ 30%	-	(231)	(604)	(736)	(908)	(1,211)
Profit after tax	(25,000)	539	1,408	1,717	2,119	2,824
Scrap value (W-1)	-	-	-	-	-	7,347
Overhauling cost	-	-	-	(3,149)	-	-
Add back:						
Depreciation	-	6,250	4,688	3,516	3,424	2,569
Loss on sale of machine	-	-	-	-	-	357
Cash flows	(25,000)	6,789	6,096	2,084	5,543	13,097
Discount factor @ 12%	1.000	0.893	0.797	0.712	0.636	0.568
Present value of cash flows	(25,000)	6,063	4,859	1,484	3,525	7,439
Net present value	(1,630)					
Discount factor @ 9%	1.000	0.917	0.841	0.772	0.708	0.650
Present value of cash flows	(25,000)	6,226	5,127	1,609	3,924	8,513
Net present value	399					

$$IRR = L\% + \left(\frac{NPV_L}{NPV_L - NPV_H} \right) \times (H - L)\%$$

$$IRR = 9\% + \left(\frac{399}{399 + 1630} \right) \times (12\% - 9\%) = 9.59\%$$

Conclusion: At 9.59%, the launching of Gladiator would be financially feasible.

W-1: Depreciation and loss on sale of machine

	Depreciation	Machine cost NBV	Depreciation	Overhauling cost NBV	Total NBV
	----- Rs. In '000 -----				
Cost of machine	-	25,000	-	-	25,000
Year 1	6,250	18,750	-	-	18,750
Year 2	4,688	14,063	-	-	14,063
Year 3	3,516	10,547	-	-	10,547
Overhauling cost $2.5m \times (1.08)^3$	-	10,547	-	3,149	13,696
Year 4	2,637	7,910	787	2,362	10,272
Year 5	1,978	5,933	591	1,771	7,704
Less: Scrap value $5m \times (1.08)^5$	-	-	-	-	(7,347)
Loss on sale of machine					357

10. CHERAT MOBILES (CM) - SPRING 2023 (Q7)

Descriptions	0	1	2	3	4	5
	----- Rs. in million -----					
Research cost	-	-	-	-	-	-
Machinery and equipment	(250.00)	-	-	-	-	-
Loan – receipt and repayment	-	-	-	-	-	-
Working cap. – invest. & release	(15.00)	-	-	-	-	12.00
Profit after tax (W-1)	-	29.75	44.22	59.84	76.98	94.12
Add: Depreciation	-	37.50	31.88	27.09	23.03	19.58
Add: Loss/(gain) on disposal	-	-	-	-	-	(2.00)
Add: Working capital loss						3.00
Sale value - machinery & equip	-	-	-	-	-	112.93
Cash flows	(265.00)	67.25	76.10	86.93	100.01	239.63
Discount factor	1.000	0.833	0.694	0.579	0.482	0.402
Discounted cash flow	(265.00)	56.02	52.81	50.33	48.20	96.33
NPV	38.69					

Conclusion: As the company has a positive NPV, the company should proceed with the investment.

W-1: Accounting profit after tax

Descriptions	1	2	3	4	5
	----- Rs. in million -----				
Annual sales volume (3,000 watches×12×5%)	36,000	37,800	39,690	41,675	43,758
Contribution margin (4,000×9%)	4,000.00	4,360.00	4,752.40	5,180.12	5,646.33
	----- Rs. in million -----				
Contribution margin	144.00	164.81	188.62	215.88	247.07
Fixed cost (excluding depreciation)	(58.00)	(63.22)	(68.91)	(75.11)	(81.87)
Depreciation - machinery & equipment(W-2)	(37.50)	(31.88)	(27.09)	(23.03)	(19.58)
Gain on disposal of machine	-	-	-	-	2.00
Dismantling cost	-	-	-	-	(1.69)
Rental income loss	(6.00)	(6.54)	(7.13)	(7.77)	(8.47)
Working capital loss – bad debt	-	-	-	-	(3.00)
Interest on loan (to be ignored)	-	-	-	-	-
Profit before tax	42.50	63.17	85.49	109.97	134.46
Taxation 30%	(12.75)	(18.95)	(25.65)	(32.99)	(40.34)
Profit after tax	29.75	44.22	59.84	76.98	94.12

W-2: Depreciation @ 15%

Descriptions	0	1	2	3	4	5
	----- Rs. in million -----					
Depreciation for the year		(37.50)	(31.88)	(27.09)	(23.03)	(19.58)
Carrying amount	250.00	212.50	180.62	153.53	130.50	110.93

11. SANIA COSMETICS (SC) - AUTUMN 2023 (Q10)

Descriptions	0	1	2	3	4
	----- Rs. In '000 -----				
Machine – Investment and sales	(250,000.00)				98,674.58
Working capital invest. & release (W-1)	(75,000.00)	(11,250.00)	(12,937.50)	(14,878.13)	68,439.38
Accounting profit after tax (W-2)		38,907.05	57,324.24	75,442.41	74,363.18
Net of tax scrap value of SB 600 kg @ 50% less 30% tax	(882.00)				
Add: Depreciation – Machine		62,500.00	46,875.00	35,156.25	26,367.19
Add: Inventory write-off					45,626.25
Less: Gain on disposal of machine					(19,573.01)
Cash flows	(325,882.0)	90,157.05	91,261.74	95,720.53	293,897.57

Descriptions	0	1	2	3	4
	----- Rs. In '000 -----				
Discount rate at cost of capital @ 20%	1.00	0.833	0.694	0.578	0.482
Discounted cash flows	(325,882.0)	75,100.82	63,335.65	55,326.47	141,658.63
Net present value	9,539.56				
Discount rate at cost of capital @ 22%	1.00	0.820	0.672	0.551	0.452
Discounted cash flows	(325,882.0)	73,928.78	61,327.89	52,742.01	132,841.70
Net present value	(5,041.62)				

$$IRR = L\% + \left(\frac{NPV_L}{NPV_L - NPV_H} \right) \times (H - L)\%$$

$$IRR = 20\% + \left(\frac{9539.56}{9539.56 + 5041.62} \right) \times (22\% - 20\%) = 21.31\%$$

Conclusion: IRR is less than the cost of capital of the company. So this project should not be under taken.

W-1 Working Capital:

Descriptions	0	1	2	3	4
	----- Rs. In '000 -----				
WC (Investment)/Release	(75,000.00)	(11,250.00)	(12,937.50)	(14,878.13)	68,439.38
Balance	(75,000.00)	(86,250.00)	(99,187.50)	(114,065.63)	(45,626.25)

W-2 Accounting profit after tax:

	1	2	3	4
Sales volume	30,000	30,000	30,000	30,000
	----- Rs. in '000 -----			
Sales price -11% inflation from year 1	4.44	4.93	5.47	6.07
Sales	133,200.00	147,852.00	164,115.72	182,168.45
Material cost - SB – 1 st year (600 kg @ 4,200 per kg)	(2,520.00)	-	-	-
11% inflation from year 1:				
Material cost - BW (W-3)	(1,831.50)	(2,032.97)	(2,256.59)	(2,504.82)
Material cost - SB (W-3)	-	(6,209.78)	(6,892.86)	(7,651.07)
Contribution foregone (W-4)	(999.00)			
Labour (W-5)	(7,770.00)	(8,624.70)	(9,573.42)	(10,626.49)
Fixed overheads - excl. dep.	(1,998.00)	(2,217.78)	(2,461.74)	(2,732.53)
Depreciation (W-6)	(62,500.00)	(46,875.00)	(35,156.25)	(26,367.19)
Gain on disposal				19,573.01
Inventory write-off				(45,626.25)
Profit before tax	55,304.30	81,891.77	107,774.87	106,233.12
Taxation 30%	(16,591.29)	(24,567.53)	(32,332.46)	(31,869.93)
Profit after tax	38,713.01	57,324.24	75,442.41	74,363.18

W-3: Material Cost

	BW	SB
Annual requirement – kgs	3,000	1,200
Cost per kg	550	4,200
Total cost (to be inflated by 11% from Y1)	1,650,000	5,040,000

W-4: Contribution forgone

	Rupees
Contribution on 600 kg @ 1,500 per kg	900,000
11% inflation	99,000
	999,000

W-5: Labour cost

	Semi-skilled	Skilled	Total
Hours per annum	30,000	10,000	
Rate per hour	150	250	
Labour Cost (to be inflated by 11% from Y1)	4,500,000	2,500,000	7,000,000

W-6: Depreciation

	0	1	2	3	4
	----- Rs. in '000 -----				
Depreciation @ 25% reducing bal.		(62,500.00)	(46,875.00)	(35,156.25)	(26,367.19)
Carrying amount	250,000.00	187,500.00	140,625.00	105,468.75	79,101.56

12. ZAID LIMITED (ZL) - SPRING 2024 (Q9)**Option 1: Replace machine and continue with production of Zing**

	0	1	2	3
Machine	(100,000)			
Sales of opening inventory [(1,500×1.1)×0.85×25,000]	35,063			
Sales [40,000×1,500×(1.1) ²]		72,600	79,860	87,846
Variable cost (W-1)		(27,386)	(29,303)	(31,354)
Rent [5m×(1.1) ² ÷1,000]		(6,050)	(6,655)	(7,321)
Other fixed cost [1.5m×(1.07) ²]		(1,717)	(1,838)	(1,966)
Depreciation (ignore)	-	-	-	-
Working capital release				5,000
Sale value of machine (W-2)				77,625
Cash flows	(64,938)	37,447	42,064	129,830
Discount rate at cost of capital 18%	1	0.85	0.72	0.61
Discounted cash flows	(64,938)	31,734	30,210	79,019
Net present value	76,026			

W-1: Variable Cost

	1	2	3
Initial estimate – Per unit [650×(1.07) ²]	744.19	796.28	852.02
Variable cost – Initial estimate	29,767	31,851	34,081
8% reduction with new machine	27,386	29,303	31,354

W-2: Sale value of machine

	Rupees
WDV after 3 years $(160m \times 0.75 \times 0.75 \times 0.75)$	67,500,000
Profit @ 15%	10,125,000
Residual value	77,625,000

Option 2: Discontinue production of Zing

	Year 0
	Rupees
Sales $(25,000 \times 1,500 \times 1.1 \times 0.8)$	33,000,000
Working capital realization	7,000,000
Penalty $(5m \div 2 \times 1.1)$	(2,750,000)
Resale value	50,000,000
Cash Flow – Net present value	87,250,000

Recommendation: ZH should choose Option 2.

13. ZAYD PACKAGING SOLUTIONS (ZPS) - AUTUMN 2024 (Q9)

Proposal 1	Y0	Y1	Y2	Y3	Y4
	----- Rs. in '000 -----				
Variable cost @ 700 per unit*		(26,950,000)	(31,720,150)	(37,334,617)	(43,942,844)
Maintenance cost*		(220,000)	(242,000)	(266,200)	(292,820)
Depreciation (W-2)		(3,750,000)	(2,812,500)	(2,109,375)	(1,582,031)
Loss on disposal (W-3)					(2,246,094)
		(30,920,000)	(34,774,650)	(39,710,192)	(48,063,789)
Tax @ 35%		10,822,000	12,171,128	13,898,567	16,822,326
Add back: Depreciation		3,750,000	2,812,500	2,109,375	1,582,031
Add back: Loss on disposal					2,246,094
Purchase cost	(15,000,000)				
Disposal value of machine					2,500,000
Net cash outflow	(15,000,000)	(16,348,000)	(19,791,022)	(23,702,250)	(24,913,338)
Discount factor @ 14%	1.000	0.877	0.769	0.675	0.592
PV	(15,000,000)	(14,340,351)	(15,228,549)	(15,998,343)	(14,748,696)
	(75,315,919)				

Proposal 2	Y0	Y1	Y2	Y3	Y4
	----- Rs. in '000 -----				
Variable cost @ 750 per unit*		(28,875,000)	(31,762,500)	(39,930,000)	(43,923,000)
Shortfall @ 1,200 per unit*		-	(3,557,400)	(114,200)	(5,053,789)
Maintenance cost*		(330,000)	(363,000)	(399,300)	(439,230)
Depreciation (W-2)		(2,875,000)	(2,156,250)	(1,992,188)	(1,494,141)
Loss on disposal (W-3)					(2,982,422)
		(32,080,000)	(37,839,150)	(42,435,687)	(53,892,582)
Tax @ 35%		11,228,000	13,243,703	14,852,491	18,862,404
Add back: Depreciation		2,875,000	2,156,250	1,992,188	1,494,141
Add back: Loss on disposal					2,982,422
Purchase cost	(11,500,000)				
Overhaul cost			(1,500,000)		
Disposal value of machine					1,500,000
Net cash outflow	(11,500,000)	(17,977,000)	(23,939,198)	(25,591,009)	(29,053,616)
Discount factor @ 14%	1	0.8772	0.7695	0.6750	0.5921
PV	(11,500,000)	(15,769,298)	(18,420,435)	(17,273,202)	(17,202,073)
	(80,165,008)				

Recommendation: Proposal 1 is more favourable.

**Amounts inflated by inflation rate of 10% per annum starting from year 1.*

W-1: Shortfall units

	Y1	Y2	Y3	Y4
	----- Units -----			
Units required - Proposal 1 & 2	35,000	37,450	40,072	42,877
Units available - Proposal 2	35,000	35,000	40,000	40,000
Shortfall - Under Proposal 2	-	2,450	72	2,877

W-2: Depreciation

	Proposal 1	Proposal 2
	----- Rupees -----	
Cost	15,000,000	11,500,000
Depreciation year 1	3,750,000	2,875,000
Carrying amount	11,250,000	8,625,000

	Proposal 1	Proposal 2
	----- Rupees -----	
Depreciation year 2	2,812,500	2,156,250
Carrying amount	8,437,500	6,468,750
Overhaul	-	1,500,000
Carrying amount after overhaul	8,437,500	7,968,750
Depreciation year 3	2,109,375	1,992,188
Carrying amount	6,328,125	5,976,563
Depreciation year 4	1,582,031	1,494,141
Carrying amount	4,746,094	4,482,422

W-3: Loss on disposal

	Proposal 1	Proposal 2
	----- Rupees -----	
Carrying amount	4,746,094	4,482,422
Disposal value	2,500,000	1,500,000
Loss on disposal	2,246,094	2,982,422

