BUSINESS ECONOMICS AND ACCOUNTING

Business Economics and Accounting

ISBN: 978-93-88934-49-7

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CHAPTER 1

Introduction to Business Economics

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LEARNING OBJECTIVES

After studying this chapter, you will be able to:

- Discuss the realms of economics and business economics
- Explain the role of economics in business decision making
- Describe the different laws of economics

1.1 INTRODUCTION

Business economics can be defined as the science of applying the theories and methodologies of economics to the various activities of the business with a view to maximise the output with minimal resources in the specified time period.

It is well known that businesses are all about decision making. Right choices made at the right time go a long way in making or breaking a business enterprise. Making choices is important as the basic resources, such as land, labour, raw materials, capital, etc., are often limited and can also be used in other related areas. So, business economics is all about organisations taking financial, operational and strategic decisions in the light of the economic feasibility of the situation and resources at hand. Due to the application of the concepts of economics in the decision-making processes of business enterprises, business economics is also known as managerial economics.

In this chapter, you will study about the concepts of economic and business economics. This chapter also throws light on how economics affects business decision making. At the end, the chapter describe the various laws of economics.

1.2 ECONOMICS AND BUSINESS ECONOMICS

Lionel Charles Robbins, in his famous book, "An Essay on the Nature and Significance of Economic Science", defines economics as *the science which studies human behavior as a relationship between given ends and scarce means which have alternative uses.* In simple words, economics is the study of the optimum utilisation of the available resources. As these resources can be in any form (goods, services or raw materials) or at any stage (production, distribution and consumption), the realm of economics is basically involved at almost every level of the demand-supply chain, which is also the core concept of any business.

Business involves the production and sale of goods and services with the intent to make a profit. The fields of economics and business are interrelated as, like economics, the business makes use of resources in various forms; involves various stages of production, distribution and consumption; and is dependent on the demands and supply patterns of the existing market. The outputs of a business contribute in driving the economy of a country, while the theories and concepts of economy, when applied to the various types of business practices, play an important role in deciding the outcome of the business.

As the principles of economics are used to solve the problems faced by individual companies, i.e., at a micro level, managerial economics is sometimes also referred to as a form of microeconomics.

Now, let us go through some popular definitions of business economics:

According to **Spencer** and **Siegelman**, business economics is *the integration of economic theory with business practice for the purpose of facilitating decision-making and forward planning by management*.

In the words of **McGutgan** and **Moyer**, *managerial economics is the application of economic theory and methodology to decision-making problems faced by both public and private institutions*.

Though business economics is a branch of the realm of economics and both are inter-related in many ways, yet both can be distinguished from each other on the basis of their scope and fields of operation. Table 1 shows some of the basic differences between economics and business economics:

Table 1: Difference between Economics and Business Economics

Economics	Business Economics
It is a field of social sciences that deals with the production, distribution and consumption of products and services that are often limited in number	It is a part or sub-science within economics that deals predominantly with the financial and operational challenges faced by business organisations
It is a traditional field of study dealing with the optimum utilisation of available resources	It is a modern theory dealing with the application of economic principles in taking organisational decisions
It covers mainly theoretical concepts; studies and offers solutions for problems of individuals and societies	It covers practical aspects of day-to-day functioning of organisations and offers solutions to various types of organisational problems
Only economic factors are considered, i.e., in terms of currency and other movable and immovable assets	Both economic and non-economic factors are considered, i.e., market trends and competition, relationship and goodwill among various levels of employees, and other various types of inter- and intra-organisational issues
As it encompasses all aspects of human life and society, its scope of operation is very large and involves the principles of both microeconomics and macroeconomics	It deals with individual and specific problems of both small and big business organisations. So its scope of operation is quite limited and involves only the principles of microeconomics

1.2.1 SCOPE OF BUSINESS ECONOMICS

We have already discussed that business economics deals with the everyday issues and problems arising while running a business enterprise. These problems can be related to various aspects, such as demand and supply chain, level of production, quality of standards, costing of products, market trends and degree of competition. In short, the scope of the application of business economics covers the following aspects of a business:

- Demand analysis and forecasting
- Cost and production analysis

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- Pricing decisions, policies and practices
- Profit maximisation
- Capital management

Let us discuss each of these aspects in detail.

Demand Analysis and Forecasting

A business enterprise can be defined as an economic organisation which earns its profit by producing and selling goods and services demanded by the consumers. Now the keyword here is 'demand' as a major part of any successful business strategy depends upon the correct estimate of the market demands. The analysis of market demands allows organisations to have an overview of the current market situation, identify potential consumers, the type of products they are likely to purchase, their expectations from the product, and the price at which they may be willing to buy that product. As demand analysis and demand forecasts are required by managers for business planning and taking timely decisions on crucial issues, this aspect plays a very strategic role in business economics.

Cost and Production Analysis

After the demand patterns have been analysed, the next step is to purchase/produce the products that are in demand and decide the cost at which they will be sold in the market. All this depends upon the correct cost analysis which requires a proper research and taking into account all the hidden, uncontrollable and unforeseen expenses that may intrude in the production cycle and sabotage the set budget. A well-researched and thorough cost and production analysis helps organisations formulate effective measures for cost control, determine the variables of the Return on Investment (ROI), check the feasibility of the project, and be prepared for unforeseen economic exigencies.

Pricing Decisions, Policies and Practices

The success of a business largely depends upon the pricing decisions and policies implemented by the higher management. In fact, pricing is one of the key areas in which the concepts of business economics can be and are applied. It involves deducing the cost of a product or service purchased or sold by an organisation after considering the various influencing factors.

Profit Maximisation

Businesses are conducted with an aim to earn profits. Profit generation and maximisation is the driving force that keeps managers and employees involved in a business motivated and ready to accept greater challenges. However, conducting profit maximisation activities is easier said than done. As all the other policies and practices involved in running up of a business, generating profits also needs a thorough research and analysis of various economic and operational aspects. Some activities involved in profit maximisation are identifying the nature and kind of profit, formulating economic policies, setting up variables to measure the profit, conducting the break-even analysis, etc. These activities and their techniques may

vary across organisations on the basis of their nature of business, structure, size and scope.

Capital Management

Capital is one of the most important ingredients in making up a business organisation. Without the availability of enough capital, one cannot even think of starting a business. However, it is the decisions regarding the investment of capital that are often the most difficult to make. Management often finds itself divided over the opinion of where to invest the capital resources. The principles of business economics find their applicability in formulating the policies regarding the investment of the capital of the organisation.

Several economic factors, such as interest rates, Gross Domestic Product (GDP), national income, inflation index, growth rate, level of unemployment, foreign exchange, foreign investment, etc., need to be considered while taking such decisions as any variations in these factors directly affect capital management.

1.2.2 ROLE OF A MANAGERIAL ECONOMIST

A managerial economist, also known as a business economist or an economic advisor, plays an important role in the decision-making processes of a business organisation. The work of a managerial economist includes analysing the internal and external factors that are affecting or may affect a business organisation, and using different tools and techniques to formulate solutions for resolving problems. Some of the functions performed by a managerial economist include:

- Performing market research
- Performing economic analysis of rival organisations
- Formulating the pricing policy of the organisation
- Forecasting sales of an organisation
- Performing investment analysis
- Assisting the top management in making decisions related to trade and public relations and foreign exchange
- Performing capital budgeting and production planning
- Keeping the top management informed regarding any changes in the business environment

Self Assessment Questions

1. The scope of the application of business economics covers the following aspects of a business:
   a. Demand analysis and forecasting
   b. Cost and production analysis
   c. Pricing decisions, policies and practices
   d. All of these

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2. The fields of economics and business are interrelated as like economics, business makes use of resources in various forms; involves various stages of production, distribution and consumption; and is dependent on the demands and supply patterns of the existing market. (True/False)
3. Due to the application of the concepts of economics in the decision-making processes of business enterprises, business economics is also known as _____.
   a. managerial economics
   b. capital economics
   c. macro economics
   d. decisive economics
4. Name two factors that need to be considered while taking decisions regarding capital investment.

1.3 ECONOMICS AND BUSINESS DECISION MAKING

You have already learned that for the smooth operation of all organisational activities, managers need to take quick and appropriate decisions regarding the various aspects concerning the business. However, as business and economics are interrelated, any changes in the market trend, government policies, existing business scenario, foreign relations, etc., can significantly alter all the dynamics of a business. Therefore, it is very important to study all these factors and the potential effects that their fluctuation may cause on the profitability, stability and sustainability of the business. Any misreading of these factors can cause serious trouble for an organisation in the future. Therefore, it is suggested that managers should make use of various tools, techniques and models of economics to analyse the details and complexities of various factors and situations that arise from time to time in a business environment. Some examples of the types of decisions that managers are required to take include which product should be brought into the market and what is the right time to launch it, which customer base is to be catered to, what price should be fixed for the product, how much units of a particular product should be produced, how much should be spent on advertising and marketing activities, should the product be launched in the internal market only or should other options also be considered, what will be the effect of the variations in the foreign exchange market on the sales of the product, etc.

To deal with all such questions, organisations often include the following six steps in their decision-making processes:

1. **Identify the objective of the business/project at hand:** This involves establishing the main objective behind starting a particular project or business. For example, earning profit is generally the main objective of a private business enterprise; whereas, the objectives of public business undertakings, such as running of a power plant, airport or post office, can be the implementation of government schemes and policies.

2. **Define the problem:** This step is about defining the problem or the issue that needs to be addressed for the attainment of the defined objective. Identification of all the issues involved in a project is very important as only then can the correct decisions be taken.
3. **Formulate potential solutions:** This step is related to finding out ways in which it can be solved by employing the minimum resources. While formulating solutions, the managers should also consider the impact that their decisions can have on other aspects of the business. This may require collecting, sorting and analysing of data from both within and across organisations.
4. **Find alternative courses of action:** In the highly volatile and uncertain market and business environments, managers must always strive to find alternative ways of performing a task or solving a problem. Checking the feasibility and suitability of the available solutions for a particular issue is also part of the decision-making process.
5. **Implement the decision:** This step involves changes in the ongoing processes and work patterns of the organisation. So, it is very important to introduce the solution at the right time and at the right point of the process cycle.
6. **Monitor the effect of the decision:** Introduction of any new element or any change in the existing processes requires time to fit in. The ongoing system cycle may not adjust with the implemented change/solution and may not deliver the desired results. Thus, continuous monitoring is very essential to check the effects of any new decision as well as the need for taking any corrective actions.

Self Assessment Questions

5. As business and economics are interrelated, any changes in the market trend, government policies, existing business scenario, foreign relations, etc., have no effect on the dynamics of a business. (True/False)
6. Continuous monitoring is very essential to check the effects of any new decision as well as the need taking any _____ actions.
7. Some examples of the types of decisions that managers are required to take include:
   a. The type of product that should be brought into the market and the right time to launch it
   b. The price that should be fixed for the product
   c. The number of units produced of a particular product
   d. All of these

Activity

Visit a manufacturing unit and collect information about the role of economic principles in the day-to-day decision-making processes.

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1.4 LAWS OF ECONOMICS

As everything else in this Universe, the realm of economics is also ruled by certain laws. **Adam Smith**, the 18th century Scottish philosopher and economist, is considered as the 'Father of Economics'. In his book 'An Inquiry into the Nature and Causes of the Wealth of Nations', he defined economics as *the science of national wealth*. He gave three laws of economics, which are discussed in brief as:

- **First Law of Economics:** It is called the law of self-interest. This law states that most people work for their own survival, well-being and personal interest. Human beings want a happy and fulfilled life for themselves and their families, and it is the sole purpose of their putting in efforts and performing various kinds of activities to earn money. In the pursuit of this goal, people often go to new places and take new chances. All this involves the movement of the workforce across continents, exchange of ideas and technologies, and adoption of new culture and values, which leads to globalisation.
- **Second Law of Economics:** It is called the law of competition. This law emphasises the competitive nature of man. It states that a healthy competition always brings about the best outcome in humans as well as situations. For example, the competition between two organisations dealing with manufacturing the same kind of products not only creates a better product at a reasonable cost but, also eliminates monopolisation.
- **Third Law of Economics:** It is called the law of supply and demand. According to this law, demand is the major factor behind the production and supply of a product. If the demand for a particular product is high in the market, then the manufacturers will also increase its supply in the market to meet the growing demands. To manufacture more of the demanded product, the company would need more workforce and people would move into this job to satisfy their own self interests. Thus, all the three laws of economics are interrelated to each other.

SELF ASSESSMENT QUESTIONS

8. The second law of economics is also known as:
   a. The law of self-interest
   b. The law of competition
   c. The law of demand
   d. The law of supply
9. If the _____ of a particular product is high in the market, then the manufacturers will also increase its _____ in the market to meet the growing demands.
10. The movement of the workforce across continents, exchange of ideas and technologies, adoption of new culture and values leads to _____.
    a. monetisation
    b. commercialisation
    c. socialisation
    d. globalisation

Activity

Describe the applications of the three laws of economics given by Adam Smith.

1.5 SUMMARY

- Business economics can be defined as the science of applying the theories and methodologies of economics to the various activities of the business with a view to maximise the output with minimal resources in the specified time period.
- Business involves the production and sale of goods and services with the intent to make a profit.
- The fields of economics and business are interrelated as like economics, business makes use of resources in various forms; involves the various stages of production, distribution and consumption; and is dependent on the demands and supply patterns of the existing market.
- A business enterprise can be defined as an economic organisation which earns its profit by producing and selling goods and services demanded by the consumers.
- After the demand patterns have been analysed, the next step is to purchase/ produce the products that are in demand and decide the cost at which they will be sold in the market.
- Several economic factors, such as interest rates, Gross Domestic Product (GDP), national income, inflation index, growth rate, level of unemployment, foreign exchange, foreign investment, etc., need to be considered while taking such decisions as any variations in these factors directly affect capital management.
- As business and economics are interrelated, any changes in the market trend, government policies, existing business scenario, foreign relations, etc., can significantly alter all the dynamics of a business.
- Managers should make use of various tools, techniques and models of economics to analyse the details and complexities of various factors and situations that arise from time to time in a business environment.
- While formulating solutions, the managers should consider the impact that their decisions can have on other aspects of the business.
- In the highly volatile and uncertain market and business environments, managers must always strive to find alternate ways of performing a task or solving a problem.
- The three laws of economics, proposed by Adam Smith, are the law of self-interest, the law of competition, and the law of demand and supply.

1.6 KEY WORDS

- **Business economics:** The science of applying the theories and methodologies of economics to various activities of business with a view to maximise the output with minimal resources in the specified time period.

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- **Business enterprise:** An economic organisation which earns its profit by producing and selling of goods and services demanded by the consumers.
- **Law of self-interest:** According to this law, most people work for their own survival, well-being and personal interest and take up various kinds of activities to achieve this goal.
- **Law of competition:** According to this law, a healthy competition always brings about the best outcome in humans as well as situations.
- **Law of supply and demand:** According to this law, demand is the major factor behind the production and supply of a product. If the demand a particular product is high in the market, then the manufacturers will also increase its supply in the market to meet the growing demands.

1.7 CASE STUDY: Wii: THE BESTSELLING GAME CONSOLE

Nintendo, the famous Japanese video game manufacturing company, launched a new video game console named Wii. It is the fifth home video game console made by Nintendo and is equipped with many features, such as Bluetooth, Wi-Fi online capabilities and wireless controllers.

The successor to GameCube, Wii is different from the other game consoles of Nintendo in many ways, but the main point of difference is the controller. The introduction of controller has revolutionised the gaming industry. The controller is a device that can be used as a mouse to move and control the objects on the screen. However, instead of moving the controller on a flat surface, like a mouse, the gamer can simply point the controller towards the screen like a television remote control.

Apart from this, Nintendo also gave a game package called Wii Sports, containing five different mini games: baseball, boxing, bowling, tennis and golf. Each of these games requires the use of the controller and will make the players feel as if they are playing the actual game in the 3D space. For example, you can swing the remote to and fro to hit the tennis ball as if it was a real tennis racket.

Nintendo released the information for the launch of Wii in Japan, North and South America, Australia, Asia and Europe. This information also included relevant dates, prices, and projected unit distribution numbers. It was decided that the majority of the shipments would be allotted to America. On November 19, 2006, two days after the PS3 was released in North America, Wii was launched in the United States at $249.99. In the United Kingdom, Wii was launched on December 8, 2006 at £179. In South Korea and Taiwan, Wii was launched in 2008.

The popularity of Wii became so high overnight that the United Kingdom suffered a widespread shortage of console units. Many high-street and online stores were unable to fulfil all the pre-orders given by their customers. One of the officials at Nintendo said in an interview, "We understand the frustration of consumers... I can tell you that we expect no slowdown after the first of the year. We want to say that if you could possibly hold out just a little longer, there will be more products in January."

Some United Kingdom stores still had a shortage of consoles by March 2007. The sales market lead is recorded as the largest in the Japanese market. In 2008, Wii was declared the best-ever selling home console in Japan with almost 2,908,342 units sold. The same trend continued in other markets of the world also. In Australia, it became the fastest-selling game console in Australian history. In the North American and United Kingdom markets, demand still outpaced supply as of June 2007.

Compared to the phenomenal success of Nintendo's game console, the consoles manufactured by the companies like Microsoft and Sony suffered losses in the market. The strategy Nintendo adopted in the production and marketing of Wii was to optimise the production costs to obtain a significant profit margin with each Wii unit that is sold. On May 7, 2009, Nintendo reported an increase in the operating profits as well as a significant rise in sales for its fiscal year (from April 1, 2008 to March 31, 2009).

In the year 2009, Nintendo dropped the price of Wii in many countries including Japan, the United States, and the United Kingdom. The price drop along with the new software releases, such as New Super Mario Bros, boosted the market of Wii making it again the bestselling home video game console. Nintendo has recorded the sales of around 87.57 million Wii consoles by June 30, 2011.

Source: *http://stephenkinsella.net/WordPress/wp-content/uploads/2011/09/eC4004_2011_Case-Studies.pdf*

QUESTIONS

1. What made Wii the most sought-after game console as compared to others available in the market?

   (**Hint:** Introduction of new features, such as Bluetooth, Wi-Fi online capabilities and wireless controllers.)

2. Discuss the steps taken by Nintendo to again boost the sales of Wii in the world market.

   (**Hint:** Price drop, new software releases.)

1.8 EXERCISE

1. Explain the concept of business economics.
2. State the difference between economics and business economics.
3. Discuss the various factors involved in the scope of business economics.
4. How do the concepts of economics affect the decision-making processes of a business organisation?
5. Discuss the three laws of economics given by Adam Smith.

1.9 ANSWERS FOR SELF ASSESSMENT QUESTIONS

Topic	Q. No.	Answer
Economics and Business Economics	1.	d. All of these

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Topic	Q. No.	Answer
	2.	True
	3.	a. managerial economics
	4.	National income and inflation index
Economics and Business Decision Making	5.	False
	6.	corrective
	7.	d. All of these
Laws of Economics	8.	b. The law of competition
	9.	demand; supply
	10.	d. Globalisation

1.10 SUGGESTED BOOKS AND E-REFERENCES

SUGGESTED BOOKS

- Dwivedi, D., & Dwivedi, D. (2009). *Essentials of Business Economics*. Noida, U.P.: Vikas Pub. House Pvt. Ltd.
- Trivedi, M. (2002). *Managerial Economics*. New Delhi: McGraw-Hill.
- Chaturvedi, D., & Gupta, S. (2010). *Business Economics*. New Delhi: International Book House.

E-REFERENCES

- Managerial Economics - Definition and Meaning - Characteristics - Scope - Importance - Economicsconcepts.com. (2019). Retrieved from https://economicsconcepts.com/managerial_economics.htm
- (2019). [Ebook]. Retrieved from http://www.ddegjust.ac.in/studymaterial/bba/bba-103.pdf

CHAPTER 2

Concept of Demand

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LEARNING OBJECTIVES

After studying this chapter, you will be able to:

- Explain the meaning of demand
- Describe the types of demand
- Explain the factors that affect individual demand and market demand
- Describe the law of demand
- Explain demand curve
- Explain shifts and movements along the demand curve

2.1 INTRODUCTION

In the previous chapter, you studied about the basic concept of economics and business economics. Further, you studied about the basic laws of economics. This chapter discusses about demands. Study of demand is related with our decision to purchase a product or a combination of products depending on the amount of money we have and the price we have to pay.

As you know that principle of market is depend upon the forces of demand and supply. Demand and supply in the market play a crucial role in deciding the price of a commodity and size of the market. This chapter helps you to understand in details the concept of demand and how demand affect other factors in the market. Demand represents a relationship between all possible prices of a product and the quantities purchased by the buyer at each price.

In this chapter, you will study about concept of demand, individual demand, market demand, factors that affect individual demand and market demand, law of and demand. This chapter explains the reasons of law of demand as well as exception to law of demand. Concept related to demand curve also explain with suitable illustrations.

2.2 DEMAND

Demand is an economic concept that is defined as the quantity of a product an individual is willing to purchase at a specific point of time. By demand for a commodity, we mean the willingness or effective desire of individuals to buy a product supported by their purchasing power.

Often people alternatively use the terms, desire, want and demand, however, in economics, the meaning of each of these terms is quite different. Merely wishing to have a commodity irrespective of whether that thing is really available or not is known as the desire. Want is the desire supported by ability and the willingness to pay. Let us understand the difference between these three terms with the help of an

example. Suppose an individual is willing to purchase a laptop, then it can be called his desire. If the individual has the money to buy the laptop but is not willing to sacrifice his money, it becomes a want. However, if the individual is willing to use the money to purchase the laptop, it becomes a demand.

Thus, you can say that demand is the quantity of a commodity or service that consumers are willing to buy at a given price at a given time period. The three fundamental elements of demand are as follows:

i. quantity of the commodity

ii. price of the commodity

iii. period of time when the commodity is purchased

Let us consider the following three scenarios:

1. An individual purchased a laptop in March 2019.
2. An individual purchased a laptop for ₹ 30,000
3. An individual purchased a laptop for ₹ 30,000 in March 2019.

The first two scenarios are not useful for demand purpose. In the first case, the price of the laptop is not stated. In the second case, the period of time is not stated. The third case is complete as it states the quantity of the laptop, the price of the laptop and the time period during which the said quantity is demanded.

Self Assessment Questions

1. Which of the following is/are the fundamental elements of demand:
   a. Quantity of the commodity
   b. Price of the commodity
   c. Period of time when the commodity is purchased
   d. All of the above
2. Merely wishing to have a commodity irrespective of whether that thing is really available or not a _____.
   a. desire
   b. want
   c. demand
   d. dream

2.3 TYPES OF DEMAND

There are various factors which influence demands in various circumstances such as the number of consumers for a given product, the nature of products, the utility of products, and interdependence of different demands. An organisation has to be

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aware of various types of demands in various situations. Figure 1 lists the different types of demands:

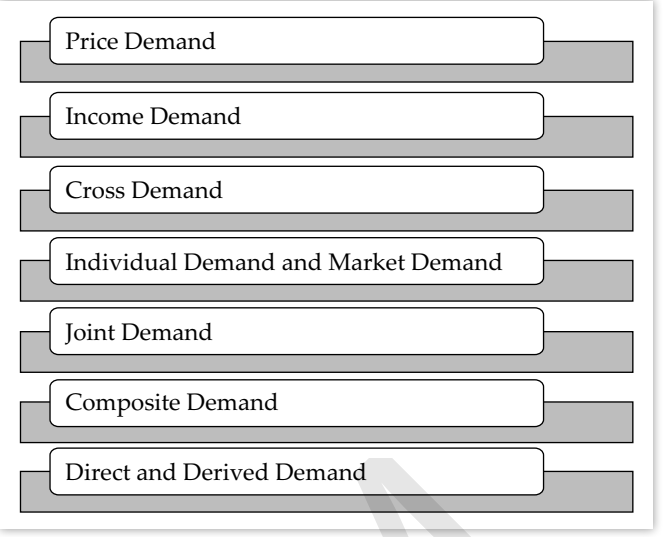

FIGURE 1: Different Types of Demands

Let us now discuss each of these different types of demand in detail:

- **Income demand:** If all the other factors remain the same, then the demand for different quantities of a commodity or service that the consumer intends to purchase at different levels of income is known as the income demand. Except for inferior goods, the demand for a commodity or service increases with the increase in the level of the income of individuals.

  The relationship between demand and income can be represented as follows:

  $D_x = f(Y_A)$

  Where,

  D_x = Demand for commodity

  f = Functional Relationship

  Y_A = Income of consumer A

  So from the above equation, it can be said that demand and income are directly proportional to normal goods whereas the demand and income are inversely proportional to inferior goods.

- **Price demand:** If all the other factors such as prices of the related goods, level of income of consumers, and consumer preferences remain unchanged, then the demand for different quantities of a commodity or service that consumers intend to purchase at a given price and time period is known as the price demand.

  The relationship between demand and price can be represented as follows:

  $D_A = f(P_A)$

  Where,

  D_A = Demand for commodity A

f = Functional Relationship

P_A =Price of commodity A

So from the above equation, it can be said that the price demand is inversely proportional to the price of a commodity or service. The price of a commodity or service falls with the rise in its demand.

- **Cross demand:** When the demand for different quantities of a commodity or service depends not only on its own price but also on the price of other related commodities or services, then the demand is known as the cross demand. For example, tea and coffee are cross demand products because the rise and fall in the price of one influence the sales of the other.

  The relationship between demand and price of the commodities can be represented as follows:

  $D_A = f(P_B)$

  Where,

  D_A = Demand for commodity A

  f = Functional Relationship

  P_B = Price of commodity B

- **Individual demand and market demand:** Individual demand is the quantity of a commodity or service that an individual buyer is willing to buy at a given price in a given time period. For example, the quantity of milk that an individual buy in a month is the individual demand. The individual demand for a product is decided by the price of the product, the income of customers, and their tastes and preferences.

  Market demand, on the other hand, is the sum of demand of all the buyers of a product at a given price during a given period of time. For example, if there are four buyers of milk, then the market demand is the aggregate of all the four individual demands of milk over a period of time at a specific price while other factors are constant.

- **Joint demand:** The demand of two or more commodities or services that are used jointly, and are thus mostly demanded together, refers to as the joint demand. The demand for car and petrol, bread and butter, pen and refill, etc., are some examples of joint demand. There is a proportional relationship between the products of joint demand. For example, the rise in the demand of cars results in a proportionate rise in the demand for petrol. In the case of joint demand, the rise in the price of one commodity results in the fall of the demand of the other commodity. In the above example, an increase in the price of cars will cause a fall in the demand of not only of cars but also of petrol.

- **Composite demand:** It refers to the demand for the products or services that have multiple uses. The demand for steel for various purposes, such as manufacturing utensils, car bodies, pipes, cans, etc., is a prime example of the composite demand. For products and services that come under composite demand, a change in the price results in a large change in the demand. For example, change in the price of steel may affect other products depending upon it.

Notes

- **Direct and derived demand:** Some of the demands arise due to the natural desire of an individual to consume a particular product such as the demand for food, shelter, clothes and vehicles. These demands are meant for final consumption and referred to as direct demands. These demands arise out of the biological, physical and other personal needs of consumers.

  Derived demand, on the other hand, refers to the demand for a product that arises due to the demand for other products. The demand for cotton to produce cotton fabrics is a prime example of the derived demand. Other examples of derived demand are the demand for raw materials in manufacturing, the demand for labour in the construction of buildings, etc.

2.3.1 FACTORS AFFECTING INDIVIDUAL DEMAND

There are various factors that affect the individual demand of a product or service, such as the price of the product, the price of substitutes, the level of income, tastes and preferences of the consumer, and the features of the product. These factors are known as the determinants of demand and are explained as follows:

- **Price of the commodity:** There is an inverse relationship between the price of a commodity and its quantity demanded by its buyers while other factors remain the same. This implies that when the price of a commodity or service rises, its demand falls and vice versa.
- **Price of related goods:** Apart form its own price, the demand for a good or service also depends upon the price of related goods. If the change in the price of one item affects the demand for the other item, then the two items are said to be related to each other. While purchasing goods, the prices of their substitutes and complements affect the quantity of the main item that is purchased.

  The related goods can be classified as follows:

  - **Substitute goods:** These goods can be used in place of one another as they serve the same purpose. For example, tea and coffee, cold drink and juice, etc. There is a directly proportional relationship in demand for goods to the price of their substitutes. Consider the two brands of fruit juice; Tropicana and Real. If the price of Tropicana increases, consumers will tend to switch to Real. Therefore, the demand for Real is influenced by the rise in the price of Tropicana. Therefore, these are substitutes or competitors of each other.
  - **Complementary goods:** An increase in the price of complementary goods leads to a decrease in the demand for the given commodity and a decrease in the price of complementary goods leads to an increase in demand for the given commodity. For example, car and petrol. So, the demand for a given commodity is inversely affected by the change in the price of complementary goods. Thus, an increase in the price of cars not only would lead to the fall in the quantity demanded but also lower the demand for petrol.
- **Income of the buyer:** The demand for a product or service is affected by the income of the buyer of that product or service. So, the income and demand are directly proportional to each other, which means that the rise in the buyer's income results in the rise in the demand for a product or service. However, the relationship between income and demand depends on the types of commodity under consideration. Types of commodities are classified as follows:

- **Normal goods:** Those goods whose demand increases with the increase in the income of buyers are known as normal goods. For example, the demand for clothes, furniture, cars, mobiles, etc., rises with an increase in the buyer's income.
- **Inferior goods:** Those goods whose demand decreases with the increase in the income of buyers are known as inferior goods. For example, the demand for coarse rice, toned milk falls when individuals' income increases as they prefer to purchase higher quality grains. These goods are also known as Giffen goods.
- **Luxury goods:** The demand for luxury goods rises with an increase in the level of the income of buyers. For example, the demand for luxury restaurant meals increases with an increase in the individual income of buyers.

- **Tastes and preferences of consumers:** The demand for a commodity is also affected by the tastes and preferences of consumers. The customs, habits and fashion prevalent in a certain region also affect the demand for particular commodities. For example, the demand for Saris usually remains high in the Indian subcontinent.
- **Credit policy:** The ease in getting credit for a particular product also affects the demand for that product. Favourable credit policies generally result in the purchase of commodities that consumers may not have purchased otherwise. For example, easy home and car loans offered by banks have led to a steep rise in the demand for homes and cars, respectively.

2.3.2 FACTORS AFFECTING MARKET DEMAND

Market demand is the total quantity of a commodity that all its buyers taken together are willing to buy at a given price during a given period of time. All the factors that affect the individual demand also affect the market demand as well. There are various factors which influence the market demand for a commodity. Let us discuss these factors in details:

- **Number of buyers in the market:** It refers to the population and its composition in the market. The increase in the population increases demand and the decrease in the population decreases demand. The composition of the population like age ratio of males, females, children and old people in the population also have a major impact on the demand for a commodity.

  For example, the younger male population has a higher demand for bikes.
- **Distribution of income and wealth:** Distribution of income and wealth also has an impact on the demands of various commodities. Unequal distribution of income results in the differences in the income status of different individuals in a nation. Demands for luxury goods will be more if the distribution of income and wealth is in favour of the rich. Demands of essential items, which are necessary for living, will be more if the distribution of income and wealth is in favour of the poor.
- **Climatic conditions:** The demand for commodities also depends on the climatic conditions of a region. Demand for woollens increases during winters, whereas demand for ice creams and cold drinks increases during summers. Similarly, market demand for umbrellas and raincoats increases during the rainy season.

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- **Policies of the government:** Economic policies of the government, such as taxation levels, budgets, money supply, and interest rates have a major impact on the level of market demand. For example, if the government puts a product in the higher basket of Goods and Services Tax (GST), then their prices would increase, which would lead to a fall in their demand.

Self Assessment Questions

3. Demand and income are directly proportional to normal goods whereas the demand and income are inversely proportional to inferior goods. (True/False)
4. When the demand for different quantities of a commodity or service depends not only on its own price but also on the price of other related commodities or services, then the demand is known as the _____.
   a. price demand
   b. income demand
   c. cross demand
   d. direct demand
5. _____demand is the quantity of a commodity or service that an individual buyer is willing to buy at a given price in a given time period.
6. Those goods whose demand decreases with the increase in the income of buyers are known as _____ (gifted/giffen) goods.

2.4 LAW OF DEMAND

The law of demand refers to the relationship between the price of a commodity and its quantity demanded, when all the other factors affecting the demand remain the same. There is an inverse relationship between the quantity demanded and the price of a commodity. The law of demand states that the quantity demanded of a commodity increases with the fall in the price of the commodity and vice versa while other factors remain the same. Here, other factors are consumers' preferences, level of income, population size, etc.

Demand is a function of price and can be expressed as follows:

$D = f(P)$

Where,

D = Demand

P = Price

f = Functional Relationship

2.4.1 DEMAND CURVE

A demand curve is a graphical illustration of the law of demand. By graphically plotting the different combinations of the price and quantity demanded of a product, we can convert the demand schedule into a demand curve. The demand curve is the pictorial representation of the demand schedule. The demand curve represents

different quantities of a commodity demanded at a specific price and time while other factors remain constant.

The demand curve can be categorised into the following two types:

1. **Individual demand curve:** The individual demand curve represents the relationship between the quantity of a commodity which an individual is willing to buy and all the possible prices of that commodity in a given time period with an assumption that other factors remain the same. For example, the individual demand schedules of A and B, when plotted on a graph, will represent the individual demand curves, as shown in Figure 2 and Figure 3:

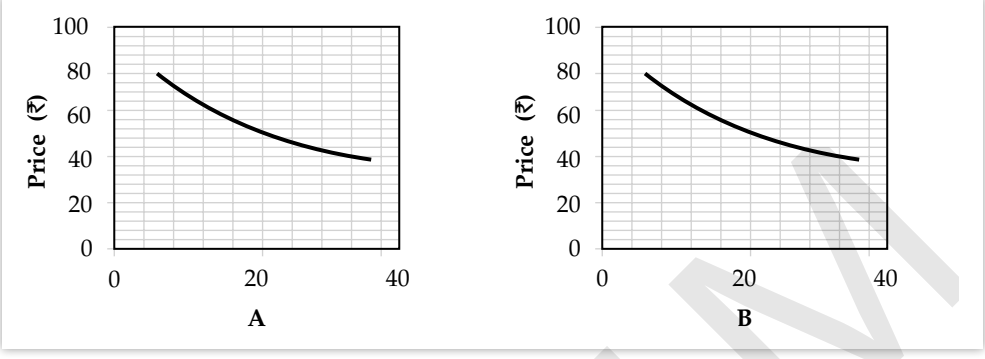

Figure 2: Individual Demand Curve of A

Figure 3: Individual Demand Curve of B

An individual demand curve slopes downwards to the right indicating an inverse relationship between the price and quantity demanded of a commodity.

2. **Market demand curve:** This curve represents the relationship between the quantity of a commodity which all individuals in the market are willing to buy and all possible prices of that commodity in a given time period with an assumption that other factors remain the same. The market demand curve is the horizontal summation of the individual demand curve. For example, the price of eggs against the demand generated by all the buyers in the market can be illustrated in Figure 4:

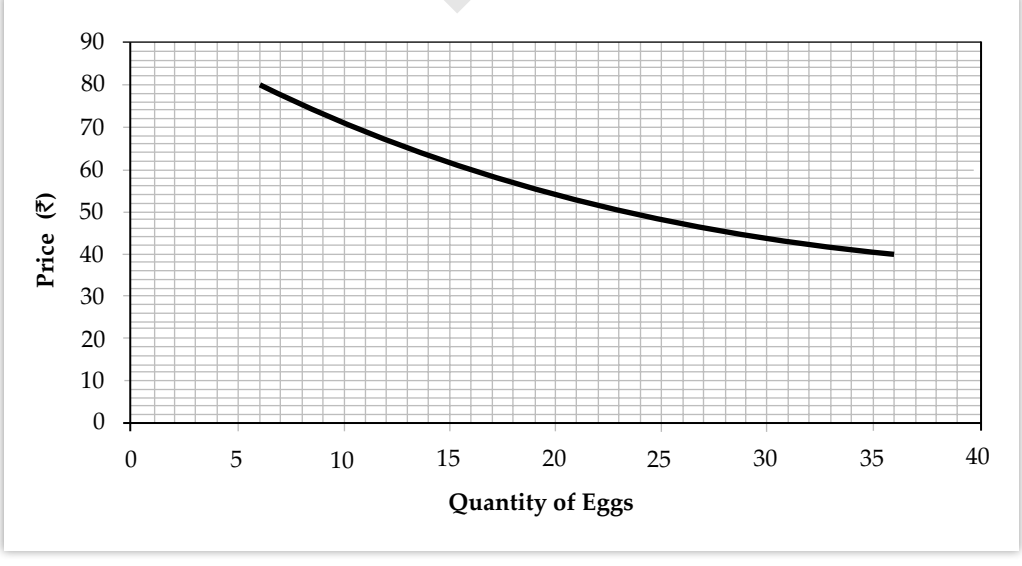

Figure 4: Market Demand Curve

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The demand curve slopes downwards from left to right. The negative slope of a demand curve is a reflection of the law of demand. The main reasons for the operation of the law of demand are discussed in the following subsections.

Law of Diminishing Marginal Utility

The law of diminishing marginal utility states that as consumption increases, the utility that a consumer derives from a commodity decreases with each successive unit. Therefore, a consumer tends to buy a commodity in higher quantities when the price of that commodity is low.

Assumptions of the law of diminishing marginal utility are as follows:

- The main assumption of this law is that a consumer is rational and he makes rational purchases in order to maximise the utility derived from a product.
- There is no change in the price of a commodity.
- There is no change in preferences, taste fashion, etc., of the consumer.
- The consumption of a commodity is continuous and there is no interval in between.
- The quantity of each unit is equal and it must be suitable and reasonable.
- The total utility for all commodities are additive in nature.
- The marginal utility of money remains the same.

Exceptions of the law of diminishing marginal utility are as follows:

- This law is not applicable to luxury goods, such as rare paintings, gems, vintage arts, luxury cars, etc.
- The law of diminishing marginal utility is not applicable in the case of certain normal commodities also. For example, televisions, washing machines and refrigerators. It is because the consumption of these goods is continuous in nature.
- This law is not applicable to the consumption of illegal drugs, cigarettes, liquor and other intoxicants. This is because these goods are habitual in nature.

Income Effect

Income effect is the change in the demand situation when the consumer's real income changes due to the change in the price of a commodity in the market. That means a change in the price of a commodity affects the purchasing power of a consumer. For example, if an individual buys 2 kg of sugar at ₹ 30 per kg, he/she spends ₹ 60. When the price of apples falls to ₹ 20 per kg, he/she spends ₹ 60 for purchasing 3 kg of sugar. This results in a saving of ₹ 30 for the individual, which implies that the real income of the individual has increased by ₹ 30. The money saved by the individual may be used in purchasing an additional amount of sugar. Thus, the demand for sugar increased because of the change in real income.

Substitution Effect

It is the effect of change in the relative price of a commodity over the demand of that commodity. The relative price means the price of a commodity in relation to other

substitute commodities. A buyer always looks for the lower priced commodities that are substitutes of higher-priced commodities in order to maintain their standard of living. Therefore, due to the **Substitution effect,** the demand for relatively cheaper commodities increases. For example, if the price of smartphones comes down, while the price of feature mobile phones remains the same, the smartphones will become relatively (feature mobile phones) cheaper. The demand for smartphones will increase as compared to feature mobile phones.

Change in the Number Of Buyers

Change in the number of buyers in the market influences the law of demand. When the number of buyers of a commodity increases, the price of that commodity decreases accordingly and that ultimately increases the demand of that commodity. For example, when the price of sugar is ₹ 60 per kg, only a few people purchase it, however, when the price of sugar falls down to ₹ 30 per kg, more number of people can afford it.

Multiple Uses of a Commodity

There are certain commodities that have diverse uses like milk, steel, oil, etc. For example, milk is used for different purposes like drinking, making sweet dishes, making ice-creams, etc. When the price of such commodities increases, its use may be restricted to important purposes only. Therefore, the demand for such products is reduced.

SELF ASSESSMENT QUESTIONS

7. The demant curve is the pictorial representation of the _____.

2.5 SHIFTS AND MOVEMENTS ALONG DEMAND CURVE

The law of demand states that there is an inverse relationship between price and quantity demanded. In the law of demand, change in quantity demanded and change in demand are two different things.

Change in quantity demanded happens due to changes in the price, keeping other factors constant. Representation of the change in quantity demanded is the movement along the same demand curve on a graph. There can be either a downward movement or an upward movement along the same demand curve. On the other hand, the change in demand happens when the demand for a commodity changes due to the change in any factor other than the price of the commodity. It is graphically expressed as the shift in the demand curve.

2.5.1 INCREASE AND DECREASE IN DEMAND

Increase in demand of a commodity happens due to favourable changes in factors other than the price of the commodity. In case of the increase in demand, the demand curve shifts towards right. Decrease in demand of a commodity happens due to unfavourable changes in factors other than price of the commodity. In case of the decrease in demand, the demand curve shifts towards left.

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When other factors change, the demand curve changes its position, which is referred to as the shift along the demand curve, as shown in Figure 2.5:

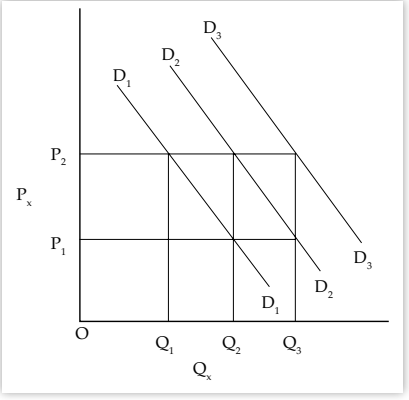


FIGURE 5: Shift along the Demand Curve

The demand curve, D_2, is the original demand curve of commodity x. At price OP_2, the demand is OQ_2 units of commodity x. When the consumer's income decreases owing to high-income tax, he/she is able to purchase only OQ_1 unit of commodity, x, at the same price OP_2. Therefore, the demand curve, D_2 shifts downwards to D_1. Similarly, when the consumer's disposable income increases due to the reduction in taxes, he/she is able to purchase OQ_3 units of commodity, x, at the price OP_2. Therefore, the demand curve, D_2 shifts upwards to D_3. Such changes in the position of the demand curve from its original position are referred to as a shift in the demand curve.

Factors that cause a shift in the demand curve are listed as follows:

- Change in price of the substitute goods
- Change in price of complementary goods
- Change in income of the buyer
- Change in tastes and preferences of the consumer
- Change in population
- Change in distribution of income
- Change in season and weather

2.5.2 EXPANSION AND CONTRACTION OF DEMAND

Expansion and contraction of demand are known as the change in the quantity demanded of a product due to the change in the price of that product, while other factors remain the same. Expansion and contraction are represented by the movement along the same demand curve.

The downward movement along the same demand curve is known as the expansion of demand. For example, when the price of eggs falls from ₹ 60 per dozen to ₹ 50 per dozen, its quantity demanded rises from 6 dozens to 9 dozens. Therefore, the demand for eggs is expanded or extended.

The upward movement along the same demand curve is called the contraction of demand.

For example, when the price of eggs rises from ₹ 60 per dozen to ₹ 80 per dozen, its quantity demanded falls from 6 dozens to 2 dozens. Therefore, the demand for eggs is contracted. Let us consider the graph shown in Figure 6:

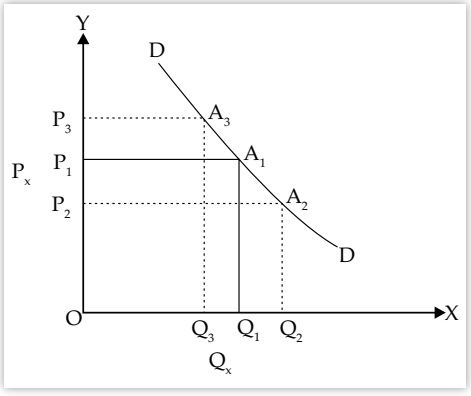


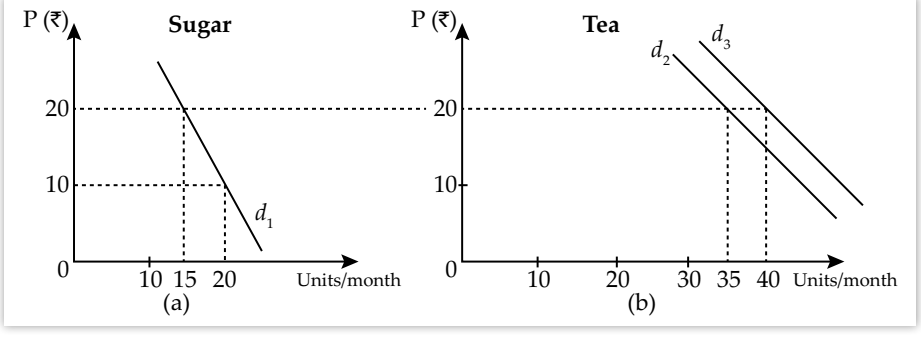
Figure 6: Movement along the Demand Curve

In the demand curve, shown in Figure 6, when the price of commodity x is OP_1, the quantity demanded is OQ_1. If the price of commodity x decreases to OP_2, the quantity demanded increases to OQ_2. The movement of the demand curve from A_1 to A_2 in the downward direction is called the extension of the demand curve. On the other hand, if the price of the commodity x rises from OP_1 to OP_3, the quantity demanded of commodity x falls from OQ_1 to OQ_3. This movement along the demand curve in the upward direction is called the contraction of demand.

Example: Consider the following table of two complementary goods (Sugar and Tea).

Commodity		Before		After
	Price (₹)	Quantity (units)	Price (₹)	Quantity (units)
Sugar	10	20	20	15
Tea	20	40	20	35

In the above table, prices and quantities of sugar and tea are given. Now we will understand the changes in the quantity demanded and prices graphically as:



The above graph explains the changes in prices and quantities of sugar and tea due to the change in the price of sugar. Graph (a) shows that the quantity demanded of sugar decreases from 20 units to 15 units when price increases from ₹ 10 to ₹ 20. This is the case of the contraction of demand. While Graph (b) shows that the demand for tea decreases from 40 units to 35 units at the same level of price and this is due to

Notes

the increase in the price of complementary goods of tea (i.e., price of sugar increases from ₹ 10 to ₹ 20). It also shows that the demand curve of tea is shifted towards left (from d_3 to d_2) and this is the case of the decrease or shift of demand.

Self Assessment Questions

8. The _____ refers to the relationship of the price of a commodity and its quantity demanded, when all the other factors affecting the demand remain the same.
9. Name two types of demand curves.

2.6 SUMMARY

- Demand is an economic concept that is defined as the quantity of a product an individual is willing to purchase at a specific point of time.
- The three fundamental elements of demand are quantity of the commodity, price of the commodity and the period of time when the commodity is purchased.
- Market demand is the sum of the demands of all the buyers of a product at a given price during a given period of time.
- The factors that affect the individual demand for a commodity are price of the commodity, price of related goods, income of buyer of the commodity and tastes and preferences of the buyer.
- An individual demand curve slopes downwards to the right, indicating an inverse relationship between the price and quantity demanded of a commodity.
- The law of diminishing marginal utility states that as consumption increases, the utility that a consumer derives from a commodity decreases with each successive unit.
- The law of demand states that the quantity demanded of a commodity increases with a fall in the price of the commodity and vice versa while other factors remain the same.
- Change in quantity demanded happens due to changes in the price, keeping other factors constant. There can be either a downward movement or an upward movement along the same demand curve.
- The change in demand happens when the demand for a commodity changes due to the change in any other factor than the price of commodity. It is graphically expressed as the shift in the demand curve.

2.7 KEY WORDS

- **Desire:** The wish to acquire a commodity or thing irrespective of whether that thing is really available or not.
- **Want:** The desire that is not backed by the ability and willingness to pay.
- **Utility:** The power of a commodity to satisfy a want.
- **Marginal utility:** An increase in the total utility derived from the consumption of an additional unit of a commodity.

2.8 CASE STUDY: DEMAND ANALYSIS OF GOLD IN INDIA

In India, there is always remains a demand for gold whether its price increases or decreases. This case study discusses the issue of sustainable demand for gold in India. Gold does not come under the law of demand because it comes under luxury goods and people think of it as more of a status symbol and a valuable investment. Cultural and traditions play a major role in influencing Indian gold demand.

Gold Consumption in India

India is the second largest consumer of gold in the world. In India, the demand for gold is mostly in the jewellery sector. The other uses of gold are in exchange-traded funds, RBI reserves, etc. Consumers purchase gold mostly on the occasions of weddings and festivals. The change in the trend and the introduction of new models also impacts the increase in consumption. From the microeconomics point of view, gold is considered to be a wealth due to its increase in value over a period of time.

Law of Demand

The law of demand represents a functional relationship between the price and quantity demanded of a commodity or service. The law states that the quantity demanded of a commodity increases with a fall in the price of the commodity and vice versa while other factors like consumers' preferences, level of income, technology, trend, manufacturing and government restrictions in usage, etc., are constant.

The law of demand is not applied on the gold consumption in India because the pattern of the consumption of gold, changes in regulations, availability of gold shows that in India, the demand of gold does not decrease with the increase in price as shown in the following table:

Year	Demand of gold (tons)	Price (per 10 gram)
2011	990	25000
2012	870	32000
2013	980	29600
2014	800	29190
2015	1000	29633

Source: *World Gold Council forecast 2015 & www.smaulgld.com*

Demand Curve

The demand curve of gold shows that its price and demand changes from time to time but it cannot be inferred that the price alone influences the demand. The rate of inflation, government policies, tastes and preferences of consumers also influence the change in price and demand for gold in India.

Source: *https://www.researchgate.net/publication/311650509_A_Case_Analysis_on_Demand_and_Supply_of_Gold_in_India*

QUESTIONS

1. Why the law of demand acts against the consumption of gold in India?

   (**Hint:** Cultural and traditions override the law of demand)

Notes

2. What are the other factors that influence the demand for gold in the Indian market?

(**Hint:** Inflation, government policies)

2.9 EXERCISE

1. Discuss the definitions of 'demand', 'want' and 'supply' in the economic context. List the different types of demands.
2. Explain the concept of joint demand with the help of suitable examples.
3. Differentiate between substitute and complementary goods with examples.
4. Discuss the law of diminishing marginal utility with its assumptions and exceptions.
5. Show the effects of the increase and decrease in demand with the help of a demand curve.

2.10 ANSWERS FOR SELF ASSESSMENT QUESTIONS

Topic	Q. No.	Answer
Demand	1.	d. All of the above
	2.	a. desire
Types of Demand	3.	True
	4.	c. cross demand
	5.	Individual
	6.	giffen
Law of Demand	7.	demand schedule
Shifts and Movements along Demand Curve	8.	law of demand
	9.	Individual demand curve and Market demand curve

2.11 SUGGESTED BOOKS AND E-REFERENCES

SUGGESTED BOOKS

- Frank Opuni (2017). Fundamentals of Microeconomics. Key Essentials of Demand and Supply Analysis: Grin Publishing
- Kishtainy, N., & Abbot, G. (2012). The economics book (1st ed.). New York [N.Y.]: DK Pub.

E-REFERENCES

- Law of Diminishing Marginal Utility | (2019) Consumption Retrieved from http://www.economicsdiscussion.net/diminishing-marginal-utility/law-of-diminishing-marginal-utility-consumption/25163
- Other Determinants of Demand Retrieved from https://pressbooks.bccampus.ca/uvicecon103/chapter/3-3-other-determinants-of-demand/

CHAPTER 3

Concept of Supply

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LEARNING OBJECTIVES

After studying this chapter, you will be able to:

- Understand the basic meaning of supply
- Analyse the factors affecting supply
- State the law of supply and its importance
- Learn the difference between shift and movement along the supply curve
- Discuss supply and demand equilibrium in the market

3.1 INTRODUCTION

In the previous chapter, you have studied about the law of demand, demand curve and the shifts and movements along the demand curve.

A market is a place where buyers and sellers meet to exchange products at certain prices. The concept of demand explains the behaviour of buyers, whereas the behaviour of sellers is analysed by using the concept of supply. Supply is defined as the quantity of a product that the seller is willing to offer in the market at a particular price within a specific time. There are many factors that influence the supply of the product in the market. These factors will be further discussed in the chapter. In economics, demand along with supply determines the market equilibrium.

In this chapter, you will study about the concept of supply, factors affecting supply and the law of supply. In addition, the shifts and movements along the supply curve and supply-demand equilibrium are also discussed.

3.2 SUPPLY

The total saleable quantity of a particular product present at a specified price and time in the market is defined as the supply of that particular product. It can also be referred to as the quantity of a product that the seller is ready to sell at a particular price within a particular time frame. The point to be noted here is that the readiness of the buyer is referred to as demand while the readiness of supplier is referred to as supply. However, the term supply is defined differently by different experts.

Following are the three basic components of supply:

- Supply is defined with respect to price. However, the price of the quantity supplied varies from place to place. For example, the price of vegetables differs from place to place.
- Supply is defined with respect to time. The total quantity of a product that a seller is ready to sell in a particular time period is referred to as supply. Thus, supply is always measured for a particular time frame, i.e., per day supply, weekly supply, monthly supply, yearly supply, etc.
- Inventory and price of the product in the market affect the supply of a product. Inventory, commonly known as stock, means the total amount of product that is available with the supplier to sell in the market in a particular time frame. Supply

is heavily influenced by the market price as well as the stock of a product. For example, the supplier increases the supply of a product when the market price of the product is greater than the cost price of the product and decreases its supply when the market price comes below the cost price of the product.

The concept of supply can be further understood with an example. A product is sold at ₹ 1,000 per item by a seller in the market. The given situation cannot be considered as supply as only the price of the product is specified here. In another situation, a seller offers the same product at ₹ 1,500 in the market in the month of January. This situation is considered as supply as both time and price of the product sold is specified.

There are two broad categories into which supply can be classified – market supply and individual supply. The total amount of goods that are available for selling in the market at a specific price and for a specific time period by a single producer or a firm is known as the individual supply, whereas the total amount of goods that are available for selling in the market at a specific price and for a specific time period by all firms is known as the market supply. As firms collectively are known as industry, therefore, the market supply is known as the industry supply.

Self Assessment Questions

1. Time and price of the product are the two factors that affect the supply of the product. (True/False)
2. Market supply is also known as _____.

3.3 FACTORS AFFECTING SUPPLY

There are various factors that affect the supply of a product due to which the supply of the product gets inconsistent in the market. The two major factors that affect the supply of the product are the cost of production and price. In other words, it can be said that the supply is the function of production cost and price. Thus, the factors that influence the supply of the product are termed as the determinants of supply. Figure 1 shows the factors that affect the supply of products:

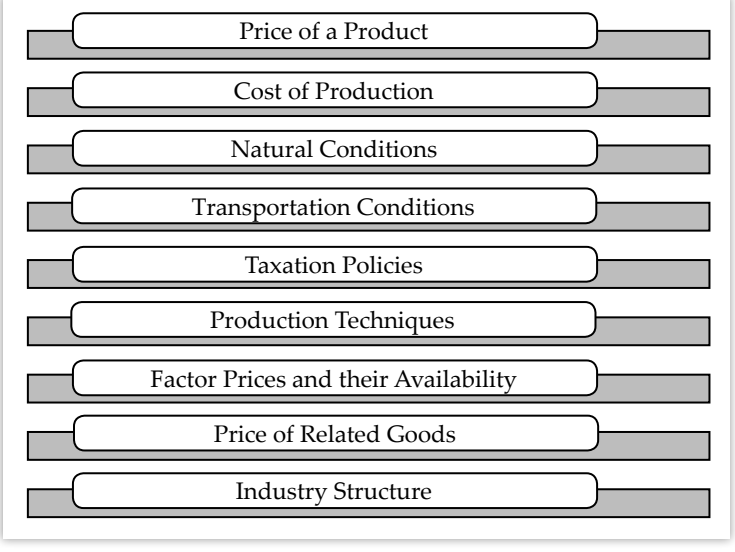

Figure 1: Factors Influencing Supply of Products

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Following are the determinants or factors influencing supply:

- **Price of a product:** Price is the most important factor affecting the supply of a product. While other factors remain unchanged, the supply of a product increases with an increase in price and decreases with a decrease in price of the product. The motive behind an increase in supply by the supplier during the price hike is to earn more profit. Thus, it can be said that the supply of a product is directly proportional to the price of the product.
- **Cost of production:** A certain amount of money is invested or utilised while manufacturing goods including fixed and variable cost. The sum total of fixed and variable cost is referred to as the cost of production. Supply and cost of product share an inverse relationship with each other, which means the supply in the market decreases with increase in the cost of production. The shortage of supply in this situation arises as suppliers hold the stock until the market price rises. There are a number of reasons due to which the cost of production increases, such as increase in wage rates of labour, loss of fertility of land, cost of transportation, hike in the prices of raw material, tax rate, etc.
- **Natural conditions:** Natural and climatic conditions also affect the supply of certain products. For example, the timely arrival of monsoon increases the supply of agricultural products. However, there is a decrease in supply during the drought period. There are few crops that are climate-specific and their cultivation widely depends on the climatic conditions, as Kharif crops are cultivated during summers, while Rabi crops are grown during winters.
- **Transportation conditions:** Transportation limits the supply of goods. However, the supply of goods can also be increased by having efficient transport facilities. When goods are unavailable due to lack of transportation, its supply decreases despite an increase in the prices of those goods.
- **Taxation policies:** The supply of the product is also regulated by tax policies of the government. The supply of the product decreases if the tax rate for that particular product increases as an increase in the tax rate adds up to the cost of production. It leads to the inconvenience of supply by the suppliers in the market due to lesser profit margin. Likewise, supply of the product increases with a decrease in the tax rate for that particular product.
- **Production techniques:** The method or technique used for manufacturing or production also influences the supply of products in the market. The use of outdated techniques decreases production, which leads to further decrease in the supply of products. However, improvement in the production methodology in the past few years has successfully increased the supply of the product.
- **Factor prices and their availability:** Production factors, like labour, raw materials, machines and equipment also influence the supply of the product indirectly. The cost of production increases with a rise in the prices of the factors of production, which subsequently leads to a decrease in the supply in the market by the producers.
- **Price of related goods:** The supply of the product is also affected by the price of complementary and substitute goods. For example, a firm produces both cotton

and polyester cloths. The firm will be producing more of cotton cloths if the prices of cotton cloths increase and will be producing less of polyester cloths. Thus, the supply of polyester cloths will decrease in the market.

- **Industry structure:** The layout of the industry in which a firm operates also influences the supply of products. For example, in a monopoly competition, a supplier can hold the supply with an intention to increase the prices of the products, resulting in more profits; whereas, in a perfectly competitive market, the supply increases due to the large number of suppliers available in the market.

Self Assessment Questions

3. Which among the following is not the determinant of supply?
   a. Government taxes
   b. Natural conditions
   c. Price of related goods
   d. Political conditions
4. The supply of a product _____ if the tax rate for that particular product _____.

3.4 LAW OF SUPPLY

The correlation between the supply and price of a product is described by the law of supply. According to the law of supply, the quantity supplied increases with an increase in the price of the product and decreases with a decrease in price of the product with other factors remaining constant, such as size of population, size of market and customer preferences. For instance, when the price of a product increases in the market, the producer will increase the production of the product to gain the maximum profit. Consequently, supply for that product in the market will eventually increase. Likewise, the supplier will hold the supply in the market until the price of the product rises to the normal level. Therefore, the law of supply describes that the supply of the product is directly proportional to its price. Thus, the movement of both supply and price is in the same direction. The law of supply can be better understood by discussing the concept of supply schedule and supply curve.

Self Assessment Questions

5. The law of supply describes the relationship between _____ and _____ of a product.
6. According to the law of supply, the quantity supplied _____ with a rise in the product prices and vice versa while other factors remaining constant.

3.5 SHIFTS AND MOVEMENTS ALONG THE SUPPLY CURVE

Similar to demand, the change in supply and change in the quantity supplied are two separate concepts in economics. Increase or decrease in price of the product leads to the change in the quantity supplied while other factors remain constant. The change in supply is the aftereffect of the change in various other factors that affect the supply excluding the price of the product (price remaining constant). The

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movement of the supply curve determines the change in the quantity supplied; whereas, the shift in the supply curve determines the change in supply. Expansion or contraction of supply occurs due to the change in quantity supplied; whereas, the change in supply refers to the increase or decrease in the supply.

3.5.1 INCREASE AND DECREASE IN SUPPLY

When a supplier is ready to offer huge quantities of products in the market at the same price, an increase in supply occurs. This can be due to various reasons like reduction in taxes, decrease in prices of factors of production, upgradation in production techniques, etc. The supply decreases when the supplier holds the stock and is not willing to offer large quantities of products in the market at the same price due to various reasons, such as high costs of labour, increase in taxes, unfavourable weather conditions and low agricultural production. Increase or decrease in supply leads to a shift in the supply curve, as shown in Figure 2:

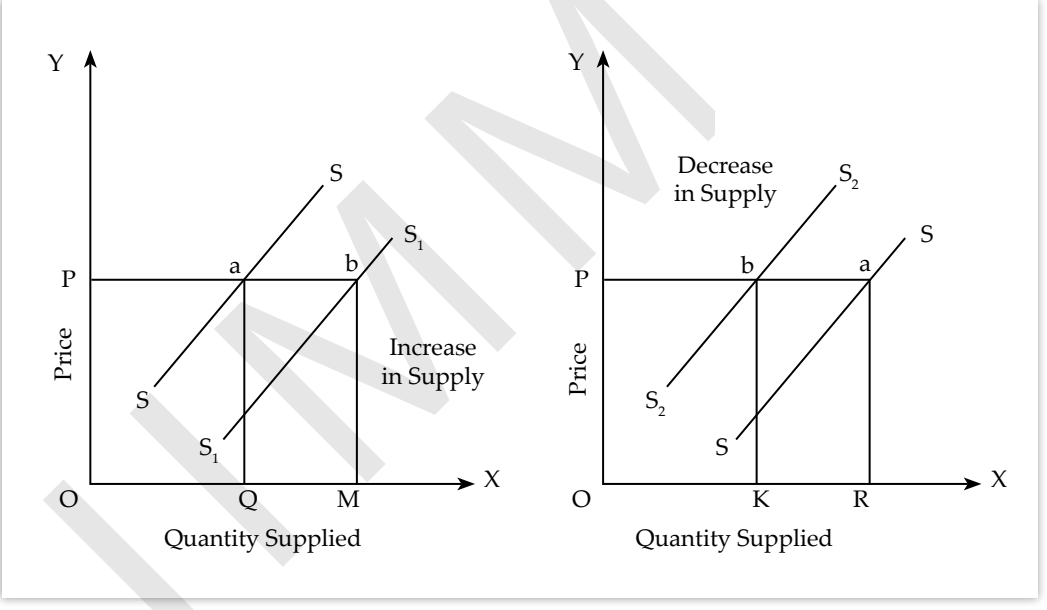

FIGURE 2: Increase and Decrease in Supply

In Figure 2, the shift of the supply curve occurs due to an increase in the supply from SS to S_1S_1.

There is a shift at the given price, OP, due to an increase in supply from a on supply curve SS to b on supply curve S_1S_1. At this point, large quantities, i.e., OM instead of OQ, are supplied at the given price OP. For instance, suppose ABC Limited deals in the production of edible sugar and due to the technical upgradation of the production method, is able to control the waste. As a result, its cost of production decreases and consequently ABC Limited will supply more sugar at the same price level. It is known as an increase in supply.

On the other hand, when the supply decreases, the supply curve shifts from SS to S_2S_2. The amount supplied at OP is decreased from OQ to OK due to a shift from a on supply curve SS to b on supply curve S_2S_2. For example, a supplier (or producer) of ACs will predict that there will be an increase in the price of ACs in the near

summer and, thus, holds the stock at the same price and eventually supply will fall short. Suppose XYZ Limited deals in the manufacturing of leather jackets made up from real-skinned leather. As the government has now banned hunting in most of the areas to save natural habitat, it is expected that eventually the market supply of leather jackets will fall short. This is known as a decrease in supply.

3.5.2 EXPANSION AND CONTRACTION OF SUPPLY

The change in quantity supplied as a result of change in price is referred to as expansion or contraction of supply. The expansion or extension of supply is a condition when a large quantum of goods is supplied at higher than usual prices. On the other hand, when small quantities of goods are supplied even at reduced prices, it is known as the contraction of supply.

Figure 3 depicts the movement along with the supply curve:

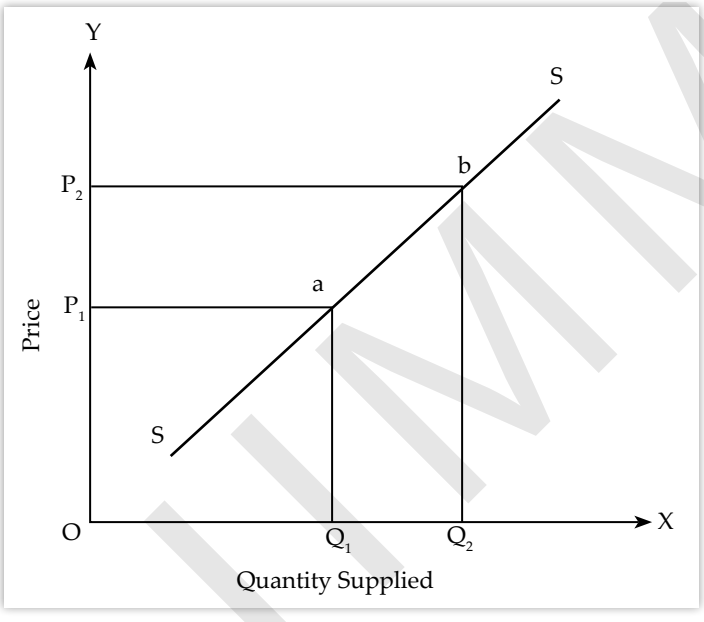

Figure 3: Expansion and Contraction of Supply

In Figure 3, the quantity supplied at price OP_1 is OQ_1. When the price rises to OP_2, the quantity supplied also increases to OQ_2, which is depicted by the upward movement from a to b of the supply curve. This is known as expansion of supply. On the other hand, a fall in price from OP_2 to OP_1 leads to a decrease in supply from OQ_2 to OQ_1, which is depicted by the downward movement from b to a of the supply curve. This is known as contraction of supply. Thus, the expansion and contraction of the quantity supplied are represented by the movement from a to b and b to a, respectively.

Self Assessment Questions

7. The movement of the supply curve determines the change in supply, whereas, the shift in the supply curve determines the change in quantity supplied. (True/False)
8. Expansion and contraction of supply occurs due to change in _____.

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3.6 SUPPLY AND DEMAND EQUILIBRIUM

There are two major forces that control the market system, namely demand and supply. The reason behind this is that the price of the product is widely dependent on these two factors as the intersection of demand and supply forces determines the price of the product.

As stated by the economic theory, the point at which the supply and demand meet determines the price of the product and is referred to as the equilibrium point.

Theoretically, the state of rest is defined as equilibrium. It is a situation where the balance is attained between supply and demand forces.

Statistically, market equilibrium is expressed as:

$Q_d (P) = Q_s (P)$

Where,

$Q_d (P)$ is the quantity demanded at price P

$Q_s (P)$ is the quantity supplied at price P

The concept of market equilibrium can be better understood by the illustration provided below:

Table 1 shows the demand and supply of ACs in Delhi at different price levels:

TABLE 1: Demand and Supply of ACs in Delhi

Price	Supply	Demand
(₹ per fan)	**('000 per month)**	**('000 per month)**
60,000	50	95
65,000	60	80
70,000	**75**	**75**
75,000	95	45

The equilibrium price where the quantity demanded is equal to the quantity supplied for the product is ₹ 70,000.

SELF ASSESSMENT QUESTIONS

9. The two major forces that govern the market system are _____ and _____.
10. At equilibrium, the quantity supplied of the product is equal to the quantity demanded for the product in the market. (True/False)

3.7 SUMMARY

- Supply refers to the willingness of a seller to offer a particular quantity of a product in the market for sale at a specified price and time.

- Supply is always expressed in terms of price, time and quantity, and can be of two types – individual supply and market supply.
- The supply of a product is dependent on many factors such, as price of the product, cost of production, natural conditions, transportation conditions, and taxation policies.
- The law of supply states that supply decreases with a fall in price and increases with a rise in price, assuming all other factors remain constant. Thus, there is a direct relationship between supply and price.
- The law of supply is represented through the supply curve.
- The supply function states the functional relationship between supply and various determinants of supply.
- The law of supply is based on certain assumptions, such as no change in the incomes of buyers and sellers, no change in the factors of production, and stability of natural factors.
- The law of supply fails under certain cases such as agricultural products, expectation of change in price in the future, and labour supply.
- Change in the quantity supplied occurs as a result of the rise or fall in product prices while other factors are constant. It is also expressed in terms of expansion or contraction of demand.
- The change in supply can be defined as increase or decrease in the supply of a product due to various determinants and is expressed in terms of increase or decrease in demand.
- Market equilibrium is a stage where both the opposite forces, i.e., demand and supply meet. It is expressed as Q_d (P) = Q_s (P).
- The price at which both demand and supply intersect is known as the equilibrium price.

3.8 KEY WORDS

- **Cost price:** It refers to the price at which products are bought from a manufacturer by sellers and retailers.
- **Supply curve:** It is a graphical representation of the supply schedule that states the law of supply.
- **Market price:** It refers to the price at which a product is available for sale in the market.
- **Expansion of supply:** It occurs when large quantities of goods are supplied at higher prices.
- **Equilibrium:** It is a stage where both the opposite forces, i.e., demand and supply intersect.

3.9 CASE STUDY: ROSS's PLECTRUMS

Ross was very much familiar with the retail side of the music industry as he has already run a number of music shops. Few years back, he decided to set up his own

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business of manufacturing plectrums. Plectrums are thin small plastic items which are used to play guitars by striking them against the strings. At that time, all the major manufacturers of plectrums were Americans. So, Ross decided to manufacture plectrums in UK with a value-added feature of placing British symbols on plectrums. The manufactured plectrums were in red, white and blue plastic, which made them attractive. Few symbols that were imprinted on plectrums were World Cup, Red post-boxes, Queen and various other British icons.

Ross discovered a UK-based manufacturer who used plastic injection-moulding technique to make plectrums from recycled plastic for about 0.5 pence. These plectrums were sold in packs to music retailers.

Retailers hesitated to switch suppliers to an unknown brand and also wanted huge incentives for compensating the risk of stocking the product. Ross was able to sell few hundred packs at the initial phase, but he needed to sell even more to reach the break-even. After market analysis, he found new suppliers in China. Ross wanted to manufacture his plectrum in the UK itself, but the same can be produced abroad at a significantly lower price, i.e., 0.06 pence per item.

There was scope in this business, but the technology was growing even faster and people had started buying 3D printers by which a customised imprint can be designed and made on the plectrums. Due to these changes, there was an increase in the plectrum production. However, the market for Ross's plectrums was disappearing rapidly.

QUESTIONS

1. Discuss the major factors that influenced the supply of plectrum in the UK.

   (**Hint:** Shift along the demand curve)

2. Discuss the factors other than price that can affect the supply of a product in the market.

   (**Hint:** Determinants of supply)

3.10 EXERCISE

1. Discuss the concept of supply in detail.
2. Elaborate the determinants of supply.
3. What do you understand by the law of supply? Explain in detail.
4. What do you understand by market equilibrium?
5. Describe the impact of increase in both demand and supply on equilibrium.
6. Compare shift and movement along the supply curve.

3.11 ANSWERS FOR SELF ASSESSMENT QUESTIONS

Topic	Q. No.	Answer
Supply	1.	True
	2.	industry supply

Topic	Q. No.	Answer
Factors Affecting Supply	3.	d. Political conditions
	4.	decreases, increases
Law of Supply	5.	supply; price
	6.	increases
Shifts and Movements along the Supply Curve	7.	False
	8.	prices
Supply and Demand Equilibrium	9.	demand; supply
	10.	True

3.12 SUGGESTED BOOKS AND E-REFERENCES

SUGGESTED BOOKS

- Arnol, Roger A., (2008). *Economics*: South-Western Cengage Learning
- Mankiw, N. Gregory, (1998). *Principles of Microeconomics:* The Dryden Press

E-REFERENCES

- Determinants of supply. (2019). Retrieved from https://docplayer.net/59319880-Course-design-committee.html
- Supply and Demand equilibrium. (2019). Retrieved from http://www.whatiseconomics.org/microeconomics/supply-demand-and-the-concept-of-equilibrium

CHAPTER 4

Consumer Demand

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LEARNING OBJECTIVES

After studying this chapter, you will be able to:

- Describe an overview of the consumer demand
- Explain the concept of utility
- Discuss the law of diminishing marginal utility
- Examine the cardinal and the ordinal utility approaches
- Describe the budget line

4.1 INTRODUCTION

In the previous chapter, you have studied about the concept of supply, factors affecting supply and the law of supply. You have also studied about the shift and movement along the supply curve. The supply and demand equilibrium discussed in the end of the chapter.

All activities related to production depends on consumer demand. It said that "*necessity is the mother of invention and demand is the mother of production*". A better business attractiveness and growth can be seen in the products with higher demand whereas decrease in demand of a product leads to unhealthy business attractiveness i.e., high business prospects can be observed with increase in demand for a product or service in future and decrease in demand for a product or service diminishes its business prospects.

For example, in India, demand for cars, computers, smartphones, etc. has increased which has opened the business prospect for both domestic and foreign companies dealing in these goods. On the other hand, the demand for black and white TV sets and manual typewriters are decreased due to which companies dealing in these products were forced to leave this business or switch over to advanced products and substitutes. Therefore, business managers must have a clear understanding regarding various aspects such as what forms the basis of demand for a commodity, which factors determine the demand for a product, what factors consumers take into consideration while deciding the amount of a product to be purchased, how consumers respond to changes in product prices, their incomes and the prices of the related goods, and how can an organisation measure and forecast the market demand for goods and services.

The analysis of consumer behaviour assists in answering these questions and, thus, the study of consumer behaviour gives rise to the concept of consumer demand.

In this chapter, you will study about consumer demand and the concept of utility. The chapter also explains the law of diminishing marginal utility, the cardinal utility approach and the ordinal utility approach. The budget line has also been described at the end of this chapter.

4.2 CONSUMER DEMAND

There are several factors such as features, size, price range, a specific brand, etc., are considered by the customers while making a buying decision. Moreover, there

are some individual characteristics, such as tastes and preferences, income, age, sex, standard of living, customs and socio-economic backgrounds which are also affected by the buying decision. Also, these factors widely influence consumer buying behaviour which is of great importance for manufacturers and producers. Gaining information about consumer buying behaviour helps organisation to forecast and determine the demand pattern for goods and services. Consumer demand analysis can be defined as a process of evaluating consumer behaviour based on the wants and needs created by a consumer from the consumption of different goods or availing the services. Utility is referred to as the satisfaction obtained by the consumers after consuming particular goods or services. There are three main assumptions decisiveness, transitivity and non-satiation. The study and analysis of consumer behaviour is based on these three assumptions which are presented in Figure 1:

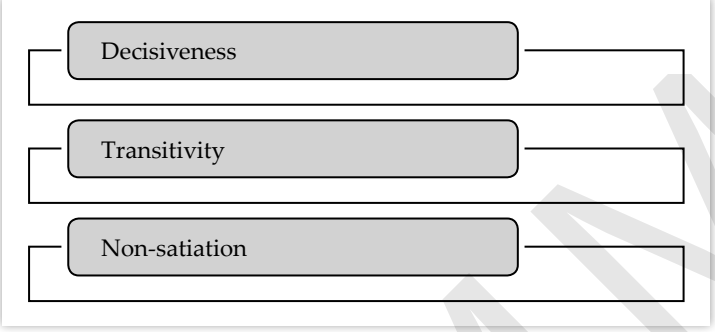

Figure 1: Assumptions in Consumer Behaviour Analysis

Let us now discuss the assumptions in detail.

- **Decisiveness:** Refers to the assumption that a consumer can distinguish between two dissimilar products based on his/her taste and preferences. Thus, no confusion exists there while choosing a particular product by a consumer which is known as decisiveness of consumers. For example, a person visiting a restaurant is asked to make an order between a burger and a pizza. As per the assumption of decisiveness, the individual can follow one of the following courses of action:
  - Order a pizza
  - Order a burger
  - Order none of the two and leaves the restaurant
- **Transitivity:** Refers to the assumption in consumer demand that there is consistency in the preferences of an individual consumer. The preference or insignificance for a commodity over another is applicable to another related product which is known as transitivity. For example, in the above situation if an individual prefers burger over pizza, pizza over pasta, then the individual would also prefer burger over pasta according to the assumption of transitivity.
- **Non-satiation:** Refers to the assumption that a consumer can never be entirely satisfied. An individual will have a continuous demand for a product that is preferred by him/her which is known as non-satiation. For instance, a bigger pizza is preferred over a smaller pizza or two dresses are favoured over one, etc.

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SELF ASSESSMENT QUESTIONS

1. _____ is referred to as the satisfaction obtained by the consumers after consuming particular goods or services.
2. Which of the following is not an assumption in consumer behaviour analysis?
   a. Transitivity b. Non-satiation
   c. Consistency d. Decisiveness

4.3 CONCEPT OF UTILITY

An ability and willingness of a customer to pay for a specific goods is defined as demand. The willingness to purchase a goods by an individual is driven by the utility gained from the consumption of that goods. In economics, a measure of satisfaction that an individual receives through the consumption of a commodity is defined as utility.

There are two points of view from which the concept of utility can be looked upon. First, from the product perspective and the second from the consumer perspective. Utility as per the product perspective is the ability of a product to satisfy want. The product has an inbuilt characteristic of providing utility regardless of whether the product is consumed by an individual or not. For instance, a hair dryer has its own utility whether a consumer buys it or not. Whereas utility as per the consumer prospective is the psychological sentiment of happiness, satisfaction, well-being, etc. that a consumer earns from the possession or consumption of particular goods.

In economics, utility entails that a commodity has the ability to satisfy a want. Rather, it is a relative term, i.e., consumption of a product may satisfy the want of one individual while be of no use for another. For instance, a car is of value for an individual going to office whereas is of no use for a beggar.

Also, the level of satisfaction varies individual to individual depending upon the situations for the same product. For instance, a morning tea has a greater utility as compared to a tea that is consumed in the afternoon by an individual.

Statistically, utility is expressed as an integrated function of the number of different commodities consumed by a consumer. For example, an individual consumes quantity x_1 of a commodity x, quantity y_1 of a commodity y and quantity z_1 of a commodity z, then the utility U of the consumer can be calculated as follows:

$U = f(x_1, y_1, z_1)$

4.3.1 TOTAL UTILITY

The utility is the quantity of the utility gained from the consumption of various units of a product by an individual for a given period of time is defined as Total Utility (TU).

For example, utility derived from the consumption of four units of a product by an individual at a given period of time is U_1, U_2, U_3, U_4, respectively, Thus, the TU can be calculated as:

$TU = U_1 + U_2 + U_3 + U_4$

Suppose, n number of commodities are consumed by an individual, then the sum of the utility gained from each commodity will make up his/her total utility, TU_n.

For example, commodities x, y, z whose utilities are U_x, U_y and U_z are consumed by an individual, then the TU is calculated as:

$TU_n = U_x + U_y + U_z$

4.3.2 MARGINAL UTILITY

Beside total utility, another important concept of utility analysis is the concept of marginal utility. The utility gained by an individual from the consumption of an additional or marginal commodity is defined as a marginal utility. In other words, marginal utility is the addition in total utility due to consumption of an additional unit of a product. Thus, the Marginal Utility (MU) of a commodity x, is equal to the change in the TU, i.e., Δ TU. It is calculated from the consumption of an extra unit of commodity x. ΔQ is change in quantity.

Mathematically, marginal utility is expressed as:

$MU_x = \Delta TU_x/\Delta Q$

$\Delta TU_x = TU_x - TU_{x-1}$

$\Delta Q = Q_x - Q_{x-1}$

SELF ASSESSMENT QUESTIONS

3. A measure of satisfaction that an individual receives through the consumption of a commodity is defined as total utility. (True/False)
4. Which of the following is the addition in total utility due to consumption of an additional unit of a good?
   a. Total utility
   b. Marginal utility
   c. Budget line
   d. Ordinal utility

4.4 LAW OF DIMINISHING MARGINAL UTILITY (DMU)

One of the utmost important laws in economics is the law of diminishing marginal utility. According to law of diminishing marginal utility, utility derived from consumption of every successive unit of a commodity keeps on decreasing or diminishing, assuming that the consumption of all other commodities is constant. In other words, the utility derived from each consecutive unit continues to diminish when an individual continues to consume more and more units of a commodity per unit of time. For example, drinking the first bottle of cold drink provides more utility than that by drinking consecutive bottles of cold drinks. The law of diminishing marginal utility is valid for all categories of goods such as durable goods, non-durable goods, consumer goods, etc.

Let us understand the law of diminishing marginal utility with the help of an example. Let us suppose, commodity x is consumed by an individual whose utility is measured quantitatively.

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The TU and the MU schedules are as shown in Table 1:

Table 1: Number of Units of Commodity X Consumed per Unit of Time

Units of commodity X	Total Utility (TU_x)	Marginal Utility (MU_x)
1	30	30
2	50	20
3	60	10
4	65	5
5	60	– 5
6	45	– 15

Table 1 shows that with each successive consumed units of a commodity X, TU_x increases at a diminishing rate whereas there is a constant decrease in the marginal utility MU_x. The rate of increase in TU_x as a result of increase in the number of units consumed has been represented by the MU_x curve in the graph shown in Figure 2:

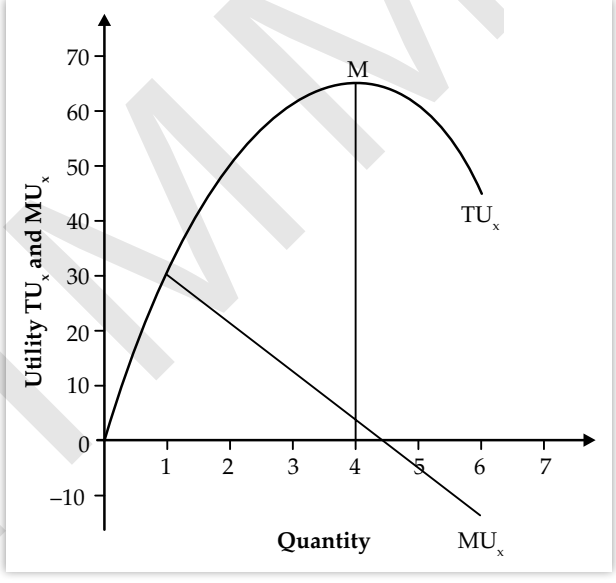

Figure 2: Total and Diminishing Marginal Utility of Commodity x

In Figure 2, the downward sloping MU_x curve indicates that the MU of a commodity constantly decreases with an increase in its consumption. TU_x reaches its maximum level when the consumption reaches to 4 units of commodity x, (the point of saturation) marked as M. After the point of saturation, MU_x becomes negative and TU_x commences to decline steadily. The downward slope of MU_x describes the law of diminishing marginal utility. Thus, as per the law of diminishing marginal utility, the utility gained from a unit of a commodity is reliant on the consumer's desire for that particular commodity. When an individual continues to consume extra units of a commodity, the satisfaction that he/she gains from the consumption keeps decreasing. The reason behind this is that his/her need gets satisfied in the course of consumption. Hence, the utility derived from consecutive units of the commodity decreases.

Following are some assumptions on which the law of diminishing marginal utility is based upon:

- **Rationality:** It is assumed that as a rational being, maximisation of utility is the main aim of a consumer at a particular market price and income level.
- **Measurement of utility:** Quantifiable standards are used to measure the utility of a commodity such as a bag of sugar, a pair of socks, a cup of tea, etc.
- **Constant marginal utility of money:** The marginal utility is constant for income of consumer.
- **Homogeneity of commodity:** The characteristic of a additional unit of commodity consumed are similar including homogeneity in quality, shape, colour, taste, size, etc.
- **Continuity:** An individual should consume successive units of a commodity continuously without any intervals.
- **Ceteris Paribus:** Factors such as price of related goods, tastes and preferences of consumers and income are constant.

Although, there are some cases in which the law of diminishing marginal utility is not applicable known as exceptions to the law of diminishing marginal utility. For example, in case of an individual collecting wealth, pursuing hobbies, such as collection of rare paintings, coins, stamps, antiques and songs.

Moreover, the measurement of utility has constantly been an arguable issue. The views on the measurement of utility of different economists vary widely. Neo-classical economists proposed the theory of cardinal utility for the measurement of the utility gained from the consumption of goods. While the theory of ordinal utility for the measurement of the utility gained from the consumption of a goods was proposed by modern economists.

Self Assessment Questions

5. According to_____, utility derived from consumption of every successive unit of a commodity keeps on decreasing or diminishing, assuming that the consumption of all other commodities is constant.
6. _____ refers to the assumption that factors, such as the price of related goods, tastes and preferences of consumers and the incomes are constant.

4.5 CARDINAL UTILITY APPROACH

Many classical economists including William Stanley Jevons of England, Gossen of Germany, Karl Menger of Austria and Leon Walras of France proposed the theory or approach of cardinal utility. Later the theory of cardinal utility was improved and amended by neo-classical economists Alfred Marshall. Hence, cardinal utility theory is also called as neo-classical utility theory.

According to Neo-classical economists, it was supposed that utility possesses a cardinal or quantifiable property. Also, the utility can be measured just like other mathematical variables, such as air pressure, height, weight, temperature and

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velocity. Hence, they established a unit of measurement for measuring utility known as utils. For example, according to the cardinal utility approach, 20 utils are gained when an individual consumes a pizza whereas 10 utils are gained from the consumption of a burger.

As per the neo-classical approach, single util is equal to one unit of money and the utility of money remains unchanged in the measurement of utility. Therefore, in cardinal utility approach, equilibrium is reached when the last unit of money spent by an individual on each unit of the commodity derives the same utility. Thus, the money spends on commodity x by an individual is beneficial util is as follows:

$MU_x > P_x (MU_m)$

This equilibrium state derives the consumer demand curve for commodity x as shown in Figure 3:

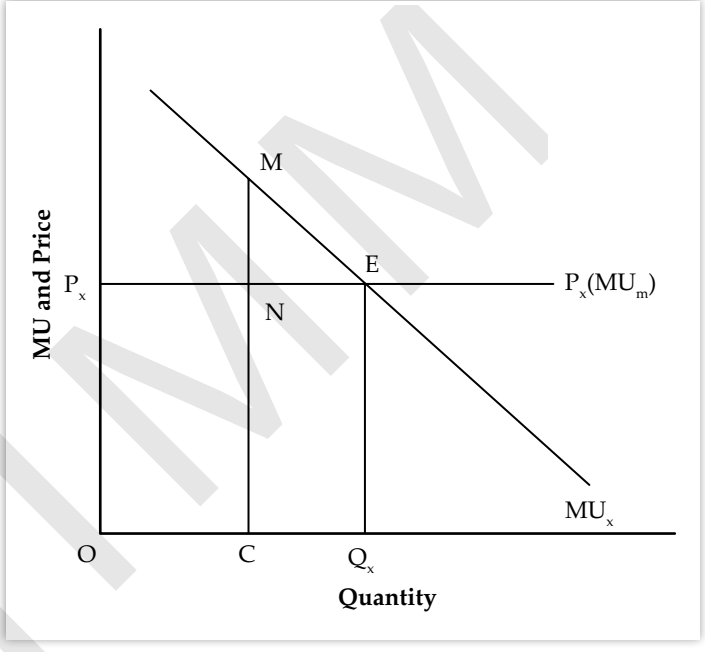

FIGURE 3: Consumer Equilibrium

The line parallel to the x-axis, $P_x (MU_m)$ denotes the constant utility of money weighed by the price of commodity x. MU_x curve represents the diminishing marginal utility of commodity x. Both the lines intersect at point E, which means the consumer reaches equilibrium at point E.

The assumptions of the cardinal utility approach are as follows:

- **Utility is measurable:** This is the basic assumption of the cardinal utility approach. As per this assumption, utilities derived from the consumption of commodities are quantifiable. According to **Marshall,** the utilities of commodities are measured in terms of money which means that the amount of money that a consumer is willing to pay for a particular commodity is a measure of its utility.

- **Marginal utility of money is constant:** The cardinal utility approach assumes that money must measure the same amount of utility under all conditions. In other words, the utility gained from each unit of money remains constant.
- **Utilities are additive:** According to this assumption, the utility gained from the different commodities consumed by an individual can be summed together to calculate the total utility. For example, an individual consumes x_1, x_2, x_3, x_4 .... x_n units of commodity x and derives U_1, U_2, U_3, U_4 .... U_n utils, respectively, thus the TU is gained by the individual from n units of the commodity can be expressed as follows:

  $U_n = U_1(x_1) + U_2(x_2) + U_3(x_3) + U_4(x_4) + ... + U_n (x_n)$
- **Diminishing marginal utility:** The marginal utility of a commodity decreases as an individual consumes consecutive units of a commodity.
- **Rationality:** Consumers are rational beings and aim at maximising their utility at the given income level and market price.

Self Assessment Questions

7. The cardinal utility theory or approach was not proposed by which of the following classical economists?
   a. Gossen (Germany)
   b. William Stanley Jevons (England)
   c. Leon Walras (France)
   d. Alfred Marshall
8. Unit of measuring utility is called _____.

4.6 ORDINAL UTILITY APPROACH

In the 1930s, the two English economists **John Hicks** and **R.J. Allen**, contradicted that the theory of consumer behaviour analysis should be based on the concept of ordinal utility. According to the ordinal utility approach, utility is a psychological phenomenon which possesses a descriptive character and thus differs across individuals such as happiness, satisfaction, etc. Hence, measuring utility in quantifiable terms is not possible. The measurement of utility can be done in relative terms such as less than and greater than. Cardinal utility approach proposes that consumer behaviour can be described in terms of ranking or preferences. For example, a consumer may prefer pizza over the burger. In this situation, pizza is considered as at rank one and burger is at rank two. Therefore, different combinations of two commodities are identified by the consumer which are similar in terms of providing the level of satisfaction. Among these combinations, an individual would choose one commodity depending upon how these two commodities are ranked with respect to each other. Hence, the theory of carinal utility states that utility can be ranked as per its qualitative nature and not its quantifiable nature.

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The ordinal utility approach has some assumptions which are as follows:

- **Rationality:** Consumers are rational beings and aim to maximise their utility at the given income level and the market price of commodities that they consume.
- **Ordinal utility:** Utility cannot be measured in quantitative terms rather it can be measured in qualitative terms. This is due to a consumer states his/her preference for a commodity out of a collection of likely goods.
- **Transitivity and uniformity of choice:** It is assumed that the choice of a consumer is always transitive. This implies that if a consumer prefers A over B and B over C, the consumer would also prefer A over C. Also, if the consumer considers A = B and B = C, he must consider A = C. On the other hand, consistency of choice implies that if a consumer prefers A to B at one time period, he/she does not consider A and B as equal or does not prefer B to A in another time period.
- **Non-satiety:** The theory also assumes that a consumer is never entirely satisfied with commodities. This means that a state of saturation is never reached by a consumer in case of any commodity. Thus, a consumer inclines to prefer larger quantities of a commodity over smaller.
- **Diminishing marginal rate of substitution:** The marginal rate of substitution refers to the rate at which a consumer is willing to substitute one good (x) for another good (y) in order to maintain the level of satisfaction. The marginal rate of substitution is represented as dy/dx. According to the ordinal utility approach, the marginal rate of substitution goes on decreasing when a consumer continues to substitute x for y.

SELF ASSESSMENT QUESTIONS

9. According to ordinal utility approach, level of satisfaction can be measured in terms of utils. (True/False)
10. According to _____, utility derived from a product can be measured in relative terms, such as 'less than' and 'greater than'.

4.7 BUDGET LINE

A budget line or price line is represented through different combinations of two commodities, which can be purchased at a certain income level and market price by a consumer. One of the important components of consumer behaviour analysis is budget line. The preference of consumer for a combination of two commodities that are alternatives of each other is represented by indifference curve. Although, the income of an individual acts as a base for making the actual decision.

A budget line is the locus of a different combination of commodities that a consumer can purchase with all his/her income. Let us suppose that there are only two commodities x and y. The price of x is P_x and that of y is P_y. A consumer purchases Q_x quantity of the commodity x and Q_y quantity of the commodity y with income M. Thus, the budget line equation is expressed as follows:

$$M = P_x Q_x + P_y Q_y$$

As per the budget equation, the total expenditure of a consumer on various combinations of commodities x and y cannot be greater than his/her income M.

When different numerical values of Q_x and Q_y are plotted on a graph, a straight line with a negative slope is derived known as a budget line or price line as shown in Figure 4:

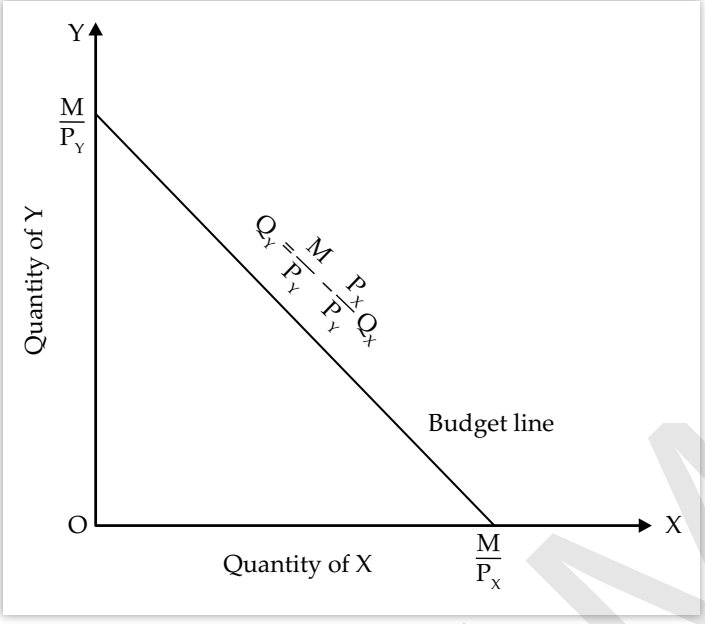

FIGURE 4: Budget Line

SELF ASSESSMENT QUESTIONS

11. The preference of a consumer for a combination of two goods that are substitutes of each other is represented by _____.
12. Budget line is also called _____.

4.8 SUMMARY

- Utility can be defined as a measure of satisfaction received by a consumer on the consumption of a good or service.
- Total utility is defined as the sum of the utility derived by a consumer from different units of a commodity or service consumed at a given period of time.
- Marginal utility is defined as the utility derived from the marginal or additional unit of a commodity consumed by an individual.
- The law of diminishing marginal utility states that as the quantity consumed of a commodity continues to increase, the utility obtained from each successive unit goes on diminishing, assuming that the consumption of all other commodities remains the same.
- According to the ordinal utility approach, utility can be measured in relative terms.
- An indifference curve can be defined as the locus of points each representing a different combination of two substitutes, which yield the same level of utility to a consumer.
- A change in the consumer's income or the prices of commodities would result in a shift in the budget line.

Notes

- A consumer reaches a state of equilibrium when he/she attains maximum total utility at the given income level and the market price of commodities.
- Consumer's equilibrium changes with change in consumer's income, but the prices of goods remain unchanged.
- When a consumer tends to purchase more units of commodity x and fewer units of commodity y, it is called substitution effect on consumer's equilibrium.
- A budget line or price line is represented through different combinations of two commodities, which can be purchased at a certain income level and market price by a consumer. One of the important components of consumer behaviour analysis is the budget line.
- The indifference curve represents consumers' preferences for a combination of two goods that are substitutes of each other.

4.9 KEY WORDS

- **Demand:** Want backed up with the ability and willingness to pay for it is defined as demand.
- **Utility:** The property of a goods or service to satisfy the need or wants of an individual is termed as the utility of that particular product.
- **Transitivity:** The preference or insignificance for a commodity over another is applicable to another related product which is known as transitivity.
- **Homogeneity**: It refers to a state or property of goods of being alike in characteristics, composition, state, etc.
- **Consumer equilibrium:** It refers to the point at which a consumer attains optimum utility from goods and services purchased with the given income and market price.
- **Indifference curve:** An indifference curve can be defined as the locus of points each representing a different combination of two substitutes, which yield the same level of utility to a consumer.

4.10 CASE STUDY: INDIA'S NEW ECONOMIC POLICY (NEP)

The New Economic Policy (NEP) of 1991-92 introduced a significant change in Indian economic policy. Till the 1980s, the policy of 'import substitution' was followed by India. The government stimulated the production and manufacturing of substitutable domestic goods in order to protect value foreign exchange. This resulted in inefficient domestic, monopolistic or oligopolistic firms. The NEP of 1991-92 targeted at earning more foreign exchange by depending more and more on other countries in terms of export, investment, etc. Economists and policy-makers realised that an outward-looking policy or the policy of export promotion was better than that of import changeover in terms of making a foreign exchange with a spirit of healthy competition among firms that discouraged inefficiency and uncompetitiveness. One of the main advantages of an open-door policy is that consumers are offered a large variety of choices for the same product. In other words, the degree of substitution among different types of the same product is very high in an actually globalised market. An individual can choose anything from a pin to a penthouse and costumes to cars from a domestically produced commodity or the one produced through collaboration or a fully foreign manufactured and imported product. In the present scenario, the consumer has become the king in

the 'buyers' market'. Nowadays, from a basic food item like rice, wheat to highly specialised machinery, substitution between goods, domestically produced and those produced abroad has elevated. The degree of substitution for some products is almost perfect. Thus, eventually leads to a situation where the consumer is a king. A minor price differentiation gave rise to a huge shift in the demand for a product. Under this situation, niche marketing and product differentiation are often more influential than price leadership as a marketing strategy, especially for those products which have a high price and income elasticity. This describes the intention behind the huge advertising budget for both domestic organisation as well as MNCs, giving the latest and best information on their products to the customers and building up a reliable brand image all with one motive to make the consumers less sensible to the slightest of change in process of the substitute products.

Thus, in the new global supermarket, there is abundant of choice for the consumer between likely as well as similar products. In the case of likely products, virtual differentiation is brought about by promotional and marketing strategies. The global market has removed distinctions between domestically produced and imported products, at least for some of them. For example, a JV (joint venture) company in the automobile sector can produce sensitive parts like the engine or the gear box in a foreign country while assembling the whole car in India (mainly because of cheap semi-skilled and skilled labour and also the low cost of importing parts rather than the whole car) whereas the market may include other countries along with India. What would such a product be called — indigenous or imported?

The trend of this high level of alternatives and subtle product, differentiation is more predominant for products targeted at the young, upwardly mobile and urban population due to the presence of similar tastes and preferences of the young. For example, a middle-aged, middle-class Punjabi housewife will have a different taste and preferences when compared to a middle-aged, middle-class Gujarati housewife. Conversely, more often than not, one can find a teenager in a posh locality of Delhi eating a McDonald's Burger wearing Levis jeans and listening to Justin Bieber just like her counterpart in Mumbai.

QUESTIONS

1. What is import substitution policy with reference to the export promotion policy? How does it affect consumer demand?

   (**Hint:** Consumer demand)

2. Discuss the various determinants of consumer demand in detail with reference to any industry or sector of your choice.

   (**Hint:** Determinants of consumer demand)

4.11 EXERCISE

1. Discuss the concept of consumer demand in detail.
2. Explain the concept of total and marginal utility with the help of suitable example.
3. Write a short note on the law of diminishing marginal utility.
4. Explain the theory of cardinal Utility in detail.

NOTES

5. What do you understand by ordinal utility approach? Explain it with the help of a suitable example.
6. Elaborate the budget line with the help of a suitable diagram

4.12 ANSWERS FOR SELF ASSESSMENT QUESTIONS

Topic	Q. No.	Answer
Consumer Demand	1.	Utility
	2.	c. Consistency
Concept of Utility	3.	False
	4.	Marginal utility
Law of Diminishing Marginal Utility (DMU)	5.	the law of diminishing marginal utility
	6.	Ceteris Paribus
Cardinal Utility Approach	7.	d. Alfred Marshall
	8.	utils
Ordinal Utility Approach	9.	False
	10.	ordinal utility approach
Budget Line	11.	indifference curve
	12.	price line

4.13 SUGGESTED BOOKS AND E-REFERENCES

SUGGESTED BOOKS

- Dwivedi, D. N. (2015). *Managerial Economics*, 8th Edition: Vikas Publishing House Pvt. Ltd.
- Nadar, E. Narayanan, & Vijayan, S. (2012). *Managerial Economics*: PHL Learning Pvt. Ltd.
- Sivagnanam, K. Jothi, & Srinivasan, R. (2010). *Business Economics:* Tata McGraw Hill Education Pvt. Ltd.

E-REFERENCES

- Law of diminishing Marginal Utility (2019). Retrieved from http://economicsconcepts.com/law_diminishing_marginal_utility.htm
- Ordinal Utility (2019). Retrieved from https://docplayer.net/59319880-Course-design-committee.html

CHAPTER 5

Production Theory

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LEARNING OBJECTIVES

After studying this chapter, you will be able to:

- Discuss the concept of production
- Explain the various factors of production
- Describe the production process during the short run
- Explain the process of production in the long run
- Describe the concept of producer's equilibrium
- Explain the returns to scale and the laws associated with it

5.1 INTRODUCTION

In the previous chapter, you have studied about the concept of consumer demand and utility. The chapter discussed about the law of diminishing utility, cardinal utility approach as well as ordinal utility approach. The budget line has been described at the end of the chapter.

The production theory is the functional relationship between physical inputs and outputs. The production function is also referred to as the theory of production. Production function refers to the functional relationship between the factors of production in terms of inputs which are used. Hence, the production theory can be referred to as the economic process for production, which is used for producing the outputs from the physical inputs of factors of production.

Production activity is the result of increasing the degree of compliance among the number of goods, services, and the distribution of goods and services in a specific given pattern. In economics, it refers to the creation of those goods and services which have exchange value in the economy. It refers to the creation of utilities. Creation of these utilities results in the overall increase in the production, and redistribution of goods and services in the economy. The utility of a commodity may increase due to several reasons.

This chapter explains the concept and the factors of the production. Then, it discusses the process of production in the short run as the well as long run. Next, the chapter explains the producer's equilibrium. Towards the end, the topic on returns to scale has been described in detail.

5.2 CONCEPT OF PRODUCTION

The term production means the process by which a commodity is transformed into different usable commodities. In economics, production refers to the creating of goods and services which have exchange value in the economy. This refers to creating a form of utility. By creating these utilities there is a total increase in the production and distribution of goods and services within the economy. The utility of a commodity may increase due to several reasons.

NOTES

The process of production of changing the inputs into the required outputs follows the following three basics steps:

1. Transforming the input quantity of a product
2. Changing the form of goods from the state of raw materials
3. Distribution of the goods within the economy

The factors of production such as land, labour, capital and entrepreneur are considered as the main factors of production. Also, the factors relating to technology and knowledge have also been regarded as important factors of production. The technical relationship between the units of factors of production and the unit of production of commodity or services is called a production function. In an economic manner, it states the maximum amount of output that can be produced during a period with a certain quantity of various inputs in the existing state of technology. The production function is the technical knowledge of the relationship between physical quantities of inputs and outputs achieved per period of time. In other words, it is the tool of analysis which is used to explain the input-output relationships.

Some Established authors have defined the term 'production function' in a different manner. The definitions are as follows:

According to **Prof. George J. Stigler**, *the production function is the name given to the relationship between the rules of input of productive services and the rate of output of the product. It is the economics summary of technical knowledge.*

According to **Prof. L.R. Klein**, *the production function is a technical or engineering relation between input and output. As long as the natural laws of technology remain unchanged, the production function remains unchanged.*

The production theory involves the basic principles of economics. This theory includes the relationship between the price of goods, wages, land, etc. of the productive factors. These factors are used to produce goods or services for making profit.

Thus, the production function shows the functional relationship between physical inputs and physical output.

Thus, the production function gives the technique of production output that can be obtained from the various levels of factors of the inputs.

SELF ASSESSMENT QUESTIONS

1. The production function is the technological knowledge of _____ between physical quantities of inputs and outputs achieved per period of time
2. In economics, production refers to the creating of goods and services which do not have exchange value in the economy. (True/False)

5.3 FACTORS OF PRODUCTION

In economics, production factor is a term which is used to describe the inputs that are used in the production of goods or services in order to make profits. This includes

economic resources like land, labour, capital and entrepreneurship. The production factors also refer to managing the resources such as labour, machines, materials and knowledge. These resources are used to produce the products or the outputs. The factors of production are essential elements for production, without them no production would be possible.

According to the general classification, there are basically four kinds of factors of production which are as follows:

1. **Land:** Land includes different natural resources that come along with it, such as land surface, air, water, minerals, forests, rivers, lakes, seas, mountains, climate and weather. Land refers to a natural resource that can be utilised to produce income. According to **Marshall**, *the materials and the forces which nature gives freely for man's aid, in land and water, in air and light and heat.*

   The characteristics of land is as follows:

   - A gift of nature along with other natural resources.
   - It is available in fixed quantity with no supply price. The change in the price of land does not affect its supply.
   - It is considered as a permanent input with inherent properties, that is natural and indestructible.
   - It has unlimited variation in terms of fertility which affects the prices or rent for the land.
   - The land is a passive factor of production

   The initial supply price of land is zero as it is a gift from nature. But when it is used in production, it becomes short in supply and it fetches a price, accordingly.

2. **Labour:** Labor is the human input which is used in the production process. It involves human services and efforts for the production of goods or services. A work whether it is physical or mental carried out for the monetary purpose is called labour. Labor comes as unskilled, semi-skilled and highly skilled forms. However, people working in factories are commonly considered as a group of unskilled labor. In economic terms, a work, physical or mental, carried out for the monetary purpose is defined as labor. According to **Alfred Marshall,** *the use or exertion of body or mind, partly or wholly, with a view to secure an income apart from the pleasure derived from the work.*

   It includes the services of factory workers, professional workers such as engineers, doctors, teachers, lawyer, etc. Labour is the living factor among all the production factors. This peculiar aspect of labour differentiates it from the rest of the factors of the production. The characteristics of labour are as follows:

   - It is the use of human services for production.
   - It has no reserved price and is a perishable factor of production.
   - Change in the price of labour affects the supply of labour.

Notes

- Adjustments in supply and demand for labour are difficult because it is difficult to increase or decrease the labour instantly.
- It is mobile since man moves from one place to another due to monetary benefits.

3. **Capital:** Capital is an important factor of production which is used to produce other goods and services. According to **Marshall,** *capital consists of those kinds of wealth other than free gifts of nature, which yield income*.

   Money is used as capital to buy various raw materials, machines, tools, etc. for the purpose of production. The terms capital and wealth are different in their own ways. Capital is a part of wealth which is used for further production of wealth.

   It includes physical capital as well as human capital. Human capital comes in the form of skilled and technically qualified people. Human capital is also important because without the involvement of human the materialistic capital cannot be used effectively.

   Prof. Galbraith defined capital as "*we now get the larger part of our industrial growth not from more capital investment, but from investment in men and improvements brought about by improved men.*"

   In economics, capital is considered as monetary resources. By the using of capital, the organisations are purchasing land and other goods. These monetary resources flow through the economy since the people use it for buying and selling of resources for their work. Capital can be categorised into different forms which are as follows:

   a. **Physical capital:** The various man-made physical assets like machines, plants, equipment and tools, buildings, roads, dams, communications, etc. are the various forms of physical capital.

   b. **Money capital:** The investment that is made in the form of money or monetary instruments is called money capital. People save their income in the form of bank deposits, shares and securities, or other monetary instruments. These are the sources of money capital.

   c. **Human capital:** Human capital is an important factor, and is improved through education, skill development, training, etc. This improvement needs investment. Higher the investments in human capital, higher will be the skills and productivity levels.

   The characteristics of capital are as follows:

   - It is the passive factor of production.
   - It is man-made and is not an indispensable factor of production, i.e., production can happen even without capital.
   - The supply of capital is elastic and is high on mobility.
   - It is productive and lasts over a period of time.
   - It involves present monetary benefits for getting future benefits.

4. **Organisation or Entrepreneur:** An entrepreneur is an individual who uses the different factors of production i.e., land, labour and capital in the right proportion and uses them for the process of production along with bearing the risks involved with it. The entrepreneur organises, manages and uses their organisational skills to produce goods and services in order to gain a profit. Organisation refers to the services of an entrepreneur who controls, organises and manages the workings of a firm, undertakes risks involved and innovates new ways of doing business.

   According to **Schumpeter**, *an entrepreneur is an innovator of new markets and new techniques of production. A new market increases the sales volume whereas a new cost-cutting production technique will make the product cheaper. This will, in turn, increase the volume of sales and the profit*.

   This form of entrepreneurship is considered as a factor of production since someone must complete the managerial functions of gathering, allocating and distributing economic resources for businesses. Entrepreneurs use their creative ideas for creating a valuable good or service and are willing to take the risk involved with transforming economic resources into consumer products. The entrepreneurs are responsible for the changes within the environments and society. The entrepreneur is always willing to face uncertainties and risks. The success or failure of the business depends totally on the efficiency of the entrepreneur.

   The functions of an entrepreneur can be described as follows:

   - Identifies profitable investing opportunities with finding new and profitable ideas for promoting business in the market
   - Takes a decision on the unit of production whether big or small depending upon the nature of the products and the level of competition in the market.
   - decides the location of the production unit by locating his/her unit of production nearer to both factor market and the end-user market.
   - He/she also identifies the optimum combination of factors of production after having decided to start a new venture with the task of hiring factors of production.
   - Makes the right innovations for increasing the volume of sales and utilising the cost-cutting production techniques for cheaper products which will, in turn, increase the volume of sales and the profit.
   - He/she decides on the reward paid for the factors used in production on the basis of his/her productivity. Measuring the productivity of the factors and the payment of reward is an important function of an entrepreneur.

5.3.1 PRODUCTION POSSIBILITY CURVE

The Production Possibilities Curve (PPC) is a process which is used to show the balance in assigning resources for the production of two different goods. The PPC shows the concept of economic growth, scarcity, the efficiency of production and the opportunity cost associated with the production of goods. It is important to use the resources in an optimum manner for producing different goods.

Notes

PPC helps to give an outline of the total output of goods which an organisation can produce by utilising the available resources along with the quantities of other goods being produced. Therefore, PPC shows the combinations of two goods which are produced in an organisaton with its limited resources. The resources and goods which are shown on the PPC are considered as practically well planned and are correct, while the resources and goods that are placed below the curve are regarded as ineffective. The PPC is used to represent only two goods since a larger number of goods cannot be shown on a simple graph.

Let us understand this concept better with an example, an organisation producing two goods A and B. Table 1 demonstrates the different combinations of goods A and B which are produced by an organisation:

Table 1: Production Possibilities

Production Possibilities	A (Thousands)	B (Thousands)
P	0	20
Q	2	14
R	4	10
S	5	5
T	6	0

Source: *http://www.economicsdiscussion.net/production/production-possibility-curve-with-diagram/3619*

Table 1 shows that when the goods A has attained the quantity of 6000, then goods B has not been produced, and is at 0. In the same manner when the quantity of goods B was at 20 000, then the quantity of goods A is at 0. This happens in very extreme cases when all the resources are used for manufacturing one good. But the table also shows cases in between where both the goods A and B are being manufactured together. The table can be plotted on a graph to show the PPC as shown in Figure 1:

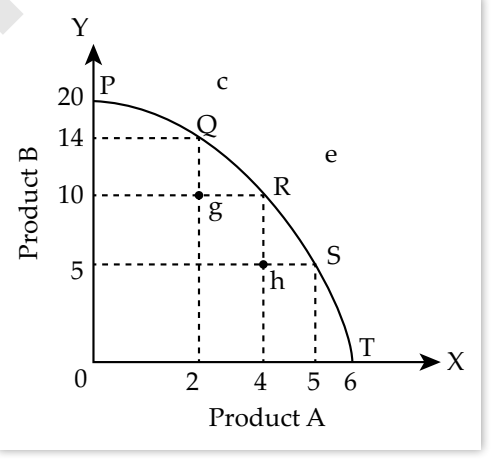

Figure 1: Production Possibility Curve

Source: *http://www.economicsdiscussion.net/production/production-possibility-curve-with-diagram/3619*

In Figure 1, the PPC is concave in shape because the resources of good B were utilised for the production of good A. Hence, the resources of product B were sacrificed in the process which is referred to them as the marginal rate of transformation. In

Figure 1, the points of possibility on the curve for *g* and *h* are combinations which can be attained. The points of *c* and *e* are combinations which cannot be attained.

The PPC helps to provide answers for problems related to production. It also helps in finding solutions as what needs to be produced and the methods on how to produce, and also which can be utilised for different purposes. The significance of PPC is as follows:

- It helps the decision makers to utilise the method for diverting the use of their resources for producing goods and services as per demand.
- The opportunity costs helps to decide how much of another product or activity should be sacrificed for producing another product. It also helps in moving from one effective combination of producing goods to another effective combination of products.
- The PPC helps in monitoring the movement of resources which helps to increases the productive resources of the organisation for attaining high production level.

5.3.2 PRODUCTION FUNCTION

The scientific relationship between the different factors of production and the production of goods or service is referred to as the production function. The production function defines the amount of output that can be expected from other factors of production. It is for a definite period and with changes in the technology, it also undergoes the changes.

According to **Professor Watson,** *production function is the relation between a firm's physical production (output) and the material factors of production (output).*

It shows the relationship between the quantity of output and the required quantity of different inputs that are used in production. It helps to understand in the technological sense the maximum output that can be produced within a given period with a specific quantity of inputs in the existing state of the economy. The production of a commodity depends wholly on the available resources and inputs.

The productivity concept is of great significance for the countries which are underdeveloped and are in the state of developing. The basic aim of the production function is to use the resources in an optimum manner so as to get maximum benefit with lesser efforts and expenditure.

Apart from the various factors of production like land, labour, capital and entrepreneur, the latest factors like technologies, skills, and knowledge have also been accepted as important factors of production. The formula given below helps to understand the relationship between physical inputs and physical output. The production function can be well explained in mathematical terms as follows:

P = f (a, b, c, d ..... k)

Where,

P = Output of goods produced per unit of time.

a, b, c, d ..... k are the various factors of production used to produce output.

NOTES

It shows the technical relationship between the given quantities of inputs combined together resulting in a certain quantity of output per unit of time.

The main characteristics of the production function are as follows:

- It is related to a specified unit of time.
- The technical knowledge during the unit of time remains the same.
- The factors of production are divisible into feasible units.
- The entrepreneur uses the best method available.

SELF ASSESSMENT QUESTIONS

3. The scientific relationship between the different factors of production and the production of commodity or service is referred to as the production _____.
4. _____ refers to the quality of labor resources, which can be improved through investments in education, training, and health.
   a. Money capital
   b. Human capital
   c. The factor of production
   d. Production function

5.4 PRODUCTION IN THE SHORT RUN

The short run is a period of time where one input is used for production is fixed and there are other variables inputs which can be changed. Short run period refers to the time period in which the supply of certain inputs like a factory, building, machines, equipment and more are fixed or inelastic. Thus, an increase in production during this period is possible only by increasing the variable inputs.

In some organisations, the short run may consist of some weeks or a few months and in some others, it may go up to three or more years. Therefore, short-run production function can be explained as follows:

- It is a period of the time period where one factor of production is in fixed.
- It is the process adopted by the organisation to increase productivity levels.
- It is assumed that certain variables like machinery and plant are fixed, and the level of production can be altered by the changing variable inputs like labour, other resources in the form of raw materials and energy.

There are three measures of production in short-run production which are as follows:

1. **Total Production (TP):** Total production refers to the total amount of units of output which is produced per unit of time by the different factors of inputs. It refers to the total amount of output which is produced using a given quantity of the factor, assuming other factors to be remaining at constant levels.

It is seen that the total output increases due to the change in variable factor inputs. In mathematical terms, it is shown as:

TP = f (QVF)

TP = Total Product

f = Functional Relationship

QVF = The Quantity of Variable Factor

2. **Average Production (AP):** Average production can be is defined as the total product per unit of factor employed in the process of production. This can be achieved by dividing the total product by the number of variable factors. The average production can be explained in mathematical terms as follows:

   AP = TP/QVF

   Where,

   TP = Total Product

   QVF = Quantity of variable factors

   Suppose the total product of a commodity is 500 units per day with 20 workers employed, then

   AP = 500/20 = 25 units per workers

3. **Marginal Production (MP):** The additional unit produced by the last variable factor is called as marginal production. In other words, in total production, the change in output owing to the addition of a variable factor of input is referred to as marginal production. Mathematically, it is shown as:

   $$MP = \frac{\Delta Y}{\Delta X}$$

   Where,

   MP = Marginal product

   ΔY = Change in quantity of output resulting from change in input.

   ΔX = Change in the firm's usage of input.

   In the short run, input-output relations are studied with one variable input, while other inputs are held constant. In the short run, the 'Law of variable proportions' is used to establish the short-run relationship between the changes in output and the changes in inputs. During the short run, there is an increase in the variable factors which are applied upon some fixed factors, and this changes the factor proportion. This proportion is known as the law of variable proportion.

According to **Prof. Samuelson**, "*An increase in some inputs relative to other comparatively fixed inputs will cause the output to increase; but after a point, the extra output resulting from the same additions of inputs will become less and less; this falling of extra returns is a consequence of the fact that the new doses of varying resources have less and less of the constant resources to work with.*"

Notes

5.4.1 LAW OF DIMINISHING RETURNS

The law of diminishing returns is one of the oldest and is the most important part of economic theory. This law states that if the quantity of one factor is fixed, for increasing output, then more units of labour and capital are applied. The increase in output will take place at a decreasing rate. The Laws of returns states the relationship between the variable input and the output in the short term. According to the definitions, certain factors of production like land, equipment, plant, machinery, etc., are available in short supply during the short run. All these factors in the input combination lead to variation in factor proportions. The Law which brings out the relationship between varying factor properties and output is, therefore, known as the Law of variable proportions.

By using variation in inputs, it leads to a disproportionate increase in output. When more units of variable factors are applied, it causes an increase in output, but after a certain point, the extra output will start decreasing. The law which brings out this tendency in production is referred to as Law of diminishing returns.

Table 2 explains the operation of the Law of diminishing returns:

Table 2: Law of Diminishing Returns

No. of Workers	Total Product	Average Product	Marginal Product
1	10	10	10
2	22	11	12
3	36	12	14
4	52	13	16
5	66	13.2	14
6	76	12.7	10
7	82	11.7	6
8	85	10.6	3
9	85	9.4	0
10	83	8.3	(–2)

Table 2 illustrates several important points of a typical production function.

The table shows that by employing one variable input, both AP and MP rise initially, and when they reach their maximum level, they tend to decline.

The total output increases at an increasing rate until the employment of the 4th worker. This is revealed by the rate of increase in the MP. However, if any additional labour is employed after the Fourth labour, then it clearly shows the operation of the law of diminishing returns.

The maximum MP is 16 after which it continues to fall, ultimately becoming negative. Thus, when more and more units of labour are combined with other fixed factors, the total output increases first at an increasing rate and then at a diminishing

rate. Finally, it becomes negative. The graphical representation of the above table is shown in Figure 2:

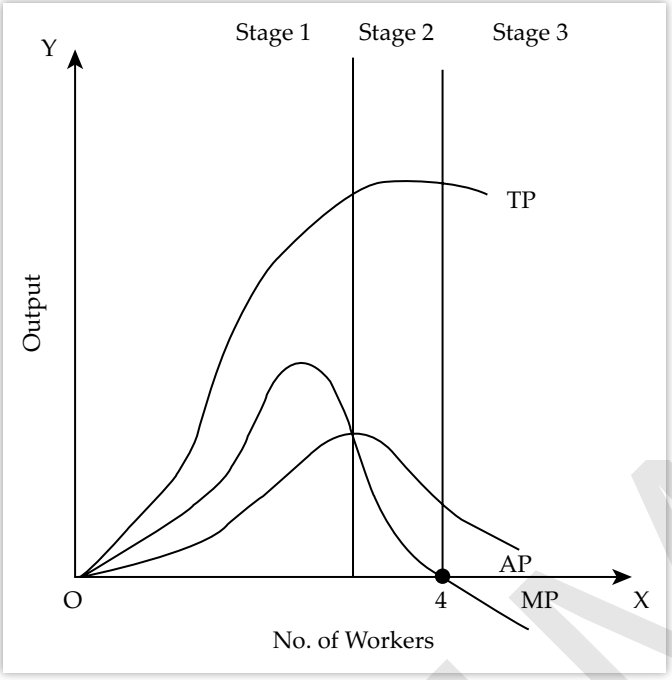

Figure 2: Graphical Representation of Law of Diminishing Returns

Here, the factor labour and the unit of output are shown on the OX axis and OY axis, respectively. Total Output or TP curve has a steep rise, until the employment of the 4th worker. This shows that the output increases at an increasing rate until the employment of the fourth labourer. TP curve still goes on increasing but only at a diminishing rate. Finally, the TP curve shows a downward trend.

The Law of Diminishing Returns operates in three stages. During the first stage, TP increases at an increasing rate and the MP in this stage also increase resulting in a greater increase in TP. The average product also increases and this stage continues up to the point where the AP is equal to MP, and the law of increasing returns is in operation during this stage.

Self Assessment Questions

5. _____ period refers to the time period in which the supply of certain inputs like a plant, building, machines, equipment and more are fixed or inelastic.
6. The laws of diminishing returns states the relationship between the variable input and the output in the short term. (True/False)

5.5 PRODUCTION IN THE LONG RUN

The long run is a period of time in which all inputs used for production and under the control of the producer. A long run means a period of time in which the supply of all the input is done in an elastic manner, but there is not change occurs in technology. This helps the producers to increase the levels of inputs accordingly. In the long run,

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the availability of even fixed factor increases. Thus, in the long run, the production of a commodity can be increased by employing the variables and fixed inputs.

The difference between long run and short run depends on the particular production activity. Some producers, the short run lasts a few days, whereas, for others, the short run can last for years.

In the long run, input-output relations are studied in the manner that all the inputs to be variable. The long-run input-output relations are studied under Laws of Returns to Scale. The long run is a period of time in which all inputs used for production and under the control of the producer can be varied.

5.5.1 MARGINAL RATE OF TECHNICAL SUBSTITUTION

Marginal Rate of Technical Substitution (MRTS) is based on the production function where the two factors of production can be substituted in different proportions in a manner for producing a constant level of output. A positive MRTS shows that it is advantageous for an organisation to make this substitution, and a negative MRTS implies that the organisation would drop in productivity if it did this. This can be shown very well with the help of an Isoquant curve. The *isoquant curve* is shown on the graph and charts where all inputs produce a specified level of output.

According to **Salvatore**, "*The marginal rate of technical substitution is the amount of output that a firm can give up by increasing the amount of the other input by one unit and still remain on the same isoquant.*"

The marginal rate of technical substitution between two factors of production Capital (C) and Labour (L) is the rate at which L can be substituted for C in the production of goods X without changing the quantity of output. As the isoquant curve moves downward to the right, every point on it shows the substitution of labour for capital. Figure 3 shows the slope of the gradient of the isoquant which is the marginal rate of technical substitution of labour for capital. The slope = $MRTS_{LC} = -\Delta C/\Delta L$.

This can be understood with the help of the isoquant schedule as illustrated in Table 3:

Table 3: Showing the Isoquant Schedule

Combination	Labour	Capital	$MRTS_{LC}$	Output
1	5	9	--	100
2	10	6	3:5	100
3	15	4	2:5	100
4	20	3	1:5	100

Source: *http://www.economicsdiscussion.net/law-of-returns/principle-of-marginal-rate-of-technical-substitution-mrts/18505*

Table 3 shows that in the other combination while keeping the output constant at 100 units, and by reducing 3 units of capital, it requires the addition of 5 units of labour, MRTS = 3:5.

In Figure 3 at point B, the marginal rate of technical substitution is AS/SB, at point Q it is BT/TG and at H, it is GR/RH.

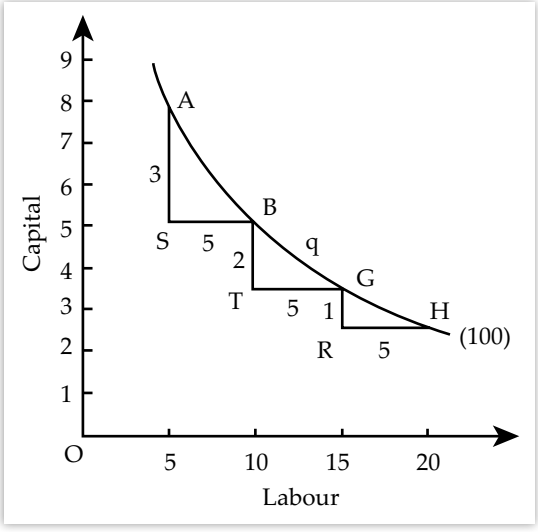

Figure 3: The Isoquant Curve

Source: *http://www.economicsdiscussion.net/law-of-returns/principle-of-marginal-rate-of-technical-substitution-mrts/18505*

In Figure 3, AH represents the units of labour that increased as factor combination to produce 100 units of goods X. Here, the reduction in the units of capital becomes smaller and smaller. That reduction shows that the MRTS is diminishing.

Hence, MRTS diminishes so, labour is substituted for capital. In other words, isoquant in convex form that reveals the origin at every point.

Self Assessment Questions

7. In the long run, production of a commodity cannot be increased by employing more of both, variable and fixed inputs. (True/False)
8. A positive MRTS shows that it is _____ for a company to make this substitution

5.6 PRODUCER'S EQUILIBRIUM

A producer's level of equilibrium deals with the entire economy on how total demand and total supply are brought into equality both in the factor and product markets. This means that the market is at a state of rest and there are no changes are required. The producer is in equilibrium when it has no intention of expanding or contracting its levels of output. It could be a state of maximum profit or minimum loses. The state of general equilibrium will be reached when the decisions of buyers and sellers regarding demand and supply of product and factor markets are in harmony with each other.

According to **Prof. Stigler**, "*Theory of general equilibrium is the theory of interrelationship among all parts of the economy*."

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The above definition explains the meaning and nature of general equilibrium. It is an approach that concentrates on the total economy i.e., whole as against partial equilibrium analysis which deals with partial or for an individual unit. It is a comprehensive study of the market with the study of the different variables, their interrelations, and interdependence with each other and more. It implies the determination of the level of output that yields maximum profit.

It is reached when MR = MC.

Where,

MR = Marginal Revenue

MC = Marginal Cost

According to **Walras**, "*General equilibrium occurs through the mutual interdependence between different markets and their constituents*."

A general equilibrium occurs for the whole system when every individual unit attains equilibrium simultaneously. The producer can be at an equilibrium level under two situations:

a. When the price levels remain constant and any quantity of the product can be sold at the set price.

b. When price levels fall with an increase in output then the producer follows their own prices. The sales can be increased only by reducing the prices.

Self Assessment Questions

9. The state of general equilibrium will be reached when the decisions of buyers and sellers regarding demand and supply of product and factor markets are in _____ with each other.

10. The state of general equilibrium is not reached when the decisions of buyers and sellers regarding demand and supply of product and factor markets are in harmony with each other. (True/False)

5.7 RETURNS TO SCALE

The law of returns to scale works during a longer period. It studies the behaviour of the firm with all variable factors in terms of production. No fixed production factors are found in the long run. The law of returns to scale explains the relationship between variable inputs and output when every input or the factors of production are increased in the same proportion. The law of returns to scale helps to find out the proportion of change in the output in comparison to the proportion of change in the quantities of the inputs. It helps in analysing the effects of scale on the level of outputs. This analysis would help the organization to decide its level of scale during the longer period.

According to **Koutsoyiannis**, "*The term returns to scale refers to the changes in output as all factors change by the same proportion.*"

In the long run, all the factors of production are variable and can be changed, and an increase in output is possible by increasing all the inputs of factors of production. The law of returns to scale explains the technological relationship between changing the scale of input and output. When there is an increase in the outputs after increasing the factors of production in the same proportion, then this increase is referred to as returns to scale.

According to **Leibhafsky**, "*returns to scale relates to the behaviour of total output as all inputs are varied, and is a long run concept.*"

When there is an increase in the output of a firm more than in proportion to an equal percentage increase in all inputs, the production results in increasing returns to scale. If the increase in output is proportionate to the increase in input, then it is the constant returns to scale. If it is less then proportionate, then it is diminishing returns to scale. The increasing return to the scale comes first, which results in constant returns to scale and it finally ends with a diminishing return to scale. The Figure 4 explains the three laws of returns to scale:

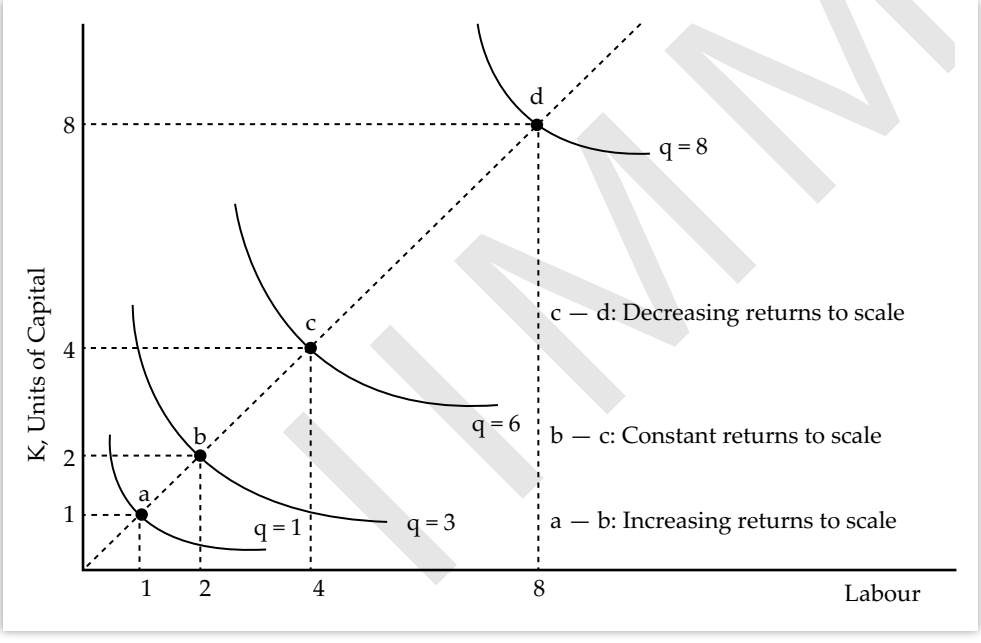

Figure 4: Laws showing Returns to Scale

Source: *http://www.economicsconcepts.com/law_of_returns_to_scale.htm*

5.7.1 INCREASING RETURNS TO SCALE

Increasing returns of scale takes place when there is a proportionate increase in all factors of production, and which results in a more than proportionate increase in output which is the first stage of production. There is an increase in the marginal output in this stage.

According to the law of increasing returns to scale, the production for a commodity increases in a greater proportion in comparison to the increase in the units of factors

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of the production. This is also called the 'Law of Diminishing Costs'. In other words, the cost per unit of the extra output decreases as the factors increase in the economy.

According to **Marshal**, "*An increase of labour and capital lead generally to the improved organization, which increases the efficiency of the work of labour and capital. Therefore, an increase of labour and capital generally give returns which increases more than in proportion.*"

The main characteristics of the law of increasing returns to scale are as follows:

- The certain factors of the production should be variables.
- The fixed and variable factors should be arranged effectively.
- There should be one factor of the production, which should be divisible.

In the words of **Benham**, "*As the production of one factor in a combination of factors is increased up to a point, the marginal productivity of the factors will increase.*"

5.7.2 CONSTANT RETURNS TO SCALE

Constant returns to scale take place when there is an increase in the inputs that lead to a proportionate increase in the output. When a firm has constant returns to scale, it is said to have minimal economies or diseconomies of scale. The firms come to a stage when total outputs tend to increase at a rate which is equal to the rate of increase in inputs. This process comes into operation when the economies of large-scale production are neutralised by the diseconomies of a large-scale operation.

5.7.3 DIMINISHING RETURNS TO SCALE

The diminishing returns to scale occur when there is an increase in input in the short run while one production variable like labour or capital is kept constant. This law only applies in the short run because, in the long run, all factors are variables. In this stage, a proportionate increase in all the inputs result in only less than proportionate increase in output. This is because of the diseconomies of large-scale production.

Let us explain this with an example, an organisation which hires more labour while keeping the same office space. This can lead to an increase in total output, but every additional labour produces less additional output than the one before him. The total output will decrease at some point, which can result in negative returns. If the organisation hires a bigger amount of labour, then they would get in each other's way which can lead to being unproductive after some time.

Self Assessment Questions

11. In the long run, all the factors of production are _____ and can be changed, and an increase in output is possible by increasing all the inputs of factors of the production.
12. The increasing returns to scale occurs when there is an increase in input in the short run while one production variable like labour or capital is kept constant. (True/False)

5.8 SUMMARY

- The production theory is the functional relationship between physical inputs and outputs. The production function is also referred to as the theory of production.
- The production function is the technical knowledge of the relationship between physical quantities of inputs and outputs achieved per period of time.
- A factor of production is a term in economics, which is used to describe the inputs that are used in the production of goods or services in order to make profits economically.
- The Production Possibilities Curve (PPC) is a process which is used to show the balance in assigning resources for the production of two different goods.
- The short run is a period of time where one input used for production is fixed and there are other variable inputs which can be changed.
- The law of diminishing returns is one of the oldest and is the most arguable part of economic theory.
- The long run is a period of time in which all inputs, used for production and under the control of the producer, are variable or can be changed.
- Marginal Rate of Technical Substitution (MRTS) is based on the production function where the two factors of production can be substituted in different proportions in a manner for producing a constant level of output.
- A producer's level of equilibrium deals with the entire economy on how total demand and total supply are brought into equality in both the factor and product markets.
- The law of returns to scale works during a longer period. It studies the behaviour of the firm with all variable factors in terms of production. In the long run, there are no fixed factors of production.

5.9 KEY WORDS

- **Factors of production:** An economic term that explains the inputs that are used in the production of goods or services in order to make a profit.
- **Economic resources:** The goods or services available to individuals and businesses for producing consumer products.
- **Economic profit or loss:** The difference between the revenue received from the sale of output and the opportunity cost of the inputs used.
- **Physical capital:** An important factor of production that is used as inputs in the production function.
- **Isoquant curve:** This curve is shown on the graph, and it is used in microeconomics, which shows all inputs that produce a specified level of output.

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- **Marginal Rate of Technical Substitution (MRTS):** It is based on the production function where the two factors of production can be substituted in different proportions in a manner for producing a constant level of output.
- **Diminishing Returns to Scale:** It occurs when there is an increase in input in the short run while one production variable like labour or capital is kept constant.

5.10 CASE STUDY: MICROSOFT'S EXPERIENCE WITH INCREASING AND DIMINISHING RETURNS

It has been seen that in some industries, it is not easy for people to adopt an industry standard that is beneficial to their own product in an easy way. It invariably involves a lot of marketing efforts, which helps to grow more productive, which makes the product market share grow bigger.

A good example of this is Microsoft's Windows. It is observed that when more customers adopt Windows, then there are more applications which are introduced by independent software developers in the market, and the more interesting applications that are introduced which have a better chance of being accepted by the users. It is seen that with other products, the market can show results in diminishing returns towards the expenditure for promotions, since it becomes saturated. But due to the latest standards of technology and accepting these new industry standards, the law for increasing returns can continue. Taking advantage of this, Microsoft is willing to spend big expenditures on promotion and marketing to dominate the industry. Many would claim that this is a limited practice, which can be justified by the recent anti-trust suit filed against the company.

In December 1999, Microsoft introduced a new program Office 2000 included Word, Excel, PowerPoint and Access for its customers. It had certain advance features over the previous package of Office 97. The new features allow more interaction with the Internet. It is also beneficial for the firms since it also allows easier collaborative work for them using an intranet. Therefore, many larger firms are willing to buy and pay for it.

There are limitations in terms of scope for the users to take advantage of these beneficial features. Office 97 contained a number of features that most customers cannot finish using them, and exhaust all its prospects. It was expected that with Word 97 even skilled users were not likely to use more than a quarter of all its benefits. Keeping these aspects in mind Microsoft is a victim of the law of diminishing returns.

The small business and end-users from home may not be impressed with the advanced features and further capabilities of Office 2000. Since there are large expenditures and costs involved for upgrading and developing to the package, the next question is where Microsoft moves from here. It is expected that the next version of Office 2003, may bring in a speech-recognition program, which would eventually make the keyboard and mouse useless. But these kinds of programs need a good amount of investment in terms of time and energies for the user to train the computer to understand and interpret their commands correctly. It is also a huge investment for the software producer for developing the package.

Source: *http://marketworksasia.com/yahoo_site_admin/assets/docs/Excerpts_Ch5_Managerial_Economics-*

QUESTIONS

1. Is it possible for a firm to experience both increasing and diminishing returns at the same time?

   (**Hint:** Advance features, extra benefits, expenses.)

2. Explain the nature of the fixed factor that is responsible for the law of diminishing returns in Microsoft's case?

   (**Hint:** Using the benefits of features and costs in terms of variable and fixed factors.)

5.11 EXERCISE

1. What is production and why are the factors of production important?
2. What is the production function?
3. What do you understand by 'Short Run' and 'Long Run' in the analysis of an organisation?
4. Explain the Marginal Rate of Technical Substitution (MRTS).
5. What is the scale of production? Which are the increasing returns to scale, constant returns to scale and diminishing returns to scale?

5.12 ANSWERS FOR SELF ASSESSMENT QUESTIONS

Topic	Q. No.	Answer
Concept of Production	1.	relationship
	2.	False
Factors of Production	3.	function
	4.	b. Human capital
Production in the Short Run	5.	Short run
	6.	True
Production in the Long Run	7.	False
	8.	advantageous
Producer's Equilibrium	9.	harmony
	10.	False
Returns to Scale	11.	variable
	12.	False

5.13 SUGGESTED BOOKS AND E-REFERENCES

SUGGESTED BOOKS

- Robert S Pindyck, Daniel L Rubinfeld and Prem L Mehta: *Micro Economics* – Sixth Edition, Pearson Education
- Dominick Salvatore, *Micro Economics – Theory and Applications*, New Delhi, OUP.

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E-REFERENCES

- https://edurev.in/studytube/ICAI-Notes-of-Ch–3-1-Theory-of-Production–Theory/876ee119-789e-4c95-92fd-7911bdedc274
- http://www.economicsdiscussion.net/production-function/production-function-meaning-definitions-and-features/6892

CHAPTER 6

Costs and Revenues in Business

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LEARNING OBJECTIVES

After studying this chapter, you will be able to:

- Explain the basic concept of cost and its different types
- Discuss the meaning of short run costs of production
- Describe the meaning of long run-costs of production
- Illustrate the derivation of cost schedule from a production function
- Explain the concept of revenue and its different types

6.1 INTRODUCTION

In the previous chapter, you studied about the production theory, the concept of production and the various factors of production. This chapter highlights the costs and revenues involved in the production process.

Goods or services are produced by the producers with the help of different factors of production. The expenses incurred by the enterprise for producing, manufacturing and selling the products or services to the customers are known as costs of production. For example, producers of furniture spend their monies on wood, nails, polishing, wages to carpenter and other indirect expenses such as electricity bills and rent for building in order to make wooden tables and furniture for sale to customers. Here, the total amount spent by the producer for making wooden table is referred to as the cost.

This chapter throws light on the different kinds of costs. There are different types of costs involved in the production of goods or services such as explicit and implicit cost, opportunity cost, direct and indirect cost, controllable and uncontrollable cost, etc. Similarly, when goods or services are ready for final use, they are sold to the customers for a price. The profit earned by selling the commodity in the market is called the revenue. When producers increase the scale of production, the cost of production tends to decrease which is known as the economies of scale.

This chapter will give you a proper understanding of the total concept of cost. It also explains in detail the concept of cost in the long run and short run. Further, the chapter elaborates the concept of production function and revenue. Towards the end, it also elucidates the relationship between economics and accounting.

6.2 CONCEPT OF COST

There are various factors of production like land, labour and capital which are needed by the producer to manufacture the goods. For every factor of production, businesses make payments in the form of rent, wages and interest. Therefore, the producers have to make an arrangement for money to schedule or fix up the production process. In the production process, the producers incur various kinds of expenses; and once the goods or services are produced by them, they earn profits by selling these to the consumers. Cost can be defined as the measurement of resources, used for the purposes of production, in monetary terms. From business point of view, cost is an essential factor for decision making and analysis of profit margin.

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Expenditures are costs which are borne by an organisation for the production of its products and services. It is also said that cost incurred in the production process is the sacrifice made by the producer. Chartered Institute of Management Accountants, **CIMA** defines *cost as the amount of expenditure (actual or notional) incurred on, or attributed to, a specified thing or activity.*

Various elements of cost are as follows:

- **Material:** These are the raw materials or substances from which a product is made. For example, textile fabrics, cotton, flax, etc. are required for making clothes. Material can be classified into two types:
  i. **Direct material:** It is the primary material which is directly used for producing a particular product or article such as sugarcane for sugar.
  ii. **Indirect material:** It is the material used in the production process which cannot be directly attributed to a particular product or job. For example, Fevicol or nails are used for making furniture.
- **Labour:** These are the human resources or people who are very important for converting raw materials into finished products. Labour is further divided into two types:
  i. **Direct labour:** These are the persons who are directly involved in the production process. Cost related to these persons or labour is called direct labour cost.
  ii. **Indirect labour:** These persons are not actively involved in the manufacturing process. Sales persons, financiers, etc. come under this category. Cost related to these persons is called indirect labour cost.
- **Expenses**: These refer to the amounts or costs incurred in the process of producing final goods or services, other than labour cost and material cost. Two types of expenses are as follows:
  i. **Direct expenses:** These are traceable costs that can be easily identified to a specific product or job.
  ii. **Indirect expenses:** These are non-traceable costs which cannot be easily identified to a specific product or job.

6.2.1 TYPES OF COSTS

It is very important for the organisation to have a clear understanding of various types of costs involved in the procurement of raw material, labour and capital. Different situations or events contribute to the generation of different types of costs such as controllable and uncontrollable cost, explicit and implicit cost, opportunity cost, fixed and variable cost, etc. Let us now discuss the various kinds of cost concepts in an organisation in detail.

Opportunity Costs

Opportunity cost can be described as the cost of the next best alternative forgone by a business entity. In other words, opportunity cost is the cost of sacrifice made or benefit forgone in order to pursue the chosen action or alternative. Opportunity cost is also known as alternative cost. Due to the existence of scarce resources, organisations tend to utilise their limited resources for the best alternative and give

up the income expected from the second best alternative. Therefore, opportunity cost may be defined as the return from the second-best use of the organisation's limited resources, which it gives up in order to get benefit from the best use of these resources. For instance, an organisation has a capital of ₹ 1,00,000 and two alternative courses of action to make investment. It can either purchase a printing machine or photo copier, both having a productive life span of 12 years. The printing machine would yield an income of ₹ 30,000 per annum while the photo copier would yield an income of ₹ 20,000 per annum. An organisation that aims to maximise its profits would use the available amount to purchase the printing machine and forgo the income expected from the photo copier. Therefore, the opportunity cost in this case is the income forgone by the organisation, i.e., ₹ 20,000 per annum.

Explicit Costs

Explicit cost is also known as accounting cost. It is the money spent by the producer to purchase or own the factors of production. These costs are also referred to as actual costs. Explicit cost includes payment for raw materials, interest paid on loans, rent paid for leased building or machinery, and taxes paid to the government. Explicit costs are the direct costs which are calculated and recorded individually. For example, if an organisation takes a loan of ₹ 50,00,000 at an interest rate of 5% p.a., the interest cost of ₹ 2,50,000 p.a. would be an explicit cost for the enterprise.

Implicit Costs

These costs are also known as economic costs. Implicit costs cannot be reported as cash outlays in the accounting books. Alternative or opportunity costs are examples of implicit cost. For example, Mr. Rao, a business owner who is a commerce graduate, uses his own property for business activities and also manages the accounts of his business without drawing any kind of salary. Here, the average rent of his house and average salary of an accountant will be considered as implicit costs. Implicit costs are also referred to as notional costs, imputed costs or implied costs.

Business Costs

The expenses which are incurred to carry out a business are called business costs. The concept of explicit cost and business cost is quite similar. Business costs include all the payments and contractual obligations made by a business which are added to the books of account, such as cost of depreciation of plant and equipment. Business costs are used to calculate the profit or loss made in a business. Other examples are costs involved in filing of income tax returns and legal procedures.

Full Costs

Full costs are the total costs in business. They include opportunity costs, business costs and normal costs. These costs comprise of cost of materials, cost of labour, variable overheads and fixed manufacturing overheads that are required to produce a commodity.

Fixed Costs

The costs incurred by an enterprise that do not vary with changes in the output level are known as fixed costs. Even when an organisation does not carry on its business

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operations, fixed costs would still remain unchanged. For example, depreciation, administrative costs, rent of land and buildings, taxes, etc. However, if the time period under consideration is long enough to make changes in the organisation's capacity, the fixed costs may also change.

Variable Costs

These are the costs that are directly dependent on the level of output of the organisation. In other words, variable costs change with the changes in the volume or level of output. For example, if an organisation increases its level of output, it would need more raw materials to match the increased production requirements. Variable costs are wages paid to labourers, maintenance costs of fixed assets, routine maintenance expenditure, etc. However, the level of changes in variable costs with the changes in output level may not necessarily be in the same proportion. The ratio between variable costs and output depends upon the utilisation of fixed assets during the production process. The total of fixed costs and variable costs of an organisation give the total cost of production which can be expressed as:

Total Costs of an organisation (TC) = Fixed costs (FC) + Variable costs (VC)

Incremental Cost

An additional or extra cost due to a change in the nature or level of business activity is known as incremental cost. It means that the additional cost would not have been incurred if an additional unit of output was not produced. Since these costs can be eliminated by avoiding the possible changes in production, therefore, they are also referred to as avoidable costs or escapable costs. For example, if a production house has to run for additional two hours, the electricity consumed during the extra hours is an additional cost to the production house.

Real Costs

The actual costs incurred by the members of the organisation in the process of production of goods or services are known as real costs. In other words, real cost is the expense or cost incurred with respect to the efforts and sacrifices made by the whole enterprise on the tangible resources/factors of production for producing a commodity. It is the total cost of raw materials, direct labour, advertising, transportation, etc. which emerges in the process of producing goods or services for the customers.

Social Costs

The cost incurred by the society in any economic activity is called social cost. For example, when a new airport is built in the city, the cost of construction, salary of workers, maintenance expenses, etc., will be considered as private costs whereas the loss of landscape, noise and air pollution, risks of accidents, etc. will be considered as external costs. In this case, social cost will be calculated by adding both private and external costs.

Replacement Costs

Replacement cost is also known as replacement value. The total amount of cost that an organisation incurs in replacing an old asset with a similar kind of new

asset is called replacement cost. For example, suppose a company purchases a new machinery costing ₹ 1 crore, and on the same day, it sells an old machinery of a similar kind for ₹ 25 lakhs. In this case, replacement cost of machinery will be calculated by deducting the sale proceeds of old machinery from the price of new machinery. Hence, the replacement cost for machinery will be ₹ (1,00,00,000 – 25,00,000) = ₹ 75,00,000.

Direct Costs and Indirect Costs

Those costs which are directly incurred in relation to the production of a specific commodity and can be identified or traced easily are called direct costs. Generally, direct cost is considered as variable cost because it varies with changes in the level of production. For example, wages of labour, packaging costs, etc.

On the other hand, indirect costs are those costs which cannot be traced to the production of a specific commodity. Generally, these costs include the costs of maintaining the whole organisation. Indirect cost is considered as fixed cost because it remains fixed or unchanged whether the production is zero or maximum. For example, depreciation, insurance premium, etc.

SELF ASSESSMENT QUESTIONS

1. _____ is a measurement in monetary terms of the amount of resources used for some purpose.
2. Variable cost does not change with change in the level of output. (True/False)
3. The total amount of cost that an organisation incurs in replacing an old asset with a similar kind of new asset is called _____.

6.3 SHORT-RUN COSTS OF PRODUCTION

Short run is a period of time in the production process wherein at least one input is fixed while others are variable. Capital, factory buildings, plant and equipment, etc., are some factors which an organisation cannot change in the short run. However, the variable factors, such as raw materials, employee wages, etc. keep on changing with the level of output. If an organisation is willing to increase its output in the short run, it would hire more labourers and purchase more raw materials. However, it cannot expand its plant size or increase its plant capacity in the short run. Similarly, when demand falls, the enterprise would decrease the working hours or its output, but cannot reduce its plant size. Therefore, in the short run, only variable factors fluctuate whereas fixed factors remain the same. Let us discuss the cost-output relations in the short run in the next sections.

6.3.1 SHORT-RUN TOTAL COST

The sum of total fixed cost and total variable cost is called total cost. There are two types of costs under Short-Run Total Cost (SRTC). They are as follows:

- **Total Fixed Cost (TFC):** The cost which does not vary with change in the level of output is called total fixed cost. In short run, TFC remains constant even when

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the output is zero. TFC is represented by a straight horizontal line to the x-axis (output).

- **Total Variable cost (TVC):** With change in the level of output, total variable cost also changes. This means that when the output increases, TVC also increases and when the output decreases, TVC also decreases.

The summation of total fixed cost and total variable cost is referred to as total cost in the short run.

SRTC = Total Fixed Cost + Total Variable Cost

As the TFC remains constant, the variations in SRTC are entirely due to changes in TVC. Figure 1 depicts the short-run costs of an organisation:

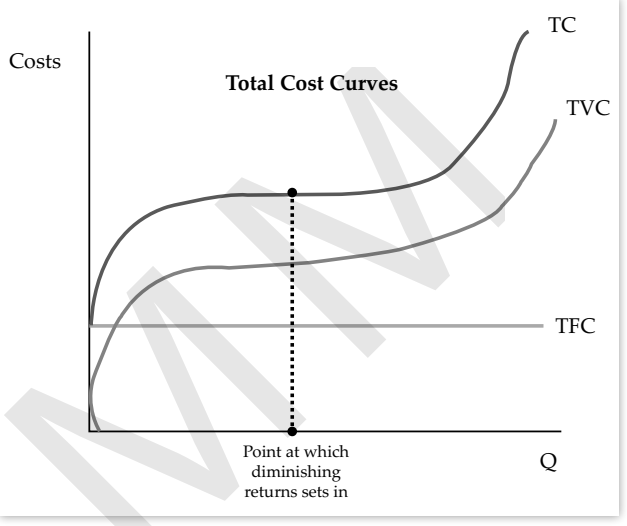

FIGURE 1: Short-Run Costs of an Organisation

Source: *http://welkerswikinomics.wikifoundry.com/page/Shortrun+Production+Costs*

6.3.2 SHORT-RUN AVERAGE COST

Average cost is referred to as the total cost divided by the number of units produced in a organisation. The Short-Run Average Cost (SRAC) in a production organisation means the per unit cost of output at different levels of production. To compute SRAC, short-run total cost is divided by the units of output.

SRAC= SRTC/Q or TFC+ TVC/Q

The curve of SRAC is U-shaped. It tends to fall down in the beginning, reaches to a minimum and then starts to rise. In the beginning, the fixed costs remain the same while only the variable costs, such as cost of raw material, labour, etc. change. Later, when the fixed costs get distributed over the output, the average cost begins to fall. When an organisation utilises its capacities to the full, the average cost reaches to a minimum. It is at this point that the organisation operates at its optimum capacity. Figure 2 below depicts the short-run average cost of an organisation:

ATC = Average Total Cost

AVC =Average Variable Cost

AFC = Average Fixed Cost

MC = Marginal Cost

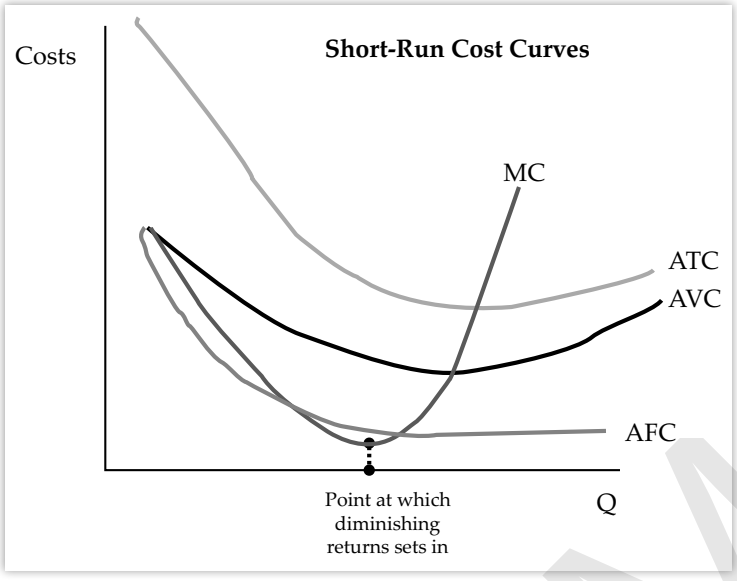

Figure 2: U-Shaped Short-Run Average Cost

Source: *http://welkerswikinomics.wikifoundry.com/page/Short-run+Production+Costs*

6.3.3 SHORT-RUN MARGINAL COST

The changes in total cost of an organisation divided by the changes in total output is called marginal cost. Short-run marginal cost refers to the change in short-run total cost due to a change in the organisation's output.

In the marginal cost concept, $\Delta Q = 1$ and the total fixed cost does not change with the change in quantity. Therefore, the total cost changes only due to the changes in variable cost. Short-Run Marginal Cost (SRMC) on a graph is the slope of the SRTC and depicts the rate of change in total cost as output changes. The marginal cost of an organisation is used to determine whether additional units need to be produced or not. If an organisation expects to sell the additional unit at a price higher than the cost incurred to produce the additional unit (i.e., marginal cost), the organisation may decide to produce the additional unit in the anticipation of profits. Table 1 below shows the estimation of SRTC, SRAC and SRMC of an organisation producing paper bags. Quantity expressed is in thousands (₹ 000) and the cost in ₹ (lakhs):

Table 1: Estimation of SRMC of an Organisation

Quantity	Total Fixed Cost (TFC)	Total Variable Cost (TVC)	Total Cost (TC)	Average Cost	Marginal Cost
20	10	15	25	1.25	-
21	10	20	30	1.43	5
22	10	10	20	0.91	10
23	10	12	22	0.96	2

Notes

Self Assessment Questions

4. The shape of short-run average cost curve is _____.
5. The cost which does not vary with change in the level of output is called:
   a. Total Fixed Cost
   b. Total Variable Cost
   c. Marginal Cost
   d. Average Cost

6.4 LONG-RUN COSTS OF PRODUCTION

Long run refers to the time period in which all the factors of production are variable, i.e., an organisation can change all the factors of production. An organisation incurs long run costs when the level of production changes to a different level. In the long run, the factors of production may be utilised in changing proportions to produce a higher level of output. Here, the organisation can expand its plant size along with labour or set up a new plant to produce the desired output. For example, downsizing or expanding an organisation, entering or leaving a market, etc. involves the incurrence of long-run costs. To understand long run cost-output relations, it can be assumed that a long-run cost curve is composed of a series of short-run cost curves.

At a given level of output, when all the factors of production are variable, the total cost incurred by an organisation is called Long-Run Total Cost (LRTC). In other words, the total cost incurred by an enterprise when it increases the scale of its operations (not just by hiring more workers, but also by building a larger factory or setting up a new plant) is called long-run total cost.

LRTC curve is S-shaped and is much similar to a short-run total cost curve. When the quantity of output is relatively small, the slope begins to flatten due to the increasing returns to scale or economies of scale. Similarly, for larger quantities, the slope makes a turn-around and becomes steeper. The reason behind the steepening of slope is the decreasing returns to scale or diseconomies of scale. This shape highlights that no fixed input is included in the long run cost, and, hence every cost component is variable. Figure 3 below shows the LRTC of an organisation:

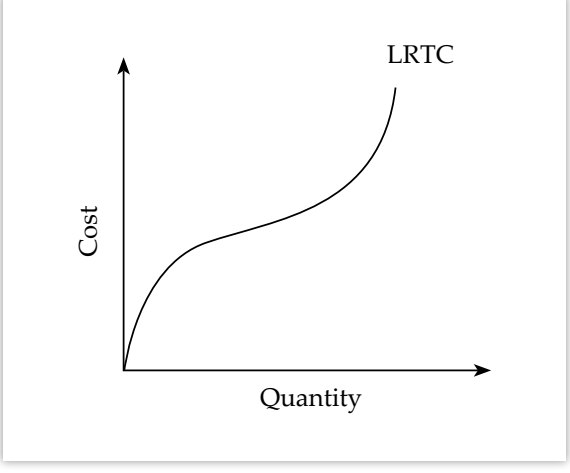

Figure 3: Long-Run Total Cost of an Organisation

6.4.1 LONG-RUN AVERAGE COST

In production of a desired level of output where all the inputs are variable, the per unit cost incurred by an organisation is called Long-Run Average Cost (LRAC). LRAC is calculated by dividing the long-run total cost by the quantity of output.

LRAC curve of an organisation highlights the minimum average cost at which the organisation can produce any given level of output. The LRAC of an organisation can be obtained from its individual SRAC curves. Each SRAC curve represents an organisation's short-run cost of production at different levels of capital utilisation. The shape of the LRAC curve is similar to the SRAC curve. The economies of scale and increasing returns to scale are depicted by the negative slope of the LRAC. On the other hand, the positive slope of the LRAC curve represents diseconomies of scale or decreasing returns to scale. Figure 4 given below depicts the long-run average cost of an organisation:

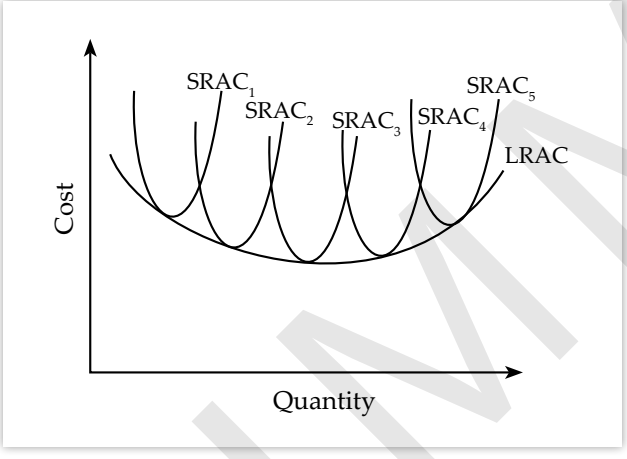

Figure 4: Long-Run Average Cost of an Organisation

In Figure 4, $SRAC_1$, $SRAC_2$, $SRAC_3$, $SRAC_4$ and $SRAC_5$ are the five alternative scales of a plant. However, in the long run, the organisation will operate on the most profitable scale, i.e., LRAC.

6.4.2 LONG-RUN MARGINAL COST

In the long run where all the inputs are variable, the additional cost of producing an extra unit of output is called Long Run Marginal Cost (LRMC). LRMC refers to the extra cost incurred by an organisation for producing a given output level when all the factors of production are variable. In other words, long-run marginal cost is the additional cost that the organisation incurs when it expands the scale of its operations not just by hiring additional workers, but also by increasing the plant capacity. LRMC is the change in long run total cost as divided by the change in quantity. LRMC is the slope of the LRTC curve and the LRMC and SRMC curves are similar in shape. The negative slope of the LRMC curve highlights the increasing returns to scale or economies of scale. On the other hand, the positive slope of LRMC curve represents diseconomies of scale or decreasing returns to scale.

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Figure 5 below shows the U-shaped LRMC curve:

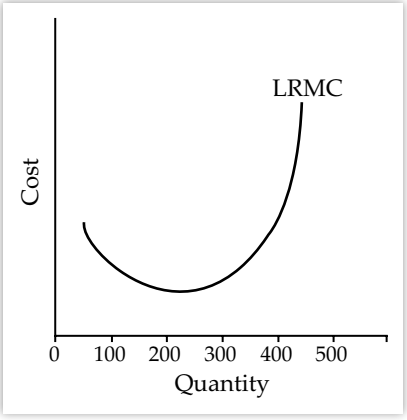

Figure 5: Long Run Marginal Curve

Source: *http://www.amosweb.com/cgi-bin/awb_nav.pl?s=wpd&c=dsp&k=longrun+marginal+cost*

Self Assessment Questions

6. In the long run, the cost of production of all factors of production are variable. (True/False)
7. _____ refers to the extra cost incurred by an organisation for producing a given output level when all the factors of production are variable.

6.5 FROM PRODUCTION FUNCTION TO COST SCHEDULE

According to **Prof. Watson**, *production function is the relationship between an organisation's physical production (output) and the material factors of production (inputs)*. In this section, we will discuss the process of deriving cost schedules from a production function. As discussed previously, all the factors of production in the long-run production process are variable and there is no fixed factor of production. Hence, on the basis of capacity and scale of production, the size of the organisation is the first decision made by a producer. During this period of time, a manager must understand the cost of production (at various levels of output) for efficient decision-making. Now let us take an example to understand the process of deriving long run costs from a production function. Suppose at each level of output, an organisation estimates its production function and the management had already derived the expansion path. Also, let us suppose that the organisation uses only two factor inputs (i.e., labour and capital) for production purposes and the level of factor usage has no effect on their prices. In simple words, there are only two factors of production (i.e., labour and capital) which are variable in the long run. Cost of labour and cost of capital are given as ₹ 10 and ₹ 20, respectively as shown in Table 2 below:

Table 2: Deriving Cost Schedule from Production Function

Units of Production (Q)	Labour Units	Capital Units	Total Cost (TC) in ₹ (Labour @ ₹ 10 and capital @ ₹ 20)	Average cost in ₹ (TC/Q)	Marginal cost in ₹ (TCn – TCn-1)
0	0	0	0	0	-
1	20	14	480	480	480

Units of Production (Q)	Labour Units	Capital Units	Total Cost (TC) in ₹ (Labour @ ₹ 10 and capital @ ₹ 20)	Average cost in ₹ (TC/Q)	Marginal cost in ₹ (TCn – TCn-1)
2	24	16	560	280	80
3	40	20	800	266	240
4	60	30	1200	300	400
5	80	44	1680	336	480
6	104	60	2240	373	560
7	120	86	2920	417	680

In Table 2 depicted above, the numbers of units produced by an organisation with a given level of capital and labour are shown. There are seven levels of outputs with the optimum combinations of labour and capital. These combinations of labour and capital yield seven points through which an expansion path is derived. The total cost of production for a given level of output can be calculated by multiplying the level of output (production units) with the quantity of inputs (labour and capital). For example, the production of 2 units of output requires 24 labour units and 16 units of capital. The prices of labour and capital are given as ₹ 10 and ₹ 20 respectively. Hence, the total cost of production will be ₹ 560 (i.e., 24 × 10 + 16 × 20). The total cost of production always shows an increasing trend because an organisation cannot produce additional units of output at a lower cost. The average cost can be calculated by dividing the total cost by the quantity of production. Lastly, marginal cost is derived from the change in total cost on the production of one additional unit of output.

Self Assessment Questions

8. _____ is the relation between a organisation's physical production (output) and the material factors of production (inputs).
9. On the basis of scale of production, the size of an organisation is the first decision made by a producer. (True/False)

6.6 ECONOMIES OF SCALE AND SCOPE

The efficiency of production maximises when an organisation expands its production capacity. Economies of scale refer to a situation wherein cost advantages are gained by the organisation with an extremely increased level of output. With economies of scale, a firm is able to draw more output per unit of input, thereby, leading to lower average total costs. Economies of scale give cost advantages to an organisation because the same level of inputs produces a higher level of output. More output results in minimising the average costs as the total costs are spread over the increased units of output. There are two types of economies of scale:

- **Internal economies of scale:** When an organisation enjoys economies of scale due to growth of the organisation itself, it is referred to as internal economies of scale. Where a firm minimizes its costs and maximizes its production, internal economies of scale are achieved. Internal economies of scale refer to the minimum per unit costs that an organisation achieves by increasing its capacity. For example, purchasing inputs in bulk from a wholesaler leads to reduction in overall costs.

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- **External economies of scale:** When an organisation enjoys economies in production due to growth of the overall industry in which the organisation operates, it is referred to as external economies of scale. External economies of scale are achieved due to industrial factors existent outside an organisation. Therefore, when an industry's scope of operations expands to a greater level, external economies of scale are said to have arisen. For example, a better transportation network, which results in minimising the transportation cost of an organisation operating within that industry, leads to technological advancements and external economies of scale.

Diseconomies of scale arise when a business organisation grows extremely large which results in an increase in the cost per unit. It is the cost disadvantage which arises due to the increase of a organisation's capacity resulting in an increase in the average cost of production. The diseconomies of scale are divided into two categories, i.e., internal and external diseconomies of scale. These are explained as follows:

- **Internal diseconomies of scale:** It arises when an organisation incurs more costs due to the growth of the organisation itself. It results in lowering an organisation's output and increasing its long-run average cost. The two main reasons for internal diseconomies of scale are managerial inefficiency and financial inefficiency.
- **External diseconomies of scale:** It refers to the cost disadvantages that arise due to a rise in the number of organisations operating in an industry, thereby, resulting in over production. External diseconomies of scale result from factors outside the control of an organisation leading to an increase in organisation's total costs with the rise in output of the industry as a whole.

Economies of Scope

Economies of scope refer to the decrease in the average total cost of an organisation due to the production of a wider variety of goods or services. Economies of scope can happen when an organisation lowers the average total cost of production for each of its products by spreading the input costs across over the whole range of products. Economies of scope can be attained by sharing or joint utilisation of inputs leading to reductions in unit costs. Economies of scope allow organisations to generate operational efficiencies in production. Economies of scope are usually achieved by manufacturing small batches of many items as opposed to economies of scale where organisations produce large batches of a few items. Some of the ways through which an organisation can achieve economies of scope are as follows:

- **Flexibility in manufacturing:** The use of flexible manufacturing systems results in economies of scope as it allows low-cost swapping of one product line with another.
- **Mergers and acquisitions:** Mergers may be undertaken to enhance or expand a manufacturer's product portfolio, increase plant size and combine costs. This leads to the attainment of economies of scope.
- **Sharing of resources:** When an organisation expands its existing capacities, resources or areas of expertise for greater competitiveness, this results in lowered cost of production as the organisation can use the expertise in one business to gain from a new business.

SELF ASSESSMENT QUESTIONS

10. The cost advantage enjoyed by an organisation when it increases it level of output is called _____.
11. Managerial and financial inefficiencies give rise to external diseconomies. (True/False)

6.7 CONCEPT OF REVENUE

Profit making is one of the major motives of an organisation. An organisation can maximise the profit by lowering the cost of production or by increasing the revenue. The total amount of money gained or received by an organisation in selling of goods or services rendered during a given time of period is called Revenue. It refers to the income or amount of money generated by the organisation from the sale of a given quantity of a goods in the market. For example, if an organisation obtains ₹ 2,60,000 from the sale of 10 computers, the received amount of ₹ 2, 60,000 is its revenue earned during the time period. There are different types of revenues.

6.7.1 TYPES OF REVENUE

Total receipts or amount received from the sale of a given quantity of a commodity is called total revenue. In other words, the total income of an organisation is its total revenue. Mathematically it can be expressed as,

$TR = Q \times P$

Where, TR is total revenue

Q is Quantity

P is Price

For example, if an organisation sells 8 fans at a price of ₹ 1,000 per fan, then the total revenue would be calculated as follows:

8 fans × ₹ 1,000 = ₹ 8, 000

Average Revenue

The average revenue refers to revenue earned by the organisation by selling per unit of commodity. The total revenue of the organisation divided by the total number of units sold is Average Revenue. Mathematically it can be expressed as,

Average Revenue = Total Revenue/Total no. of unit sold

Marginal Revenue

It is the revenue earned by selling an extra unit of the commodity. In other words, the variation or change in total revenue resulting from the sale of an extra or additional unit is called marginal revenue. Mathematically it can be expressed as,

$MR_n = TR_n - TR_{n-1}$

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Where,

MR_n = marginal revenue of n^{th} unit (additional unit)

TR_n = Total revenue from n units,

TR_{n-1} = Total revenue from (n – 1) units

n = the number of units sold.

For example, if the total revenue earned from the sale of 10 fans is ₹ 2,000 and that of the sale of 11 fans is ₹ 2,500, then MR of the 11^{th} fan will be calculated as follows:

$MR_{11} = TR_{11} - TR_{10}$

Or MR_{11} = ₹ 2,500 – ₹ 2,000 = ₹ 500

SELF ASSESSMENT QUESTIONS

12. The revenue earned by selling per unit of commodity is called _____of an organisation.
13. Average revenue is the revenue earned by selling an extra unit of the commodity. (True/False)

6.8 RELATION BETWEEN ECONOMICS AND ACCOUNTING

There are various types of similarities between economics and accounting because the subject matter of the is the same, i.e., goods and services.

Economics studies the factors related to the production of goods and services and accounting take care of record of the transactions. Some of the similarities are as follows:

- Economics uses the information generated by accounting like asset and liabilities, financial statements, etc. in making business decisions.
- The accountant and the economist use the statistical methods to gain a better understanding of consumer and the market.
- Accounting and economics give accountability to economic entities and businesses. Both of them facilitate valuable tools to the decision makers.

SELF ASSESSMENT QUESTIONS

14. The terms 'economics' and 'accounting' can be used interchangeably. (True/False)

ACTIVITY

Read the annual report of any organisation of your choice, and try to analyse the factors affecting its revenues.

6.9 SUMMARY

- Cost is referred to as a measurement of the amount of resources used for some purpose in the terms of money.
- There are different types of costs such as controllable and uncontrollable cost, explicit and implicit cost, opportunity cost, fixed and variable cost, etc.
- Those costs which are directly in relation to the production of a specific commodity and can be identified or traced easily are called direct costs.
- Indirect costs are those costs which are non-traceable to the production of a specific commodity because these costs include the cost of maintaining the whole organisation.
- Short run is a period of time where at least one input is fixed while others are variable.
- The sum of total fixed cost and total variable cost gives the total cost in the short run. Short-Run Total Cost (SRTC) = Total Fixed Cost + Total Variable Cost
- At a given level of output, when all the factors of production are variable, then the total cost incurred by an organisation is called Long- Run Total Cost (LRTC).
- Economies of scale refer to the cost advantage enjoyed by an organisation when it increases its level of output.
- Revenue refers to the income generated by the organisation from the sale of a given quantity of a commodity in the market to the customers.
- Production function is the relationship between an organisation's physical production (output) and the material factors of production (inputs).
- Diseconomies of scale arise when a business organisation grows extremely large which results in an increase in the cost per unit.
- Economies of scope refer to the decrease in the average total cost of an organisation due to the production of a wider variety of goods or services.
- An organisation can minimise the profit by covering the cost of production or by increasing the revenue. Revenue is the income generated by the selling of goods or services.
- Average revenue is the revenue earned by organisation by selling per unit commodity.
- Marginal revenue is earned by selling an extra unit of commodity.

6.10 KEY WORDS

- **Monetary**: Something of value which can be calculated in the terms of money.
- **Depreciation**: It is the decrease in the value of machines due to normal wear and tear with the passage of time.
- **Commodity**: Goods and services produced by a business organisation for sale to the customers.
- **Theories**: These are scientific investigations or postulates developed after a great deal of research.

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6.11 CASE STUDY: PEPSICO INC. - ECONOMIES OF SCALE OR OPPORTUNITY COSTS?

PepsiCo Inc. is an American multinational food and beverage corporation that manufactures, markets and distributes grain-based snack foods, beverages and other products. The organisation was formed in 1965 by the merger of Pepsi-Cola Company and Frito-Lay, Inc.

Indra Nooyi is the current CEO of PepsiCo Inc. Nooyi has been constantly questioned by investors who think that PepsiCo has shifted from its core business of snacks and fizzy drinks to new healthier markets. The carbonated drinks business has lost its market share considerably and the same seems true for its snacks business.

Several diversified businesses are splitting up into independent organisations. Some analysts suggest that PepsiCo should also split into two smaller organisations, a beverages manufacturing and marketing organisation and a snack manufacturing and marketing organisation. If this is the case, the two organisations for snacks and drinks would be segregated as Frito-Lay (Doritos, Tostitos and Walkers), and Pepsi Gatorade (a sports drink) and Tropicana (a maker of fruit juices). Although, the opportunity costs of running a single organisation are mounting, the CEO seems determined to maintain PepsiCo as a single unit. Nooyi admits that as a stand-alone corporation, Frito-Lay, the star performer of PepsiCo portfolio, might be the best consumer-goods maker in America. Moreover, it could also be sold for a fortune, which along with sales PepsiCo might be worth more than the current worth of the organisation.

In spite of these opportunity costs, Indira Nooyi believes in the economies of scale, given the organisation's power over its suppliers, retailers and customers. This could be attributed to the organisation's ability to market and distribute several of its brands together. By taking over Tropicana and Quaker Oats, PepsiCo is now selling less sugary drinks and healthier snacks, which are 25% less salty and 15% less fatty. Nooyi aims to increase PepsiCo's portfolio of "good for you" products (nuts, oats and fruit juices) from about $10 billion to $30 billion. However, the reality is not the same. Since the initiative for healthier products has been taken up by PepsiCo, its market share has declined by 7%, whiles those of Coca-Cola (its biggest rival) have increased by 50 %.

QUESTIONS

1. Do you think that PepsiCo's business is trading on powerful economies of scale?

   (**Hint**: Since the initiative for healthier products has been taken up by PepsiCo, its market share has declined by 7%, whiles those of Coca-Cola (its biggest rival) have increased by 50 %.)

2. Suppose PepsiCo Inc. decides to segregate into two different organisations. What could be the possible advantages or disadvantages of the act?

(**Hint**: Advantages: Frito-Lay might be the best consumer goods maker in America. It could also be sold for a fortune, which along with sales PepsiCo might be worth more than the current worth of the organisation. Disadvantages: Losing on economies of scale and marketing of several brands together.)

6.12 EXERCISE

1. Cost is the essential factor for decision making and analysis of profit margin. What are the different types of cost involved in the production of goods and services?
2. Explain the concept of average cost and marginal cost in long run with the help of an example.
3. Discuss the economies and diseconomies of scale and its types.
4. In what way, accounts and economics are related to each other? Give a brief idea.
5. Explain the concept of revenue.

6.13 ANSWERS FOR SELF ASSESSMENT QUESTIONS

Topic	Q. No.	Answer
Concept of Cost	1.	Cost
	2.	False
	3.	replacement cost
Short-Run Costs of Production	4.	U-shaped
	5.	a. Total Fixed Cost
Long-Run Costs of Production	6.	True
	7.	Long-Run Marginal Cost
From Production Function to Cost Schedule	8.	production function
	9.	True
Economies of Scale and Scope	10.	economies of scale
	11.	False
Concept of Revenue	12.	average revenue
	13.	False
Relation between Economics and Accounting	14.	False

6.14 SUGGESTED BOOKS AND E-REFERENCES

SUGGESTED BOOKS

- Sivagnanam, K., & Srinivasan, R. (2010). Business economics. New Delhi: Tata McGraw Hill.
- Vohra, R. (2005). Advanced mathematical economics. London: Routledge.

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E-REFERENCES

- How Economies of Scale Confer an Advantage to Larger Entities. (2019). Retrieved from https://www.thebalance.com/economies-of-scale-3305926
- Long-Run Costs. (2019). Retrieved from https://www.cliffsnotes.com/study-guides/economics/theory-of-the-organisation/long-run-costs

CHAPTER 7

Introduction to Financial Statements and Financial Accounting

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LEARNING OBJECTIVES

After studying this chapter, you will be able to:

- Describe the business activities and its types
- Discuss the concept of financial accounting
- Explain the important accounting models
- Discuss three financial statements-Balance Sheet, Profit and Loss Account and cash flow statement
- Define the concept of manipulating the bottom line

7.1 INTRODUCTION

In the previous chapter, you have studied the concept of cost and its types. You have also studied about the short-run and long-run cost of production in detail. The chapter discussed about the from production function to cost schedule and economic scale and slope. The concept of revenue described at the end of the chapter.

All the stakeholders of an organisation are interested in knowing the financial performance of the organisation over a given period of time. It is essential for every organisation to prepare an organised, structured and detailed summary of the financial statement over a period of time in order to evaluate the profit earned or the loss suffered by the organisation. Financial statements determine the financial position and earning capability of the organisation.

Every business organisation prepares three financial statements, namely The Balance Sheet, The Profit and Loss Account and The Cash flow Statement. The information provided in the financial statement is used for financial planning and financial analysis in order to make informed and sound financial decisions. Financial statement such as balance sheet and profit and loss statement are public and used for financial reporting in the annual report.

This chapter provides an overview of business activities and its types. It also describes the concept of financial accounting, accounting models and different types of financial statements prepared by an organisation. Towards the end, manipulating of bottom line has been described in this chapter.

7.2 BUSINESS ACTIVITIES AND ITS TYPES

Every business organisation perform business activities for profit earning motive. Business activities are the economic activities carried out within the organisation in order to earn a profit. Business activities get started from establishing objectives and goals, which are followed by creating strategies for raising funds. After raising funds, organisation invests in resources in order to carry out operations.

The three most important business activities are illustrated in Figure 1:

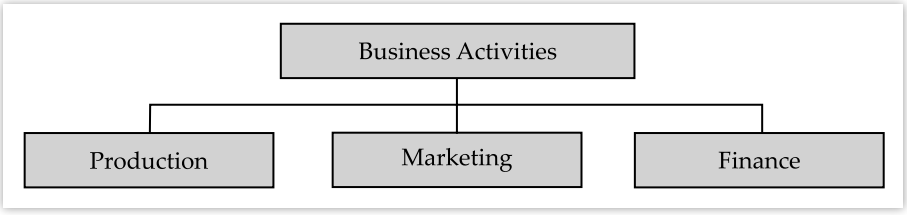

FIGURE 1: Types of Business Activities

Let us discuss these business activities briefly.

- **Production:** All the operations performed during the manufacturing stage started from procurement to final delivery of goods come under production.
- **Marketing:** All the tasks performed to promote and distribute goods and services come under marketing.
- **Finance:** All the financial assistance required to raise funds, making investments, etc. come under finance.

Every business activity requires funds. There are two major sources of finance which can be used by the organisations that are shareholder's fund and the loan funds. Shareholder's fund is also known as equity, and it can be in the form of equity capital, preference capital and retained earnings. On the other hand, loan funds can be raised through debentures, terms loans and fixed deposits, etc. A wide range of fixed assets such as land and building, plant and machinery, warehouses are purchased with the help of raised capital in order to manufacture and transport the goods and services. Also, organisation invests in raw material, research and development, manpower training, etc., in order to carry out operating activities.

It is important to know how much expenditure is done under each head and how much profit or loss has been earned by an organisation which can be determined with the help of financial statements.

SELF ASSESSMENT QUESTIONS

1. _____ are the economic activities carried out within the organisation in order to earn profit.
2. The two major sources of funds are shareholder's fund and loan funds. (True/ False)

7.3 CONCEPT OF FINANCIAL ACCOUNTING

Financial accounting includes various process such as summarising, analysing and classifying the transactions of the organisation. It helps in depicting an accurate picture of financial affairs of the organisation. It offers a snapshot of income and expenditure of the business organisation.

Generally Accepted Accounting Principles (GAPP) standards are adopted in financial accounting procedure. These standards and principles help in facilitating

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consistency and uniformity in preparing and maintaining books of accounts. These standards are universally accepted rules and are the basic foundation of accounting. Let us study the various accounting concepts in detail:

- **Concept of entity:** The personal transactions of owners are separate from the business transaction because a business transaction is considered as a separate entity. For example, if an owner withdraws business cash for its personal use, it will not be treated as business expenses in the name of drawings. Similarly, if he/she invests capital in the business, it will be treated as a liability for business. This concept ignores the involvement of personal transactions of owners in the financial statement of the business organisation.
- **Concept of money measurement:** This concept states that the transactions in the monetary terms are recorded in the books of account. It is also called concept of measurability. Other types of transactions can be recorded separately but financial statements involve only those transactions which can be recorded in monetary terms only.
- **Concept of going concern:** This concept states that the business operations will be carried out for an infinite period of time. Every business is expected to run for a long period of time. This concept helps in judging the capability of business to earn profitability for a long period of time.
- **Concept of cost:** For accounting purposes, assets owned by a business are recorded at their acquisition cost rather than their current market value. It is also known as historical cost concept. This concept assumes that price paid to purchase an asset is recorded and for old assets, depreciation is deducted from the original prices.
- **Conservatism concept:** This concept facilitates "anticipate no profit and provide for all possible losses". Also, it must consider all the actual and anticipated expenses. Assets are recorded at cost or market value, whichever is lower. This concept is a safety shield for business organisation as all the likely losses such as doubtful or bad debts are recorded in the books of account.
- **Dual aspect concept:** This concept facilitates the double entry system for each transaction because every transaction has an impact on its respective sides. For example, goods are bought for cash. This transaction affects two accounts: cash account and goods received account. This concept is generally expressed in terms of fundamental accounting equation as:

  Assets = Liabilities + Capital.
- **Accounting period concept:** This concept assumes that one-year time span is the usual accounting period and every organisation should determine the financial positions in terms of profit earned or loss suffered for a specific time period. This concept aids in ascertaining profit, analysing the performance of a business for a particular period, tax computation, etc.
- **Accrual concept:** Accrual is defined as an amount that is yet to be paid. For accounting purposes, this concept assumes that the revenue is released at the time of sales of goods irrespective of cash received or not. Also, expenses are recorded when they become due and payable. It helps in ascertaining actual profit and actual loss during a particular time period.

- **Realisation concept:** This concept states that the revenue is recognised only when it is realised. Realisation can be defined as the legal right to receive money. Example of realisation is selling of goods. So, revenue is realised only when cash is received or right to receive cash is created on sales of goods.
- **Matching concept:** This concept states that the expenses incurred in an accounting period are matched with the revenue generated in that period. So, all the expenses, paid or unpaid and all the revenue realised should be recorded in the books of accounts in order to ascertain the actual profit earned or loss suffered.

SELF ASSESSMENT QUESTIONS

3. Dual aspect concept facilitates double entry system for each transaction (True/False)
4. Which of the following concept recognises profit or income only when it is realised?
   a. Cost concept
   b. Matching concept
   c. Conservatism concept
   d. None of the above
5. _____ concept states that all the transactions which are capable of being expressed in terms of money will be recorded in the books of account.

7.4 ACCOUNTING MODEL

Accounting model defines the basic concepts, principles, assumption that ascertain the method of recording, reporting, analysing the transactions of an organisation. It processes economic transactions to prepare a set of financial statements. Figure 2 illustrates the accounting model:

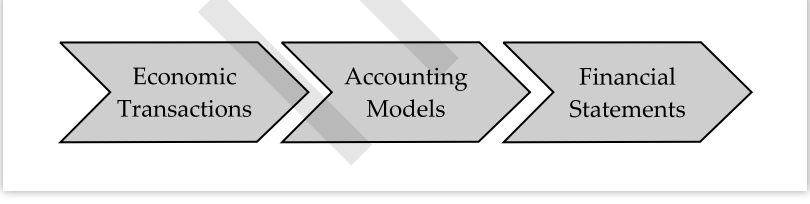

FIGURE 2: The Accounting Model

This accounting model states that the assets of a business organisation are equal to liabilities and capital. Let us understand the accounting model with the help of an example:

Rahul has stated a sole proprietary business called Rahul Enterprises. Following transactions are made in the first quarter, which are recorded in the balance sheet:

Transaction 1: Rahul invested ₹ 4,00,000 in the business as capital which is deposited in bank account opened with the organisation's name, i.e., Rahul Enterprises.

This transaction will be recorded in the balance sheet by increasing the bank deposits in asset side by ₹ 4,00,000 and equity share capital which is on the liability side which is shown as follows:

NOTES

Liabilities (in ₹)		Assets (in ₹)	
Share capital	4,00,000	Bank Deposit	4,00,000
Total	4,00,000	Total	4,00,000

Transaction 2: Rahul Enterprises pays ₹ 50,000 as deposits for hiring office premises. This will be named as 'premise deposit'. This transaction increases an asset (premise deposit) by ₹ 50,000 and another asset (bank deposit) gets decreased by ₹ 50,000.

This transaction affects the balance sheet of Rahul Enterprises as follows:

Liabilities (in ₹)		Assets (in ₹)	
Share capital	4,00,000	Bank Deposit	3,50,000
		Premise Deposit	50,000
Total	4,00,000	Total	4,00,000

Transaction 3: Rahul Enterprises invests ₹ 2,50,000 cash in Plant and Machinery (P&M). This means that an asset (P&M) increases by ₹ 2,50,000 and another asset (bank deposit) decreases by ₹ 2,50,000. This transaction affects the balance sheet of Rahul enterprise as follows:

Liabilities (in ₹)		Assets (in ₹)	
Share capital	4,00,000	Bank Deposit	1,00,000
		Premise Deposit	50,000
		P&M	2,50,000
Total	4,00,000	Total	4,00,000

Transaction 4: Rahul Enterprises buys merchandise for ₹ 2,00,000 on credit. This will increase one asset (merchandise) by ₹ 2,00,000. Also, on the liabilities side, trade creditors increase by ₹ 2,00,000. This transaction affects the balance sheet of Rahul enterprise as follows:

Liabilities (in ₹)		Assets (in ₹)	
Share capital	4,00,000	Bank Deposit	1,00,000
Trade Creditors	2,00,000	Premise Deposit	50,000
		Plant and Machinery	2,50,000
		Merchandise	2,00,000
Total	6,00,000	Total	6,00,000

Transaction 5: Rahul Enterprises sells merchandise of ₹ 1,00,000 for ₹ 1,40,000. This transaction will increase the asset (bank deposit) by ₹ 1,40,000. Merchandise on assets side will get decreased by ₹ 1,00,000. Also, profit generated will be recorded

in the equity account (Reserves and Surplus) on asset side. This transaction affects the balance sheet of Rahul enterprise as follows:

Liabilities (in ₹)		Assets (in ₹)	
Share capital	4,00,000	Bank Deposit	2,40,000
Reserves and Surplus	40,000	Premise Deposit	50,000
Trade Creditors	2,00,000	Plant and Machinery	2,50,000
		Merchandise	1,00,000
Total	6,40,000	Total	6,40,000

Transaction 6: Rahul Enterprises sells merchandise of ₹ 50,000 for ₹ 1,00,000 on credit. This transaction will increase the asset side (Debtors) by ₹ 1,00,000. It will also add ₹ 50,000 in Reserves and surplus as profit is generated in this transaction. The merchandise amount will also get decreased by ₹ 50,000. This transaction affects the balance sheet of Rahul enterprise as follows:

Liabilities (in ₹)		Assets (in ₹)	
Share capital	4,00,000	Bank Deposit	2,40,000
Reserves and Surplus	90,000	Premise Deposit	50,000
Trade Creditors	2,00,000	Plant and Machinery	2,50,000
		Merchandise	50,000
		Debtors	1,00,000
Total	6,90,000	Total	6,90,000

Transaction 7: Rahul Enterprises pays ₹ 10,000 for office establishments expenses in cash. This will decrease the bank deposit by ₹ 10,000 and it will also decrease the reserves and surplus by ₹ 10,000**.** This transaction affects the balance sheet of Rahul enterprise as follows:

Liabilities (in ₹)		Assets (in ₹)	
Share capital	4,00,000	Bank Deposit	2,30,000
Reserves and Surplus	80,000	Premise Deposit	50,000
Trade Creditors		Plant and Machinery	2,50,000
	2,00,000	Merchandise	50,000
		Debtors	1,00,000
Total	6,80,000	Total	6,80,000

Transaction 8: Rahul Enterprises pay ₹ 10,000 for rent in cash**.** This transaction will decrease the bank deposit by ₹ 10,000 and it will also decrease the reserves and

surplus by ₹ 10,000. This transaction affects the balance sheet of Rahul enterprise as follows:

Liabilities (in ₹)		Assets (in ₹)	
Share capital	4,00,000	Bank Deposit	2,20,000
Reserves and Surplus	70,000	Premise Deposit	50,000
Trade Creditors	2,00,000	Plant and Machinery	2,50,000
		Merchandise	50,000
		Debtors	1,00,000
Total	6,70,000	Total	6,70,000

Transaction 9: Rahul Enterprises depreciates its P&M by ₹ 10,000. This transaction will decrease the asset (P&M) by ₹ 10,000. It will also decrease the reserves and surplus by ₹ 10,000. This transaction affects the balance sheet of Rahul enterprise as follows:

Liabilities (in ₹)		Assets (in ₹)	
Share capital	4,00,000	Bank Deposit	2,20,000
Reserves and Surplus	60,000	Premise Deposit	50,000
Trade Creditors	2,00,000	Plant and Machinery	24,00,000
		Merchandise	50,000
		Debtors	1,00,000
Total	6,60,000	Total	6,60,000

So, when the above balance sheet is compared with the opening balance sheet, it is observed that there is a revenue of ₹ 60,000 under 'reserves and surplus' head.

So, reviewing above illustrations, you can say that accounting is very simple. In an accounting model, both aspects of the transactions are recorded and thus, a complete and reliable record of account is provided. As per the accounting equation, the total amount debited in the records must equal the total amount credited. The organisation prepares accurate financial statements with help of it.

Self Assessment Questions

6. XYZ Pvt. Ltd. has purchased merchandise on credit. Which of the following two accounts will get affected by this transaction?
   a. Trade credit and Merchandise
   b. Bank deposit and trade credit
   c. Bank deposit and merchandise
   d. None of the above
7. This accounting model states that the assets of a business enterprise are equal to liabilities and capital. (True/False)

7.5 TYPES OF FINANCIAL STATEMENTS

Financial statements are the final accounts prepared to determine the profit or loss, financial strengths and weaknesses of the business at the end of an accounting period. According to **John N. Myer**, "*the financial statements provide a summary of the accounts of a business enterprise, the balance sheet reflecting assets and liabilities and the income statement showing the results of operations during a certain period.*"

The net profit or the net loss calculated from financial statements is further transferred to the balance sheet, which discloses the financial position of a business as on a particular date. The preparation of financial statements is the final step of the accounting cycle. The types of financial statements are discussed in the next sections.

7.5.1 STATEMENT OF PROFIT AND LOSS

The profit and loss account is prepared to ascertain the net profit earned or the net loss suffered by the business over an accounting period, depicting the financial performance of the organisation. In this account, all indirect revenue expenses are shown on the debit side whereas all the indirect revenue incomes are shown on the credit side. In other words, the profit and loss account is a statement that shows the expenditures, revenues, and net income of an organisation.

According to **Carter**, "*a profit and loss account is an account into which all the gains and the losses are collected in order to ascertain the excess of the gains over the losses or vice versa.*"

A profit and loss account can be prepared by considering the following points:

- Debiting all the expenses
- Crediting all the incomes
- Considering the balance amount, if any, as profit or loss

The general pro forma of the profit and loss account is shown as follows:

Profit and Loss Account
For the year ending _____

Particulars	Amount (₹)	Particulars	Amount (₹)
To gross loss		By gross profit	
To office salaries and wages		By cash discount received	
To office rent, rate, and taxes		By bad debts recovered	
To office lighting and insurance		By income from investments	
To printing and stationary		By commission received	
To postage and telegram		By interest on deposits	
To legal expenses		By interest on renewal of bills of exchange	
To trade expenses		By gain on sale of fixed assets	
To audit fees		By apprenticeship premium	
To car up keeping expenses		By interest on drawings	

NOTES

Particulars	Amount (₹)	Particulars	Amount (₹)
To telephone expenses		By net loss (transferred to capital account)	
To general expenses			
To cash discount allowed			
To interest on capital			
To interest on loan			
To discount or rebate on bills of exchange			
To bad debts			
To selling and distribution expenses			
To packing of finished goods			
To store charges			
To carriage, freight, and cartage outwards			
To cost of samples and catalogue expenses			
To salesman salaries, expenses, and commission			
To advertising expenses			
To depreciation on fixed assets			
To loss on sale of fixed assets			
To net profit (transferred to capital account)			
Total		Total	

The profit and loss account plays an important role in the accounting process as it helps in determining the net results of the business activities. The main objectives of the profit and loss account are as follows:

- Determining the net gain or loss of an organisation
- Controlling unnecessary expenses by providing information about the effect of individual expense on the net profit or loss of the organisation
- Assisting in analysing the progress of an organisation by comparing the current and previous year's net profit
- Helping in preparing the balance sheet, which would further indicate the financial position of an organisation.

Illustration 1: Prepare the profit and loss account from the following particulars:

	Particulars	Amount (₹)
a.	Gross Profit	75,000
b.	Salary	30,000
c.	Rent	15,000
d.	Interest Paid on Loan	5,000
e.	Postage and Telegram	2,000

	Particulars	Amount (₹)
f.	Advertising	6,000
g.	Commission paid	2,500
h.	Bad debts	1,500
i.	Depreciation	1,000
j.	Legal charges	3,000
k.	Interest Received	4,000

Solution: The required profit and loss account is shown in the following table:

Profit and Loss Account
For the year ending on March 31, 2015

Particulars	Amount (₹)	Particulars	Amount (₹)
To Salary	30,000	By Gross profit	75,000
To Rent	15,000	By Interest received	4,000
To Interest paid on loan	5,000		
To Postage and telegram	2,000		
To Advertising	6,000		
To Commission paid	2,500		
To Bad debts	1,500		
To Depreciation	1,000		
To Legal Charges	3,000		
To net profit (transferred to capital account)	13,000		
	79,000		79,000

7.5.2 BALANCE SHEET

A balance sheet is the statement that summarises, and presents the financial position of an organisation as on a particular date, by showing the assets and liabilities of the organisation. It is prepared with an aim to know the exact financial position of the business on the last date of the financial year. Assets in the balance sheet reflect debit balances whereas liabilities reflect credit balances. A balance sheet can be prepared by performing a number of steps. Firstly, all nominal accounts in the trial balance are transferred to the trading and profit and loss accounts. Secondly, personal accounts of customers are grouped under the heading of sundry debtors, the entities from whom the amounts of sold goods and services due. Similarly, all balances of the suppliers are grouped under the single heading of sundry creditors, the entities to whom the organisation owes money or payment. Finally, the balances of real and personal accounts are grouped as assets and liabilities and are arranged in a proper way. The resultant statement obtained is called the balance sheet.

According to **The American Institute of Certified Public Accountants**, *"A tabular statement of summary of balances (debits and credits) carried forward after an actual constructive closing of books of account and kept according to principles of accounting."*

NOTES

In the balance sheet, assets are represented on the right side and liabilities are shown on the left side. It is also known as the statement of sources of funds and application of funds. The balance sheet is the detailed summary of the basic accounting equation:

Assets = Liabilities + Owner's Equity

The proforma of the balance sheet is shown in as follows:

Balance Sheet of… (Company Name)
As on….(Date)

Liabilities	Amount (₹)	Amount (₹)	Assets	Amount (₹)
Capital	xxx		Fixed assets	xxx
Add: Net profit	xxx		Goodwill	xxx
Add: Interest on capital	xxx		Land &Buildings	xxx
Less: Drawing	xxx		Loose tools	xxx
Less: Int. on drawing	xxx		Furniture and fixtures	xxx
Less: Loss if any	xxx		Vehicles	xxx
			Patents	xxx
Long term liabilities		xxx	Trade marks	xxx
Loan on mortgage		xxx	Long term loans(advances)	xxx
Bank loan		xxx	Investment in current assets	xxx
			Closing stock	xxx
Current liabilities		xxx	Sundry debtors	xxx
Sundry Creditors		xxx	Bills receivable	xxx
Bills payable		xxx	Prepaid expenses	xxx
Bank overdraft		xxx	Accrued incomes	xxx
Creditors for outstanding exp.		xxx	Cash at bank	xxx
			Cash in hand	xxx
Income received in advance		xxx	Fictitious assets	xxx
			Preliminary expenses	xxx
			Advertisement expenses	xxx
			Underwriting commission	xxx
			Discount on issue of shares	xxx
			Discount on issue of debentures	xxx
		Total		Total

Characteristics of a Balance Sheet

A balance sheet plays a vital role in taking important financial decisions by management and investors of the organisation. The characteristics of a balance sheet are as follows:

- It is prepared on a particular date and thus, shows the position of the organisation at a point of time
- It is considered as a statement and not an account as it enlists the assets and liabilities columns instead of showing the debit and credit columns
- It is prepared after the preparation of profit and loss trading account

- It provides a summarised information about the balances of various assets and liabilities along with their values and nature in a structured manner and on a particular date
- It requires the total assets to be equal to total liabilities

Illustration 2: From the following balances extracted from the books of Rajan Associates on 31st March, 2015, prepare the balance sheet:

Trial Balance

Particulars	Amount (₹)	Particulars	Amount (₹)
Opening Stock	96,000	Repair	1,600
Wages and Salaries	32,000	Cash in Hand	2,000
Commission on Purchase	2,000	Debtors	40,000
Freight	3,000	Income Tax	5,500
Purchase	1,18,500	Drawings	6,500
Sales	2,49,000	Capital	50,000
Trade Expenses	200	Bills Payable	5,000
Bills Receivable	6,000	Loan	9,000
Rent	2,000	Discount on Purchase	4,000
Plant	20,000	Creditors	23,300
Bad Debts	5,000		

The closing stock as at 31st March, 2015 was ₹ 35,000.

Trading and Profit & Loss Account of Rajan Associates

Dr. **for the year ending 31st March, 2015** **Cr.**

Particulars	Amount (₹)	Particulars	Amount (₹)
To Opening Stock	96,000	By Sales	2,49,000
To Purchase	1,18,500	By Closing Stock	35,000
To Wages and Salaries	32,000		2,84,000
To Commission on Purchase	2,000		
To Freight	3,000		
To Gross Profit c/d	32,500		
	2,84,000	By Gross Profit b/d	
To Trade Expenses	200	By Discount Received	32,500
To Rent	2,000		4,000
To Bad Debts	5,000		
To Repairs	1,600		
To Net Profit transferred to Capital A/c	27,700		
	36,500		36,500

NOTES

Solution:

Balance Sheet Rajan Associates
as on 31st March, 2015

Liabilities		Amount (₹)	Assets	Amount (₹)
Capital	50,000		Cash in Hand	2,000
Add: Net Profit	27,700		Plant	20,000
Less: Income Tax	5,500		Debtors	40,000
Drawing	6,500		Bills Receivable	6,000
		65,700	Closing Stock	35,000
Loan		9,000		
Bills Payable		5,000		
Sundry Creditors		23,300		
		1,03,000		1,03,000

7.5.3 STATEMENT OF CASH FLOWS

The record of outflow and inflow of cash is maintained in a financial statement, which is known as cash flow statement. The preparation of cash flow statement is important as it depicts the liquidity position of an organisation. A cash flow statement indicates the sources of cash inflow and outflow of an organisation. It explains changes in the cash balance of an organisation. Note that the funds flow statement takes into account the transactions affecting the transfer of working capital. It does not give any special attention to the transfer of cash. Therefore, a cash flow statement is prepared to record all the cash related transactions of the organisation.

The cash flow statement is divided into three sections, as shown in Figure 3:

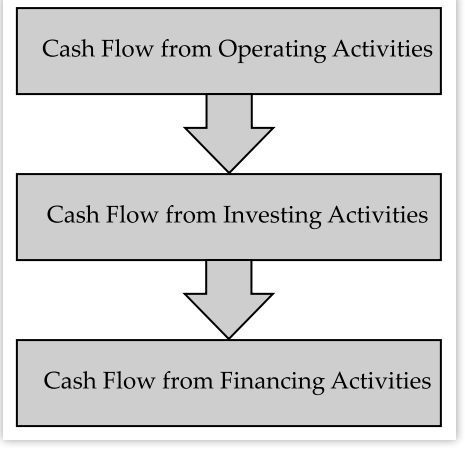

FIGURE 3: Classification of Cash Flow Statement

The explanation of these three sections is given as follows:

- **Cash flow from operating activities:** Shows the results of cash inflow and outflow related to the fundamental operations of the organisation. It includes cash effects

of those transactions and events that enter into the calculation of net profit or loss. Following are the examples of cash flows from operating activities:

- Receiving cash from sales of goods and the rendering of services
- Receiving cash from royalties, fees, commissions, and other revenues
- Paying cash on behalf of employees
- Paying insurance premium, annuities, and receiving claim on maturity

- **Cash flow from investing activities:** Refers to the purchase and sale of non-current assets. Investing activities are the acquisition of disposal of long-term assets. In simple words, investing activities include purchase of various fixed assets required for production of goods and services and are not meant for sale. The following are the examples of cash flows arising from investing activities:
  - Payment to purchase fixed assets, such as, land and building and plant and machinery
  - Payment for getting share, share warrant, and debt instrument
  - Receipts from selling of shares, warrants, and debt instruments
  - Providing loans to outside parties
- **Cash flow from financing activities:** Includes activities, such as issue of shares or payment of interest, through which an organisation either receives or pays cash. Financing activities are activities whose outcomes are the changes in the size and composition of the proprietor's capital and debts of the organisation. Following are the examples of cash flows arising from the financing activities:
  - Proceeds of cash by issuing shares or other financial instruments
  - Proceeds of cash by issuing debentures and bonds
  - Payment of cash to redeem debentures and preference shares
  - Payment of dividend and interests

Methods for preparing cash flow statement as follows:

Institute of Chartered Accountants of India (ICAI) has provided 29 Accounting Standards, (as on 1st July, 2017) which should be followed while preparing any type of financial statement of an organisation. Accounting Standard (AS-3) laid down two formats, namely direct and indirect methods for preparing cash flow statement. Two different pro forma are provided to show the different set of data used in the calculation of cash flow. Table 1 shows the pro forma of cash flow statement as per the direct method:

Table 1: Proforma of Cash Flow Statement as per the Direct Method

Particulars	Amount (₹)	Amount (₹)
Cash flow from operating activities		
Cash receipts from customers		
Cash paid to suppliers and employees		
Cash generated from operations		

Notes

Particulars	Amount (₹)	Amount (₹)
Income tax		
Cash flow from extraordinary items		
Net cash from operating activities (A)		
Cash flow from investing activities		
Purchase of fixed assets		
Proceeds from sale of equipment's		
Interest received		
Dividend paid		
Net cash from investing activities (B)		
Cash flow from financing activities		
Issue of share capital		
Long-term borrowings		
Repayment of loan		
Redemption of shares		
Interest paid		
Dividend paid		
Net cash from financing activities (C)		
Net increase/decrease in cash and cash equivalents (A + B + C)		
Cash and cash equivalents at the beginning of the period		
Cash and cash equivalents at the end of the period		

Table 2 shows the pro forma of cash flow statement as per the indirect method:

Table 2: Proforma of the Cash Flow Statement as per the Indirect Method

Particulars	Amount (₹)	Amount (₹)
Cash flow from operating activities		
Net income		
Adjustments to reconcile gross income to net		
Cash provided by operating activities:		
Depreciation and amortization		
Changes in other accounts affecting operations:		
Increase/decrease in accounts receivable		
Increase/decrease in inventories		
Increase/decrease in prepaid expenses		
Increase/decrease in accounts payable		
Increase/decrease in taxes payable		
Net cash provided to operating activities (A)		
Cash Flow from Investing Activities		
Capital expenditures		
Proceeds from sales of equipment		
Proceeds from sales of investments		
Investments in subsidiary		
Net cash provided by investing activities (B)		

Particulars	Amount (₹)	Amount (₹)
Cash Flow from Financing Activities		
Payments of long-term debt		
Proceeds from issuance of long-term debt		
Proceeds from issuance of common stock		
Dividends paid		
Purchase of treasury stock		
Net cash provided by financing activities (C)		
Increase/Decrease in cash and cash equivalents (A + B + C)		
Add: Cash and cash equivalents at the beginning of the period		
Cash and cash equivalent at the end of the period		

The points to be considered while preparing the cash flow statement are as follows:

- Treat marketable securities as long-term investments. These securities appear in cash flow from investing activities.
- Treat all types of debt (whether short or long) as long-term debt. These debts appear in cash flow from financing activities.
- Treat the payment of dividends as cash outflow. Dividends are considered financing activities; whereas, interest payments are termed as operating outflow.
- Operating activities, such as cash receipts from customers and payment made to suppliers, are carried out on a day-to-day basis.

Illustration 3: Prepare the cash flow statement for the year ended 31st March, 2015 from the following summary:

Particulars	Amount (₹)	Particulars	Amount (₹)
Cash balance brought down	50000	Payment to creditors	100000
7% debentures	300000	Purchase of assets	15000
Receipts from debtors	270000	Overhead expenses	20000
Sale of assets	20000	Wages & salaries	25000
		Taxation	80000
		Dividend	100000
		Repayment of bank loan	150000
		By bal carried down	150000
	640,000		640,000

Solution: The solution to the given problem is as follows:

Particulars	Amount (₹)	Amount (₹)
Cash flow from operating activities		
Receipts from debtors	270000	
Less: Payment to creditors	(100000)	

Notes

Particulars	Amount (₹)	Amount (₹)
Less: Wages & salaries	(25000)	
Less: Overhead expenses	(20000)	
Cash generated from operations	125000	
Less: Taxation	(80000)	
Net cash from operating activities (A)		45000
Cash flow from investing activities		
Less: Purchase of assets	(15000)	
Sale of assets	20000	
Net Cash flow from investing activities (B)		5000
Cash flow from financing activities		
Debentures	300000	
Dividend	(100000)	
Repayment of bank loan	(150000)	
Net Cash flow from financing activities (C)		50,000
Net increase in cash and cash equivalents		1,00,000
Add: Cash and cash equivalents at the beginning		50000
Cash and cash equivalents at the end		1,50,000

Self Assessment Questions

8. Which of the following financial statement reveals the net profit earned or the net loss suffered by an organisation during an accounting period?
   a. Profit and loss account
   b. Balance sheet
   c. Cash flow statement
   d. None of the above
9. Profit and loss account is also known as _____.
10. A balance sheet indicates the sources of cash inflow and outflow of an organisation. (True/False)

7.6 MANIPULATING THE BOTTOM-LINE

It is quite evident that the financial statements state the accurate value of assets, liabilities, revenue and expenses. But corporate management does have some discretion in influencing the measurement, occurrence and reporting of transaction or items in financial statements. Bottom line is a device used by corporate management to manipulate the reported profit in order to paint a good financial position of the organisation. Such manipulations are done to project the image of the organisation as a low-risk organisation or to increase managerial compensation.

An organisation can manipulate its financial statements by lengthening its accounting year so as to cover up its poor performance or an organisation can revalue its assets in order to create the impression of substantial reserves. There are a plethora of

methods adopted by corporate management to manipulate the books of account. So, it is advisable to gain greater knowledge of financial statements and current accounting practices. Proper audits should be conducted and the performance of the organisation should be analysed over a period of time.

SELF ASSESSMENT QUESTIONS

11. _____ is a device used by corporate management to manipulate the reported profit in order to paint a good financial position of the organisation.
12. Corporate management does not have any discretion in influencing the measurement, occurrence and reporting of transaction or items in financial statements. (True/False)

7.7 SUMMARY

- Business activities are the economic activities carried out within the organisation in order to earn profit. Business activities get started from establishing objectives and goals, which is followed by creating strategies for raising funds. After raising funds, organisation invests in resources in order to carry out operations.
- Financial accounting involves the various process of classifying, analysing, summarising and recording the financial transaction of an organisation. It also helps in depicting an accurate information of financial affairs of the organisation.
- Accounting model defines the basic concepts, principles, assumption that ascertain the method of recording, reporting, analysing a business enterprise transaction.
- In an accounting model, both aspects of the transactions are recorded and thus, a complete and reliable record of account is provided. As per the accounting equation, the total amount debited in the records must equal the total amount credited.
- Financial statements contain a structured, organized, and detailed summary of the business processes. They are the final accounts prepared to determine the profit or loss, financial strengths and weaknesses of the business at the end of an accounting period.
- The profit and loss account is prepared to ascertain the net profit earned or the net loss suffered by the business over an accounting period, depicting the financial performance of the organisation.
- A balance sheet is the statement that summarizes, and presents the financial position of an organisation as on a particular date, by showing the assets and liabilities of the organisation.
- The record of outflow and inflow of cash is maintained in a financial statement, which is known as cash flow statement. The preparation of cash flow statement is important as it depicts the liquidity position of an organisation.
- Bottom line is a device used by corporate management to manipulate the reported profit in order to paint a good financial position of the organisation.

Notes

7.8 KEY WORDS

- **Revenue:** It refers to the net income obtained after deducting various costs incurred from the income generated.
- **Capital:** It refers to the fund or assets that are used by an organisation for carrying its business operations.
- **Depreciation:** It is defined as the wear and tear of fixed assets with time.
- **Dividend:** It is a part of corporation profit, which is distributed to shareholders.

7.9 CASE STUDY: MANIPULATIONS IN FINANCIAL STATEMENTS OF RAM DAS LTD.

Mr. Ram Das is the owner of Ram Das Ltd. which was started in 1995. Gupta Associates audited the financial statements of Ram Das Ltd. In 2012, many entries were made in the following manner:

- Credit sales were not shown in the P & L account
- Land and building were shown at their market price
- Withdrawals by Mr. Ram Das for personal use were shown at their market price
- Depreciation on assets was charged at their market value
- General reserve maintained by the organisation was not shown in the balance sheet

The financial statements were biased and do not provide a full disclosure of the facts. This restrained the framing of the true financial position of the organization.

QUESTIONS

1. Which were the various accounting concepts that were not used in the financial statement of the Ram Das Ltd.?

   (**Hint:** Disclosure concept, cost concept.)

2. What would be the role of an auditor of Gupta Associates while auditing the financial statements of the organisation?

   (**Hint:** An auditor verifies the accounting data and determines the accuracy and reliability of the accounting statements and reports.)

7.10 EXERCISE

1. Describe various accounting concepts and the accounting model.
2. Define financial statements. What is the importance of financial statement?
3. Define balance sheet. What are the main characteristics of the balance sheet?
4. Define cash flow statement. What are the various methods of preparing a cash flow statement?
5. Explain in detail the profit and loss account.

7.11 ANSWERS FOR SELF ASSESSMENT QUESTIONS

Topic	Q. No.	Answer
Business Activities and its Types	1.	Business activities
	2.	True
Concept of Financial Accounting	3.	True
	4.	c. Conservatism concept
	5.	Concept of money measurement
Accounting Model	6.	a. Trade credit and Merchandise
	7.	True
Types of Financial Statements	8.	a. Profit and loss account
	9.	Income statement
	10.	False
Manipulating the Bottom-line	11.	Bottom-line
	12.	False

7.12 SUGGESTED BOOKS AND E-REFERENCES

SUGGESTED BOOKS

- Meigs, R., & Meigs, R. (2001). *Financial Accounting*. Boston, Mass.: Irwin/McGraw-Hill.
- Ross, K. (2000). *Fundamentals of Accounting*. Cincinnati, Ohio: South-Western.

E-REFERENCES

- Accounting Concepts - AccountingExplanation.com. (2019). Retrieved from http://accountingexplanation.com/accounting_concepts.htm
- Bragg, S., & Bragg, S. (2019). Debits and credits. Retrieved from https://www.accountingtools.com/articles/2017/5/17/debits-and-credit

CHAPTER 8

Analysing the Financial Statements

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LEARNING OBJECTIVES

After studying this chapter, you will be able to:

- Discuss the financial statement analysis
- Explain financial ration analysis and comparative analysis
- Define DuPont analysis
- Describe the financial statements in the percentage format
- State the guidelines for analysing financial statements

8.1 INTRODUCTION

In the previous chapter, you have studied the financial accounting and financial statements. In this chapter, you will study about the financial statement analysis. Users of financial information, such as financial analysts depend upon the financial statements to diagnose financial performance of an organisation. Every stakeholder is interested in the insights into financial statement analysis. Financial analysis delineates the process of ascertaining the strengths and weakness of the organisation by analyzing the relationship between various items of financial statements. Financial statement analysis can be performed for various reasons, such as ascertaining short term liquidity position of the organisation or comprehensive assessment of the financial strength or weakness of an organisation. Financial statement analysis plays a pivotal role in financial planning and forecasting as analysis of past information is crucial for anticipating future.

This chapter discusses the financial ratio analysis, comparative analysis. Further, it defines the DuPont analysis and the financial statements in the percentage format. At last, it states the guidelines for analysing financial statements.

8.2 FINANCIAL STATEMENT ANALYSIS

Financial statement analysis is the process of assessing a company's present and future financial performance and position by recording, evaluating and interpreting the financial data and accounting reports issued periodically. Financial analysis can be performed by the management or outsiders such as creditors, investors, etc. The financial analysis is done depending upon the purpose of the analyst. For example, investors are more concerned about the earnings of the firm in which they have invested their money. So, they concentrate more on the firm's profitability. Similarly, long-term suppliers and trade creditors are interested in knowing the firm's ability to meet their claims over a given period of time.

Financial statements analysis is a process of assessing the organisation's present and future financial performance and position by recording, evaluating and interpreting the financial data. It helps in assessing the viability, profitability and stability of the firm by examining and comparing financial data. As per Moore and Jaedicke,

Financial analysis is a process of synthesis and summarization of financial operative data with a view to getting an insight into the operative of a business enterprise.

8.2.1 FINANCIAL RATIO ANALYSIS

A financial ratio is an arithmetic measure or method, which is used to calculate or analyse the financial position of an organisation. There are simple calculations performed on the financial statement items. Financial ratio analysis assesses the current position of a firm's financial health by establishing a relationship between the items of financial statements. It also aids in comparing the performance of a firm with its competitors or industry groups. Financial ratio analysis is performed to know the firm's status in terms of liquidity, operational efficiency, profitability and stability. Financial ratios are divided into five broad categories which are as follows:

- Liquidity ratios
- Profitability ratios
- Valuation ratios
- Leverage ratios
- Turnover ratios

Table 1 illustrates the description of these ratios:

Table 1: Ratios and their descriptions

Ratios	Formulae	Description
Liquidity: It refers to the firm's ability to convert its assets into cash. Liquidity ratio assesses the firm's ability to meet short term obligations, usually for one year.		
Current ratio	$\frac{Current\ assets}{Current\ liabilities}$	It is the ratio of current assets over current liabilities. It is a measure of short-term solvency of an organisation.
Acid-test ratio	$\frac{Quick\ assets}{Current\ liabilities}$	It is also known as the quick ratio. All the current assets except inventories and prepaid expanses are considered as quick assets. It is a better measure of liquidity.
Profitability: It is defined as the final financial growth of an organisation. Profitability ratio is a measure of operating efficiency.		
Gross profit margin ratio	$\frac{Gross\ profit}{Revenues\ from\ operations}$	It is ascertained by deducting the cost of goods sold from revenues from operations. It is the measure of the efficiency with which an organisation can produce each product unit.
Net profit margin ratio	$\frac{Net\ profit}{Total\ revenues}$	It is the deduction of operating expenses, taxes, interest from gross profit. This ratio formulates a relationship between net profit and sales. It is a measure of overall efficiency of the firm.
Return on assets	$\frac{Profit\ after\ tax}{Average\ total\ assets}$	This ratio shows the relationship between assets and profit. It is a measure of profitability of the investments of a firm. It is also known as profit-to-asset ratio.

Notes

Ratios	Formulae	Description
Earning power	$\frac{PBIT}{Average\ total\ assets}$	It is a measure of firm's performance that is not affected by tax burden and interest charges. This ratio is best used for inter-firm comparisons. The numerator represents the Profit Before Interest and Tax (PBIT).
Return on capital employed	$\frac{PBIT(1-T)}{Average\ total\ assets}$	The numerator represents the profit before interest and tax (1-tax rate), which is known as the net operating profit after tax. It is a measure of profitability based on the sources of long-term funds.
Return on equity	$\frac{Equity\ earnings}{Average\ equity}$	Equity shareholders are keenly interested in this ratio as it is the ratio of return on shareholders' fund. It is a measure of profitability in relation to equity funds invested in the firm.
Valuation: Valuation ratios are used in capital market to assess the earning on equity stock. These ratios are a comprehensive measure of firm's performance.		
Price earnings ratio	$\frac{Market\ price\ per\ share}{Earning\ per\ share}$	It is also known as the price-earnings multiple. It is a measure of firm's growth prospects, shareholder orientation, risk characteristics and degree of liquidity.
Market value to books value ratio	$\frac{Market\ price\ per\ share}{Book\ value\ per\ share}$	This ratio is a measure of the firm's contribution to society's wealth. When this ratio is more than 1, it indicates that the firm has contributed to the wealth creation of the society.
Leverage: It is defined as debt finance. The debt capital contains high risk. Leverage ratios are used to assess the risk involved in the use of debt capital.		
Debt-equity ratio	$\frac{Total\ liabilities}{Shareholders'\ funds}$	This ratio represents the contribution of owners and creditors. It establishes a relationship between lenders contribution for each rupee of owner's contribution.
Interest coverage ratio	$\frac{PBIT}{Interest}$	The numerator is profit before interest and tax. Since, interest on debts is tax deductible, the tax payment and interest do not affect the firm's ability to pay interest. It is a measure of firm's debt capacity.
Turnover: These ratios are also known as asset management or activity ratios. These ratio measure the efficiency of a firm with which it manages its assets.		
Inventory turnover	$\frac{Revenues\ from\ operations}{Average\ inventory}$	This ratio is a measure of inventory management efficiency. It delineates how rapidly inventory is turning into cash or receivables through sales.
Debtor's turnover	$\frac{Net\ credit\ sales}{ŶŶŶŶŶŶŶŶŶŶ}$	This ratio represents the number of times sundry debtors turn over during the accounting year. It is a measure of credit management efficiency.
Fixed Assets turnover	$\frac{Revenues\ from\ operations}{Average\ net\ fixed\ assets}$	This ratio is a measure of operational efficiency with which a firm employs its fixed assets. It assesses the sales per rupee of investment in fixed assets.
Total Assets turnover	$\frac{Total\ revenues}{Average\ total\ assets}$	This ratio shows the ability of a firm in generating sales in relation to all the investment being made in total assets. It is a measure of the overall efficiency of assets employed by a firm.

Illustration 1: Using XYZ Limited financial statements, calculate the following financial ratios:

1. Current Ratios
2. Acid test ratio
3. Debt equity ratio
4. Interest coverage ratio
5. Debtors turnover ratio

Particulars	2014 (₹)	2015 (₹)
Cash	2,20,000	1,40,000
Sundry Debtors	3,00,000	4,20,000
Temporary investments	2,40,000	3,00,000
Stock	18,00,000	21,80,000
Prepaid expenses	28,000	12,000
Total current assets	25,88,000	30,52,000
Total assets	58,00, 000	66,00,000
Current liabilities	6,00,000	8,00,000
Loans	16,40,000	16,20,000
Capital	20,00,000	20,00,000
Retained earning	4,68,000	8,12,000

Statement of Profit for the Current Year

Particulars	₹
Sales	40,00,000
Less: Cost of goods sold	(25,00,000)
Less: Interest	(1,60,000)
Net profit	13,40,000
Less: taxes@50%	6,70,000
Profit after taxes	6,70,000
Profit Distributed	3,20,000

Solution:

1. Current asset ratio (2015) = $\frac{Current\ Assets}{Current\ Liabilities} = \frac{30,52,000}{8,00,000}$

   Current ratio = 3.81

2. Acid test ratio (2015) = $\frac{Quick\ Assets}{Current\ Liabilities} = \frac{30,52,000 - 21,92,000)}{8,00,000}$

   Acid test ratio = 1.07

Notes

3. Debt equity ratio = $\frac{Long\text{-}term\ debts}{Equity\ funds} = \frac{16,20,000}{28,12,000}$

   Debt equity ratio = 0.57

4. Interest coverage ratio (2015) = $\frac{EBIT}{Interest\ charged} = \frac{15,00,000}{1,60,000}$

   Interest coverage ratio = 9.37

5. Debtors turnover ratio (2015) = $\frac{Sales}{Average\ debtors} = \frac{40,00,000}{4,20,000}$

   $$\text{Average Debtors} = \frac{\text{Opening Debtors + Closing Debtors}}{2} = \frac{3,00,000+4,20,000}{2}$$

   = 3,60,000

   Debtors turnover ratio = 11.11

8.2.2 COMPARATIVE ANALYSIS

A comparative analysis is a simple method that is used to track the changes in the financial performance or position of an organisation. It judges whether the ratios are high or low. In order to perform comparative analysis, comparative financial statements can be used. Comparative financial statements record items for at least two periods. In India, the balance sheet and P&L account of joint companies are published in a two-year comparative format. Comparative analysis can be performed either on the basis of time series/trend series or on inter-firm series, discussed as follows:

- **Time analysis:** In this comparative analysis, ratios are compared over time. This analysis is generally applicable to the items prevailing in the P&L account. It helps in defining the direction of change over a period of years. It is also known as the trend analysis as it compares the financial position of a firm over a long period of time or past trends. This type of comparative analysis helps in identifying the changes in the financial performance of a firm from historical or past financial records in order to anticipate the future.
- **Inter-firm analysis:** In this comparative analysis, the firm's financial performance is compared and judged with its competitors and industry groups. It is also known as the cross-section analysis. Financial ratios are compared with its major competitors or with industry benchmarks. Also, industry averages offer useful benchmarks for comparative analysis.

8.2.3 DuPONT ANALYSIS

The DuPont analysis framework is developed in the 1920s by the management at DuPont Corporation. It is a valuable technique, which is the product of different drivers of Return on Equity (ROE). The DuPont analysis is a measure of the financial analysis and an expanded version of ROE. It assesses the profitability or earning

power of an organisation. The DuPont analysis breaks down the organised equation for ROE into three components, which are shown in Figure 1:

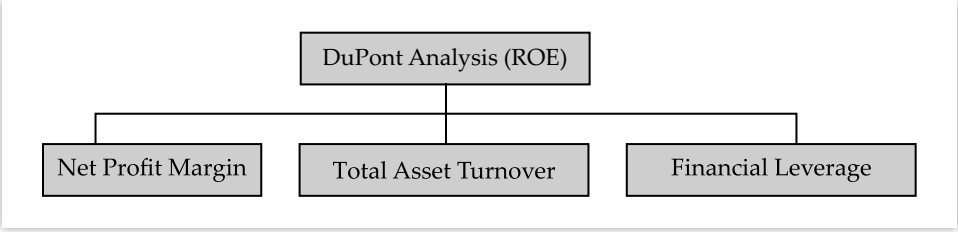

Figure 1: DuPont Framework

Let us discuss these three components:

- Net profit margin: The equation of net profit margin helps in operating efficiency.
- Total asset turnover: This equation assesses the asset use efficiency.
- Financial leverage: This is the equity multiplier.

The following is the formulae of the DuPont analysis:

$$Return\,on\,Equity = Profit\,Margin \times Total\,Asset\,Turnover \times Financial\,Leverage$$

$$Return\,on\,Equity = \frac{Net\,Income}{Net\,Sales} \times \frac{Net\,Sales}{Average\,Total\,Assets} \times \frac{Total\,Assets}{Total\,Equity}$$

The DuPont analysis finds interrelationships based on the information available in financial statements. It is a valuable tool that helps in evaluating an organisation's ROE and identifying the financial activities that are affecting the ROE by defining the key metrics involved in the financial strength or weakness of the organisation. It helps an organisation in avoiding misleading conclusions regarding a company's profitability.

8.2.4 DIFFICULTIES IN FINANCIAL STATEMENT ANALYSIS

A financial statement analysis is a valuable tool that can be used to drive key insights into the financial position of a firm provided that it should be performed ethically and accurately. However, there are certain instances which can impose difficulties in financial statement analysis. It is important to conduct financial analysis with proper care, critical judgement and circumspection. The following are some difficulties that a firm may face while performing financial statement analysis:

- **Deciding the benchmarks:** Large firms may face difficulties in the development of benchmarks as there are various ranges of products and the firm can operate in a wide range of industries. Hence, it is difficult to evaluate the financial performance for the firms with diverse product lines. However, the firm with a well-defined industry classification may find meaningful benchmarks.
- **Window dressing:** A firm may create an impression of favourable financial position by showing strong liquidity position or high turnover. Such manipulations are done by corporate management to create a good picture of firm's financial position.

Notes

- **Intuitive or heuristic character:** All the ratios possess a well-defined theoretical framework. However, there is a lack of direction in financial ratios as these are more of subjective impression rather than pragmatic approach. It is not easy to judge the credibility of a financial ratio, i.e., whether it is 'good' or 'bad'.
- **Differences in accounting policies:** Firms operating globally may face difficulty while preparing financial statements, which can impact the financial statement analysis. For example, many countries do not take price level changes into consideration. Some firms also follow different accounting policies for depreciation, foreign exchange transactions or for provisions of reserves.

The above-mentioned situations may place difficulty in judging the financial strength or weakness of a firm. However, a firm may go for financial audit in order to overcome such difficulties.

Self Assessment Questions

1. _____ helps in assessing the viability, profitability and stability of the firm by examining and comparing financial data.
2. Return on assets is also known as the profit-to-asset ratio. (True/False)
3. DuPont analysis breaks down the organised equation for ROE into three components. Which of the following is not a component of DuPont analysis?
   a. Net profit margin
   b. Total asset turnover
   c. Financial leverage
   d. None of these
4. A firm may create an impression of favourable financial position by showing strong liquidity position or high turnover. This is known as _____.

8.3 FINANCIAL STATEMENTS IN PERCENTAGE FORMAT

Financial statements, such as a balance sheet in the percentage format is a better tool to compare a company's financial position and performance with other company over a period of time. When the balance sheet is presented in the percentage format, all the assets, liabilities, profits and losses are expressed as a percentage of the total revenue.

Table 2 shows the balance sheet of company XYZ, Inc. in the percentage format:

Balance Sheet for Company XYZ, Inc. for the year ended December 31, 2008		
Current Assets		
Cash	₹150,000	1.77%
Accounts receivable	₹984,563	11.63%
Inventory	₹1,345,230	15.89%
Total current assets	₹2,479,793	29.29%
Total fixed assets	₹5,987,345	70.71%
Total assets	₹8,467,138	100.00%
Current Liabilities	₹982,134	11.60%

Balance Sheet for Company XYZ, Inc. for the year ended December 31, 2008		
Current Assets		
Accounts payable	₹345,690	4.08%
Short-term debt	₹12,983	0.15%
Total current liabilities	₹1,340,807	15.84%
Long-term debt	₹4,387,632	51.82%
Total liabilities	₹5,728,439	67.65%
Shareholders equity	₹2,738,699	32.35%
Total liabilities and equity	₹8,467,138	100.00%

Source *https://investinganswers.com/financial-dictionary/financial-statement-analysis/common-size-balance-sheet-5236*

Financial statements in the percentage format have the following merits:

- They are useful to look at a company's activity from one time period to the next.
- They are useful for comparing a company to its competitors or to an industry standard.
- They are used for analysing and interpreting the results of the company in an easy manner.
- They are easy to track the changes done in each item in the percentage terms.

Self Assessment Questions

5. A financial analyst can use the balance sheet in the percentage format to compare the financial performance of different entities at a glance since each item is expressed in terms of_____ of total assets.
6. Financial statements in the percentage format are useful for performing comparative analysis. (True/False)

8.4 GUIDELINES FOR ANALYSING FINANCIAL STATEMENTS

It is essential to understand the basic structure and guidelines to analyse the financial statements and mark the economic features of the industry in which the firm is operating. Some of the important guidelines for analysing the financial statements of a firm are:

- **Use ratios to raise reasonable and logical questions:** There are different types of ratios like profitability ratio, equity and debt ratio which provide the status of the financial position of a firm. However, these ratios rarely provide direction to the implications but the result obtained can help in asking the right question at the right time during analysis.
- **Review the financial statement of the firm as per the accounting standards:** It is important to properly track the financial statements as per the set accounting standards in order to depict the true value of firm's asset and economic position.

Notes

- **Learn the tricks applied by the accountant:** Accountants try to manipulate the items in financial statements. Hence, it is advisable to know the devices employed by accountants to manipulate the reported income.
- **Read the notes and keep in mind that a financial statement is the blend of art and science: A** financial statement is the study of art and science because it requires the creativity as well as specific guidelines for successful implementation. Hence, it is essential to read the notes carefully to gain valuable insights into financial statements.

Self Assessment Questions

7. _____can help in asking the right question at the right time during the financial statement analysis.
8. It is essential to properly track financial statements as per the set accounting standards in order to depict the true value of a firm's asset and economic position. (True/False)

8.5 SUMMARY

- Financial statement analysis is the process of assessing a company's present and future financial performance and position by recording, evaluating and interpreting the financial data and accounting reports issued periodically.
- Financial ratio analysis is performed to know the firm's status in terms of liquidity, operational efficiency, profitability and stability.
- Financial ratio analysis assesses the current position of a firm's financial health by establishing relationship between the items of financial statements.
- Comparative analysis is a simple method that is used to track the changes in the financial performance or position of an organisation.
- Comparative analysis can be performed either on the basis of time series/trend series or on inter-firm series.
- DuPont analysis framework is developed in 1920s by the management at DuPont Corporation. It is a valuable technique which is the product of different drivers of Return on equity (ROE).
- Financial statement analysis is a valuable tool that can be used to drive key insights into the financial position of a firm, provided that it should be performed ethically and accurately. However, there are certain instances which can impose difficulties in financial statement analysis.
- Financial statements, such as balance sheet in the percentage format is a better tool to compare a company's financial position and performance with other companies over a period of time.
- It is essential to understand the basic structure and guidelines to analyse financial statements and mark the economic features of the industry in which the firm is operating.

8.6 KEY WORDS

- **Operating leverage:** It measures the firm's ability to increase the operating income by increasing the operating revenue.
- **Quick assets:** All the current assets which can be converted into cash immediately.
- **Trade creditors:** A supplier that sells goods and services to its customers on credit.
- **Financial audit:** A comprehensive evaluation of firm's financial reports.

8.7 CASE STUDY: FINANCIAL RATIOS TO ASSESS THE PROFITABILITY OF XYZ LIMITED

XYZ Limited is engaged in the business of import and export of textile matrials. The company is making plans for the expansion and renewal of business with a view to increase profitability in future. For this purpose, XYZ Limited has made plans for the upcoming year.

The company has decided on the following consiuations:

- The company will invest in assets worth ₹ 8,00,000.
- 40% of the assets are bought by borrowed capital at an interest rate of 5 % per year.
- The direct cost for the year is calculated at ₹ 4,80,000.
- Rest of the operating expenses cost worth ₹ 50,000.
- The goods will be sold at 150 % of the direct cost to the customers.
- The tax rate is 30%.

The firm needs to assess the profitability of the past financial data.

QUESTIONS

1. Calculate Net Profit Margin with the help of information provided in the case study.

   (**Hint:** Net Profit Margin $\frac{Net\ Income}{Total\ Revenues}$)

2. Calculate Asset Turnover Ratio with the help of information provided in the case study.

   (Hint: Asset Turnover Ratio = $\frac{Revenues\ from\ operations}{Average\ net\ fixed\ assets}$)

8.8 EXERCISE

1. Explain the role of financial statement analysis in detail.
2. Discuss the financial ratios and their implications.
3. Define DuPont analysis.

Notes

4. What are the difficulties one can face while analysing financial statements?
5. Define financial statements in the percentage format.

8.9 ANSWERS FOR SELF ASSESSMENT QUESTIONS

Topic	Q. No.	Answer
Financial Statement Analysis	1.	Financial statement analysis
	2.	True
	3.	d. None of these
	4.	Window dressing
Financial Statements in Percentage Format	5.	Percentage
	6.	True
Guidelines for Analysing Financial Statements	7.	Financial ratio
	8.	True

8.10 SUGGESTED BOOKS AND E-REFERENCES

SUGGESTED BOOKS

- Meigs, R., & Meigs, R. (2001). *Financial accounting*. Boston, Mass.: Irwin/McGraw-Hill.
- Ross, K. (2000). *Fundamentals of accounting*. Cincinnati, Ohio: South-Western.

E-REFERENCES

- Accounting Concepts - AccountingExplanation.com. (2019). Retrieved from http://accountingexplanation.com/accounting_concepts.htm
- Bragg, S., & Bragg, S. (2019). Debits and credits. Retrieved from https://www.accountingtools.com/articles/2017/5/17/debits-and-credits

CHAPTER 9

Accounting Mechanics

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LEARNING OBJECTIVES

After studying this chapter, you will be able to:

- Explain the meaning of an account
- Describe the basic rules of debit and credit
- Outline the process of accounting information processing
- Describe the concept of balance sheet equation
- Discuss the formats of journal, ledger, trial balance and financial statements

9.1 INTRODUCTION

In the previous chapter, you have studied about the concepts related to financial analysis of business information with the help of tools such as ratio analysis. Such an analysis helps in identifying the relationships between two or more financial variables to analyse the financial performance over a period of time. In this chapter, you will learn about the fundamentals of accounting concepts which are used to analyse, record, classify and summarise business transactions with a view to generate statements of financial results of a business entity.

In the first part of the chapter, you will study the basic concept of an accounting model and the rules of debit and credit, which are used by accountants to record transactions as and when they occur in a business entity. Every transaction has two-sided effects resulting in increase in one resource of a business entity and decrease in another resource. The two-sided effects of each transaction are recorded with debit and credit amounts in two or more accounts and the accounting equation ensures that assets always equate to the sum total of liabilities and owners' equity.

In the second part of the chapter, steps involved in accounting information processing cycle have been discussed. Firstly, transactions supported by satisfactory evidence are recorded in a journal book in a chronological order and, thereafter, these journal entries are posted from the journal book to the respective classified accounts in the ledger. The balances of various ledger accounts are compiled together in a summarised form in Trial Balance. Lastly, financial statements consisting of profit and loss account and balance sheet are prepared from the information recorded in original and principal books of entry.

9.2 ACCOUNTING MODEL AND THE CONCEPT OF AN ACCOUNT

Accounting relates to recording and giving effect to transactions which have an economic effect on the business or firm. These are those transactions which are measurable in terms of money. A business transaction is one wherein there is an exchange of something of value (i.e. assets/money/obligations) between the enterprise and an outside party. Some examples of these transactions may be purchase of materials from a supplier, sale of goods to customers, or taking a loan from a financial institution. It is also possible that a business transaction can affect the business entity even though there is no exchange of goods or services with

the outside parties. For instance, loss of an asset due to fire in premises may have economic impacts on the business entity.

9.2.1 ACCOUNTING EQUATION

Before learning how to record business transactions, it is necessary to understand that every business transaction has dual effects on a business entity. Each transaction has equal effects on two sides, i.e., debit and credit. Let us understand this with the help of an example. When a company sells its products to customers for cash, it gives up one resource for another, resulting in decrease in one resource (i.e., product) and a simultaneous increase in another resource (i.e., cash). This fundamental concept of accounting is given by way of an accounting equation which is as follows:

Assets = Shareholders' or Owners' Equity + Outside Liabilities

The foundation of recording business transactions in a double entry system is the concept of accounting equation. It is worth mentioning here that owners' equity also comprises profits and revenues. Thus, it increases because of investments, profit margins and revenues and declines because of capital withdrawals, expenses and losses.

Accounting equation is also known as balance sheet equation whereby the total of a company's assets always equals the sum of shareholders' equity and external liabilities. It ensures that every entry has a debit and credit side and both their corresponding impacts are recorded properly in the books of account. Since the debit side effects are always equal to the credit side effects, therefore, the accounting equation or balance sheet equation always matches. In other words, the total amount of assets is always equal to the sum total of equity and outside liabilities.

Now let us understand the concept of accounting equation with the help of an illustration.

Illustration 1: Rohit and his friends set up a business of manufacturing and sale of handicraft products (named RV Private Limited) on 1st April, 2018. The following transactions have taken place in the business during the financial year ending 31st March, 2019:

1. Rohit and his three friends introduced capital into the business by subscribing to 1,000 equity shares of ₹ 80 each.
2. A building was acquired for ₹ 9,00,000 for running business activities.
3. Furniture, fixtures and fittings were purchased for ₹ 5,40,000 on 15th April, 2018.
4. A loan of ₹ 4,00,000 from a commercial bank was borrowed at an interest rate of 12% p.a.
5. They bought raw materials, clothes, and other items needed for the manufacturing of handicraft items. The amount spent was around ₹ 2,50,000.
6. The operating expenses incurred for the business amounted to ₹ 60,000.
7. Goods borrowed on credit from suppliers were worth ₹ 58,000.
8. The amount collected on sale of handicraft products to customers during the year was ₹3,00,000.

NOTES

9. Products worth ₹ 1,00,000 were sold on credit to customers.
10. Depreciation charges on furniture and fittings amounted to ₹ 18,000.

On the basis of the given information, calculate the effect of each transaction and derive the balance sheet equation.

Solution:

The impact of RV Private Limited's business transactions during the year ended 31st March, 2019 on the accounting equation is shown as follows:

A = B + C					
Business Transaction	**Assets (A in ₹)**	**= Liabilities (B in ₹)**	**+ Owners' Equity (C in ₹)**	**(Nature of Asset)**	**(Nature of Liability)**
1. Subscription to equity share capital (1,000 × 80 × 4)	3,20,000	-	3,20,000	Cash increase	Share Capital increase
2. Acquisition of building	9,00,000	-	-	Building increase	-
	(9,00,000)	-	-	Cash decrease	-
3. Purchase of furniture and fittings	5,40,000	-	-	Furniture increase	-
	(5,40,000)	-	-	Cash decrease	-
4A. Loan from commercial bank	4,00,000	4,00,000	-	Cash increase	Bank loan increase
4B. Interest payment on loan	(48,000)	-	(48,000)	Cash decrease	Interest expenses increase
5. Raw materials procurement	2,50,000	-	-	Stock increase	-
	(2,50,000)	-	-	Cash decrease	-
6. Operating expenses	(60,000)	-	(60,000)	Cash decrease	Operating expenses increase
7. Goods purchased on credit	58,000	58,000	-	Stock increase	Creditors increase
8. Revenue from sale of products	3,00,000	-	3,00,000	Cash decrease	Revenue increase
9. Sale of products on credit	1,00,000	-	1,00,000	Debtors increase	Revenue increase
10. Depreciation on furniture	(18,000)	-	(18,000)	Furniture decrease	Depreciation expenses increase

In the above illustration, the dual side of each business transaction is recorded separately and it ensures that the integrity of the balance sheet equation remains intact (i.e., accounting equation always matches) at the instance of every business transaction.

9.2.2 PROBLEMS IN DATA PROCESSING

Recording business transactions in the books of account in the manner shown in Illustration 1 may pose problems in data handling and processing. By recording each transaction separately and tracking its impact on the balance sheet equation individually can make it extremely difficult and cumbersome to summarise the amount of each class of asset, liability and shareholders' equity. Additionally, this process may be prone to a number of errors/mistakes in recording the increases and decreases made to individual accounts of assets, liabilities and capital.

Therefore, in order to solve such problems, an efficient method of keeping a track of each asset, liability and owners' capital and a systematic approach of recording the increases and decreases in such accounts is required. This would ensure that the financial results and profits/losses are computed accurately. The systematic recording and classification of business transactions into appropriate accounts was addressed by accountants by devising a system of debits and credits and developing the concept of an account.

9.2.3 CONCEPT OF ACCOUNT

An account is a systematised format of recording accounting data. There are separate accounts for various categories of transactions such as assets (for example building, furniture, cash, bank, inventory, equipment, etc.), liabilities (for example, creditors, bills payable, salaries outstanding, etc.), equity (for example, reserves, share capital, etc.), revenue items and expense items.

Luca Pacioli, the father of accounting, published the first book on double entry system and developed the fundamental accounting model and the T-account format. Each account comprises two sides (one debit and the other credit) wherein all transactions leading to an increase in its balance are recorded in one column and all transactions leading to a decrease in its balance are recorded in the other column. Increases and decreases are recorded on the debit or credit sides depending upon the nature of the account and the applicable rules of debit and credit. For instance, in cash account, increases are recorded on the debit side and decreases on the credit side; whereas in a liability account, increases are recorded on the credit side and decreases on the debit side.

When we add all the increases to the opening balance of an account and reduce all the decreases, we arrive at the closing balance of that account for a particular period. Thus, an account provides valuable information relating to several transactions entered into for a particular accounting head at one place.

Notes

To gain a better understanding on the concept of an account, let us look at the overview of a cash account as shown in Table 1:

Table 1: Overview of Cash Account

Cash Account			
Increases in cash balance (Debit Side)	**Amount (in ₹)**	**Decreases in cash balance (Credit Side)**	**Amount (in ₹)**
Opening balance	Nil	Cash withdrawn from business	50,000
Capital introduced in business	400,000	Payment of salaries to staff	45,000
Interest received on investments	20,000	Purchase of furniture	100,000
Sale of goods for cash	135,000	Payment of rent on building	80,000
Loan taken from commercial bank	100,000	Amount paid to trade creditors	36,000
		Payment of dividend to shareholders	40,000
		Balance remaining	304,000
	6,55,000		**6,55,000**

In the given cash account, increases are recorded on the left-hand side and decreases are recorded on the right-hand side. Once the increases are added to the opening balance and decreases are deducted therefrom, we get the balance cash available of ₹ 304,000.

9.2.4 CONCEPT OF DEBITS AND CREDITS

Debits and credits are recorded in a two-column transaction recording format. While accounting for transactions, the amounts are recorded in an account wherein the 'debit' refers to the left-hand side of an account and the 'credit' refers to the right-hand side of an account. In every business transaction, two or more accounts are always impacted, the debit amount being recorded against one account and the credit amount being recorded against the other account.

Because of the rules of debit and credit, the increases and decreases in accounts can be easily recorded. The balancing and dual aspect feature of debits and credits ensures that for every debit in accounting, there is an equal and correspondingly balancing credit. This makes it possible that assets are always equal to the sum of liabilities and owners' equity.

The rules of debit and credit that are used to record increases and decreases in balances of accounts are as follows:

- Increases (+) in assets are debits and decreases (–) in assets are credits.
- Increases (+) in liabilities are credits and decreases (–) in liabilities are debits.
- Increases (+) in capital are credits and decreases (–) in capital are debits.

- Increases (+) in expenses/losses are debits and decreases (–) in expenses/losses are credits.
- Increases (+) in incomes/gains are credits and decreases (–) in incomes/gains are debits.

Additionally, because of these rules of debit and credit, all assets and expenses generally have debit balances and all liabilities, incomes and capital generally have credit balances. To gain more clarification on the rules and mechanism of recording debits and credits, let us look at some of the business transactions entered into by RV Private Limited as discussed in the previous illustration.

Illustration 2: RV Private Limited entered into the following transactions during the financial year:

1. The company purchased a building worth ₹ 8,00,000.
2. Operating expenses paid in cash amounted to ₹ 60,000.
3. The amount collected from customers against credit sales amounted to ₹ 1,20,000.
4. Operating expenses which have been accrued but not yet paid amounted to ₹ 30,000.
5. Depreciation charged on fixed assets was ₹ 12,000.

Analyse the impact of these transactions on individual accounts by applying the debit and credit rules.

Solution:

1. On purchase of the building for ₹ 8,00,000, two accounts will get affected, i.e., cash and building. Building account will be debited by ₹ 8,00,000 on increase in fixed assets and cash account will be credited by ₹ 8,00,000 on decrease in cash balance.

   Cash Account – Credit ₹ 8,00,000

   Building Account – Debit ₹ 8,00,000

2. On payment of operating expenses for ₹ 60,000, two accounts will get affected, i.e., cash and operating expenses. Operating expenses account will be debited by ₹ 60,000 on increase in expenses (which impacts owners' equity) and cash account will be credited by ₹ 60,000 on decrease in cash balance.

   Cash Account – Credit ₹ 60,000

   Operating Expenses Account (Owners' Equity) – Debit ₹60,000

3. On collection of ₹ 1,20,000 from customers against credit sales, two accounts will get affected, i.e., cash and debtors. Cash account will be debited by ₹ 1,20,000 on increase in cash balance and debtors account will be credited by ₹ 1,20,000 on decrease in outstanding debtors balance.

   Cash Account – Debit ₹ 1,20,000

   Debtors Account – Credit ₹ 1,20,000

4. On accrual of operating expenses for ₹ 30,000 which have not been paid in cash, two accounts will get affected, i.e., expenses payable and operating expenses.

NOTES

Operating expenses account will be debited by ₹ 30,000 on increase in expenses (which impacts owners' equity) and expenses payable account will be credited by ₹ 30,000 on increase in liabilities.

Expenses Payable Account – Credit ₹ 30,000

Operating Expenses Account (Owners' Equity) – Debit ₹ 30,000

5. On charge of depreciation on fixed asset for ₹ 12,000, two accounts will get affected, i.e., depreciation and fixed asset. Depreciation account will be debited by ₹ 12,000 on increase in depreciation expense (which also impacts owners' equity) and fixed asset account will be credited by ₹ 12,000 on decrease in value of fixed asset.

   Depreciation Account – Debit ₹ 12,000

   Fixed Asset Account – Credit ₹ 12,000

SELF ASSESSMENT QUESTIONS

1. In double entry system, minimum two accounts are always impacted from a business transaction. (True/False)
2. The left-hand side of an account is known as _____ side.
3. Which statement equates assets with the sum of liabilities and owners' equity?
   a. Balance sheet equation
   b. Statement of cash flows
   c. Statement of income
   d. None of the above

9.3 ACCOUNTING INFORMATION PROCESSING

After equipping you with the basic knowledge on the fundamentals of accounting and recording financial data, let us now throw light on the steps involved in the information processing cycle. The ultimate goal of financial accounting is to find out the profit earned/loss suffered during a given period and analyse the statements of affairs of a business enterprise. For obtaining the financial results of a business entity, the steps involved in the process of accounting information processing are as follows:

- Collection of data
- Analysis of transactions
- Journalising of transactions
- Posting of transactions to ledger accounts
- Preparation of trial balance
- Making adjustment entries and preparation of financial statements

9.3.1 COLLECTION OF DATA

The first step in the process of accounting information processing is the collection of raw data which has economic or monetary effects on the operations of a business entity. There are a huge number of day-to-day transactions which need to be recorded in their financial terms to know their combined impact on the financial results.

For recording these transactions, it is extremely important that they should be backed by some supporting evidence. For example, transactions with outside parties are reflected in supporting documents such as purchasing invoices, sales invoices, passbook, receipts, cash memos, bills, pay slips, etc. Similarly, internal transactions such as consumption of raw materials should also be backed by appropriate evidence in the form of documents or memos generated by operational departments of the enterprise. These source documents which contain the details of financial records act as an evidence to record business transactions in the books of account.

9.3.2 ANALYSIS OF TRANSACTIONS

After collection of raw data or transactions to be entered into the books of account, the next step is to analyse them to determine their possible effects on the business entity. This is done by applying the concept of basic accounting model and the rules of debit and credit as discussed earlier to find out which accounts will get affected by a given transaction and what debits and credits will be made to such accounts.

9.3.3 JOURNALISING OF TRANSACTIONS

After determining the economic effects of business transactions, the transactions are first recorded in the book of journal in a chronological order to show which accounts should be debited and which should be credited. Journal book is a book of original entry in which the transactions are recorded on a day-to-day basis as and when they occur. The procedure of recording journal entries in the book of journal in a systematic manner is known as journalising of transactions. In a journal, the debits and credits of each transaction are recorded along with their respective accounts and appropriate explanations. The format of a journal is shown in Table 2 with the help of some transactions of RV Private Limited as discussed in previous illustrations:

Table 2: Journal Entries of RV Private Limited

JOURNAL				
Date	**Particulars**	**Ledger Folio (L.F.)**	**Dr Amount (₹)**	**Cr Amount (₹)**
	Building Dr To Cash (Being building purchased for cash)		8,00,000	8,00,000
	Operating Expenses Dr To Cash (Being operating expenses paid in cash)		60,000	60,000
	Depreciation Dr To Fixed Asset (Being depreciation charged on fixed assets)		12,000	12,000
	Cash Dr To Trade Debtors (Being amount collected from debtors)		120,000	1,20,000

NOTES

The columns in a journal are explained as follows:

1. In the first column, the particular date on which a transaction has occurred is entered.
2. In the second column, the names of the accounts to be debited and credited are written. The account name to be debited in the books is written in the first line along with the word "Dr" and the account name to be credited in the books is written in the next line prefixed by the word "To". In the last line, an explanation called narration of the transaction is written.
3. In the third column, the page number of the ledger in which the journal entry is posted is written.
4. In the fourth column, amounts to be debited are written.
5. In the fifth column, amounts to be credited are written.

9.3.4 POSTING OF TRANSACTIONS TO LEDGER ACCOUNTS

We have already discussed the concept of an account in a previous section. A ledger is a group of accounts wherein the transactions recorded in the journal are transferred or posted to the ledger accounts. This process is known as classification and grouping of transactions into appropriate ledger accounts by transferring the debit and credit items from the journal book to separate accounts in the ledger. The book which comprises all the accounts is referred to as a ledger. While journal is updated every day as and when a transaction occurs, ledger posting is done on a less frequent basis. The ledger is referred to as the principal book of accounts wherein the account-wise data is maintained and balances are determined for various accounts.

The terms "To" and "By" are generally used for posting transactions from the journal to the ledger. These terms do not carry any meanings, however, the term "To" is used along with the accounts debited in a particular column and the term "By" is used along with the accounts credited in a particular column. The amounts in a ledger account are balanced to find out the closing balance at the end of a period. The specimen of a ledger account is as shown in Table 3:

TABLE 3: Format of Ledger Account

Dr. **Ledger Account (Stationary Account)** **Cr.**

Date	Particulars	J.F.	Amount (₹)	Date	Particulars	J.F.	Amount (₹)
	To balance b/d		xxx		By balance c/d		xxx
	To Bank A/c (purchases)		xxx				xxx
			xxx				xxx
	To balance b/d						

(Here, J.F. means Journal Folio i.e., the page number in the journal book from where the transaction is posted to the ledger.)

9.3.5 PREPARATION OF TRIAL BALANCE

The next step after the preparation of ledger accounts is the preparation of the statement of the trial balance. After posting transactions in a ledger account and balancing the account, a statement is prepared to show the debit and credit balances separately. Such a statement is referred to as a trial balance, which is prepared by using the debit and credit totals or balances of all ledger accounts to determine the arithmetical accuracy of the financial transactions recorded in a business.

The balance of an account is the difference between the totals of the debit side and credit side. If the debit side total is greater, it is called debit balance. However, if the credit side total is greater, it is called credit balance. All ledger accounts showing debit balances are posted in one column and those showing credit balances are posted in the other. Under the double entry bookkeeping system, for every debit entry, there is an equal and corresponding credit. Therefore, the total of the debit balances in the ledger must be equal to the total of the credit balances in different accounts. If they agree, it means that both the aspects of transaction are recorded correctly in the ledger. The format of a trial balance is depicted in Table 4:

Table 4: Specimen of Trial Balance

Firm Name
Trail Balance as on ……

S. No.	Name of Account	L.F.	Dr. Amount (₹)	Cr. Amount (₹)
	Cash		xxx	
	Building		xxx	
	Creditors			xxx
	Equity Share Capital			xxx
	Depreciation		xxx	
	Total		**xxx**	**xxx**

9.3.6 MAKING ADJUSTMENT ENTRIES AND PREPARATION OF FINANCIAL STATEMENTS

Financial statements are prepared at the end of the year to have an overall view of its financial activities over the year. The profit and loss account, known as the income statement, shows the financial performance of the organisation. A profit and loss account can be prepared by considering the following points:

- Debiting all the expenses
- Crediting all the incomes
- Considering the balance amount, if any, as profit or loss

NOTES

On the other hand, the balance sheet summarises and presents the financial position of the organisation in terms of assets, liabilities and capital.

Firstly, all nominal accounts (those related to expenses and revenue) in the trial balance are transferred to the profit and loss account. After that, personal accounts of customers are grouped under the heading of sundry debtors, the entities from whom the amounts of sold goods and services due. Similarly, all balances of the suppliers are grouped under the single heading of sundry creditors, the entities to whom the organisation owes money or payment. Finally, the balances of real and personal accounts (those related to assets, liabilities and capital) are grouped as assets and liabilities and are arranged in a proper way. The resultant statement obtained is called the balance sheet.

In the balance sheet, assets are represented on the right side and liabilities are shown on the left side. It is also known as the statement of sources of funds and application of funds. The financial position of the organisation includes its economic resources (assets), economic obligations (liabilities), and owner's equity.

The format of profit and loss account and balance sheet are depicted in Table 5:

TABLE 5: Specimen of Profit and Loss Account and Balance Sheet

Profit and Loss Account
For the year ending ….

Particulars	Amount (₹)	Particulars	Amount (₹)
To gross loss		By gross profit (profit from revenue and sales)	
To office salaries and wages		By cash discount received	
To office rent, rates, and taxes		By bad debts recovered	
To office lighting and insurance		By income from investments	
To printing and stationary		By commission received	
To postage and telegram		By interest on deposits	
To trade expenses		By gain on sale of fixed assets	
To audit fees		By apprenticeship premium	
To telephone expenses		By net loss (transferred to capital account)	
To general expenses			
To cash discount allowed			
To net profit (transferred to capital account)			
Total		**Total**	

Balance Sheet of....
As on....

Liabilities	Amount (₹)	Assets	Amount (₹)
Capital (after adding net profit, interest on capital and deducting drawings and net loss, if any)	xxx	Fixed assets	xxx
		Land and Buildings	xxx
Long term liabilities	xxx	Furniture and fixtures	xxx
Bank loan	xxx	Closing stock	xxx
Current liabilities	xxx	Sundry debtors	xxx
Sundry Creditors	xxx	Bills receivable	xxx
Bills payable	xxx	Prepaid expenses	xxx
Bank overdraft	xxx	Accrued incomes	xxx
Creditors for outstanding expenses	xxx	Cash at bank	xxx
		Cash in hand	xxx
Income received in advance	xxx		
	xxx		xxx

As the accrual basis of accounting is followed by organisations, some adjustment in the entries are required at the end of the period to record change in the revenues, expenses, assets, or liabilities that have not been recognised before. These adjustment entries modify the balance of certain accounts so that an appropriate and fair condition could be reflected by the financial accounts. Various items used in the financial statements require adjustments so that they would present the actual financial position of the organisation. Some of these adjustments are related to accrued expenses, accrued revenues, income received in advance, provision for bad debts, expenses paid in advance, creation of reserves, etc. Once the adjustment entries are made in the books of account, the journal and ledger balances have to be determined afresh. Thereafter, the modified version of trial balance shall form the basis of the preparation of financial statements.

SELF ASSESSMENT QUESTIONS

4. The ledger book is also known as:
   a. Original book of accounts
   b. Principal book of accounts
   c. Subsidiary book of accounts
   d. Secondary book of accounts
5. Transactions in journal are recorded in a chronological order. (True/False)
6. The technique of transferring the debit and credit amounts from a journal to the classified accounts in ledger is known as _____.

NOTES

ACTIVITY

Study about the differences between a journal and a ledger. Make a presentation on the major distinctions between the two. Also, find out how journals and ledgers are maintained by companies with the use of automated accounting systems/accounting software

9.4 SUMMARY

- Accounting equation is also known as balance sheet equation whereby the total of company's assets always equals the total of shareholders' equity and outside liabilities. It ensures that every entry has a debit and credit side and both their corresponding impacts are recorded properly in the books of account. Since the debit side effects are always equal to the credit side effects, therefore, the accounting equation or balance sheet equation always matches.
- An account is a systematised format of recording accounting data. Each account comprises two sides (one debit and the other credit) wherein all transactions leading to an increase in its balance are recorded in one column and all transactions leading to a decrease in its balance are recorded in the other column.
- While accounting for transactions, the amounts are recorded in an account wherein the 'debit' refers to the left-hand side of an account and the 'credit' refers to the right-hand side of an account. In every business transaction, two or more accounts are always impacted, the debit amount being recorded against one account and the credit amount being recorded against the other account.
- The rules of debit and credit that are used to record increases and decreases in balances of accounts are as follows:
  - Increases (+) in assets are debits and decreases (–) in assets are credits.
  - Increases (+) in liabilities are credits and decreases (–) in liabilities are debits.
  - Increases (+) in capital are credits and decreases (–) in capital are debits.
  - Increases (+) in expenses/losses are debits and decreases (–) in expenses/losses are credits.
  - Increases (+) in incomes/gains are credits and decreases (–) in incomes/gains are debits.
- The process of recording journal entries in the book of journal in an orderly manner is known as journalising of transactions. In a journal, the debits and credits of each transaction are recorded along with their respective accounts and appropriate explanations.
- A ledger is a group of accounts wherein the transactions recorded in the journal are transferred or posted to the ledger accounts. This process is known as classification and grouping of transactions into appropriate ledger accounts by transferring the debit and credit items from the journal book to separate accounts in the ledger.
- Financial statements are prepared at the end of the year to have an overall view of its financial activities over the year. The profit and loss account, known as

the income statement, shows the financial performance of the organisation. The balance sheet summarises and presents the financial position of the organisation in terms of assets, liabilities and capital.

9.5 KEY WORDS

- **Transaction:** An event that occurs between the entity and an external party, the nature of which can be determined in monetary terms.
- **Journal entry:** A transaction recorded in a journal with debit and credit amounts to give effect to a business event.
- **Fixed asset:** An asset which is purchased for the long-term business benefits and which is not likely to be converted into cash in the near future.
- **Owners' Equity:** The amount which is invested by the shareholders into the business including the net income or net loss, if any.

9.6 CASE STUDY: BUSINESS COMMENCEMET AT SPL CONSUMER LIMITED

SPL Consumer Limited is a business organisation which trades in consumer goods and services. It was incorporated in the year 2008 in a small district in Punjab. The company is also involved in exporting goods to neighbouring countries, such as Nepal, Bhutan, Bangladesh, Sri Lanka, Myanmar and Malaysia. The company was started with an initial capital of amount ₹ 10,50,000 and the turnover of the company in the first year was ₹ 9,00,000.

The following are some of the initial financial transactions of the company. The company's accountant needs to make the journal entries from the following transactions:

- **May 3, 2008:** Commencement of the business with capital of ₹ 10,50,000
- **May 6, 2008:** Goods worth ₹ 3,03,000 were purchased from Manicaland & sons
- **May 8, 2008:** Goods worth ₹ 4000 were spoiled in transit and a claim was made to the Railway company; ₹ 1,500 was received for the claim
- **May 12, 2008:** Goods worth ₹ 76,000 were supplied to Sim & Co. and a freight of ₹1,000 was paid
- **May 13, 2008:** Purchased goods worth ₹ 45,000 from Ramya & Co. at a trade discount of 5%

The journal entry for the transactions made by SPL Consumer Limited are shown as follows:

Date 2008	Particulars	L.F.	Dr. Amount	Cr. Amount
May 3	Cash A/c Dr		10,50,000	
	To Capital			10,50,000
	(Being capital introduced into the business)			

NOTES

Date 2008	Particulars	L.F.	Dr. Amount	Cr. Amount
May 6	Purchases A/c Dr		3,03,000	
	To Manicaland & sons A/c			3,03,000
	(Being the goods purchased from the supplier)			
May 8	Cash A/c Dr		1,500	
	Profit and Loss A/c Dr		2,500	
	To Railways claim A/c			4,000
	(Being receipt of cash and balance is treated as loss)			
May 12	Sim & Co. A/c Dr		77,000	
	To Cash A/c			1,000
	To Sales A/c			76,000
	(Being goods supplied to Sim & Co.)			
May 13	Purchase A/c Dr		42,750	
	To Ramya & Co. A/c			42,750
	(Being goods purchased from Ramya & Co. after 5% trade discount)			

QUESTIONS

1. What would be the journal entry in case Ramya & Co. were paid cash on account of purchases on 15 May, 2008?

   (**Hint:** Ramya & Co. A/c should be debited and Cash A/c should be credited with ₹ 42,750)

2. Pass a journal entry for the purchase of furniture worth ₹ 40,000 on credit from Wooden Ltd.

   (**Hint:** Furniture A/c should be debited and Wooden Ltd. A/c should be credited with ₹ 40,000)

9.7 EXERCISE

1. Briefly describe the steps involved in accounting information processing cycle.
2. What is an account? Explain the basic rules of debit and credit for recording a business transaction.
3. What do you understand by a journal and ledger? Discuss the procedure of recording transactions in a journal and ledger.
4. Illustrate with the help of an example as to how would you prepare trial balance from a given set of ledger account balances for a particular year.
5. Write a short note on adjustment entries.

9.8 ANSWERS FOR SELF ASSESSMENT QUESTIONS

Topic	Q. No.	Answer
Accounting Model and the Concept of an Account	1.	True
	2.	debit
	3.	a. Balance sheet equation
Accounting Information Processing	4.	b. Principal book of accounts
	5.	True
	6.	Posting

9.9 SUGGESTED BOOKS AND E-REFERENCES

SUGGESTED BOOKS

- Meigs, R., & Meigs, R. (2001). *Financial accounting*. Boston, Mass.: Irwin/McGraw-Hill.
- Ross, K. (2000). *Fundamentals of accounting*. Cincinnati, Ohio: South-Western.

E-REFERENCES

- Accounting Concepts - AccountingExplanation.com. (2019). Retrieved from http://accountingexplanation.com/accounting_concepts.htm
- Bragg, S., & Bragg, S. (2019). Debits and credits. Retrieved from https://www.accountingtools.com/articles/2017/5/17/debits-and-credits

CHAPTER 10

Basics of Cost Accounting

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LEARNING OBJECTIVES

After studying this chapter, you will be able to:

- Describe the relationship among financial, cost and management accounting
- Discuss the cost classifications
- Explain the costing process
- Describe the important types of cost systems
- Outline the two types of costing: standard costing and activity-based costing

10.1 INTRODUCTION

In the previous chapter, you have studied about the basics of the accounting model, rules of debit and credit and the general ledger.

Cost accounting is an extended segment of financial accounting, which supplies the information about the cost of producing and selling each product and also of offering a particular service to the management. However, this information is determined at the time when the goods are produced or any service is rendered, and not at the end of the accounting period. In simple words, cost accounting is a modification of financial accounting.

Costing is an organised practice for finding the unit cost of the output produced or services rendered. It facilitates the analysis of the overheads, thus allowing the management to get familiar with not only the total cost of production but also with its components. In short, cost accounting is the procedure of accounting for cost, which begins with the relating and classifying of receipts and payments, and ends with the preparation of periodical statements and reports for determining and controlling costs.

In this chapter, you will study about the relationship among financial, cost and management accounting. The chapter also discusses concepts and classifications of cost, the costing process, cost systems and the types of costing.

10.2 RELATIONSHIP AMONG FINANCIAL, COST AND MANAGEMENT ACCOUNTING

An organisation requires data, records, reports, analysis, and accurate and timely information with respect to its assets, liabilities, profits and losses. It is not possible to provide such information in the absence of an accurate accounting system. The management of an organisation requires various types of accounting information for decision making. Therefore, it can be said that the accounting system is an integral part of any organisation's information system. Organisations use accounting systems to fulfil the following three major purposes:

- Estimating the costs incurred in the production of the goods and services
- Providing information to the external stakeholders such as creditors, regulatory bodies, suppliers and government
- Providing information necessary for planning, control and decision-making activities

The overall accounting system of any organisation consists of three sub systems, namely the financial accounting system, cost accounting system, and the management accounting system.

The financial accounting system helps in preparing the summary, analysis and reporting of financial transactions related to an organisation in line with the Generally Accepted Accounting Principles (GAAP). Under financial accounting, the financial statements are prepared, and these are made available for public use.

The cost accounting system records, classifies, analyses, summarises and allocates various types of costs associated with a process. The analysis of the costs can be used to develop the different courses of action to control the costs.

The management accounting system consists of various internal systems of an organisation which it uses to measure and evaluate its varied processes. The results and information revealed by the management accounting system are used by an organisation's management for decision making. The information that is generated by the management accounting system is usually monetary as well as non-monetary in nature.

The relationship among the financial, cost and management accounting systems is shown in Figure 1:

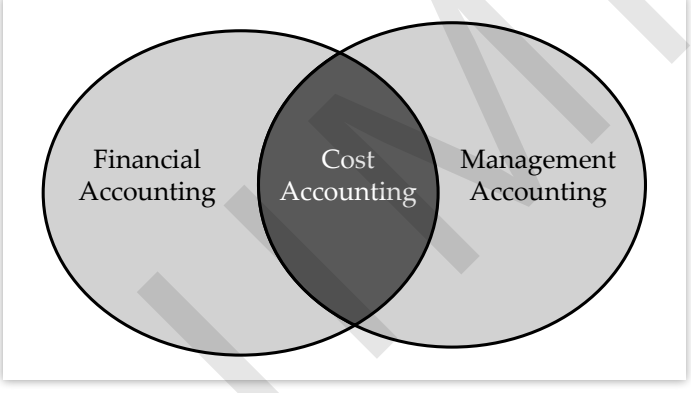

FIGURE 1: Relationship among the Financial, Cost and Management Accounting Systems

In the previous three chapters, you have studied about the important concepts of financial accounting. In this chapter, you will study about the concepts, classifications, process, systems and methods of cost accounting. The cost accounting systems are generally practised in all types of organisations, namely the manufacturing and service organisations. However, cost accounting is a very crucial part of manufacturing organisations in which it covers areas like production, marketing and service.

Let us now study about the various aspects of cost accounting in the upcoming sections.

SELF ASSESSMENT QUESTIONS

1. The results and information revealed by the management accounting system are used by an organisation's management for _____ purposes.

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10.3 COST CONCEPTS AND COST CLASSIFICATIONS

Cost refers to the sum of money that must be spent by any individual or an organisation in order to purchase something or to get some work done.

According to the **Institute of Cost and Work Accountants (ICWA),** cost implies *measurement in monetary terms of the amount of resources used for the purpose of production of goods or rendering services.*

According to the **Chartered Institute of Management Accountants** (**CIMA), London,** cost means *the amount of expenditure (actual or notional) incurred on or attributable to a given thing.*

Organisations incur various types of costs for various reasons such as acquiring resources, producing goods, commodities and services, marketing and advertising, recruitment, etc. Organisations need to keep a track of their production and overall costs because if the costs of the organisation exceed a certain level, the organisation may not be able to generate sufficient revenues and profits. At times, if the costs are not controlled, the organisation may also incur losses. In context of the Indian market, most organisations focus on introducing high-quality products at affordable prices in order to increase their market share.

Managers require cost information for answering questions such as:

- What costing procedure should be adopted for the valuation of the inventories?
- What is cost behaviour when volumes are changed?
- What costs would be incurred when an organisation accepts special orders?

The costs incurred by an organisation may be divided into various types under various categorisations. Some of the most common classifications of cost are shown in Figure 2:

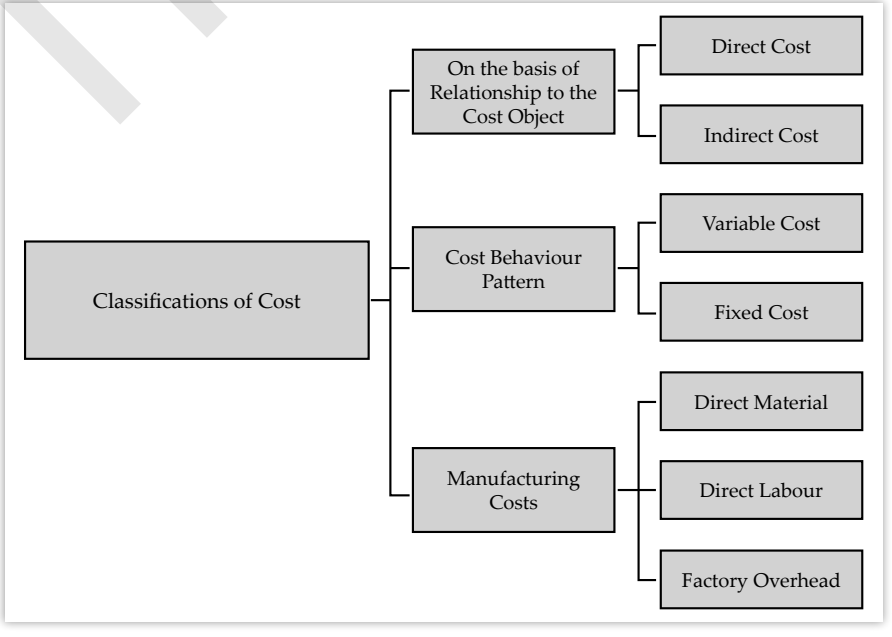

Figure 2: Classifications of Costs

Let us now discuss a few major cost classifications in detail.

When costs are classified according to their **relationship to the cost object**, they are classified as direct costs and indirect costs. **Direct costs** are those costs that can be specifically and directly attributed to a particular cost object or a project or any piece of work. For example, a bakery shop can conveniently calculate or sum up the costs that it incurs in baking a particular item. The direct costs would include the cost of raw materials, labour cost, etc. **Indirect costs** are those costs that are not directly attributable to any cost object. For example, rent and salaries. The cost object may be a product, department, programme, service, or customer.

When **costs** are classified according to their **behaviour pattern**, they are classified as fixed or variable cost. **Fixed costs** are those costs which do not vary with change in the total output or volume. For example, the property tax amount for an organisation's premises remains same irrespective of the production numbers achieved by the organisation. **Variable costs** are those costs that vary with the changes in the production output. For example, the raw materials required per unit of a product changes with the level of production. The cost of raw materials required for producing 200 units will be double as compared to the cost of raw materials required for producing 100 units. It must be remembered that both direct and indirect costs can be further divided into fixed and variable costs. If it is assumed that the labour is paid at a fixed rate, then the direct, indirect, fixed and variable costs matrix is shown in Figure 3:

	Direct	Indirect
Fixed	Labour	Depreciation
Variable	Material	Power

Figure 3: Direct, Indirect, Fixed and Variable Costs Matrix

On the basis of **manufacturing expenses**, costs are categorised as **direct material, direct labour and manufacturing overhead costs**. During the process of manufacturing, raw materials are transformed into finished goods by using a combination of plant and machinery, labour and capital. In manufacturing costs:

Prime Cost = Material Cost + Direct Labour Cost

Conversion Cost = Direct Labour Cost + Manufacturing Overhead

Direct material costs are those costs that are directly related with the product and are easily attributable to a product. For example, the fabric required for making cloths or the leather required for making shoes. Indirect material costs include the costs incurred on elements that are not directly attributable to a product. For example, to keep the plant and machinery up and running, items such as nuts and bolts, lubricants, etc., are used. The costs incurred on these items are indirect costs. Manufacturing overhead costs include all the manufacturing costs apart from direct material cost and direct labour costs. These include the likes of indirect materials, indirect labour, depreciation, rent, maintenance, etc.

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Timing of Recognition of Costs

All the costs incurred by an organisation must be expensed. If a cost is not expensed immediately, it is added to the inventory a/c until the goods are sold and is known as **inventoriable costs** or **product costs**. Some costs are expensed only in the period in which they incur and are called as **non-inventoriable costs** or **period costs.**

For external financial reporting, the GAAP dictates that all the **manufacturing costs** must be treated as product costs using absorption costing. Also, irrespective of the cost behaviour with the change in volume, all the manufacturing costs are considered as product costs.

On the contrary, according to the variable costing or direct costing, manufacturing overheads are further divided into fixed and variable overheads. Variable manufacturing costs are considered as product cost and fixed manufacturing costs are considered as period costs. It must also be noted that non-manufacturing costs are generally treated as period costs (non-inventoriable).

SELF ASSESSMENT QUESTIONS

2. If a cost is not expensed immediately, it is added to the inventory a/c until the goods are sold and is known as inventoriable cost or _____.
3. Conversion Cost = Direct Labour Cost + Material Cost. (True/False)

10.4 COSTING PROCESS

The process of costing requires determining the cost of a single unit of product or a single service. For any manufacturing organisation, there may arise two cases. The first case is that in which the organisation produces a single product and the second case is that in which it produces more than one product. For a single product, the process of costing only includes the summing up of the manufacturing costs incurred in one period on items, such as material, labour, power, rent, depreciation, etc., and dividing the total by the number of units produced.

For an organisation that manufactures two or more products, the following steps need to be adopted:

1. **Define the cost object:** The cost object may be a product such as a table fan or a service such as a spa treatment, a programme such as a training programme to train new joinees, a department such as the marketing department, or a customer such as when the Indian Railways purchases coaches from 'The Integral Coach Factory' located at Perambur.
2. **Accumulate costs:** Natural costs such as materials, labour, power, transport, rent, depreciation, insurance, etc., are collected from different departments and summed-up. The departments may be divided into two categories, namely cost centres and service centres. A product centre refers to the department where some product is worked upon; whereas, a service centre is a centre where some service is provided.

3. **Determine direct costs:** All the costs that can be effectively attributed to some cost object are included under direct costs. Direct costs include direct material costs and direct labour costs. If a product is passed through more than one product centre, the direct cost is the sum of all the direct costs accumulated from each department.
4. **Allocate indirect costs:** Indirect costs or the manufacturing overhead costs are costs that cannot be effectively attributed to any cost object. Therefore, they must be allocated to a cost object in some reasonable manner. The steps to allocate indirect costs include:
   a. Estimating indirect costs for various product centres
   b. Estimating the costs of various service centres
   c. Transferring or allocating the estimated service centre costs to the product centres
   d. Dividing the total accumulated cost in each product centre by direct labour hours or machine hours or total direct cost in order to arrive at the overhead application rate
   e. Applying the overhead application rate to the product passing through the product centres
5. **Calculate the total cost of production:** This is derived by summing up the direct costs traced to a unit and the indirect costs attributed to it.

Self Assessment Questions

4. For a single product, the process of costing only includes the summing up of the manufacturing costs incurred in one period on items, such as material, labour, power, rent, depreciation, etc., and dividing the total by the number of units produced. (True/False)
5. The total cost of production is derived by summing up the _____ traced to a unit and the indirect costs attributed to it.

10.5 COST SYSTEMS

The production function in a manufacturing organisation may be of two types namely job order production and process or continuous production.

Job Costing refers to a method of costing wherein the costs are ascertained in terms of specific orders and the accumulated cost for a job is calculated. The jobs are generally for a short time period such as involving a printing press, an automobile garage, or engine and machine construction. In job-order costing, the cost involved in the manufacturing of a product is calculated as per the batches in which the product is produced. In job orders, the manufacturing costs may vary for different batches of the same product. Job-order costing is used in various industries such as printing, aircraft, construction, auto repair and professional services.

In job costing, job order records various costs like direct material, direct labour and pre determined overheads. In job costing, the overhead rates are calculated by

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dividing the budgeted yearly overhead by the budgeted annual activity units. The variance between actual overhead and overhead applied is equal to the cost of goods sold. In case manufacturing is done in batch system, the batch cost is divided by the number of components in the batch to determine the unit cost. Service-based costing helps organisations to calculate the complete cost of their products and services.

Organisations may use job-order costing when jobs are executed for different customers as per their specifications and also when the rate of work differs from time to time on the basis of the number of jobs in hand.

Process Costing is used by those organisations in which a product needs to pass through multiple processes and in which the output of one process becomes the input of next process. The output of the final process results in the final product and these are kept in the warehouse for sale or as a stock. In process costing, the cost of each process is calculated by preparing separate process accounts. Process costing is used frequently in textile and chemical industries.

The **Chartered Institute of Management Accountants (CIMA)** defines process costing as *The costing method applicable where goods or services result from a sequence of continuous or repetitive operations or processes. Costs are averaged over the units produced during the period.*

The major points of difference between job and process costing are shown in Table 1:

Table 1: Difference between Job Costing and Process Costing

Job Costing	Process Costing
Applied usually to batch production	Applied usually to mass production
Cost is assigned to each job separately	Cost is assigned to each process
Requires strict managerial control	Requires less managerial control
For costing through this method, the concerned job must be completed	For costing through this method, the concerned job does not require to be completed.

Self Assessment Questions

6. Under what type of costing costs, variants such as direct material, direct labour and pre-determined overheads are recorded?
7. Process costing requires less managerial control. (True/False)

Activity

Collect information on the methods of costing adopted in the pharmaceutical industry.

10.6 TYPES OF COSTING

There are various types of costing systems and methods. However, two most common types of costing systems include standard costing and activity-based costing. These are explained in the next sections.

10.6.1 STANDARD COSTING

Cost control is one of the main goals of any organisation. To control costs, certain standards must be set-up and the expected outcomes must be compared with the actual outcomes of the business organisation. Cost control is a managerial function under which the management must ensure that the course of action of management activities and operational decisions are in line with the set standards.

Standard costing is a cost control technique wherein the predefined standard costs are compared with the actual cost of producing that product or service. The management analyses the reasons behind the differences between the actual and standard costs. Thereafter, the steps required to eliminate the differences are taken. In this way, standard costing helps the organisation control its costs.

For the standard costing technique to be effective, predefined standard costs of products and services should be realistic and attainable. Moreover, depending upon the change in the cost of other elements such as raw materials, labour, power, etc., predefined standard costs need to be updated from time to time. If this technique of cost control is properly utilised, it will help organisations to greatly reduce wastes and increase the productivity of business operations. Thus, standard costing can be used to gauge the performance of an organisation in terms of its business operations.

Concept Of Standard Costing

Standard costing is a type of managerial tool, which is used to control costs related to the direct material, direct labour and manufacturing overhead. It allows the management to identify any kinds of variations in the manufacturing costs. Standard costing has been defined in different ways by eminent personalities and entities. Some of these definitions are as follows:

Chartered Institute of Management Accountants (ICMA), London, defines standard costing as *the preparation and use of standard costs, their comparison with actual costs, their comparison with actual costs, and the analysis of variances to their causes and points of incidence.*

The ICMA defines standard costs as *a predetermined cost which is calculated from management's standards of efficient operation and the relevant necessary expenditure. It may be used as a basis for price fixing and for cost control through variance analysis. It estimates the amount that a product or the operation of process costs over a period of time.*

One of the main prerequisites for the standard costing technique to be effective is the formulation of appropriate and realistic standards. Some of the aspects that need to be considered while setting up the standards to define the realistic standard costs are as discussed in the upcoming text.

Determination of Cost Centre

CIMA London, defines a cost centre as a location, person or item of equipment (or group of these) for which costs may be ascertained and used for the purpose cost control. Determination of a cost centre refers to the process of identifying convenient units, called cost centres, into which an organisation is divided for the purpose of

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determining costs. A cost centre that is related to a person is called a personnel cost centre while the cost centre related to products or equipment is known as an impersonal cost centre.

Current Standards

A set of standards established to be used on a short-term basis is known as the current standard. These standards reflect the current conditions related to the ongoing budgeting period and also help to determine the performance goals that the organisation requires to achieve in the current period.

Ideal Standards

Ideal standards are set on the assumption that all favourable conditions would prevail and all the personnel, including management and employees, would operate at its highest efficiency level. In other words, ideal standards represent the highest level of efficiency. To set ideal standards, variants such as the price determined for materials, wastes, rates of wages, labour time, and overhead expenses are kept to a minimum. In actual practice, ideal standards are generally neither suitable nor attainable as they are based on assumptions rather than reality.

Basic Standards

These are certain set standards that are generally applied to industries that develop a small range of products and where long-term planning is required. These standards may be updated only in case there is some change in the raw materials that are used in the production process. One of the main drawbacks of standard costs is that they tend to deviate from the actual cost, and thus cannot be used as a benchmark for measuring performance.

Normal Standards

Normal standards are based on certain conditions related to or dependent on a future trade cycle that may cover a period of five years. So these standards can be said to be achieved sometime in the future.

Organisation for Standards Costing

A standard costing committee is usually formed for setting the required standards. Some of the members of such a committee include the product manager, the production manager, the personnel manager, the purchase manager, the sales manager, the cost accountant and the chief engineer. They are the people who are entrusted with the job of setting proper standards. The role of the co-coordinator of this committee is performed by the cost accountant. Standard costs must be reviewed and revised on a regular basis.

The various factors that may influence standard costs include technological advances, new machinery, new personnel and changing quality of materials.

Standards must be flexible so that they can be altered to accommodate changes in the organisation and its environment. In fact, it is necessary to revise standards periodically to attain the objectives of standard costing.

To control business operations, managers need to establish certain predefined targets or standards that help them to measure the actual performance and compare actual costs with standard costs. This helps organisations to reduce their manufacturing costs and make their business operations more effective. Standard costing and budgetary control are inter-related but not inter-dependent. Budgetary control can work even in the absence of standard costing; however, standard costing cannot function without budgetary control.

10.6.2 ACTIVITY-BASED COSTING

The Activity-Based Costing (ABC) method, sometimes also called the ABC method, is considered a more logical method for assigning manufacturing overhead costs to products. In this method, managers first assign costs to all the activities and processes that lead to the overhead costs. Thereafter, costs are assigned to products requiring these activities. Nowadays, the ABC method is used as a supplementary costing system.

The ABC method works on the assumption that resource-consuming activities create costs. This method allows managers to directly control processes that cause costs, rather than the cost itself. Controlling processes causing costs automatically controls the costs in the long run.

The use of the ABC method for cost control has gained much acceptance in the business and manufacturing units importance due to the following reasons:

- Increase in the manufacturing overhead costs
- Inconsistency in the production of items, for example, some items are produced on a much larger scale as compared to other items
- Availability of different types of products in the market to cater to the varying customer demands

SELF ASSESSMENT QUESTIONS

8. _____ is a cost control technique wherein the predefined standard costs are compared with the actual cost of producing that product or service.
9. Resource-consuming activities create costs. This is an assumption of the _____ costing.

10.7 SUMMARY

- The financial accounting system helps in preparing the summary, analysis and reporting of financial transactions related to an organisation in line with the Generally Accepted Accounting Principles (GAAP).
- Cost refers to the sum of money that must be spent by any individual or an organisation in order to purchase something or to get some work done.
- Organisations incur various types of costs for various reasons such as acquiring resources, producing goods, commodities and services, marketing and advertising, recruitment, etc.

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- When costs are classified according to their relationship to the cost object, they are classified as direct costs and indirect costs.
- Direct costs are those costs that can be specifically and directly attributed to a particular cost object or a project or any piece of work. Indirect costs are those costs that are not directly attributable to any cost object.
- On the basis of manufacturing expenses, costs are categorised as direct material, direct labour and manufacturing overhead costs.
- Direct material costs are those costs that are directly related with the product and are easily attributable to a product. Indirect material costs include the costs incurred on elements that are not directly attributable to a product.
- Job costing refers to a method of costing wherein the costs are ascertained in terms of specific orders and the accumulated cost for a job is calculated.
- A job order keeps the record of costs, such as, direct material, direct labour and pre determined overheads.
- Process costing is a technique in which all the costs are summed up for each stage of production and the cost per unit of product is determined at each production stage by dividing the cost of each process by the output produced by that process.
- Standard costing is a cost control technique wherein the predefined standard costs are compared with the actual cost of producing that product or service.
- Ideal standards are set on the assumption that all favourable conditions would prevail and all the personnel, including management and employees, would operate at its highest efficiency level.
- The Activity-Based Costing (ABC) method, sometimes also called the ABC method, is considered a more logical method for assigning manufacturing overhead costs to products.

10.8 KEY WORDS

- **Cost Accounting:** Refers to the accounting mechanism through which the costs of products or services are ascertained and controlled.
- **Cost Centre:** Refers to one of the convenient units into which the whole organisation has been approximately divided for costing purposes.
- **Direct Labour:** Refers to the labour, which is directly involved in the production.
- **Direct Material:** Refers to the materials, which form an essential part of the finished product and can be suitably allocated to definite physical units.
- **Overheads:** Refers to the expenditure incurred on labour, materials or services, which cannot be economically identified with specific saleable cost units.

10.9 CASE STUDY: HP MOTORS

HP motors has developed its commuter car division with an idea to provide all the luxuries of a big car at the price of a small car to the Indian consumers. One of the additions to the HP Motors family subsequent to the launch of the Arena (considered

to convey never-before levels in magnificence, safety, power and comfort on Indian roads) is the new ArenaC3. It is delectably diverse, with the latest in sporty appearance, trendy interiors, and many more features. The Arena Plus story was in progress in the past three years with the launch of the HP Arena, the magnificent automobile from HP Motors. There was a select crowd of people who required the whole thing that came with the Arena Plus and a little more space. Therefore, HP motors initiated the Arena Plus project: a car that has the magnificence of an automobile and the usefulness and expediency of a multi-utility means of transportation, a car that does not compromise on power, safety and luxury, a car that has sufficient space to bring everybody and the whole thing they had ever loved, right in front of them, on every drive.

The following were the elements of the cost incurred by HP Motors during the production of the Arena Plus in the year 2010:

Particulars	Amount (₹)	Amount (₹)
Raw-materials consumed		80,000
Wages paid to the labour		20,000
Directly chargeable expenses		4,000
Oil and wastage		200
Wages of foreman		2,000
Storekeeper's wages		1,000
Electric power		400
Lighting:		
Factory	1,000	
Office	400	1,400
Rent:		
Factory	4,000	
Office	2,000	6,000
Repairs and renewals:		
Factory plant	1,000	
Machinery	2,000	
Office premises	400	3,400
Depreciation:		
Office premises	1,000	
Plant and machinery	400	1,400
Consumable stores		2,000
Manager's salary		4,000
Director's fees		1,000
Office printing and stationery		400
Telephone charges		100
Postage and telegrams		200
Salesmen's commission and salary		1,000
Travelling expenses		400
Advertising		1,000

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Particulars	Amount (₹)	Amount (₹)
Warehouse charges		400
Carriage outward		300

Source: *http://www1.ximb.ac.in/users/fac/visiting/vfac.nsf/pages/COMA-P05*

QUESTIONS

1. Why did the HP motors initiated the Arena Plus project?

   (**Hint:** There was a select crowd of people who required the HP Arena Plus.)

2. What were the features added by HP Motors to their new product segment to gain a major market share?

   (**Hint:** Sporty appearance, trendy interiors, etc.)

10.10 EXERCISE

1. Explain the various types of costs and their classifications.
2. Describe the costing process.
3. Discuss the job order and process costing systems.
4. Elaborate the two major types of costing as explained in the chapter.

10.11 ANSWERS FOR SELF ASSESSMENT QUESTIONS

Topic	Q. No.	Answer
Relationship among Financial, Cost and Management Accounting	1.	decision-making
Cost Concepts and Cost Classifications	2.	product costs
	3.	False
Costing Process	4.	True
	5.	Direct costing
Cost Systems	6.	Job costing
	7.	True
Types of Costing	8.	Standard costing
	9.	Activity-based costing

10.12 SUGGESTED BOOKS AND E-REFERENCE

SUGGESTED BOOKS

- Dutta, M. (2009). Cost Accounting: Principles and Practice. Panchsheel Park, New Delhi: Dorling Kindersley (India) Pvt. Ltd.
- Mittal, Dr. D.K. (2006). Cost Accounting. Daryaganj, New Delhi: Galgotia Publications Pvt. Ltd.

E-REFERENCE

- (2019). Retrieved from http://www.futureaccountant.com/

CHAPTER 11

Managerial Decision Making

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LEARNING OBJECTIVES

After studying this chapter, you will be able to:

- Describe the process of decision making and types of costs
- Discuss the contribution margin in detail
- Describe the break-even analysis approach
- Explain the production and marketing decisions

11.1 INTRODUCTION

In the previous chapter, you have studied about the relationship among financial, cost and management accounting. you have also studied the concepts and cost classifications, costing process and cost systems. the typing of costing were discussed at the end of the chapter.

Considering the advent of new technologies, such as automation, artificial intelligence, and Internet of Things (IoT), some critics have started to question the need for managers, particularly mid-managers, in businesses today. In such a scenario, it has become even more crucial for managers to make critical decisions that effectively impact the company's bottom line. Although decision making is a subjective process that only gets better with experience and practical learning, there is a process which new managers can use to logically arrive at decisions. For an organisation to be feasible, it must recover all its costs in the long run. Managers can also use various tools such as the contribution margin approach and the break-even analysis approach for arriving at optimum decisions. These approaches and other tools will help you make effective production and marketing decisions.

This chapter explains the process of decision making, types of costs and contribution margin. Then, it discusses about break-even analysis and production decisions. Marketing decisions has been described at the end of this chapter.

11.2 PROCESS OF DECISION MAKING

The process of managerial decision making is anything but simple. It requires to evaluate various factors and balance the pros and cons before making a decision. Although it is not possible to standardise the process, there are broadly four steps involved:

1. **Define the problem:** What is the problem that needs to be solved? What is the nature of the problem? For instance, your textile mill is steadily losing profits and you want to find the reason for it. To determine the cause of declining profits, you may ask:
   - Is it because of the wrong price?
   - Is it because of poor relations between the workers and the management?
   - Is it because of the use of obsolete technology and/or machinery?

   Thus, to define a problem, you must be perceptive and have a deep insight over the troubling situation.

2. **Develop alternative solutions or courses of action:** After identifying the problem, you must find its different possible solutions. To do so, you must evaluate the variables that can impact the problem. This may require you to develop various hypotheses, which will become your alternative courses of action. For instance, you find that the profits in your textile mill are declining due to the use of obsolete equipment. Then, you would have two alternative courses of action:

   - Update and replace the old equipment with the new one
   - Build a new factory with the latest machinery

   Of these two options, you must choose the one that is more feasible, cost-effective, and profitable.

   Thus, to develop alternative courses of action to solve a problem, you must have:

   - Complete understanding of the actual cause(s) of the problem
   - Creative thinking about the possible ways to remove those factors

   In the beginning, you may come up with several alternatives to solve the problem. You must evaluate them on the basis of their feasibility and narrow the list down to only two or three courses of action.

3. **Evaluate the alternative courses of action:** Once you have finalised two or three possible courses of action, you must start collecting and analysing the relevant data to assess the expected outcome or results from implementing each course of action. You can find the relevant data from the organisational departments, industry, and the government sources. This data can be used in various methods, such as regression analysis, linear programming, and cost-benefit analysis to arrive at an optimum solution. The optimum solution is the one that will solve the problem most profitably and help the organisation to achieve its established objective.

   While selecting an optimal solution to a problem, you may come across various constraints, such as:

   - **Legal constraints:** Laws related to environmental pollution and waste disposal
   - **Financial constraints:** Limited budget
   - **Infrastructural constraints:** Availability of proper infrastructure, insufficient or poor quality of raw materials
   - **Technological constraints:** Old/obsolete technology that reduces the capacity of production

   An effective decision-maker determines the optimal solution under all the possible constraints. You should carefully weigh in the pros and cons of each possible alternative in qualitative as well as quantitative terms. For example, you decide to bring in a new technology for boosting the production capacity of your textile mill. The new method will lower the cost of raw material but will increase the labour costs, maintenance charges, and utility bills. Now, how can you decide whether it is prudent to introduce the new technology without determining the ratio of the expected benefits and costs?

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Now, suppose the new technology:

- Reduces the material costs by (₹ 10,000)
- Increases labour costs by ₹ 6000
- Increases maintenance charges by ₹ 1000
- Increase utility bills by ₹ 2000

The cost-benefit ratio of the new technology will be: ₹ 9000/10000

Clearly the benefits of the new technology exceed the costs by ₹ 1000.

Sometimes, though, it may not be possible to quantify costs and benefits. For instance, you cannot measure intangible benefits such as improvement in morale, customer satisfaction, and competitive advantage. Despite being intangible, these benefits play a crucial role while deciding a course of action. Decisions involving such factors would require you to have a good judgement and experience.

4. **Implement the decision:** After evaluating the alternative solutions to a problem in terms of their tangible and intangible costs and benefits, you are in a good position to choose the final decision. Before that, you may collect some more information to substantiate your decision. However, make sure that while doing so you do not waste a lot of time in procrastination, as it would be wastage of cost, effort, and time. Being a manager requires you to take calculated risks. You can never have 100% guarantee; if you've found that a solution is the most feasible in the situation, then implement it.

   After implementing a solution, you must continually monitor it to evaluate whether it is delivering the expected results. If it is not so, then you should take corrective measures. Active monitoring is essential because of the constantly changing internal and external environment. From time to time, you may need to adjust your solution according to the external changes till the desired objective is achieved.

SELF ASSESSMENT QUESTIONS

1. Every managerial decision-making process starts with:
   a. Training
   b. Problem definition
   c. Environmental assessment
   d. Team building
2. One should at least have five possible alternative courses of action to a problem. (True/False)

11.3 TYPES OF COSTS

To make effective production plans, you should also have a good understanding of the cost and output volume behaviour. Broadly, there are three types of costs that may impact the production volume:

- **Fixed costs:** As the name suggests, these costs remain fixed irrespective of the changes in the output. These costs are also called overheads. For example, even if your factory produces zero output, you would still need to pay the property taxes, insurance, and rent.

Examples of fixed costs include:

- Depreciation charges
- Property tax
- Cost of land or factory
- Legal fees
- Insurance
- Rent
- Managers' and supervisors' salaries
- Interest paid on long-term borrowings
- Normal profit

Fixed costs are a function of time. They are incurred due to creation of capacity and are constant of capacity utilisation. Figure 1 shows that since the total fixed costs do not change with the output volume, the total fixed costs curve is a horizontal line:

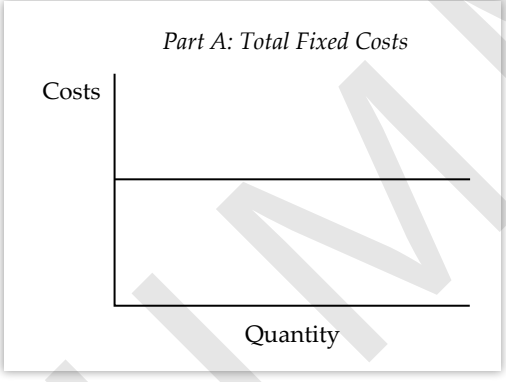

FIGURE 1: Total Fixed Costs vs. Output

By dividing the total fixed cost with the output quantity, you calculate the unit fixed costs or average fixed costs. Figure 2 shows that since fixed costs are divided by an increasing quantity, the unit fixed costs will slope down continuously:

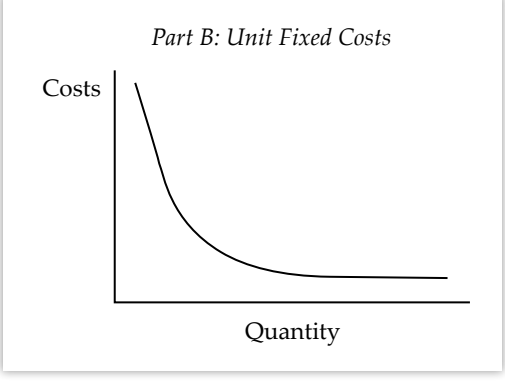

FIGURE 2: Unit Fixed Costs vs. Output

- **Variable costs:** As the name suggests, these costs change depending on the output volume produced. These costs are also known as direct costs. For example, if a

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car manufacturer produces more cars, then its raw material costs will increase. Examples of variable costs include:

- Raw material costs
- Cost of electricity and other utilities
- Workers' wages
- Transportation and distribution costs

These variable costs change directly with the output. The total variable costs slope up increasingly as per the law of diminishing returns. According to this law, when a production unit attempts to increase its output by increasing one variable input such as labour, while keeping another variable fixed such as machinery, then the extra output from each additional, marginal unit of the variable factor will finally reduce. Figure 3 shows the relation of total variable costs with the output:

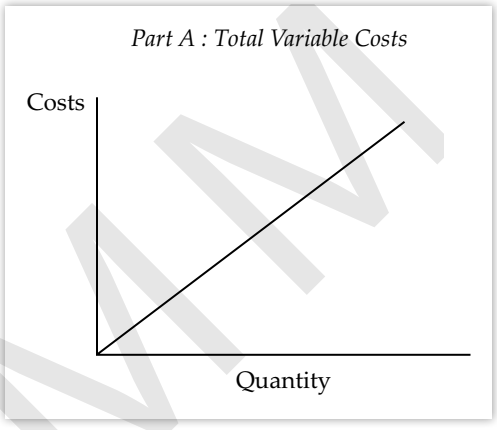

FIGURE 3: Total Variable Costs vs. Output

By dividing the total variable costs with quantity, you arrive at average variable costs. Figure 4 shows the relation of average variable costs with the output:

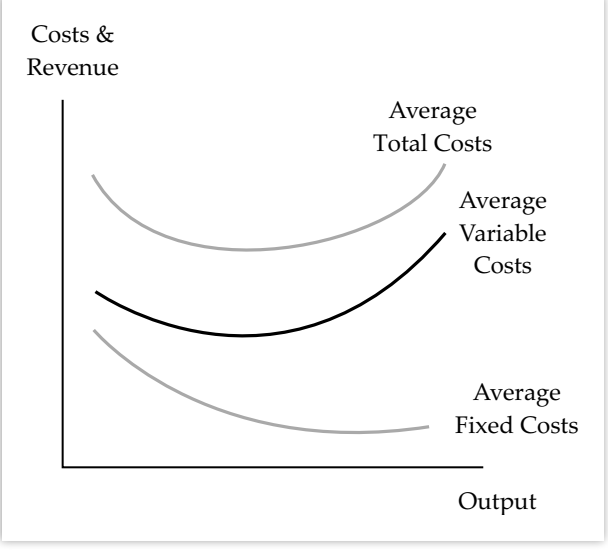

FIGURE 4: Average Variable Costs vs. Output

Source: *www.economicsonline.co.uk*

The average variable costs (AVC) curve is U-shaped due to the principle of variable proportions. As per this principle, the AVC curve has three phases:

- **AVC slopes down:** This means that initially the average variable costs will decline due to the increasing returns to the variable factors.
- **AVC reaches a minimum point:** The average variable costs will decline till a point as the returns will be constant.
- **AVC rises again:** After the minimum point, the average variable costs will start to increase again due to the declining returns to variable factors.

❍ **Semi-variable costs:** Some costs do not come under the umbrella of either the fixed or variable costs. These are known as semi-variable costs. For example, the phone bill is a mix of a fixed tariff plus a variable charge which is applicable after a certain number of calls. Figure 5 shows some common semi-variable cost patterns:

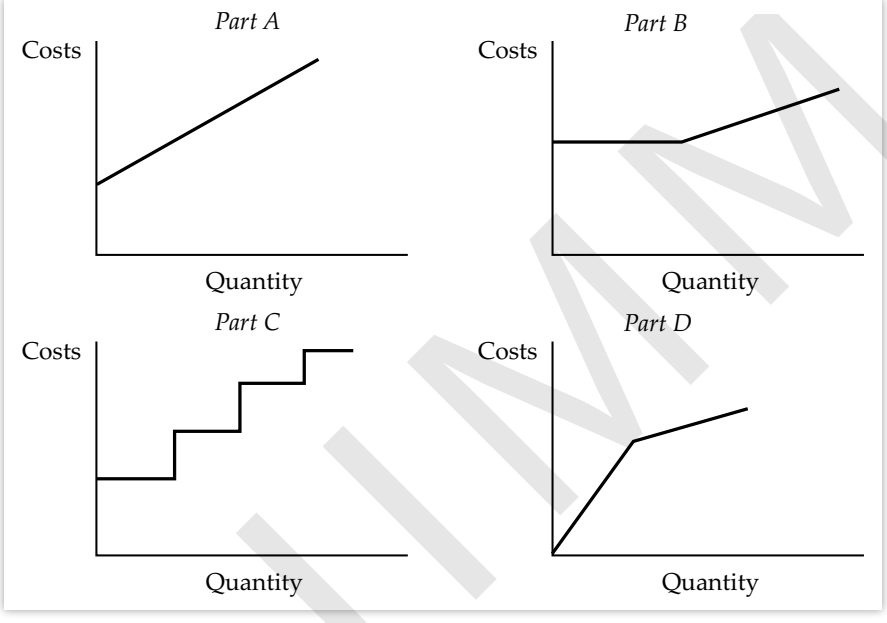

Figure 5: Semi-Variable Cost Patterns

Self Assessment Questions

3. Which of the following is a direct cost?
   a. Rent
   b. Setup cost
   c. Normal profit
   d. Raw material cost
4. The average variable cost curve will:
   a. Slope down, reach a minimum point, and then rise again
   b. Slope up at an accelerating rate
   c. Be constant with the output
   d. Slope down with the output

Notes

11.4 CONTRIBUTION MARGIN

Suppose you want to find out whether a particular product/service produced by your organisation is profitable. You want to know how much profit it contributes relative to that of other products/services. For such cases, you can use contribution margin (CM).

CM = Sales – Variable cost

CM is the difference between the sales revenue of a product/service and its variable costs. Also, contribution margin ratio can be calculated in order to express contribution margin in percentage. Its formula is:

$$\text{CM Ratio} = \frac{(\text{Sales revenue} - \text{Variable costs})}{\text{Sales revenue}}$$

Therefore, CM is the surplus profit that calculates the sales revenue left after the deduction of variable costs of the product/service. This amount will cover the fixed costs of the organisation or contributes to the overall profits of the organisation. For example, the contribution margin of a product in your organisation is 25%, which is much lower than that of other products. Then, to increase its profit margin, you can make decisions such as:

- Is it possible to reduce the variable costs to increase its profit margin?
- Is it feasible to increase the product price to increase its sales revenue?

If any of the above options is not practical, then you may choose to drop this unprofitable product line to free up resources and allocate them for other more profitable products.

Example: Your organisation sells three products, A, B, and C. Table 1 displays the volume, price and cost of these products:

Table 1: Calculation of Contribution Margin – Data

	A	B	C	Total
Quantity	2000	1200	800	4000
Sales mix	50%	20%	30%	100%
Sales price	60	50	40	
Variable costs	30	15	16	
Fixed costs	15	12	8	
Full costs	30	24	42	

Table 2 displays the CM per unit and CM ratio of each product:

Table 2: Calculation of Contribution Margin – Results

	A	B	C
Sales price	60	50	40
Variable costs	30	15	16

	A	B	C
CM per unit = Sales price per unit – Variable costs per unit	30	35	24
CM ratio = $\frac{\text{CM per unit}}{\text{Sales price per unit}}$	50%	70%	60%

Therefore, product B is the most profitable to the organisation, while product A is the least profitable.

What happens if you need to find out the CM of a product in a large departmental store? In that case, it may not be feasible to calculate the CM per unit (i.e., product by product basis). Then, you can calculate the CM of an entire product family using a CM statement. A format of CM statement is shown in Figure 6:

Sales	XX
Less: Variable Costs	XX
Contribution Margin	XX
Less: Fixed Costs	XX
Operating Income	XX

Figure 6: Format for a CM Statement

Self Assessment Questions

5. Contribution margin is the difference between:
   a. Variable costs – Fixed costs
   b. Sales revenue – Direct costs
   c. Sales revenue – Fixed costs
   d. Sales revenue + Overheads
6. A dairy company has four product lines: flavoured milk (contribution margin 64%), cheese (34%), frozen yoghurt (23%), and desserts (47%). Which product line can be dropped for optimum resource utilisation?
   a. Cheese
   b. Frozen yoghurt
   c. Desserts
   d. Flavoured milk

11.5 BREAK-EVEN ANALYSIS

Suppose you have launched a new product line in the company. It will take some time for the sales revenues to cover the total costs incurred in developing, promoting, and distributing the product. The point at which the total revenues are equal to the total costs of the product is called the break-even point. The break-even analysis determines the relationship between the product volume, costs, revenues, and profits. Also called the cost-volume-profit analysis, it will help you to plan profit of a product by changing the price, volume, or costs of the product.

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To use this accounting tool, you must consider the following basic assumptions:

- **Cost certainty:** The costs of your organisation are divided into fixed costs and variable costs. Since fixed costs remain fixed and variable costs vary proportionally to volume, the behaviour of total costs is predictable. If these cost assumptions are valid over the relevant range of volume over which the organisation is most likely to operate, then the break-even analysis is a useful tool to estimate the profit.
- **Fixed unit selling price:** The total revenue of the organisation is a linear function of the output. This is a valid assumption for organisations with a strong market for their products; not so much for others. Such organisations with a weak market for their products may have to reduce the price to achieve higher sales.
- **Stable product mix:** The third assumption is that the product mix of the organisation is stable. This will help to determine the average variable profit ratio of the product mix. Here, keep in mind that the actual mix of products may differ from the planned mix. If there is a lot of difference between the two, then the break-even analysis may have a limited applicability.
- **Fixed inventory:** The last assumption is that the volume of sales is the same as the volume of production during an accounting period. In other words, there is change in the inventory levels during the period. This assumption is necessary because the cost-even analysis balances the total costs with the total revenues for a specific period.

The formula for break-even analysis is as follows:

$$\frac{\text{Fixed cost}}{\text{Selling price per unit} - \text{Variable cost per unit}}$$

Let us understand the break-even analysis with the help of an example:

Example: A stationery manufacturing company produces ball pens.

Fixed cost of the company = ₹ 2 lakhs per year

Average unit selling price = ₹ 6

Unit variable cost = ₹ 4

Output volume = 1,40,000

Find break-even analysis.

Solution:

$$\text{Break-even point} = \frac{\text{Fixed cost}}{\text{Selling price per unit} - \text{Variable cost per unit}}$$

$$= \frac{2,00,000}{6-4} = \frac{2,00,000}{2}$$

$$= 1,00,000$$

Hence, the volume of 1 lakh units is the break-even point of the production of ball pens for the company.

Let us understand this with the help of graphical analysis.

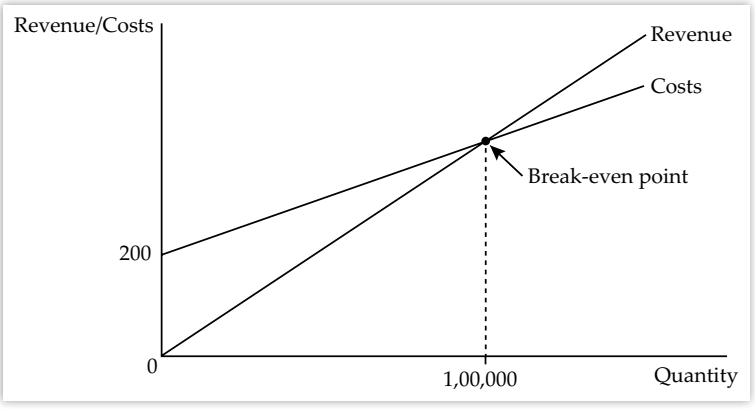

FIGURE 7: Cost-Volume-Profit (Break-Even) Graph

- At volume < 1 lakh units, Total revenue < Total cost
- At volume = 1 lakh units, Total revenue = Total cost
- At volume > 1 lakh units, Total revenue > Total cost

The profit level for a given volume = Total revenue corresponding to that volume – Total cost corresponding to that volume

Figure 8 illustrates this relationship between profit and volume:

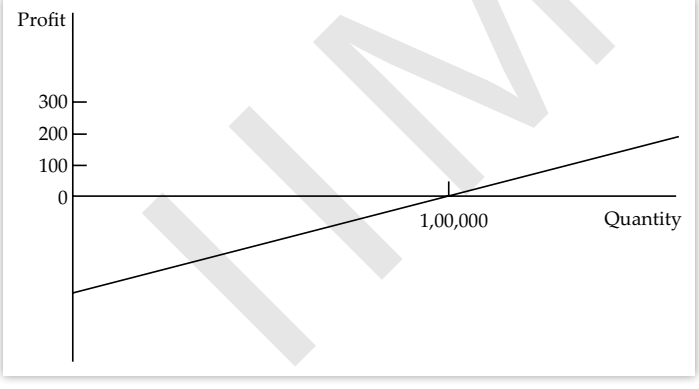

FIGURE 8: Profit-Volume Graph

The profit-volume graph in Figure 8 is derived by plotting the difference between the heights of the total revenue line and the total cost line in the cost-volume-profit graph in Figure 7. The slope of the profit-volume line (Figure 8) is the difference between the slopes of the total revenue line and the total cost line of the cost-volume-profit graph (Figure 7).

Algebraic Analysis

The following equation determines the relationship between the revenues, cost, volumes, and profits (in Figure 7):

$\pi = TR - TC$

$= PQ - (VQ + F)$

$= Q(P - V) - F$

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Here,

π = Operating profit

TR = Total revenues

TC = Total costs

P = Unit selling price

V = Unit variable cost

F = Fixed costs of the period

Q = Quantity produced and sold

(P – V) = Unit contribution margin (i.e., difference between the unit selling price and the unit variable cost)

You can use the break-even analysis to calculate the following values:

- **Profit for a given quantity level:** The profit for a given quantity level is:

  $\pi = Q(P - V) - F$

  Thus, if the quantity of ball pens produced and sold is 140,000 units, then the profit is:

  $\pi = 140000(2) - 200000 = ₹ 80,000$

- **Quantity required for achieving a given level of profit:** The formula to calculate the quantity required for an accomplishing a given target of profit is:

  $$Q = \frac{\pi}{(P - V)} + \frac{F}{(P - V)}$$

  Thus, if the stationery manufacturer wants to achieve a profit of ₹ 180,000, then it should manufacture the following quantity of ball pens:

  $$Q = \frac{180000}{2} + \frac{200000}{2} = 90000 + 100000 = 1,90,000 \text{ units}$$

- **Break-even sales in rupees:** The formula to calculate this is:

  Break-even sales in rupees = Break-even quantity × Unit selling price

  $$= \frac{F}{1 - (V / P)} = \frac{2,00,000}{1 - (4 / 6)} = ₹ 6,06,061$$

  Thus, the break-even analysis is a useful tool to calculate the above values. However, it has the following limitations:

- **Not applicable to complex cost structures:** Many companies have complicated cost structures, which cannot be simply classified as fixed or variable costs. The break-even analysis fails in those cases.

- **Complications in multiple products:** The break-even analysis is particularly useful for single product companies. If a company has several products, then the break-even analysis assumes a standard product mix as a unit of production. This assumption may be difficult in cost allocation.
- **Non-consideration of the time value of money:** The break-even analysis does not consider the time value of money. This may be acceptable if costs and revenues occur more or less at the same time. However, this is rare in real life. For instance, fixed costs generally occur before variable costs, and both of these costs occur before sales revenues. In such cases, the costs and revenues must be taken in present value terms.
- **Non-linear relationships:** The break-even analysis assumes that the unit variable cost (V) and the unit selling price (P) will remain constant per unit of output. However, this linear relationship is likely to change due to factors such as competition and realisation of economies of scale. Thus, the result of the break-even analysis may not be accurate. To overcome this limitation, you can include non-linear relationships in the analysis, but that may deprive this practical tool of its unique selling point, which is its simplicity.

In conclusion, the break-even analysis is a useful tool for estimating profit in simple cases. For complex cases, other complicated tools should be used.

Self Assessment Questions

7. The break-even analysis is the point where:
   a. Total revenues > Total costs
   b. Total revenues = Total direct costs
   c. Total revenues < Total fixed costs
   d. Total revenues = Total costs
8. If the fixed price of a battery manufacturing company is ₹ 2 lakhs, the unit selling price is ₹ 100, and the unit variable cost is ₹ 50, then what is the break-even quantity at which the profit is zero?
   a. 1500 batteries
   b. 2000 batteries
   c. 4000 batteries
   d. 4300 batteries

11.6 PRODUCTION DECISIONS

Armed with the accounting tools of contribution margin analysis and break-even analysis, you are well-positioned to make objective decision about production. Here, you need to focus on costs and revenues that are estimated to vary between the alternatives in future. This type of analysis is called the differential analysis model. This model is an extension of the break-even model.

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Figure 9 displays the differential analysis model:

	Alternative	*Status Quo*	*Difference*
Revenue	R_1	R_0	ΔR
Less: Variable Costs	V_1	V_0	ΔV
Contribution	$R_1 - V_1$	$R_0 - V_0$	$\Delta R - \Delta V$
Less: Fixed Costs	F_1	F_0	ΔF
Operating profit	Π_1	Π_0	$\Delta \Pi$

FIGURE 9: Differential Analysis Model

There are three columns in the above model:

- **Alternative:** This represents the alternative being evaluated.
- **Status quo:** T his represents the baseline.
- **Difference:** This represents the difference between the alternative and the baseline.

Using the above model, let's consider the various decisions related to production. The main focus of the decision-making is to determine the incremental operating profit.

Production Decision 1: Whether to extend the processing of a product or not?

A company manufactures a product and sells it to other companies, who process it further and sell it to other industries. The income statement of the company is as follows:

Normal production of the company per month:	40,000	units
Unit selling price (₹):	70	
Standard cost per unit (₹):	50,	which includes:
Direct materials:	21	
Direct labour:	9	
Variable manufacturing overhead:	7	
Fixed manufacturing overhead:	5	
Variable selling expenses:	5	
Fixed selling expense:	3	
Unit profit before tax (₹):	20	

Now the company's management is considering forward integration, i.e., whether the company should process the product further to sell it directly to the industrial users. Then, the extra costs in the income statement will be as follows:

Unit selling price (₹):	~~70~~ 90	
Direct labour:	~~9~~ 3	per unit

Variable manufacturing overhead: ₹ 4 per unit

Fixed manufacturing overhead: ₹ 1 per unit

Variable selling expenses: ₹ 3 per unit

Fixed selling expenses: ₹ 1 per unit

You have to decide whether the company should process the product further.

Incremental profit analysis: Before analysing the alternative, express the current fixed costs in standard amounts per unit of product rather than per unit of volume, to avoid inaccurate calculations. Thus, the fixed manufacturing overhead cost is ₹ 2,00,000 and the fixed selling expense is ₹ 1,20,000.

Figure 10 shows the differential analysis of further processing of the product.

Particulars	Alternative (Further Processing)		Status Quo		Difference
	Per Unit	Total (₹) (No. of units produced = 40,000)	Per Unit	Total (₹) (No. of units produced = 40,000)	(₹)
Revenue (A)	**90**	**3,600,000**	**70**	**2,800,000**	**800,000**
Variable Costs					
Direct Material	21	840,000	21	840,000	
Direct Labour	12	480,000	9	360,000	
Manufacturing Overhead	11	440,000	7	280,000	
Selling Overhead	8	320,000	5	200,000	
Total variable expenses (B)	**52**	**2,080,000**	**42**	**1,680,000**	**400,000**
Contribution	38	1,520,000	28	1,120,000	400,000
Fixed expenses					
Manufacturing Overhead	6	240,000	5	200,000	
Selling Overhead	4	160,000	3	120,000	
Total fixed expenses (C)	**10**	**400,000**	**8**	**320,000**	**80,000**
Operating Profit (A–B–C)	**28**	**1,120,000**	**20**	**800,000**	**320,000**

Figure 10: Differential Analysis of Further Processing of a Product

From Figure 10, you can see that further processing of the product increases the operating profit by ₹ 320,000, therefore it is the preferable alternative to status quo. While making this decision, you can also consider some other aspects, such as:

- Whether the company has the technical know-how and skill to process the product further?
- What extra working capital will be required for further processing?
- How much flexibility does the company have in hiring and retrenching staff?
- What is the marketing setup for distributing the finished product?

Although the above aspects are non-financial considerations, they are important while considering the producing decision.

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Production Decision 2: Whether to manufacture or buy a part?

A car manufacturing company produces a wide range of auto components and parts. It also procures various parts from external suppliers. One of the parts that it manufactures in-house is Part No. 101. The company requires 2000 units of this part each month.

The standard cost per unit is as follows:

Direct material:	50
Direct labour:	30
Variable manufacturing overhead:	25
Fixed manufacturing overhead:	25
Total cost per unit:	130

The materials manufacturer has suggested that if the company purchases this part from an external supplier at the cost of ₹ 110 per unit, then it would be a better cost-saving alternative for the company. Purchasing the part from an external supplier would increase the fixed clerical costs by ₹ 1600 and the variable handling cost by ₹ 6 per unit. He has also claimed that discontinuing the production of Part No. 101 will not vary the total fixed manufacturing overheads.

You want to evaluate whether to continue manufacturing this part or purchase it.

Incremental profit analysis: A casual analysis of alternative reveals that the company would save money if it purchases the part from outside because the cost of manufacturing the part is more than the cost of purchase. However, a closer inspection indicates that a part of the standard cost of ₹ 130 per unit represents the allocation of fixed manufacturing overhead. This allocation is suitable for inventory valuation purposes, provided the system of absorption costing and a reasonable overhead allocation method are used. However, this cost is irrelevant for decision-making purposes because there will be no change in fixed manufacturing overheads if the company decides to discontinue the production of the part.

Therefore, this decision only requires you to consider variable manufacturing costs, which include direct material, direct labour, and variable manufacturing overhead.

The analysis on whether to make or buy the product is as follows:

Make the Part

Direct material:	50/unit
Direct labour:	30/unit
Variable manufacturing overhead:	25/unit
Total variable manufacturing cost:	105/unit
Variable manufacturing cost of 2000 units:	₹ 210,000

Buy the Part

Purchase cost:	110/unit	
Purchase cost of 2000 units:	₹ 220,000	…(1)
Handling cost:	6/unit	
Handling cost of 2000 units:	₹ 12000	…(2)
Clerical cost:	₹ 1600	…(3)

Variable buying cost of 2000 units: (1) + (2) + (3) = ₹ 233,600

Since the cost of manufacturing the part is much lower than that of purchasing it, the company should continue to manufacture it. This decision should be considered along with the following aspects:

- What would be the value of the released facilities if the part's manufacturing is discontinued?
- What is the reliability of the external supplier?
- How will you control the quality of the external supplier?
- What would be the labour issues or motivational issues caused if workers are retrenched?

SELF ASSESSMENT QUESTIONS

9. The differential analysis represents the difference between which two columns?
   a. Alternative and Status quo
   b. Profit and loss
   c. Variable costs and Fixed costs
   d. Fixed costs and net revenues
10. While using the differential analysis for a production decision, the final decision should objectively consider only the quantitative aspects. (True/False)

11.7 MARKETING DECISIONS

Most managers face the critical decision of setting an optimum price of a product that will generate profitable sales with respect to competitors. Pricing of a product is a particularly crucial decision when:

- A new product is going to be launched
- A price has to be adjusted to respond to a new competitor
- A price has to be quoted in a sealed or open bid

While making a pricing decision, you should keep in mind the following key points related to the role of costs in pricing.

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Economic Theory and Pricing

The pricing of a product depends on the market conditions.

Perfectly Competitive Market

A perfectly competitive market decides the price, where organisations will only have to decide on their production volume. Your organisation can sell any quantity of the product at the given market price. If you decide to sell at a higher price, then the product will not sell. If you choose to lower the price, then you will let go of your profits. Therefore, your organisation does not have the flexibility to charge a set price. You can only decide how much quantity to produce to attain profitability.

To understand how prices, influence production decision in a perfect competition, consider Figure 11:

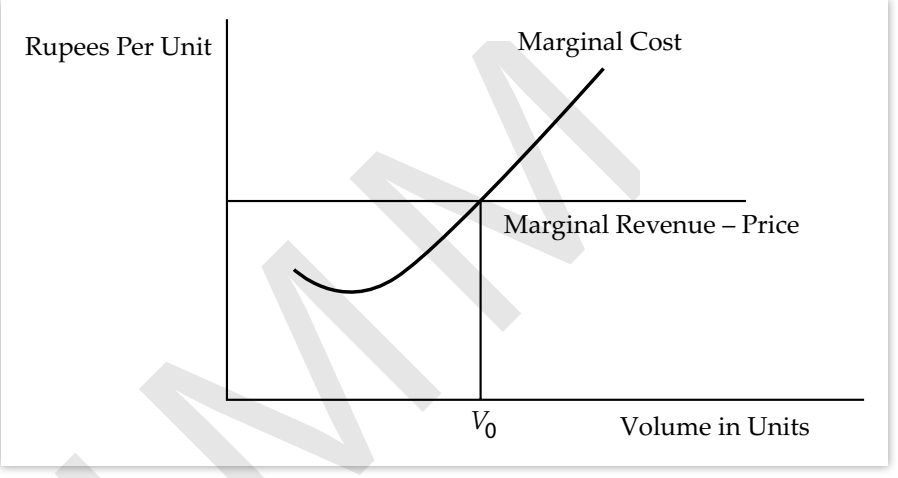

FIGURE 11: Marginal Cost and Marginal Revenue in Perfect Competition

Marginal cost is the incremental cost that is incurred from producing and selling one extra unit. As the production volume increases, the marginal cost will typically decline up to a certain point because of the economies of scale. However, after that point, the marginal cost will increase with production volume due to diseconomies of scale.

The marginal revenue is the incremental revenue that is achieved from the sale of an extra unit. In perfect competition, the marginal revenue curve is a horizontal line because the price per unit remains the same as the production volume increases.

Now, as long as the marginal cost is less than the price of the product, it is profitable to increase the production. When marginal cost is higher than the marginal revenue, then it would be unprofitable to increase the production volume. Thus, the maximum profit is achieved only when the organisation produces units.

Imperfectly Competitive Market

In this type of market, your organisation's price will affect the quantity of product sold. Reducing the price of the product will typically generate more sales.

Figure 12 shows a typical demand curve (or the average revenue curve) for imperfect competition:

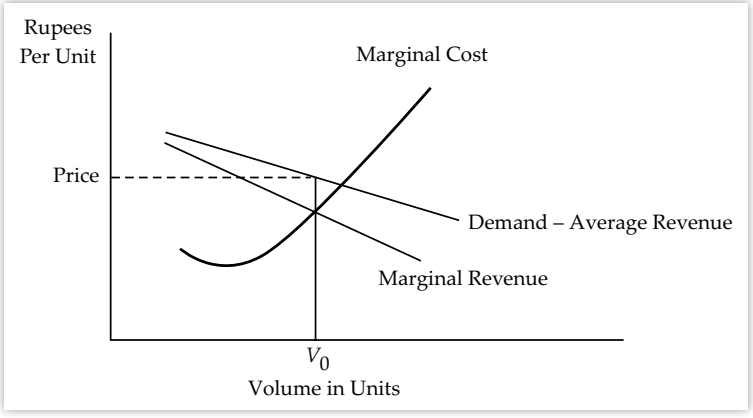

FIGURE 12: Marginal Cost and Marginal Revenue in Imperfect Competition

The above graph shows the volume of sales at each possible price. The price of all units sold has to be reduced to sell an additional unit. Thus, the marginal revenue curve lies below the demand curve. The marginal revenue for selling one extra unit is less than the price at which it is sold because the price of all units sold has to be lowered as well.

Maximisation of Total Contribution

In real life, managers seldom calculate marginal cost and marginal revenue curves. Instead, they evaluate selected volumes and use their judgement to forecast the impacts of additional production and sales on profit.

Suppose an electronics company estimates that:

- 60,000 television units can be sold @ selling price of ₹ 50,000 per unit
- 1,00,000 units can be sold @ selling price of ₹ 55,000 per unit

Variable cost per unit @ both production levels: ₹ 40,000

Since both volumes are within the relevant range, fixed costs remain unchanged by the variations in volume. What price should the company charge for the television unit?

To find a solution, calculate the incremental revenues and incremental costs.

Incremental revenue: $(100{,}000 \times 55{,}000) - (60{,}000 \times 50{,}000) = 2{,}000{,}000{,}000$

Incremental costs: $40{,}000 \times 40{,}000 = 1{,}600{,}000{,}000$

Difference: ₹ 400,000,000

An alternative solution is to calculate the total contribution for each volume and price:

Contribution @ 55,000 = $(55{,}000 - 40{,}000) \times 100{,}000 = 1500{,}000{,}000$

Contribution @ 50,000 = $(50{,}000 - 40{,}000) \times 60{,}000 = 600{,}000{,}000$

Difference ₹ 900,000,000

Notes

Self Assessment Questions

11. In a perfectly competitive market, the marginal cost curve will:
    a. Rise incrementally
    b. Be a horizontal line
    c. First decline and then rise
    d. First rise and then decline
12. In an imperfectly competitive market, the marginal revenue for selling an additional unit is:
    a. Less than the selling price
    b. More than the selling price
    c. Equal to the selling price
    d. Independent of the selling price

11.8 SUMMARY

- The process of managerial decision making starts with defining the problem, developing alternative solutions, evaluating the alternative solution, and implementing the solution.
- Fixed costs remain fixed irrespective of the variation in the output volume. On the cost-quantity graph, the total fixed cost curve is a horizontal line while the unit fixed cost curve slopes down.
- Variable costs change with change in the output quantity. On the cost-quantity graph, the total variable cost curve slopes up, while the average variable cost curve is U-shaped due to the principle of variable proportions.
- Semi-variable costs are a mix of fixed and variable costs.
- Contribution margin is the difference between the sales revenue of a product and its variable cost. It helps to estimate the surplus left to cover the fixed cost and contribute to the overall profit of the organisation.
- The break-even point is the point at which the total revenues are equal to the total costs of the product. The break-even analysis determines the relationship between the product volume, costs, revenues, and profits.
- The differential analysis model compares the alternative solution with the status quo and calculates the difference.
- While making a pricing decision, managers should consider whether the market is perfectly or imperfectly competitive, evaluate selected volumes and use their judgement to forecast the impacts of additional production and sales on profit, and target pricing.

11.9 KEY WORDS

- **Production decision:** A decision relating to production choices that a company makes to minimise production cost and maximise revenue.
- **Product mix:** The total range of products that a company offers for sale.
- **Standard cost:** The estimated cost to be incurred during the production of a product.
- **Incremental profit:** The positive difference in profit that arises as a result of a specific managerial decision.

11.10 CASE STUDY: NETFLIX BREAK-EVEN ANALYSIS

During the last 20 years, Netflix has emerged as a major disruptor within the entertainment industry. Founded in 1998 as an online DVD rental store, Netflix has transformed into the world's premier subscription-based streaming of a library of film and television programs. From just about 41 million subscribers in 2013, the company's worldwide subscriber base has grown phenomenally to more than 100 million subscribers in 2018. Most of its subscribers are from outside the US.

Today, Netflix is valued at $3.7 billion. However, when it started out, it suffered considerable losses in its initial years and even had to lay off a third of its employees. The company posted its first profit in 2003. It started moving away from the traditional business of DVD rental to online video-on-demand subscription service in 2007.

In 2016, the company had more than 100 million subscribers, but did it break even? This case study analyses whether Netflix was able to achieve the break-even point in 2016 in the US and internationally.

Netflix break-even analysis for US customers (as of 2016):

Domestic Streaming Segment

	As of/ Year Ended December 31,		
	2016	2015	2014
		(in thousands, except revenue per mem	
Memberships:			
Net additions	4,693	5,624	5,694
Memberships at end of period	49,431	44,738	39,114
Paid memberships at end of period	47,905	43,401	37,698
Average monthly revenue per paying memberships	$ 9.21	$ 8.50	$ 8.14
Contribution profit:			
Revenues	$ 5,077,307	$ 4,180,339	$ 3,431,434
Cost of revenues	2,855,789	2,487,193	2,201,761
Marketing	382,832	317,646	293,453
Contribution profit	1,838,686	1,375,500	936,220
Contribution margin	36%	33%	27%

FIGURE: Domestic Streaming Segment of Netflix as of 2016

Source: *https://www.wallstreetmojo.com/break-even-point/*

- Acquisition cost per new user in 2016:

$$\frac{\text{Marketing expenditure}(2016)}{\text{Net additions}(2016)} = \frac{382.8}{4.693} = \$81.6$$

- Acquisition cost per new user in 2015:

$$\frac{\text{Marketing expenditure}(2015)}{\text{Net additions}(2015)} = \frac{317.64}{5.624} = \$56.5$$

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- Acquisition cost per new user in 2014:

$$\frac{\text{Marketing expenditure}(2014)}{\text{Net additions}(2014)} = \frac{293.45}{5.694} = \$51.5$$

In the US market, Netflix was facing two major problems:

- Declining growth of US subscribers
- Increasing acquisition cost per subscriber. There was a 50% increase in the acquisition cost in 2016 as compared to 2015

Let's determine the break-even point of Netflix to offset this domestic acquisition cost per subscriber. In this scenario, only two types of variable costs are considered:

- Costs of revenue
- Marketing costs

Costs such as General and Admin costs, other expenses, and interest expenses have been excluded from the break-even analysis. The break-even analysis is as follows:

As of 2016:

- Average monthly revenue per paying membership: $9.21 …(a)
- Contribution margin = Revenues - (Cost of revenues + Marketing costs) = 36% …(b)
- Contribution per subscriber = 9.21 × 36% = (a) × (b) = 9.21 × 36% = $3.32 …(c)
- Acquisition cost per new subscriber = $ 81.6 …(d)
- Break-even point (in months) = (d)/(c) = $81.6/3.32 = 24.6 months

Thus, Netflix will take more than 2 years to break-even in the US market.

Netflix break-even analysis for international customers (as of 2016):

International Streaming Segment

	As of/ Year Ended December 31,		
	2016	2015	2014
			(in thousands, except revenue per mem
Memberships:			
Net additions	14,341	11,747	7,347
Memberships at end of period	44,365	30,024	18,277
Paid memberships at end of period	41,185	27,438	16,778
Average monthly revenue per paying memberships	$ 7.81	$ 7.48	$ 8.34
Contribution profit:			
Revenues	$ 3,211,095	$ 1,953,435	$ 1,308,061
Cost of revenues	2,911,370	1,780,375	1,154,117
Marketing	608,246	506,446	313,733
Contribution profit	(308,521)	(333,386)	(159,789)
Contribution margin	(10)%	(17)%	(27)%

FIGURE: International Streaming Segment as of 2016

Source: *https://www.wallstreetmojo.com/break-even-point/*

- Acquisition cost per new user in 2016:

$$\frac{\text{Marketing expenditure}(2016)}{\text{Net additions}(2016)} = \frac{608.24}{14.341} = \$42.4$$

- Acquisition cost per new user in 2015:

$$\frac{\text{Marketing expenditure}(2015)}{\text{Net additions}(2015)} = \frac{506.44}{11.747} = \$43.1$$

- Acquisition cost per new user in 2014:

$$\frac{\text{Marketing expenditure}(2014)}{\text{Net additions}(2014)} = \frac{313.73}{7.347} = \$42.7$$

As of 2016:

- Average monthly revenue per paying membership: $7.81 …(a)
- Contribution margin = Revenues - (Cost of revenues + Marketing costs) = (10%) …(b)

Thus, despite negative contribution, Netflix is aggressively added international subscribers to its base. Due to negative contribution margin, the company still has a lot to cover in revenues before they can attain break-even point.

Conclusion

Break-even analysis is useful for a single product businesses and start-ups. However, it has limited applicability for service industry or multi-product firms.

Source: https://www.wallstreetmojo.com/break-even-point/

QUESTIONS

1. What is the Break-Even Point Formula when the total revenues are equal to the total costs? How do you arrive at this formula?

   (**Hint:** Number of units produced = Fixed cost/(Price per unit – Variable cost))

2. What are the limitations of break-even analysis?

   (**Hint:** Unrealistic assumptions such as the change of price with output level and difference between sales and output. Also, most firms having more than one product for which it is difficult to calculate break-even point.)

11.11 EXERCISE

1. What is the process of managerial decision making?
2. What are the different types of costs to be considered while making decisions?
3. What is the contribution margin? How does it help managers in making decisions?
4. What is break-even analysis? Why is it used? Illustrate with an example.

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5. What are the different production decisions that managers have to face?
6. What should managers consider while setting prices of their products?

11.12 ANSWERS FOR SELF ASSESSMENT QUESTIONS

Topic	Q. No.	Answer
Process of Decision Making	1.	b. Problem definition
	2.	False
Types of Costs	3.	d. Raw material cost
	4.	a. Slope down, reach a minimum point, and then rise again
Contribution Margin	5.	b. Sales revenue – Direct costs
	6.	b. Frozen yoghurt
Break-Even Analysis	7.	d. Total revenues = Total costs
	8.	c. 4000 batteries
Production Decisions	9.	a. Alternative and Status quo
	10.	False
Marketing Decisions	11.	c. First decline and then rise
	12.	a. Less than the selling price

11.13 SUGGESTED BOOKS AND E-REFERENCES

SUGGESTED BOOKS

- Arora, M. (2012). *A Textbook of Cost and Management Accounting*. New Delhi: Vikas Publishing House PVT LTD.
- Gupta, M. (2010). *Cost Accounting for CA-PCC-Course*. [Place of publication not identified]: S Chand & Co Ltd.

E-REFERENCES

- Managerial Decision-Making Process (5 Steps). (2019). Retrieved from http://www.economicsdiscussion.net/decision-making/managerial-decision-making-process-5-steps/6099
- Contribution Margin. (2019). Retrieved from https://www.readyratios.com/reference/analysis/contribution_margin.html

CHAPTER 12

Introduction to Budgeting

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LEARNING OBJECTIVES

After studying this chapter, you will be able to:

- Explain the concept of strategy and strategic planning
- Describe the process of budget preparation
- Explain the elements of master budget
- Describe the concept of flexible budgeting
- Explain variance analysis
- Describe the human aspects of budgeting

12.1 INTRODUCTION

In the previous chapter you have studied about the process of decision making. You also studied the types of cost, contribution margin, break-even analysis and production decisions. Marketing decisions were discussed at the end of the chapter.

A budget helps you to project your business plan quantitatively. It introduces the discipline that a business needs to fund and manage its operations. It enables you to focus on the business plan and compels you to practise economy in your business activities. Effective companies use a comprehensive and consistent budget for their operations and within the available resources and constraints. A budget compels the management to plan for the future. It enables the management to coordinate the complex business operations and provides a medium for communicating future plans. It serves as a baseline against which the actual performance is evaluated.

In this chapter, you will study about the concept of budgeting. The chapter will also introduce you to the concepts of strategic planning, budget preparation, master budget, flexible budget, variance analysis and human aspects of budgeting.

12.2 CONCEPT OF STRATEGY AND STRATEGIC PLANNING

Before preparing a budget, you must have a clear idea about the strategic direction of your organisation. Strategy is defined as the broad direction to which your organisation is headed. Your organisation's strategy can be defined as the best fit between the organisation's core competencies and external opportunities, as shown in Figure 1:

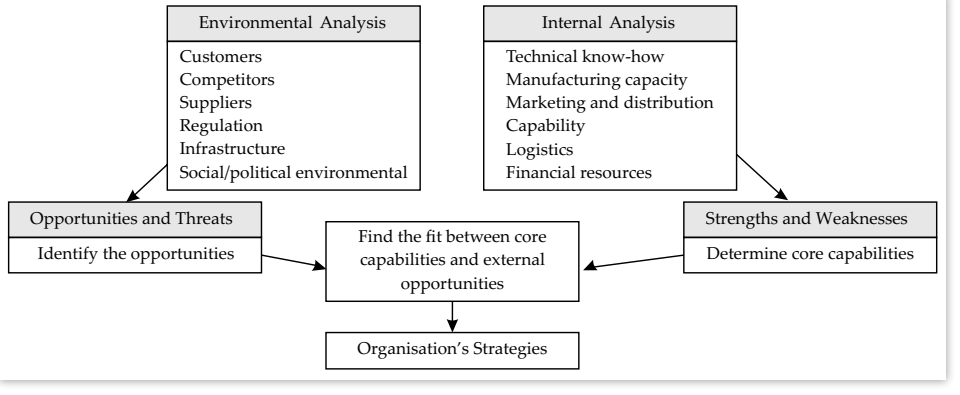

Figure 1: Development of Business Strategy

Kenneth R. Andrews, an American academician, proposed a two-level strategy formulation for multi-business organisations. These two levels are:

- **Corporate level:** Strategy at the corporate level includes key issues such as:
  - What should be the nature of businesses?
  - How much resources should be allocated to each business?

To formulate the strategy at the corporate level, you can use portfolio planning tools, such as General Electric's Spotlight Matrix (Figure 2). The Spotlight Matrix is a 3 x 3 matrix that evaluates the businesses of an organisation in terms of the following dimensions:

- **Business strength:** How strong is the organisation relative to its competitors?
- **Industry attractiveness:** What is the potential of the industry in which the organisation deals?

An organisation allocates resources to different businesses depending on how each business is rated in the above two dimensions. Businesses that are rated higher on these dimensions will be allocated more funds and resources, while business that score lower will be eventually divested. Businesses in the middle will have moderate investment. The spotlight Matrix is shown in Figure 2:

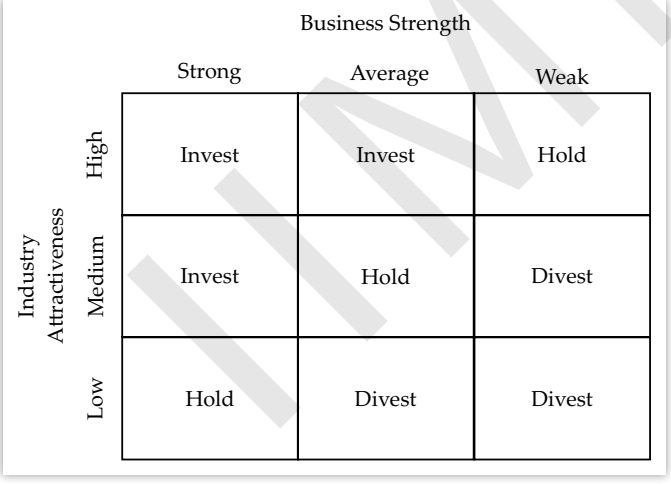

FIGURE 2: Spotlight Matrix

- **Business unit level:** If an organisation is highly diversified, then it will not compete at the corporate level. Instead, its different business units will vie with the corresponding business units of another organisation for the market leader position.

The renowned American academician **Michael Porter** suggested a generic model to develop a business level strategy. According to this model, an organisation can adopt any one of the following generic strategies at its business unit level:

- **Cost leadership:** A business unit can become a cost leader to attain a competitive advantage by offering products/services at satisfactory quality at a low cost. It does so by:
  - Practising economies of scale

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- Increasing capacity utilisation
- Having a stricter control on the entire value chain
- Improving the Research and Development (R&D) productivity and marketing expenditures
- Leveraging aggregated learning
- Streamlining the product/service design

Examples of cost leaders include Reliance Jio in telecommunications, Walmart in retailing and Hero motorcycles in vehicles.

- **Differentiation:** A business unit can become a differentiator by offering a superior product/service at a reasonable price. Its products/services are perceived as distinctive or unique by customers, and they are willing to pay a premium price for it. To become a differentiator, a business unit must:
  - Identify the attributes or features of a product or services, which are really valued by customers
  - Position itself as a unique service provider to customers
  - Offer the distinctive product/service at a profitable price

  A business can achieve differentiation by exhibiting uniqueness in:
  - World-class product quality
  - Product range
  - Bundled services
  - Brand image
  - Delivery convenience
  - Reputation

  A business unit looking for differentiation may require heavy investment in R&D, engineering skills, and marketing skills. Its organisation system and control systems must foster imagination and invention. Examples of differentiators include Apple in telecommunications, Mercedes Benz in automobiles and Rolex in wristwatches.

- **Focus:** In the focus strategy, a business unit or an organisation can concentrate on a limited market segment or a narrow product line. After selecting a target market, the business unit/organisation can gain a competitive advantage through:
  - **Cost focus:** The organisation focuses on offering products/services at a low cost in a limited market segment or a narrow line of products. For example, McDonald's uses the cost focus strategy by offering limited menus to a selected group of customers, such as Happy Meals for Kids.
  - **Differentiation focus:** A company focuses on offering differentiated products/services in a limited market segment or a narrow line of products. For example, Porsche specialises in sports car segment by relying on its ability to innovate more quickly than its closest competitors, such as General Motors and Nissan.

Figure 3 displays Porter's generic competitive strategies:

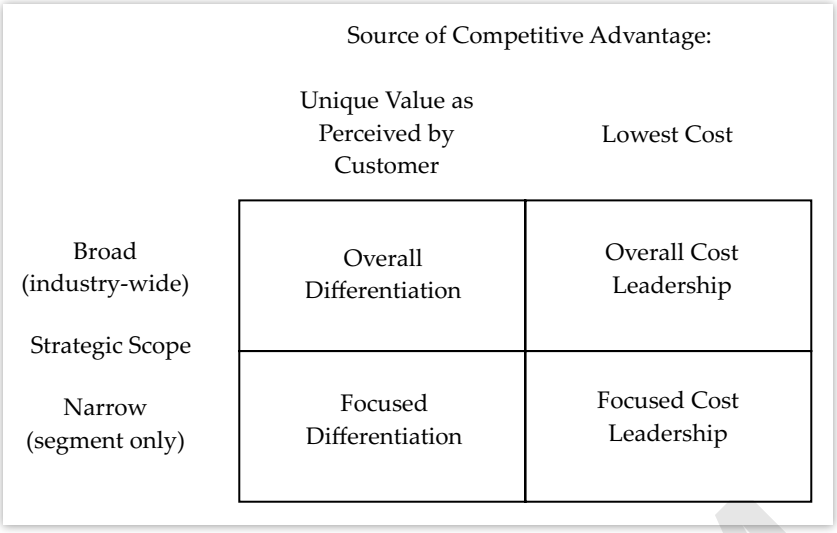

FIGURE 3: Generic Competitive Strategies

Strategic Innovation

Since Porter defined the above generic model on competitive strategies, the world's economy has taken a transformative shift. Deregulation, globalisation, and digitalisation have churned out old businesses and replaced them with new revenue streams. Organisations can no longer grow and sustain in this environment through just incremental improvements. They must innovate strategically to convert discontinuities into opportunities. According to **Hamel and Scholes,** strategic innovation requires:

- **Diversity of views and perspectives:** It is important for a company to have a diverse viewpoints and insights; otherwise, the company might miss new opportunities for growth. The new perspectives and insights will help the organisation to grow more innovatively in terms of its core competencies.
- **New passions:** Strategy displays a shared purpose and vision, which must inspire passion among the organisational members. They must be inspired to participate fully in the shared vision. Therefore, the new goals and vision of an organisation should demonstrate the collective aspirations of all its stakeholders.
- **Experimentation:** In today's dynamic environment, it is foolish to expect 100% accurate foresight. An organisation may establish its goals and direction, but its specific strategies should only be evolved through experimentation. Thus, it should start with directionally correct strategies and then improve them through quick experimentation and alteration.

Strategic Planning

Once an organisation has finalised the strategies to achieve its goals and vision (strategy formulation), it should create a strategic plan that describes how to implement those strategies (strategic planning). While strategic formulation requires an organisation to be innovative and flexible, strategic planning requires it to be systematic and structured. A strategic plan often includes a schedule and procedure.

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Strategic planning offers the following advantages:

- It provides the outline to create an annual budget.
- It compels managers to contemplate and implement long-term strategies.
- It can be used as a management development tool. It will also help them to create short-term actions for implementing long-term strategies.

The strategic planning process is a prerequisite to the annual budget preparation process. This process consists of the following steps:

1. Review the last year's strategic plan and update it.
2. Finalise assumptions and guidelines, and share them with the operating units.
3. Collect the strategic business plans developed by different operating units.
4. Evaluate and aggregate the strategic plans of different operating units into a single corporate strategic plan.
5. Submit the corporate strategic plan for approval to the Board of Directors and the Chief Executive Officer (CEO).

SELF ASSESSMENT QUESTIONS

1. The broad vision and direction of your organisation is called its _____.
2. Which strategy is not a business unit level strategy?
   a. Business strength
   b. Cost leadership
   c. Differentiation
   d. Focus

12.3 PREPARING BUDGETS

A budget is an annual plan that is derived from the strategic plan. The strategic plan is usually organised in terms of product lines, whereas the annual budget is organised in terms of responsibility centres.

A responsibility centre is a business unit led by a manager. There can be several responsibility centres in an organisation forming a hierarchical structure on the top of which sits the CEO. The CEO is responsible for the overall well-being of an organisation. He/she is the direct supervisor of the leaders of functional units. The functional units' heads in turn supervise operating managers and people managers who are responsible for their individual departments.

There are mainly four categories of responsibility centres:

- **Cost centre:** This responsibility centre is supervised by a person who is accountable for controlling the costs incurred in that centre. For example, a production department or a personnel department in a factory is a cost centre.
- **Revenue centre:** This responsibility centre is supervised by a person who is responsible for generating revenues. For example, the marketing department in a factory is a revenue centre.

- **Profit centre:** This responsibility centre is supervised by a person who is responsible for its contribution margin to the overall profit of the organisation. For example, a production division, a service division, or a bank branch is a profit centre.
- **Investment centre:** This responsibility centre is supervised by a person who is accountable for the investment required for profit generation and wealth creation.

The outline of a budget must be prepared to influence and evaluate the managerial performance in each responsibility centre. It is also important to clearly demarcate the controllable and non-controllable aspects of cost, revenue, or investment of a responsibility centre. Ideally, the supervisor of a responsibility centre controls and influences the elements of cost, revenue, or investment. If an organisational structure has several inter-relationships between different responsibility centres, then it will be very difficult to separate controllable and non-controllable elements of revenues and costs. In such cases, the performance report of the responsibility centre must identify partially controllable items and shared overhead items.

The data on revenues and costs must be aligned with the responsibility lines. After separating the controllable and non-controllable elements, performance standards for each responsibility centre must be established in terms of revenues, costs, volume and quality. These performance standards will be used by the supervisors as the guidelines to evaluate the performance of their responsibility centre.

Budgeting Outline

The budget must be prepared for a specific period, which is usually for a year, to remain impactful. The annual budget can be further split into quarterly budgets or monthly budgets, depending on the level of information required for them. For instance, you can prepare the budget for the first quarter on a monthly basis and for the remaining period on a quarterly basis. As each quarter ends, you can modify the quarterly budget in terms of months.

You can also prepare a rolling budget, which is extended at the end of each quarter or half year by adding another quarter or another half year, respectively. This will ensure that the company always has a budget for the upcoming year. For example, by December 15, 2018, a company finalises the budget for the year 2019, which is prepared on a quarterly basis. On March 15, 2019, the company drops the first quarter of 2019 and incorporates the first quarter of 2020. The budget also revises and updates the estimates of the remaining quarters of 2019 at the same time.

Budgeting Organisation

In most organisations, there is a budget committee and a budget director to guide and monitor the budget preparation process. The budget committee comprises various members from the top management. Its responsibilities include:

- Establishing general guidelines for budgeting
- Coordinating with different departments that prepare their individual budgets
- Reconciling inconsistencies among the budgets of different departments

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- Assembling the budget in the final form
- Submitting the budget for approval to the CEO and the Board of Directors

The budget director supervises a team that prepares the budget. During the budget preparation, he/she liaises with the budget committee. The responsibilities of the budget director include:

- Instructing his/her team on how to prepare the budgets
- Providing the historical data which can be used for estimation purposes
- Supporting his/her team in calculating various figures in the budgets
- Convincing and following-up with different department heads to submit their budgets on time
- Compiling the budgets prepared by the budget committee

Note that the budget director is only responsible for the budget process, and not for the budget's contents. The budget committee, on the other hand, provides the content of the budget.

Budget Base

The most standard base of a budget is the level of operations in the current year. Based on this base, the expected and planned changes in the next year are determined. This approach of budget preparation is called the incremental approach, which focuses on the increases in operations during the budget period. For example, you can use an incremental approach to prepare a sales budget for an exclusive product that is sold to the government entities only. Or, you can use this approach to prepare a salary budget of a corporate head office. A disadvantage of this approach is that in this method, the past inefficiencies in budgeting are also carried forward for the forthcoming budgets. For example, the sales budget for the exclusive product might ignore opportunities to capture different market areas. Or, the salary budget may perpetuate the past wasteful elements.

An alternative approach to the incremental budgeting is called the zero-base approach to budgeting. Conceived by the Texas Instruments Company, the zero-base budgeting approach starts from scratch. It views all the organisational activities from a fresh perspective. It prioritises the allocation of funds between two activities on the basis of an evaluation technique such as the cost-benefit analysis. For example, the zero-base sales budget for the exclusive product is prepared by inspecting all the possible markets for the product instead of just incremental changes over the current sales operations. Likewise, a zero-base salary budget for the corporate head office would be based on a careful evaluation of the current personnel requirements and not by incremental changes over the current salaries.

Despite the several benefits it offers, the zero-base budget also has some drawbacks:

- It requires more effort and time for preparation.
- It may be contested by those supervisors who do not prefer that each item of their responsibility centre is evaluated afresh every year for consideration into the budget.

Therefore, an optimum solution should be worked out that balances the benefits of both the incremental approach and the zero-base approach of budgeting. For instance, the incremental approach can be used every year, while the zero-base approach can be used once in every 5 years.

Limiting Factor

Each organisation has a limiting factor that sets a limit to its activity level. In most organisations, the demand forecast decides the scope and level of operations. When the demand is high, the limiting factor can be:

- The inability of the organisation to scale up its production capacity in the short run
- The limited availability of power
- Insufficient raw material
- Lack of capital and funding

The limiting factor is the most relevant starting point for budget preparation because it sets the scope and level of operations. For example, an organisation may start preparing a budget from the level of sales forecast if the limiting factor is sales forecast. Sometimes an organisation may start a budget planning with a limiting factor, only to discover another factor is more critical. For instance, you have started to prepare a budget from the level of sales forecast, but midway you realise that the lack of sufficient funds is more critical.

Participation

The budget preparation is an exercise that requires a full-fledged participation from all organisational members. The budget committee prepares the broad guidelines of the budget and passes it down the organisational hierarchy. At each level of the responsibility centres, the management may be required to guide its subordinates until the budget guidelines reach the lowest level of the hierarchy.

The lowest level supervisor at a responsibility centre prepares budget estimates in terms of controllable expenses at his/her level. The non-controllable expenses are usually included later by the budget team. These budget estimates are the starting point of the budget and are finalised after negotiation between the budgetee supervisor and his/her supervisor. The supervisor may ask the budgetee supervisor to change some element in his/her estimate. The net result is a budget that is mutually acceptable to both. Subsequently, the process is repeated at each higher level of the responsibility centre. In the process, the budget may be refined and revised to resolve inconsistencies at each level. Through this iterative process, the final budget is a consistent budget that is acceptable at all levels of the organisation.

Self Assessment Questions

3. The Human Resources department of an organisation is:
   a. An investment centre
   b. A cost centre
   c. A profit centre
   d. A revenue centre

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4. As June 15, 2019 approaches, a company drops the second quarter budget of 2019 and includes a budget of the second quarter of 2020. This budget approach is called:

   a. Zero-base budgeting b. Incremental budgeting

   c. Rolling budgeting d. Quarterly budgeting

12.4 MASTER BUDGET

The Master Budget is a comprehensive budget that includes all the aspects of an organisation's operations and finances. Figure 4 illustrates the different components of a Master Budget for a manufacturing organisation:

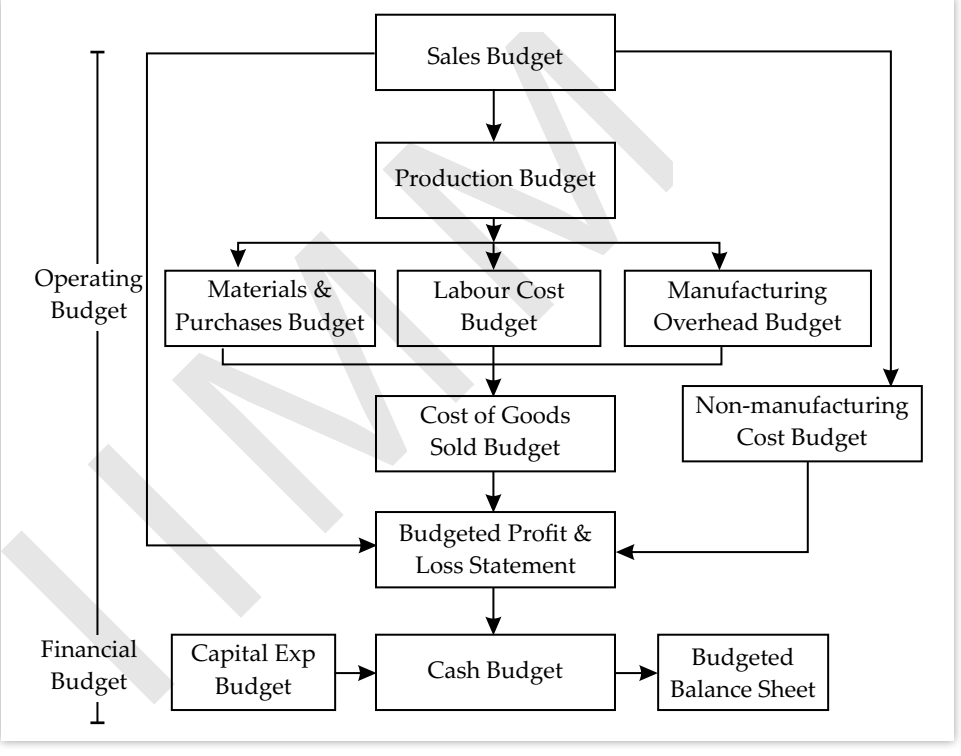

FIGURE 4: Components of Master Budget

There are two main parts of the Master Budget, each with its own components:

A. **Operating budget**: This is the main part of the budget that displays the estimated profit and loss statement. It includes the following components:

- **Sales budget:** The sales forecast is generally the starting point of every budget, as it determines the production, inventory, and expenses of the specific period. The short-term sales budget usually covers a 1-year period and is derived from a long-term sales forecast (3- to 5-years long). Following are the important points to consider:
  - ✓ Industry and economy outlook
  - ✓ Past consumer behaviour

- ✓ Emerging trends in sales
- ✓ Government regulations which may impact the industry
- ✓ Consumer attitudes, tastes and preferences
- ✓ Competition level
- ✓ Sales promotion of the company

- **Production budget:** This is a critical part of the operating budget that ensures economical manufacturing. It depends on three factors as:
  - ✓ Sales budget in terms of volume and the time period
  - ✓ The policy of inventory of the organisation
  - ✓ The capacity of production of the organisation

  The production budget is created to meet the requirements of the sales budget. The products are manufactured in a product line to cater to the needs of sales. However, sometimes the production plan and the sales plan may differ substantially. Following are examples:
  - ✓ The production may be planned in a stable manner, but the seasonal variations in sales are too high and the production budget is unable to cope with them.
  - ✓ The production has to be conducted during a certain period, whereas sales are perennial (despite seasonal variations).

  The process to prepare a production budget is as follows:

  1. Evaluate the production capacity of the organisation.
  2. Define an inventory policy for finished products.
  3. Determine the total quantity of each product to be manufactured during the budget period based on the sales forecast and the inventory policy for finished goods.
  4. Schedule the production during the budget period after considering the following factors:
     - i. Sales pattern
     - ii. Finished goods inventory policy
     - iii. Production capacity

- **Materials and purchases budgets:** After estimating the required quantities of products to be produced, the material requirements are estimated and the purchase program is determined. This would require the preparation of the following budgets:
  - ✓ **Materials budget:** A manufacturing unit may use the following types of materials:
    - ♦ **Direct materials:** These materials can easily be traced to the product. These are covered in the materials budget. The materials budget displays

the quantities and the prices of the direct materials and supplies that are planned to be purchased.

- **Indirect materials:** These materials cannot be easily traced to the product. These are covered in the manufacturing overhead budget, and not the materials budget.

✓ **Purchase budget:** This budget covers:

- The quantities of each type of raw material to be purchased
- The purchase schedules
- The prices of raw materials

While preparing the purchase budget, the following factors must be considered:

- The quantities of raw materials mentioned in the materials budget
- The planned changes in the inventories of these materials
- The reorder levels and economic order quantities of the different inventory items

✓ **Material inventory budget:** This budget displays the planned inventory levels of raw materials at specific points in the budget period.

✓ **Cost of raw materials used budget:** This budget displays the projected cost of raw materials to be used from inventory for production.

- **Labour cost budget:** Labour cost can be:

✓ **Direct labour costs:** These are the permanent workers' wages. These costs are included in the labour cost budget.

✓ **Indirect labour costs:** These are the salaries of supervisors, wages to contractors, fees to distributors, salaries to maintenance staffs, etc. These costs are included in the manufacturing overhead budget, and not the labour cost budget.

The labour cost budget can be prepared using either of the following approaches, depending on the organisational context:

✓ **Through labour cost per unit of production:** Determine the labour cost per unit of production using the following formula:

Labour cost per unit of production = Standard direct labour hours required for each production unit × Average wage rate/hour

Labour cost budget = Labour cost per unit of production × Number of units of finished goods planned to be produced

✓ **Through relationship with other budgets**: Another way to estimate the labour cost budget is through its relationship with another measure such as the material cost.

- ✓ **Through personnel information:** If either of the above approaches do not apply, then the labour cost budget can be prepared on the basis of the following information:
  - ♦ Permanent labour directly employed by the organisation and their remuneration rates
  - ♦ Payments likely to incur due to overtime
  - ♦ Contractors that may be required and their remuneration rates

- **Manufacturing overhead budget:** This budget includes all those elements of labour cost, which are not covered in Materials budget or Labour cost budget:
  - ✓ Indirect labour
  - ✓ Miscellaneous expenses such as depreciation, utilities, supplies, repairs, maintenance, insurance, and taxes

  This budget is prepared by drawing up and aggregating the expense budgets for the all the production units and service units. To do so, the projected volume of work for each department must be evaluated in terms of an activity measure, such as:
  - ✓ **For production units:** Units of output, direct labour costs, and direct machine hours
  - ✓ **For service units:** Direct repair hours, number of machines to be maintained, total purchase amount, number of purchase orders to be placed, number of employees in the plant, and total direct labour hours

  Considering the activity measure for each department, the budgets for departments are prepared in terms of two basic components:
  - ✓ **Variable cost:** This is related to the project level of activity.
  - ✓ **Fixed cost:** This is planned independently.

- **Non-manufacturing cost budget**: This budget includes the following expenses:
  - ✓ Selling and distribution related expenses
  - ✓ General administration expenses
  - ✓ R&D expenses
  - ✓ Financing expenses

  The non-manufacturing cost budget is prepared along departmental lines. For each department, the budget may be split into fixed and variable costs. It is important to relate the variable costs of a non-manufacturing department to a relevant activity.

- **Budgeted profit and loss statement:** It compares the budgeted revenues and expenses with their actual figures achieved during the budget period.

B. **Financial budget:** This is the second part of the master budget that includes the following elements:

- **Capital expenditure budget:** This budget displays the selected capital projects for investment along with their estimated expenditure. This budget is usually

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prepared independently from the operating budget. It has its individual budget cycle.

Capital expenditure proposals may arise from any source in the organisation. These proposals are evaluated by a capital expenditure committee, which is derived from the budget committee. The capital expenditure committee and the budget director prepare a capital expenditure budget which displays the projects worth investing. These projects are sent to the CEO and the Board of Directors for approval.

It is important to suitably justify each capital expenditure proposal, as it involves a substantial investment. The factors of evaluation may include:

- ✓ **Tangible factors:** Net present value, accounting rate of return, internal rate of return, cost reduction per unit, and productivity gains
- ✓ **Intangible factors:** Growth opportunities, market image, technical competence, morale, labour unrest, and employee safety

- **Cash budget:** This budget displays the projected cash inflows and outflows in the budget period. The primary sources of cash flows include:
  - ✓ **Cash inflows:** Cash received by an organisation through sales, financing investments, contribution of investors, equity, etc.
  - ✓ **Cash outflows:** Cash purchased by an organisation through employees' salaries and wages, rents, utilities, taxes, account payable various type of borrowings, etc.

  If the cash budget shows:
  - ✓ Surplus over the target cash balance, then the extra cash may be used for investment.
  - ✓ Deficit from the target cash balance, then the company may require financing.
- **Budgeted balance sheet:** This displays the estimated assets, liabilities, and owners' equity at the end of the budget period. It is prepared using the:
  - ✓ Initial balance sheet
  - ✓ Profit plan
  - ✓ Capital expenditure budget
  - ✓ Cash budget
  - ✓ Investment and financing budget

SELF ASSESSMENT QUESTIONS

5. What is the typical starting point of every budget?
   a. Cash budget
   b. Production budget
   c. Sales budget
   d. Materials & Purchases budget

6. The salary of the supervisor of a responsibility centre will be included in which budget?
   a. Labour cost budget
   b. Sales budget
   c. Cash budget
   d. Manufacturing overhead budget

12.5 FLEXIBLE BUDGETING

The Master Budget is a static budget. It is prepared on the assumption that the future operational activities are fixed and that actual results can be compared with the projected plan, irrespective of the future status.

For example, consider the monthly performance report of a single product manufacturing company as shown in Table 1:

Table 1: Monthly Performance Report of a Company

Particulars	Actual Budget	Operating Budget	Variance F/UF
Units	8000	10,000	2,000 UF
Sales	9,20,000	11,00,000	1,80,000 UF
Variable costs			
Direct material	2,56,000	3,00,000	44,000 F
Direct labour	2,10,000	2,50,000	40,000 F
Other variable costs	128,000	1,50,000	22,000 F
Total variable costs	5,94,000	7,00,000	1,06,000 F
Contribution Margin	3,26,000	4,00,000	74,000 UF
Fixed costs			
Supervision	42,000	40,000	2000 UF
Depreciation	30,000	30,000	-
Other fixed factory costs	20,000	20,000	-
Fixed manufacturing costs	1,24,000	1,20,000	4,000 UF
Fixed general and administrative costs	90,000	92,000	2,000 F
Fixed selling costs	60,000	60,000	-
Total fixed costs	2,74,000	2,72,000	2,000 UF
Operating Income	52,000	1,28,000	76,000 UF

As per the above table, the target level of sales for the given month is 10000 units. However, the actual level of sales achieved during the month is 8000 units. Now, although the Master Budget predicted a production and sales of 10000 units, only

Notes

8000 units could be produced and sold. The budget has no opening or closing inventories.

The variance column in table 1 represents the difference between the master budget figures and the actual performance figures. You can see that the variance in sales is unfavourable or U. On the other hand, the variance related to variable costs is favourable or F. These favourable variances, however, are misleading because the actual level of activity was much lower than the projected level. In such cases, it makes little sense to compare the actual budget with the inflexible master budget.

Instead, a flexible budget can be used to improve the level of comparison. As a variable budget, the flexible budget focuses on a range of activity instead of a single level of activity. It analyses the behaviour of each cost element with respect to volume. Therefore, it can be personalised to any level of activity.

Table 2 displays the flexible budget for the same company:

Table 2: Monthly Flexible Budget

	Budget formula Per unit (in ₹)	Various levels of activity		
Units		8000	10000	12000
Sales	220	880000	1100000	1320000
Variable Costs				
Direct Material	60	240000	300000	360000
Direct Labour	50	200000	250000	300000
Other variable costs	30	120000	150000	180000
Total variable costs	140	560000	700000	840000
Contribution margin	80	320000	400000	480000
Fixed Costs				
Factory supervision		60000	60000	60000
Depreciation of factory machines		40000	40000	40000
Other fixed factory costs		20000	20000	20000
Fixed manufacturing cost		120000	120000	120000
Fixed general administration		92000	92000	92000
Fixed selling costs		60000	60000	60000
Total fixed costs		272000	272000	272000
Operating Income (Loss)		48000	128000	208000

In Table 2, you can see that the total variable costs per unit are ₹ 140 while the total fixed costs are ₹ 272,000. Figure 5 displays the graph of flexible budget on the basis of the following relationship:

Total costs = Fixed costs + (Number of units x Variable costs per unit)

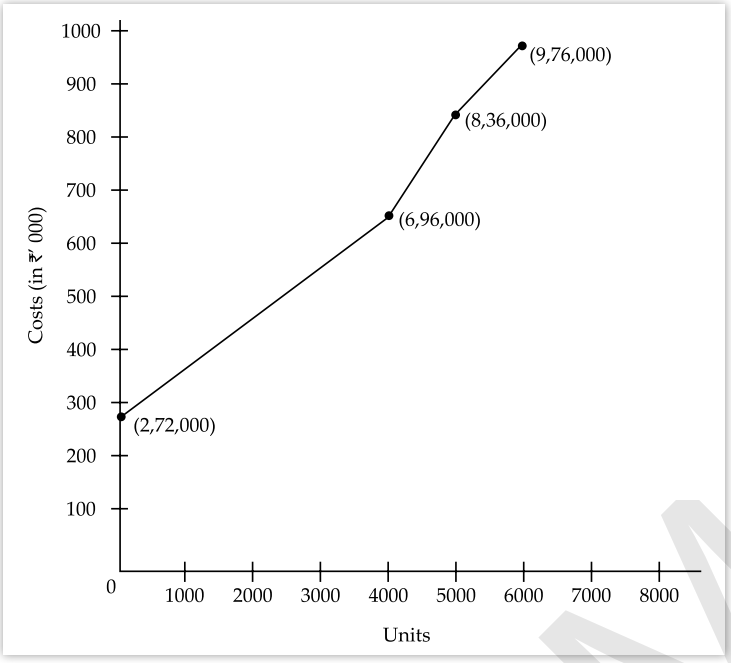

FIGURE 5: Graph of Costs

Therefore, the flexible budget provides a relevant basis of comparison, as it is prepared for a range of activity instead of a single activity level. This will help the managers to plan their budget effectively when they need to select from various activity ranges. The flexible budget is also more beneficial in evaluating the performance of departments as compared to the master budget.

SELF ASSESSMENT QUESTIONS

7. The variable budget is flexible over a range of activities. (True/False)
8. In the graph of flexible budget, the total costs:
   a. Do not change with the volume produced (horizontal line)
   b. Increase with the volume (positive scope)
   c. Decrease with the volume (negative slope)
   d. Are U-shaped (law of diminishing returns)

12.6 VARIANCE ANALYSIS

You can easily analyse the variance between the projected budget and the actual performance figures using a flexible budget. There are two types of variances:

- **Marketing/volume variances:** These variances are caused due to difference between the planned and the actual sales volume.
- **Price and Efficiency variances:** Price variances are caused due to change in unit prices (or unit costs). Efficiency variances are caused due to inefficient/efficient utilisation of inputs.

Notes

A master or static budget cannot differentiate between these types of variances. Table 3 shows both types of variances:

Table 3: Quarterly Performance for a Company

	(1) Master (static) budget	(2) Actual result at actual price	(3) Fixed budget for actual output achieved	(4) 3—1 Marketing variances	(5) 2—3 Price and efficiency Variance
Units	15000	12000	12000	3000 UF	0
Sales	1650000	1380000	1320000	330000 UF	60000 F
Variable Costs	1050000	891000	840000	210000 F	51000 UF
Contribution Margin	600000	489000	480000	120000 UF	9000 F
Fixed Costs	408000	411000	408000	-	3000 UF
Operating Income	192000	78000	72000	120000 UF	6000 F

In the above table, column 4 displays the marketing variances. It shows that the actual sales revenues fell short of ₹ 3,30,000 because the sales volume missed its projected target by 3000 units. Therefore, the contribution margin and operating income are lessened by ₹ 120,000 each. In this analysis, the fixed prices are used.

Column 5 in the above Figure displays the Price and Efficiency variances. It highlights the difference between the actual costs and the projected costs in the flexible budget for the sale of 12000 units (actual output). You can analyse it more comprehensively by preparing a cost performance report, as shown in Table 4:

Table 4: Cost Performance Report

	Actual Costs Incurred	Flexible Budget	Price and efficiency Variance
Units	12000	12000	0
Variable Costs			
Direct Material	384000	360000	24000 UF
Direct Labour	315000	300000	15000 UF
Other variable costs	192000	180000	12000 UF
Total variable costs	891000	840000	51000 UF
Fixed Costs			
Factory supervision	96000	90000	6000 UF
Depreciation of factory machines	60000	60000	0
Other fixed factory costs	30000	30000	0
Fixed manufacturing cost	186000	180000	6000 UF
Fixed general administration	135000	138000	3000 UF
Fixed selling costs	90000	90000	0
Total fixed costs	411000	408000	3000 UF

SELF ASSESSMENT QUESTIONS

9. Which variances are caused due to difference between the budgeted and actual sales volume?

   a. Marketing variances b. Sales variances

   c. Price variances d. Efficiency variances

10. How effectively an organisation has utilised its output can be determined through the inefficiency variances. (True/False)

12.7 BUDGETING AND ITS HUMAN ASPECTS

Budget preparation is not just a mechanical process; it involves various human aspects. After all, a budget impacts humans who work within the budgetary constraints to achieve goals and objectives. The following human aspects should be considered while preparing a budget:

- **Pressure:** A budget can be used as an appropriate motivational tool to deliver challenging and achievable goals. Well-formulated budgets put adequate pressure on workers to assume responsibility for their work and employ efficient methods to accomplish their objectives. However, if a budget exerts a great deal of pressure on workers, then it may lead to frustration and conflict. On the other hand, if the budget is too laidback, then workers may become complacent.
- **Credibility:** Most people being affected by a budget generally regard it with suspicion and question its performance norms. Therefore, a budget must build credibility by satisfying the following conditions:
  - **Use of scientific methods:** The budget must derive its norms of performance by applying scientific methods, such as work study, time and motion study, and other engineering studies.
  - **Application of a combined and participatory process:** The budget should evolve its norms of performance through a combined and participatory process, involving all organisational members.
- **Conflicts:** Budgets may create conflict among departments or units for more allocation of resources or funds. A responsible budgeting system ensures that each responsibility centre is able to deliver a better performance. If a budget is more tilted towards some responsibility centres relative to others, then there might be conflicts among departments. These conflicts will impact the larger organisational interests. For example, to achieve a specific level of production, the production department may manufacture certain irrelevant products, which are not required by the marketing. Similarly, to improve the collection record, the head of the finance centre in a bank may not extend funding to certain customers. Although this action may improve the bank's profitability, it may also sub-optimise the performance of departments.

  To avoid this sub-optimisation, the budget committee should ensure that the budgets and goals of all departments are aligned with the organisational goals.

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The performance of each responsibility centre must be evaluated on the basis of its contribution to the overall goals of the organisation.

- **Complacence:** To avoid drops in the actual performance below the expected standards, a manager might include slack in the budget. For instance, the production manager might over-estimate costs. The sales manager might under-estimate the sales demand. The finance manager might seek additional cash balance. Sometimes, a manager might deliberately include slack in the budgetary elements to have enough bandwidth to chase his/her individual goals along with the organisational goals.

  Although a certain level of slack is required to ensure smooth running of operations and remove conflicts between individual and organisation goals, it is a cost to the organisation. In times of plenty, an organisation may become too complacent and fail to recognise opportunities and threats. The downfall of Kodak is one such example. The company was too complacent to realise the impending threats due to changing technology and consumer preferences. By the time it woke up to take some action, it was too late. Thus, an organisation must ensure optimum levels of slack that boost efficiency and remove conflicts. Slack beyond these levels must be avoided.

- **Reward and Punishment:** A budget can be used as a tool to reward good performance and punish bad performance. Good performance is reflected through a favourable variance between the projected and estimated figures. It can be rewarded through higher monetary compensation, quick promotion in the organisational hierarchy, and recognition of good work. Bad performance is reflected through unfavourable variance. It can be punished by taking away additional compensation, non-promotion, or transfer to less important positions. In extreme cases of poor performance, a worker may be asked to leave the organisation.

  While determining rewards and punishments, actual conditions during the budget should be considered. A focus on predetermined standards may:

  - Compel managers to be extra cautious during budget preparation
  - Induce them to act in self-interest instead of the organisational interest

- **Gaming:** It has been proposed now-a-days to delink bonuses from budgets because it:

  - Emboldens managers to cook up stories, lie, and cheat to get higher bonuses
  - Causes them to underestimate targets and inflate results
  - Punishes managers for telling the truth

Therefore, rewards should be kept independent of budgets. People should be rewarded for their accomplishments rather than their ability to achieve targets. However, the budgets themselves may include performance-related targets. For instance, a manager may be rewarded for allocating more than 50% of his responsibility centre's revenues on production and sales activities.

Self Assessment Questions

11. What is the desirable aspect in a budget to be effective?
    a. Considerable pressure to emphasise responsibility and achieve the desired objectives
    b. Involvement of independent members of the organisation for inputs
    c. Creation of constructive conflicts among departments
    d. Adequate levels of slack to accomplish individual and organisational goals
12. The bonuses should be linked with the budgetary system. (True/False)

12.8 SUMMARY

- Before preparing a budget, you must be aware about the strategic direction of your organisation.
- The strategy of an organisation can be at the corporate level or business unit level.
- The corporate level strategy can be developed using the Spotlight Matrix.
- The business unit level strategy can be Porter's generic strategies of cost leadership, differentiation, or focus.
- Strategic innovation requires diversity of views and perspectives, new passions, and experimentation.
- Strategic planning is the development of a plan to implement the strategies in an organisation. Unlike strategy formulation, strategic planning should be systematic and structured.
- The strategic plan is a long-term plan of 3-5 years. A budget is an annual strategic plan.
- An annual budget can be divided into quarterly or monthly budgets.
- A rolling budget is extended at the end of each quarter/half year by adding another quarter/half year, respectively.
- The budget director is responsible for the speed, accuracy, and clarity of the budget, while the budget committee comprising top management members is responsible for the contents within the budget.
- The incremental budgeting approach focuses on the increments in operations during a budget period, whereas the zero-base budget does not take any such consideration and starts afresh.
- Each budget starts with a limiting factor, such as the estimated sales.
- The budget preparation is an iterative process that takes the budget through all the levels of the hierarchy, and refines the budget until the final budget is consistent and acceptable through all the levels of the organisation.
- The master budget includes sales budge, capital budgets, materials and purchasing budgets, etc.

Notes

- The components of an operating budget are short-term and long-term costs, various types of sub-budgets.
- The components of a financial budget include capital expenditure budget, cash budget, and a budgeted balance sheet.
- The Master Budget is a static budget, whereas a flexible budget considers the budgetary variances (both favourable and unfavourable).
- The flexible budget provides a relevant basis of comparison as it covers a range of activities.
- There are two types of variances that can be analysed using a flexible budget: marketing/volume variances and price and efficiency variances.
- The budgetary exercise should include human aspects such as pressure, credibility, conflicts, slack, reward and punishment, and gaming.

12.9 KEY WORDS

- **Net Present Value (NPV):** The summation of the present value of a series of present and future cash flows.
- **Accounting Rate of Return (ARR):** The method to evaluate the basic viability of a project by subtracting the proposed capital investment from project revenue.
- **Internal Rate of Return (IRR):** A measure of an investment's rate of return, which excludes external factors, such as inflation, cost of capital and various financial risks.
- **Time Value of Money (TVM):** TVM refers to the money available at the present time has the immense growth potential.
- **Benefit-Cost Ratio (BSR):** BSR refers to he ratio of the benefits used to analysis of cost and benefit of a proposed or future project.

12.10 CASE STUDY: FLEXIBLE BUDGET PREPARATION

This case study prepares a flexible budget for a US-based cigarette manufacturer, the Lorillard Inc., for the year 2012 at three levels of the income statement. The budget is prepared while considering the absorption costing approach.

The flexible budget of the company for the year 2012 is as follows:

Table: Flexible Budget For Lorillard Inc. For 2012

	Flexible budget	Actual results	Flexible budget variances
Expected sales (5750 million units)	7475	7648	173
Cost of Sales	4784	4784	0
Gross Profit	2691	2864	173
Selling, general, and administrative expenses	523	612	89
Operating income	2168	2252	84
Interest expense	300	128	-173

	Flexible budget	Actual results	Flexible budget variances
Income before taxes	1868	2124	256
Taxes	691	786	95
Net income	1177	1338	162

Source: *Baker & Baker 2009*

The flexible budget displays high unfavourable variances:

- **Sales:** The estimated sales are 5750 million units at $1.3. The sales are expected to increase by 15% from 5 billion units in 2011 because of the year-on-year growth in the last three years, as indicated below:
  - **Net sales in 2011:** $6466 (Increase of 9% from previous year)
  - **Net sales in 2010:** $5932 (Increase of 13% from previous year)
  - **Net sales in 2009:** $5233 (Increase of 24% from previous year)
  - **Net sales in 2008:** $4204

  Thus, the average growth rate is 15% for the year 2012, which the company can achieve. However, the company's net sales can be higher than the flexible budget due to planned increase in the sales prices (almost $1.33 relative to the flexible budget of $1.3 per unit). The management is considering raising the sales price due to low competition and good public image of the company in the US. The increased sales prices will increase the total sales revenue. These differences in sales prices may create variances in the flexible budget.

  - **Cost of goods sold:** As per the last 3 years' income statement, the cost of goods sold is $4123, which is approximately 64% of its net sales. The lack of variance in flexible budget indicates that the total cost (materials, labour and overheads) will be the same as projected.
  - **Selling, general, and administrative expenses:** The flexible budget includes both fixed and variable selling, general, and administrative expenses. As per the last 3 years' income statement, the company is expected to spend 7% of its net sales on these expenses. Therefore, to determine the budget of 2012, the changes in variable expenses must be included. The variances in the company's flexible budget indicate that its variable expenses will be more than estimated. This is because new competitors are emerging in the US market. Thus, the management wants to allocate more funds in advertising and marketing, which will increase its selling and administrative expenses. The administrative expenses of the company are also expected to be higher than planned due to increase in the utility rates.

Thus, the future expenses are determined after considering the extra costs required to meet competition and pay higher utility prices. These extra costs increase the selling, general, and administrative expenses by 1% on the company's net sales.

- **Interest:** Since the last 4 years, the company paid increasing interest rates:
  - Interest paid in 2011: $125
  - Interest paid in 2010: $94

- Interest paid in 2009: $27
- Interest paid in 2008: $1

These increasing interest rates have increased the company's expenses by $31 in 2011 as compared to 2010. After considering the last two years' income statement, it is projected that the interest expenses will increase by 140% in 2012 relative to 2011. However, the management's view is that the company will not require issuing of senior notes in 2012, which will create variances in the budgeted and actual amounts. Thus, the flexible budget estimates that the interest rate will increase by 2% from 2011 investment ($125) due to market risk and uncertainty.

- **Taxes:** The taxes are budgeted as 37% of income before taxes. The variance in tax budget indicates that the company's actual income before interest will also be the same, i.e., 37%.
- **Net income:** The total net income in the flexible budget will increase from 2011 due to the variances in each line of the income statement. The net variance is primarily due to the higher revenues earned by the company.

Conclusion

While preparing a flexible budget at the three levels of the income statement, it is important to calculate the variances in expenses, cost, or revenue after considering the organisation's competitive position and the state of economy. The business potential of the changing situation in the industry and economy must be evaluated. Finally, the organisational strategies should be directed in a positive direction through budgeting to ensure long-term sustainability of the business.

Source: *https://www.assignmenthelpexperts.com/blog/flexible-budget-assignment-help/*

QUESTIONS

1. What are the benefits of preparing a flexible budget?

   (**Hint:** It can adjust changes in the sales volume level, expenses and taxes to the actual level of output achieved during the budget period.)

2. Why is a flexible budget better than a static budget for managerial decisions?

   (**Hint:** Because it provides realistic results by considering changes)

12.11 EXERCISE

1. What do you mean by strategy? Why is it developed?
2. What are the different levels of strategy in an organisation? Mention the different tools used to develop each level of strategy.
3. What is strategic innovation? What does it require?
4. What is strategic planning? How is it different from strategy formulation? What benefits does strategic planning provide?
5. What elements should be considered while preparing budgets?

6. What are responsibility centres? Mention its categories.
7. What is the difference between incremental and zero-base budgeting approach?
8. What is the role of the budget committee? What are the responsibilities of the budget director?
9. What is a Master Budget? What are its different components? Explain the role of each component.
10. What is flexible budgeting? What benefits does it provide from the Master Budget?
11. What do you mean by variance analysis?
12. Which human aspects should be considered while preparing a budget?

12.12 ANSWERS FOR SELF ASSESSMENT QUESTIONS

Topic	Q. No.	Answer
Concept of Strategy and Strategic Planning	1.	strategy
	2.	a. Business strength
Preparing Budgets	3.	b. A cost centre
	4.	c. Rolling budgeting
Master Budget	5.	c. Sales budget
	6.	d. Manufacturing overhead budget
Flexible Budgeting	7.	True
	8.	b. Increase with the volume (positive slope)
Variance Analysis	9.	a. Marketing variances
	10.	False
Budgeting and its Human Aspects	11.	d. Adequate levels of slack to accomplish individual and organisational goals
	12.	False

12.13 SUGGESTED BOOKS AND E-REFERENCES

SUGGESTED BOOKS

- Gupta, K. (2009). *Cost management*. Delhi, India: Global India Pub.
- Khan, M., & Jain, P. (2008). *Cost accounting and financial management for CA Professional Competence Examination*. New Delhi: Tata McGraw-Hill Publishing Company Ltd.

E-REFERENCES

- Variance Analysis - Overview, Budgeting, Benefits. (2019). Retrieved from https://cleartax.in/s/variance-analysis
- Bragg, S. (2019). Variance analysis. Retrieved from https://www.accountingtools.com/articles/what-is-variance-analysis.html

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