



Rural Management Finance and Accounting

First Edition



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Ministry of Human Resource Development

Editorial Board

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About the Book

Managerial Economics is framed for facilitating business decisions based on economic theory and quantitative methods in order to develop vital tools for business. Knowing about Managerial Economics assists in identifying companies' production needs, sales, marketing and pricing strategies and in achieving short and long term objectives quickly in an effective manner.

This book contains five Chapters covering all 5S – i.e. - a workplace organization method that uses a list of five Japanese words: seiri, seiton, seisō, seiketsu, and shitsuke. These have been translated as "Sort", "Set In order", "Shine", "Standardize" and "Sustain".

The book has been prepared in a reader friendly language. Each chapter introduces the major economic concepts with illustrative examples related to rural development. Charts and diagrams have been frequently used to complement the analysis. The rigorous mathematics, wherever required, has been confined to the relevant topic. A list of major concepts and their brief elaborations are provided. This helps the students to appropriately review the main arguments and establish the logical relation between the 5S.

The logical questions include both essay type and short questions. Several worked out numerical problems interspersed throughout the material help students assimilate the theory. Both logical and numerical questions are included at the end of each chapter. In each chapter, there are two case studies with questions attached. Case studies are inserted at the end of each chapter with their points of relevance. Solved problems are also discussed. In some places, these are embodied in the text as examples to illustrate the concepts involved, and in other cases, they are included at the end of the chapter accordingly.

There are also review questions and, in many cases, additional problems at the end of the chapters, following the chapter summaries. Rupees and US Dollars are used as the standard mode of currency in the problems.

Finance is one of the important requirements of business. It is necessary to understand the meaning of Finance prior to study of management of finance. Amount of finance and its timely availability helps the development of any business or organization. All organizations including schools, colleges, hospitals, factories, banks and other commercial institutions require finance for their day to day functions. Finance is the key element for any organization to strengthen itself and survive in this world of competitive business. Finance, for all practical reasons, needs to be studied appropriately as management of finance is the key to success. A healthy financial situation leads to a healthy society and a healthy economy.

This book represents the collective efforts of many remarkable individuals. We would like to thank the contributors to this volume for their collective wisdom, experience and insight. We thank our Subject authors: **Dr Sheela Priya**, Assistant Professor, Central University of Tamilnadu; Dr J Hanamshetti, Deputy Director, NAFSCOB, Navi Mumbai; Dr Prerana, Guest Lecturer, School of Studies in Management, Jiwaji University, Gwalior; Prof Pooja Jain, Assistant Professor, Prestige Institute of Management, Gwalior; Dr Nandan Velankar, Assistant Professor, Prestige institute of management, Gwalior and Dr Amitabh Maheshwari. We would like to thank Dr Rajagopal, Associate Professor, Central University of Tamilnadu for reviewing the material on Managerial Economics.

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Dr W G Prasanna Kumar
Chairman, MGNCRE

Block 1

Managerial Economics for Rural Development



Mahatma Gandhi National Council of Rural Education

Department of Higher Education

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Chapter 1 Managerial Economics

Introduction

Managerial economics is framed for facilitating business decisions based on economic theory and quantitative methods in order to develop a vital tool for the business. It also assists to identify the companies' production and pricing strategies and to achieve the short- and long-term objectives quickly and in an effective way.

Objectives

- To understand the concept of managerial economics
- To study the principles of economics
- To identify the main subject areas in managerial economics, explain how they are related to each other, and describe how they are organized.

Structure

1.1 Managerial economics for rural development

1.2 Consumer Behavior

1.3 Elasticity of Demand

1.4 Demand Forecasting

1.5 Case Studies and Reports

To Do Activities

1. Revise the theory, and practice to apply the principles into the real-life situations, when faced with the kind of problems they find in the textbooks.
2. Facilitate discussion with students the relevance techniques and problem solving method in terms of applications.
3. Discuss the theoretical perspective of demand and empirical aspects of demand estimation.
4. Ask students to produce expressive or personal writing for the cases of the above discussed theories such as production and cost, demand & supply.
5. Make the students to do seminars

1.1 Managerial Economics for Rural Development

Generally, managerial economics is an offshoot of two disciplines – economics and management. Therefore, it is necessary to understand what these disciplines are, to understand the nature and scope of managerial economics. Economics aims at giving a solution to this problem by teaching us how to 'minimize' the use of resources and/or how to 'maximize' the level of output. Management of an organization uses the tools and techniques from economics to find out the correct solution to the problem in its organizations.

Overview of Rural Development

Rural development is often defined as development that benefits rural populations and is able to uplift on a long term and sustainable basis of the population's standards of living and wellbeing. In India, agriculture accounts for almost 19% of Indian gross domestic products (GDP). The Ministry of Agriculture, the Ministry of Rural Infrastructure, and the Planning Commission of India are the main governing bodies that formulate and implements the policy related to the rural economy in India and its subsequent development for the overall growth of the Indian economy. However, an enduring claim that entrepreneurial activity promotes economic growth and development has attracted the attention of governments, especially in developing countries to embark on various programs and strategies aimed at developing rural areas and increasing rural economic activity through entrepreneurial development.

The overall Gross Domestic Product (GDP) is estimated to grow at 8.4 percent, with the agriculture and allied sector projected to bounce back with 3.9 percent growth during 200506. Hence, the Indian economy as a whole is poised for still higher growth in the coming years. In the coming future the economy and institutions in rural areas would be acting and reacting with each other to reinforce each other strength. For providing gainful and productive avenues of employment to the growing labor force and relieve unemployment and underemployment in rural backward areas, a massive programme of industrialization in the shape of village and cottage industries have been introduced and implemented by Govt. for developing, supporting and sustaining micro and small village enterprises.

Rural development is more linked to entrepreneurship and it has been considered the backbone of economic development. In developing countries, entrepreneurship development is considered as the way to promote self employment the panacea not only for chronic unemployment among the educated youth but also to sustain economic development and to augment the competitiveness of industries in the eve of globalization and liberalization.

Principles of Economics

Principle 1 Life is Full of Trade offs

There is no such thing as free lunch in economics. This means that if you read this book for, say, you probably miss an important television programme. The important trade off faced by an economic society is the one between efficiency and equity. Efficiency means that society is getting the maximum benefit from its scarce resources. Equity means that the benefits of those resources are distributed fairly among the members of society. Efficiency is concerned with the size of a country's total output (called GDP) and equity refers to how is divided or shared.

Principle 2 All Economic Decisions are Based on Opportunity Cost

It is an amount of cost which is giving up to get another product, known as Opportunity cost. Thus, there are three fundamental economic concepts are intricately related. These are Scarcity, Choice and Opportunity cost. Because resources are scarce, no economic agent can have as much of all as desired. One has to make a choice. And the process of making a choice involves sacrificing something in order to get something else. Perhaps, if you want to do well in your examination, you must work hard, i.e. you must sacrifice some of your leisure time. Time is scarce. There are two options before you do well in the examination, or, enjoy leisure. Your choice favors the former. You sacrifice some of your leisure and the choice is your Opportunity cost.

Principle 3 Most Economic Decisions are Taken at the Margin

In economics, the word 'margin' refers to something extra. For example, the decision of a rational consumer to buy one extra of a commodity depends on marginal utility, i.e. the extra utility obtained by consuming one extra and comparing this with the marginal or extra payment the consumer has to make. Thus, people will only pursue an activity if expected marginal benefits are greater than expected marginal costs, or $E(MB) > E(MC)$.

Principle 4 People Respond to Incentives

Rational people always compare the costs and benefits of a decision. This means that rational people respond to incentives. For instance, when the price of fish rises, people decide to eat more vegetables and less fish because the cost of buying fish is higher. At the same time, fishermen decide to buy more boats and net and catch more fish because to them the benefit of selling fish is higher now.

Principle 5 Trade can Make an individual and a Nation Better off

Trade permits each person to specialize in the activities in which he/ she is most efficient. Some people can catch only fish. Someone may be efficient in farming, some in cloth making. By trading with others, people can buy more goods and services at low cost. The nation also benefits from the ability to trade with one another. International trade makes it possible for countries to specialize in what they do best and how to enjoy a wide variety of goods and services.

Principle 6 Markets are Usually a Good Way to Organize Economic Activities

In a market based economy, firms decide what to produce and when to hire. Households decide what to buy with their limited incomes and which jobs to accept or which organizations to join. These firms and households interact in the market place where they take decisions on the basis of two things prices and self-interested behavior.

Principle 7 The Government can at Times Improve Market Outcomes by Making an Optimal Correction of Market Failure

Markets often fail to produce socially desirable outcomes. And, the government is expected to intervene in the economy for at least two reasons to promote economic efficiency and to ensure social justice (equity). The most government policies aim either by increasing the size of the gross domestic product or changing the pattern of its distribution i.e. its division among different people. The main cause of market failure is an externality. A positive externality is known as a social benefit and negative externality is called social cost. Another possible cause of market failure is a monopoly or imperfect competition. The monopolist will always charge what the buyer will bear, i.e. the maximum price consumers are ready to pay for a commodity or service.

The invisible hand (invisible hand of the government allocates resources efficiently) of the market also fails to ensure an equitable distribution of income and wealth. It does not ensure that everyone gets a minimum amount of food, clothing and health care. This is why through taxes and subsidies the government seeks to achieve a more equitable distribution of economic wellbeing.

Principle 8 The Standard of living of a Country Depends on its Capacity to Produce Foods and Services

Mainly, a country's standard of living depends on the productivity of its resources, such as land labor, capital, and management. The productivity of labor refers to the number of goods and services produced from each hour of a worker's time. In the USA, Japan, Germany, and other industrially advanced countries workers produce a large number of goods and services per period. So, the people of such countries enjoy a high standard of living. In contrast, in less developed countries like India, Bangladesh, Nepal and Pakistan workers are less productive. As a result, most people are poor and just manage to survive. Therefore, the government can ensure that workers are well educated, have the tools needed to produce goods and services and have access to modern sophisticated technology.

Principle 9 Prices Rise when the Government Prints too Much Money

The major problem in the economy is inflation, i.e. a continuous increase in the overall level of prices in the economy. It occurs when the government prints too much money. When this happens the value of money falls. Hence, the major goal of government policy is to keep at a low level.

Principle 10 Society Faces a Short Run Trade off between Inflation and Unemployment

Reducing inflation causes a temporary rise in unemployment. The Philips curve shows the inverse relationship between inflation and unemployment. This trade off arises because some prices are slow to adjust. Also, government policies push inflation and unemployment in the opposite direction.

Forces of Demand and Supply

Generally, the price mechanism involves the determination of prices of commodities and factors through forces of demand and supply operating freely in the markets. Does the question arise as to how be prices determined in the market? The price of a commodity (or a factor) in the market is determined by the general interaction of the forces of demand and supply. A consumer's demand for a commodity depends upon the utility he/she gets from it. However, the aim is to achieve maximum satisfaction (utility) which is known as the state of consumer's equilibrium.

The Ceteris Paribus

It's a Latin expression which means 'all other things remaining constant'. For example, if we wish to examine the effect of price on demand we do not simultaneously change incomes, tastes, etc. This ceteris paribus assumption helps to focus on the economic relationship we want to study.

Economic Methodology

The term 'methodology' refers to the way in which economist go about the study of the subject matter. Generally, an economist makes two types of statements – positive and normative. Positive statements concern what is, what was, or what will be and explains how the world works also such statements depend on facts and observations. Normative statements concern what ought to be and hence, depend on a judgement as to what is good or bad. It proposes solutions to society's problem.

Deduction and Empirical Testing

It is the most important method of approach which starts with a priori proposition or a theory. This proposition or theory is demonstrated logically in the context of a simple model which is set up by specifying the number of assumptions concerning the behavior of the economic variables under investigation. This logical reasoning (called deduction) may yield in turn a number of predictions or testable hypotheses which are then tested statistically. If the evidence supports the theory, simply accept it; instead, it is concluded that the theory is not acceptable and that continued testing is required. If the evidence fails to support the theory, it must be rejected and either replaced by a new theory or modified in some way which improves its predictive power.

Introduction

An alternate methodology followed in economics is known as induction. This involves, first, the collection, presentation, and analysis of economic data and then the derivation of relationships among the observed variables.

Economic Models

All the models are built with assumptions. There are three basic models which are simply the reality in order to understand how the economy works. In general, it explains how the economy is organized and how participants in the economy interact with one another.

- The circular flow
- Production possibilities frontier
- Market equilibrium

Evaluation of Economic Models

Each model is based on a set of assumptions. So, it is an abstraction from reality. For this reason, people do not have much faith in a model. Milton Friedman argued that a model should be judged by its predictive accuracy rather than on how believable its assumptions are. A model must be discarded or modified if its predictions are contradicted by empirical evidence. Economics is a science because the predictions of its models can be refuted by empirical evidence. And economics analyses the day to day activities in relation to the economic wellbeing, the science of economics is thrilling.

Economics It is the study of the allocation of a society's scarce resources to satisfy its unlimited wants for goods and services. Resources are things such as land, labor, machines, and factories which are used to make goods and services.

Economic Goods 'Goods' and 'Services' are things that we value or desire. All goods and services are scarce. These scarce goods which are created from scarce resources are called economic goods.

Rural Development Rural development is often defined as development that benefits rural populations and is able to uplift on a long term and sustainable basis of the population's standards of living and wellbeing. It is commonly accepted, that rural area are associated with poverty and agriculture based economic activities

1.2 Consumer Behaviour

Consumer Behaviour that is not measured in dollars and cents is also predictable in some respects. When lines for movie tickets become long, some people go elsewhere for entertainment. This possesses the main properties of indifference curve along with the relevant assumption regarding consumer behavior.

Utility, Marginal Utility, Total Utility

The Utility is the power or capacity of a commodity to satisfy human wants. Suppose, a person is prepared to pay Rs.3 for orange, it means he gets utility from it worth Rs.3.

Marginal Utility is the additional (extra) utility derived from consumption of an additional of a commodity. If a consumer consumes only one orange, the first is itself the marginal and the satisfaction from it is a marginal utility. If he consumes the second one, the utility derived from the second orange will be called marginal utility.

$$\text{Marginal Utility} = \text{Utility derived from the additional unit}$$

Total Utility is the sum of all the utilities derived from consumption of a certain number of s of a particular commodity.

$$\text{Total Utility} = \text{sum of all marginal utilities}$$

Table 1.2.1 Total Utility

s of oranges consumed	Marginal Utility	Total Utility	
0		0	
1	10	10	TU increase when MU is positive
2	8	18	
3	5	23	
4	2	25	
5	1	26	
6	0	26	TU is maximum when MU=0
7	3	23	TU falls when MU is negative

The concepts of marginal utility and total utility are clarified with the help of the following table and diagram.

The marginal utility is declining as more and more s are consumed but the total is increasing from 10 to 18, then to 23 and then to 25 and so on. Total utility is increasing but at a diminishing rate. It reaches a maximum point when marginal utility is zero. The total utility falls when marginal utility becomes negative.

Law of Diminishing Marginal Utility

This law is the foundation stone of utility analysis. The states 'as more and more' s of a commodity is consumed, marginal utility derived from each successive goes on falling. For instance, a hungry man wants to eat chapatti which will give him maximum satisfaction say 100 utils because it saves him from starvation. The second chapatti will also fetch him utility but not as much as the first chapatti. Suppose he gets 80 utils from the second chapatti. For the same reason, let utility from the third chapatti be 50 utils and from the fourth be 25 utils.

It is possible that he may get zero utility from the fifth chapatti and negative utility from the sixth one. In short, when one (consumer) consumes more and more of a commodity, his intensity of want for the commodity goes on falling and a point is reached when he wants no more of it. Because it explains that a rational consumer is not interested to purchase more commodities at the same price or even at a higher price. Hence, the consumer does not prefer to purchase two cars/ bikes at the same time in spite of having the purchasing power to own it.

Consumer's Equilibrium

The term equilibrium means a state of balance or stability but in economics, it stands for 'best position', 'a position of interaction'. It is a state of rest which once reached has no tendency to change the present position. A consumer buys a certain commodity or service because of its utility i.e. How best to spend his limited income so as to obtain maximum possible satisfaction. When he achieves the state of maximum satisfaction, the consumer is said to be in equilibrium. In simple words, the consumer's equilibrium means the consumer's maximum satisfaction. There are two alternative approaches utility analysis and indifference curve analysis to attain the state of consumer's equilibrium.

a. The condition of Consumer's Equilibrium through Utility Approach (Cardinal Utility)

Consumer's equilibrium in the purchase of a single good is attained when

$$MU \text{ in terms of Money} = \text{price, i.e. } \frac{MU \text{ of a product}}{MU \text{ of a rupee}} = \text{Price of product}$$

MU of one Rupee is defined as "the extra utility when an additional rupee spent on other available goods in general". Suppose a consumer gets marginal utility from consumption of successive oranges, the price of an orange is Rupee one per piece. How many oranges will he consume to attain the level of equilibrium if by spending the same amount on some other good say, a banana, he gets utility equal to 2 utils from consumption of a banana, i.e. of MU of a Rupee is 2 utils.

$$\frac{MU \text{ of a Product}}{MU \text{ of of rupee}} = \text{Price of the Product}$$

b. Consumer's Equilibrium through the Indifference Curve (Ordinal Utility)

Consumer's equilibrium through indifference curve analysis is considered a better approach than a utility analysis approach of Marshall. Traditionally, utility analysis approach is based on the assumption that utility can be measured numerically in simple units called utils and expressed in terms of total utility and marginal utility. This is called a cardinal measure of utility

But in reality utility of a particular commodity can never be measured numerically because satisfaction is a subjective mental phenomenon. Therefore, Prof.J.R.Hicks, the Nobel Prize winner of economics (1972), presented an alternative technique called indifference curve analysis which is based on an ordinal measure of utility is presented in Fig. 1.2.1.

This approach is based on the assumption that every consumer has a scale of preference denoting ranks to different combinations of two goods called bundle and the consumer can prefer the goods from the bundle.

c. Budget Line (Price Line)

The budget line represents all bundles which a consumer can buy with his entire income and prices of two goods. The equation of the budget line is $P_1x_1 + P_2x_2 = M$, where x_1 shows s of good 1 and x_2 shows s of good 2. P_1 stands for price of the good 1 and P_2 for price of the good 2. M stands for money income.

1. The budget line is downward sloping because the consumer can buy/ have extra s of good 1 only by sacrificing some s of good 2 within the given income. Thus the slope of the budget line is good 2/ good 1. This is subject to a budget constraint which indicates what a consumer can afford within his given income.
2. The price line changes its position if either of the prices of two commodities or income changes. If income increases prices remaining the same, the budget line will shift outward parallel to the original budget line. A decrease in the price of good 2 makes the budget line flatter.

d. Indifference Curve (IC) and its Properties

- e. An indifference curve is a curve which shows all those combinations of two goods that give equal satisfaction to the consumer. According to Hicks, a consumer can tell whether various combinations of two goods because they give the same level of satisfaction.

Indifference Curve

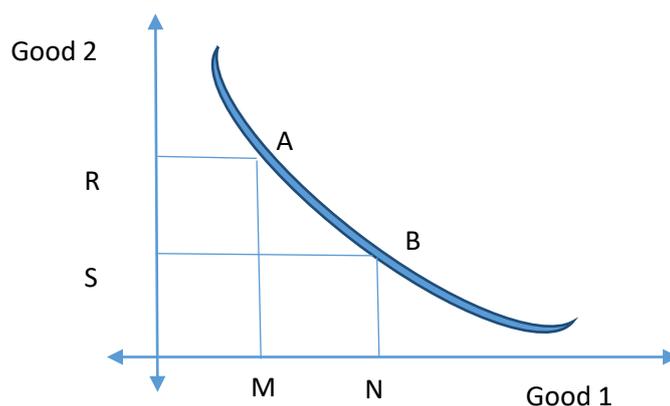


Fig. 1.2.1 Indifference Curve

According to Hicks, a consumer can tell whether various combinations of any two goods which he wants to purchase give him an equal level of satisfaction so that he is indifferent between the combinations. Thus, an indifference curve is the locus of all the points representing various combinations (Bundles) giving same satisfaction towards which consumer is indifferent. A set of indifference curves is called 'indifference map', each curve corresponds to different levels of satisfaction.

1. Assumptions

- The consumer behaves rationally, i.e. he/she tries to obtain maximum satisfaction from his expenditure.
- The consumer is able to arrange available combinations of goods according to his preference.
- It is based on an ordinal measure of utility, the i.e. consumer can denote rank to various combinations of two goods.

2. Properties

IC curve slopes down to the right, because it is both goods are desirable and consumer prefers more goods to fewer goods. Higher IC curves represent a higher level of satisfaction. IC curves are always convex to the origin (0, 0), because of MRS (marginal rate of substitution). IC curves cannot meet or intersect.

a. Marginal Rate of Substitution (MRS)

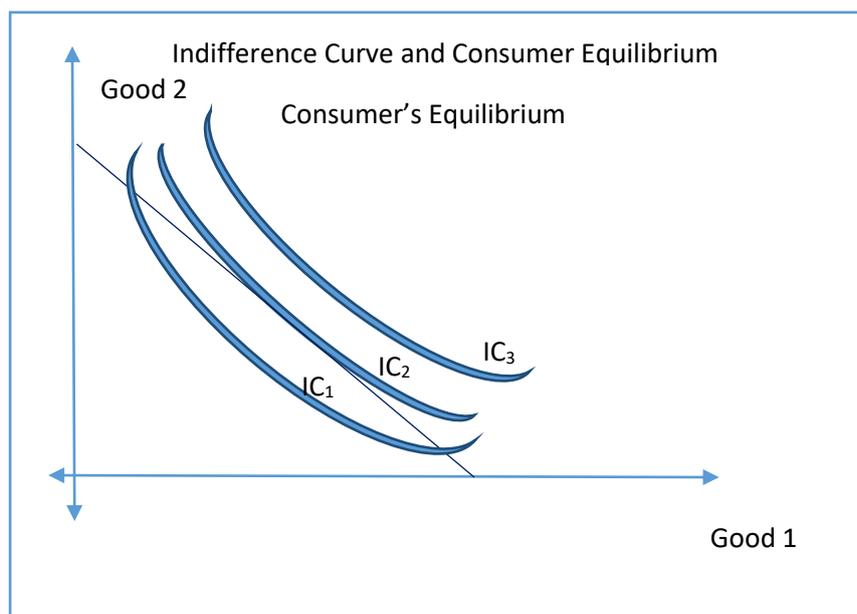
It is the basis of IC curve analysis. MRS is the rate at which the total utility will not change and the consumer is ready to give up the good 2 to get an additional of good 1. From the Fig 1.2.1. considers the two points A and B on the following indifference curve. At point A, a consumer gets a combination of OR (=MA) of goods 2 and OM (=RA) of good 1. Suppose, he shifts from point A to point B where he/ she gets a combination of OS (=ME) of good 2 and ON (=SB) of good 1. For this changes he/she loses AE (=MAME) amount of good 2 and gains EB (=ONOM) amount of good 1 without affecting his/ her level of satisfaction, meaning that the consumer is willing to substitute MN (=EB) of good1 got RS (=AE) of good 2.

b. Consumer's Equilibrium through Indifference Curves

A consumer attains equilibrium at the point where the budget line is tangent to an indifference curve. Symbolically $MRS = \frac{P_x}{P_y}$. For the consumer's equilibrium the following two conditions are necessary.

The budget line should be tangent to indifference curve 2. IC curve should be convex to the point of origin.

The aim of the consumer is to obtain the highest combination with his/ her indifference map and for this he/ she tries to go to the highest IC curve with his/her given budget line.



The consumer would be in equilibrium only at such point which is a common point between budget line and the highest attainable indifference curve. In the adjoining Fig1.2.2, P is the equilibrium point at which budget line M just touches the highest attainable indifference curve IC₂ within consumer budget. However, bundles on the higher indifference curve IC₃ are not affordable because his/her income does not permit whereas bundles on the lower indifference curve IC₁ give lower satisfaction IC₂. It is at this point that consumer attains a state of maximum satisfaction, i.e. equilibrium.

Law of Demand

Statement of the Law of Demand The law explains the relationship between the price and quantity demanded of a commodity, assuming other factors affecting the demand to be constant. According to the law, “other things being constant, quantity demanded of a commodity is inversely related to the price of the commodity” price and demand move in the opposite direction. When the price of a commodity rises, demand falls and when the price falls, demand rises provided factors other than the price remain unchanged.

According to Prof. Marshall, “when the price fall the amount demanded the commodity and vice versa”. In short, normally more of a commodity is demanded at a lower price and less of it at a higher price. This is our general experience. For example, a consumer may demand 2 kg of apples at Rs.35 per kg, however, the consumer may demand 1 kg if the price rises to Rs. 40 per kg. This has been the general behavior on the relationship between the price of the commodity and the quantity demanded. This law further explained with the help of a demand curve.

Law of Diminishing the Marginal Utility

This law states that with consumption of additional s of a commodity, marginal utility derived from successive s goes on diminishing. For instance, utility from the first chapatti to a hungry man is maximum, utility from the second chapatti is lesser from third still lesser and so on because the intensity of want goes on falling. Demand for a commodity depends on its utility or usefulness to the consumer, i.e. if he gets more satisfaction, the consumer will pay more and if he/she gets less utility, he/she will buy additional s only at a lower price.

Since additional s give him less and less utility, he/she will buy them only at a lower price. And this is the law of demand which states that demand for a commodity is more at a lower price and less at a higher price. It is said that the demand curve is downward sloping because of the law of diminishing marginal utility. In fact, the demand curve is essentially the same as the downward sloping portion of the marginal utility curve. Thus, the law of demand itself is based on the law of diminishing marginal utility. Since the additional s of a commodity give a consumer less satisfaction, additional s will be demanded only at lower prices.

The Income Effect

A change in the quantity demanded as a result of a change in real income caused by a change in the price of the commodity is called income effect. For instance, when the price of a commodity falls, less has to be spent on the purchase of that commodity. With the money saved, a consumer can buy more quantity of that good. Thus, a fall in price increases the real income of a consumer with the result that he buys more when the price falls. Similarly, a rise in price virtually amounts to fall in real income of the consumer leading to contraction of his demand. This part of the increase in demand is called income effect which

explains why people buy more when the price falls and less when the price rises. However, the income effect is related to change in income due to a change in price and not due to a change in money income.

The Substitution Effect

Substituting a commodity for the relatively better commodity is called the substitution effect. It refers to the substitution of one commodity in place of the other commodity when it becomes relatively cheaper. For example, a rise in the price of commodity says, coffee, coffee even though the price of tea remains unchanged. As a result, if people buy more tea and less coffee, it will be a case of substitution effect since coffee has been substituted by tea. This part of the increase in demand is called the substitution effect. Generally, it explains why a commodity is demanded less when its price goes up. The effect operates reverse when the price of the commodity falls. Thus, when the price of a good falls, the good becomes cheaper and more price attractive. And it induces the consumer to substitute other goods with the good whose price has fallen. This leads to a rise in demand of the commodity the price of which has fallen.

price effect = income effect + substitution effect.

The behavior of buyers and sellers naturally drives markets toward their equilibrium. When the market price is above the equilibrium price, there is a surplus of the good, which causes the market price to fall. When the market price is below the equilibrium price, there is a shortage, which causes the market price to rise. To analyze how any event influences a market, we use the supply and demand diagram to examine how the event affects the equilibrium price and quantity. To do this, we follow three steps. First, we decide whether the event shifts the supply curve or the demand curve (or both). Second, we decide which direction the curve shifts. Third, we compare the new equilibrium with the old equilibrium.

Problem

1. PK Corp estimates that its demand function is as follows

$$Q = 150 - 5.4P + 0.8A + 2.8Y - 1.2P^*$$

Q=quantity demanded per month (in 1000s)

P=price of the product (in £)

A=firm's advertising expenditure (in £'000 per month)

Y=per capita disposable income (in £'000)

P *=price of BJ Corp (in £).

- a) During the next five years, per capita, disposable income is expected to increase by £2,500. What effect will this have on the firm's sales?
- b) If PK wants to raise its price by enough to offset the effect of the increase in income, by how much must it raise its price?

Solution

- a) Use the marginal effect of income on quantity demanded

$$\frac{\Delta Q}{\Delta P} = 2.8; \Delta Y = 2.5; \frac{\Delta Q}{\Delta Y} = 2.8; \Delta Q = 2.8 * 2.5 = 7 \text{ or } 7000 \text{ units}$$

- b) Use the marginal effect of price on quantity demanded

$$\frac{\Delta Q}{\Delta P} = -5.4; \frac{-7}{\Delta P} = -5.4; \Delta P = \frac{-7}{-5.4} = £1.30.$$

Self Evaluation Activity

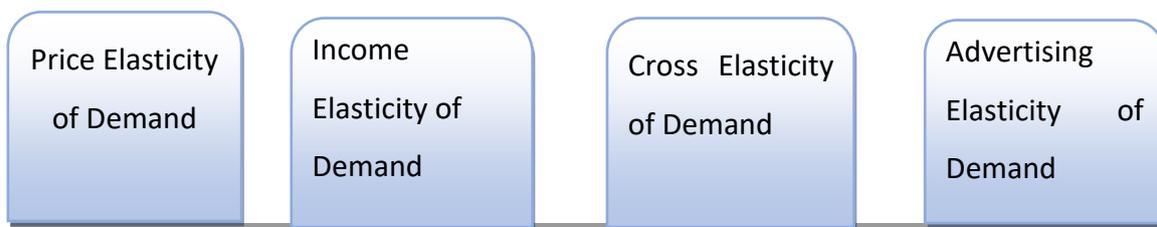
The study of Consumer Behaviour is both a science and an _____. It includes within its purview, the interplay between cognition that _____ the behaviour. Generally, consumer behaviour of actual purchase activity is the result of interplay of many individual and _____ determinants. (1, art, 2. Affect, 3, environment).

1.3 Elasticity of Demand

The demand function is useful for managers as it identifies the causal variables for and the direction of their effects on the demand for their products. However, this knowledge is not enough. The manager must know the quantitative relationship between the demand for his product and its determinants for taking certain managerial decisions. This is able to elaborate on the concept of 'elasticity of demand'.

Types of Elasticity

There are four important kinds of elasticity namely



(I) Price Elasticity of Demand

It refers to the quantity demanded of a commodity in response to a given change in the price of the commodity. It can be computed with formula.

$$E_P = \frac{(Q_2 - Q_1)/Q_1}{(P_2 - P_1)/P_1}$$

where Q_1 = quantity demanded for the product 1 before the changes. Q_2 = Quantity demanded for the product 2 after the changes. P_1 = price before the change. P_2 = price after the change. The demand is said to be elastic with respect to price if the change in quantity demanded is more than the change in price.

- This implies that the elasticity is more than one ($e > 1$). The demand is said to be inelastic relatively inelasticity of demand, when changes in the quantity.
- The demand is said to be relatively elasticity when the change in demand is less than one ($e < 1$)
- The demand is said to be relatively elastic or , when the change in quantity demanded, is equal to the change in price ($e = 1$).

The demand elasticity is zero when a change in price causes no change in quantity demanded and the demand elasticity is said to be infinity when no reduction in price is needed to cause an increase in demand.

- **Importance of Price Elasticity**
 - Knowledge of price elasticity helps to guide a firm whether its sales proceeds, decrease or remain invariable under conditions of price variations.

- It also helps the firm to estimate the likely demand for its product at different prices.

(ii) Income Elasticity of Demand

Income elasticity of demand states to the quantity demand of commodity in response to a given change in income of the consumer.

It can be computed from the following formula.

$$E_I = \frac{\text{Proportionate change in quantity demand}}{\text{Proportionate change in income}}$$

The same is expressed as

$$ED_I = \frac{(Q_2 - Q_1)/Q_1}{(I_2 - I_1)/I_1}$$

Q_1 = the amount of quantity before change. Q_2 = the amount of quantity after change. I_1 = daily income before change. I_2 = daily income after change.

The income elasticity of demand is positive for superior goods and negative for inferior goods. Positive income elasticity of demand can be of three kinds – more than y elasticity, y elasticity and less than y elasticity. The income elasticity of demand is positive and more than y when a change in income leads to a direct and more than proportionate change in quantity demanded. E.g. Luxury articles. The income elasticity of demand is positive and y when a change in income results into a direct and proportionate change in quantity demanded. E.g. semi luxury. Income elasticity of demand is positive and less than y when an increase in consumer's income causes a less than proportionate increase in quantity demanded and vice versa. E.g. food, clothing etc. The income elasticity of demand is negative when an increase in income leads to a decrease in quantity demanded.

• Importance of Income Elasticity

- Knowledge of income elasticity demand for good helps to estimate the likely changes in demand for a product as a result of changes in national income.
- It also helps us to know whether a commodity is a superior good, nominal or an inferior good.

(iii) Cross Elasticity

CR refers to the quantity demand for a commodity with respect to a change in the price of a related good, which may be a substitute or a compliment.

$$E_C = \frac{\text{Proportionate change in quantity demanded product A}}{\text{Proportionate change in price of product B}}$$

$$E_C = \frac{(Q_2 - Q_1)/Q_1}{(P_B - P_A)/P_A}$$

where Q_1 = Quantity demand price before the change; Q_2 = Quantity demand price after the change; P_A = Price of product A; P_B = Price of related product B. Cross elasticity is always positive for substitute and negative for complements. It should be noted that great the cross elasticity, the more related the two goods are. The cross elasticity will be zero, if the two goods have no relationship.

- **Importance of cross elasticity**

- It is useful in measuring the interdependence of demand for a commodity and the prices of its related commodities.
- It helps to estimate the likely effect on its sales of pricing decisions, its competitors and helpers

(iv) Advertising Elasticity

It refers to the measurement of proportionate change in the quantity demand of product X in response to the proportionate change in advertisement costs. Advertising elasticity is always positive.

$$E_A = \frac{\text{Proportionate change in quantity demanded}}{A \text{ Proportionate change in advertisement costs}}$$

$$E_A = \frac{(Q_2 - Q_1)/Q_1}{(A_2 - A_1)/A_1},$$

where Q_1 = quantity demanded before the change; Q_2 = quantity demanded after the change; A_1 = The amount spent on advertisement before the change; A_2 = The amount spent on advertisement after the change. Advertising elasticity of demand is high when even a small percentage change in advertising expenditure results in a large percentage of change in the level of quantity demanded.

- **Importance of Advertising Elasticity**

- It helps a decision maker to determine his advertisement outlay and the necessary amount to be invested for the advertisement.

Factors Affecting Elasticity of Demand

There are 9 major factors which influence the elasticity of demand for a commodity or economics. For example, a large change in the price of salt may not affect its demand, meaning that a small change in the price of AC may affect its demand to a considerable level. The elasticity of demand is different for different goods are given below.

Nature of commodity; ii) Availability of substitutes; iii) Income level; iv) Level of price; v) Postponement of consumption; v) Number of uses; vi) Share in total expenditure; vii) Time period; viii) Habits

- **Nature of Commodity**

- The elasticity of demand for a commodity has an influence on purchasing power by its nature. A commodity for a person may be a necessity, a comfort or a luxury.

The necessity commodity like food grains, vegetables, medicines, etc., demand are generally inelastic as it is required for daily survival and its demand for that commodity is not fluctuate much with a change in price. Whereas the comfort commodity like a fan, refrigerator are elastic as a consumer can shelve this consumption later. Now, the luxury commodity like AC, DVD player

is more elastic as compared to the demand for comforts. The term 'luxury' is a qualified term as any item (like AC), may be a luxury for a poor person but an obligation for a rich person.

- **Availability of Substitutes**

With a large number of substitutes, the demand for a commodity implies elastic. Due to a small rise in its prices lead to induce the buyers to go for its substitutes. For example, a rise in the price of coffee emboldens buyers to buy Tea and vice versa. Thus, the availability of close substitutes makes the demand sensitive to change in the prices.

- **Income Level**

Generally, the elasticity of demand for any commodity is a smaller amount for higher income level groups in contrast to people with low incomes. Because rich people are not precise much by changes in the price of goods. However, poor people are highly pretentious by increase or decrease in the price of goods. As a result, the demand for lower income group is highly elastic.

- **Level of Price**

Expensive goods like a laptop, Plasma TV, etc. have highly elastic demand as their demand is very sensitive to changes in their prices. Therefore, the level of price affects the price elasticity of demand. However, the demand for economic goods like a needle, matchbox, etc. is inelastic as a change in prices of such goods do not change their demand by a substantial amount.

- **Postponement of Consumption**

Goods like biscuits, soft drinks have highly elastic as their consumption can be postponed. An increase in their prices whose demand is not urgent. However, goods with urgent demand like lifesaving drugs, have inelastic demand because of their immediate requirement.

- **Number of Uses**

Suppose, the commodity under consideration for several uses, the demand of it will be elastic. Then, the price of such a product increases, then it is set only for more urgent uses, as a result of this, the demand for this product falls. If prices fall, then it will be used for satisfying a smaller amount of dire needs.

- **Share in Total Expenditure**

The proportion of consumer's income spent on a commodity influences the elasticity of demand. If the amount is greater than the proportion of income spent on the commodity then the elasticity of demand for the commodity is more. For instance, the demand for goods like salt, needle, soap, matchbox is inelastic. As consumers spend a small quantity of their income on such goods the prices of such goods change, consumers continue to purchase almost the same quantity of these goods. However, if the amount of income spent on a commodity is large, then demand for such goods will be elastic.

- **Time Period**

Period of time is related to price elasticity of demand. For example a day, a week, a month, a year or a period of several years. The elasticity of demand varies directly with the time period. Generally, demand is inelastic in the short period. In the short period, it is difficult to react to the price changes of the given commodity due to the change of consumer's habits. However, if the price of the given commodity rises then the demand for the product will be more elastic in the long period. Therefore, it is comparatively easier to shift to other substitutes.

- **Habits**

Goods and services have become habitual necessities for consumers who have less elastic demand. Because the commodity becomes a necessity for the consumer and he/she continues to purchase it even if its price rises. Examples Alcohol, tobacco, cigarettes, etc.

Methods for Measuring Elasticity of Demand

Usually, the following three methods are used for measuring the elasticity of demand which is shown in Fig.1.3.1



Fig.1.3.1 Methods for Measuring Elasticity of Demand

Total expenditure/ utility elasticity method can be measured in terms of changing in price which is shown in Table 3.1.1.

Table 3.1.1 Total Expenditure on Handkerchief Based on the Demands

Price per handkerchief (Rs.)	No. of quantity Demanded	Total amount spent (Rs.)
7	2	14
4	3	12
3	4	12
2	8	16

- Total Expenditure (y Elasticity)
- Propositional method
- Geometrical method

The elasticity can be measured by equalling the percentage in price with the percentage change in demand. According to the changes of demand and price the elasticity may classify as proportionate, more than proportionate, or less than proportionate. The ratio will be giving the total expenditure of the commodity.

The Formula is

Elasticity = Proportionate change in demand/ Proportionate change in price = Change in Demand/ Amount demanded + Change in price/ Price.

- **Geometrical Method (Point Elasticity)**
Point elasticity measures the elasticity of demand at any given point on the demand curve. Look at Fig 1.3.2

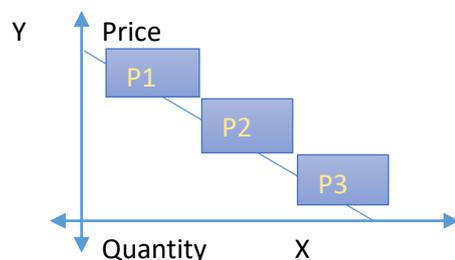


Fig.1.3.2 Estimation of Point Elasticity

DD' is the straight line in the demand curve. The points are P_i , P_i , and P_1 on the demand curve DD'.

$$\frac{D'P_1}{DP_1} \frac{D'P_2}{DP_2} \text{ and } \frac{D'P_3}{DP_3}$$

If the point P_2 , is the middle point of DD', then elasticity at P_2 , will be $DP_2 = 1$, ($D'P_2$, being equal to DP_2 ,) i.e., elasticity at the point P_2 , the middle point, is y . At any point lower than P_2 , elasticity will be less than y . It is observed that at any point above P_2 , the elasticity will be greater than y .

Price elasticity measures the responsiveness of the quantity demanded or supplied of a good to a change in its price. It is computed by the percentage change in quantity demanded/and or supplied divided by the percentage change in price. Elasticity can be described as very responsive, not very responsive.

Elastic demand or supply curves indicates that the quantity demanded or supplied response to price changes in a greater than proportional manner. An inelastic demand or supply curve is one where a given percentage change in price will cause a smaller percentage change in quantity demanded or supplied. Any elasticity means that a given percentage change in price leads to an equal percentage change in quantity demanded or supplied.

• **Problem 1**

If the prices of a commodity rise from Rs 8 per to Rs 10 per, a consumer's demand falls from 110 s to 100 s. Find out the price elasticity of demand for the commodity?

Solution

$$\Delta p = Rs 2 (10 - 8); \Delta q = -10 \text{ units } (100 - 110); p = Rs 10; q = 100 \text{ units}$$

$e_D = \frac{\Delta q}{\Delta p} \times \frac{p}{q} = \frac{-10}{2} \times \frac{8}{110} = -0.36$. Since e_D is less than, the price elasticity of demand for the commodity is less elastic.

• **Problem 2**

At the price of Rs 4 per, a consumer buys 50 units of good. The price elasticity of demand is 2. How many units will the consumer buy at Rs 3 per?

Solution

$$-2 = \frac{\Delta q}{-1 (= 3 - 4)} \times \frac{4}{50}$$

$\Delta q = 2 \times \frac{50}{4} = 25$. The consumer will buy 75 units (50+25) as the price has fallen.

1.4 Demand Forecasting

Demand forecasting defines how much of a good or service would be bought, consumed, or experienced in the future at the given marketing actions, and the market conditions. Demand forecasting can also involve forecasting influences on demand, such as changes in product design, price, advertising, or taste, seasonality, the actions of competitors and regulators, and changes in the economic environment.

In this context of demand forecasting, the role of the rural analyst is to provide the decisionmakers with the (best available) objective analysis. The decision analyst would then decide the policies based on quantitative assessment. Since in democracy politicians embody the rural development, the ultimate role of the analyst is to exploit knowledge from information using statistical tools and let the rural people decide by themselves in light of this knowledge.

Objectives of Demand Forecasting

The objectives of demand forecasting are shown in Fig 1.4.1.

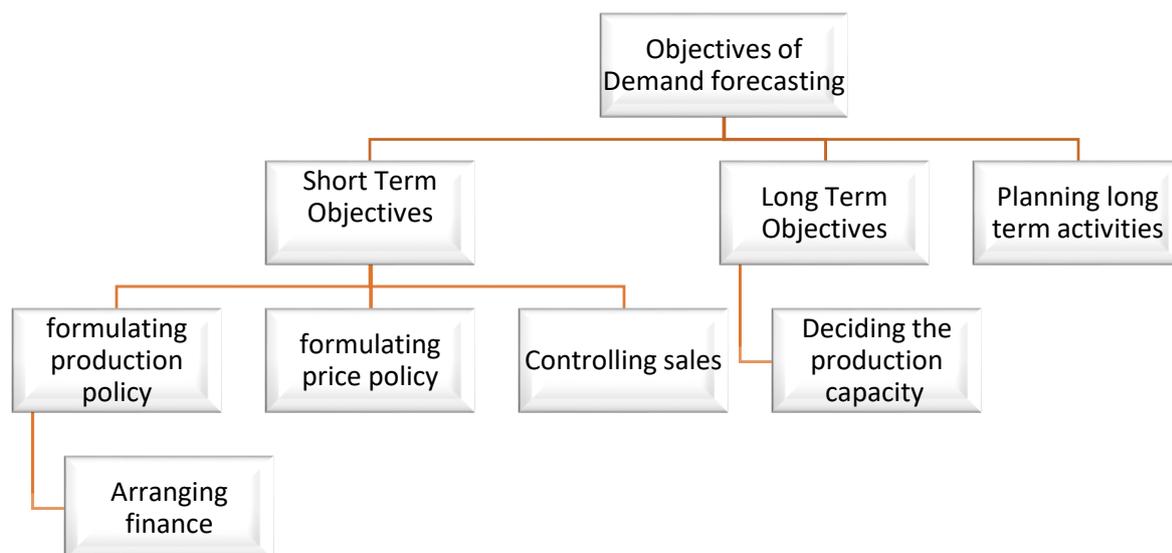


Fig. 1.4.1 Flow Chart of Demand Forecasting

i) Short Term Objectives

a. Formulating Production Policy

This production policy helps to cover the gap between the demand and supply of the product. The demand forecasting estimation gives the demanded measurement of raw material in the future so that the supply of raw material can be maintained. It further aids to maximise the utilization of resources based on the estimation.

b. Formulating Price Policy

The most important objectives of demand forecasting are formulating the price policy in an organization. Generally, an organization sets prices of its products according to their demand. For Instance, if an economy enters into depression or recession phase, the demand for products falls. In such a case, the organization sets low prices of its products.

c. Controlling Sales

Another way of controlling sales is setting sales targets, based on sales performance. So, an organization make demand forecasts for different regions and fix sales targets for each region accordingly.

d. Arranging Finance

The financial requirements of the enterprise are estimated with the help of demand forecasting. This basically, ensures the proper liquidity within the organization.

ii). Long Term Objectives

a. Deciding the Production Capacity

Production capacity also decides/ or predicts the demand forecasting of an organization which can help to determine the size of the plant required for the production process. Since the size of the plant should conform to the sales requirement of the organization, it is important to decide the production capability.

b. Planning Long Term Activities

Demand forecasting helps in planning for the long term. Perhaps, if the forecasted demand for the organization's products is high, then it may plan to invest in various expansion and development projects in the long term.

Factors Influencing Demand Forecasting

Demand forecasting is a proactive process which helps in determining what products are needed where, when, and in what quantities. There are a number of factors that affect demand forecasting which is represented in Fig.1.4.2.

i. Types of Goods

Types of goods affect the demand forecasting process in the long run. These goods can be established and new goods. Established goods are those goods which already exist in the market, whereas new goods are those which are yet to be introduced in the market.

ii. Competition Level

Level of competition Influences the process of demand forecasting. In a highly competitive market, demand for products also depends on the number of competitors existing in the market. Moreover, in a highly competitive.

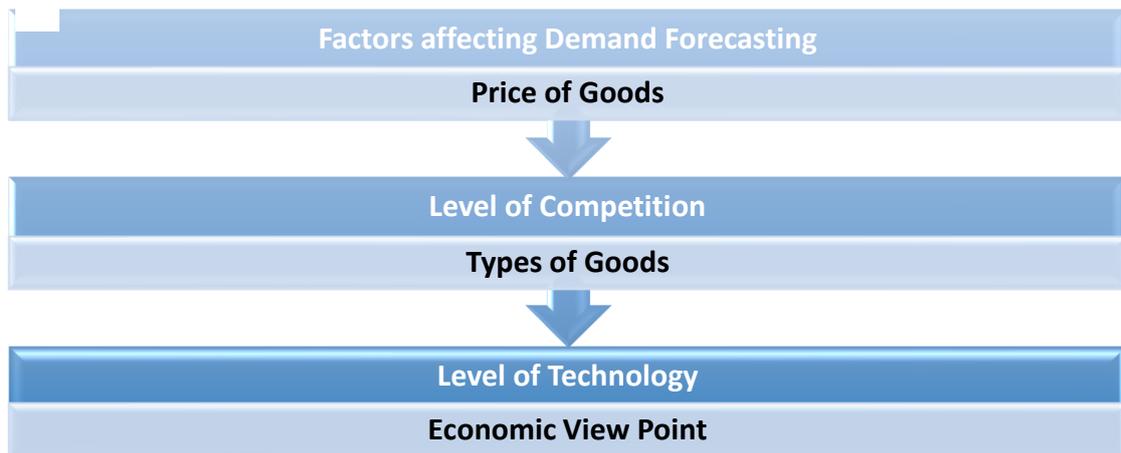


Fig. 1.4.2 Firm's Different Competition Level

The market, there is always a risk of new entrants. In such a case, demand forecasting becomes difficult and challenging.

iii. Price of Goods

In the demand forecasting process, the price of goods acts as a major influencing factor. The demand forecasts of industries are highly affected by the change in their pricing policies. In such a scenario, it is difficult to estimate the exact demand of products of the industry.

iv. Level of Technology

Technology constitutes an important factor in obtaining reliable demand forecasts. If there is a rapid change in technology, the existing technology or products may become obsolete. For instance, there is a high decline in the demand of floppy disks with the introduction of compact disks (CDs) and pen drives for saving data in the computer. In such a case, it is difficult to forecast the demand for existing products in the future.

v. Economic Viewpoint

Economic viewpoint aids to make a decision in an organization. For example, if there is a positive development in an economy, such as globalization and high level of investment, the demand forecasts of organizations would also be positive.

Types of Forecasting

Forecasts can be of five types, which are explained in Fig. 1.4.3,

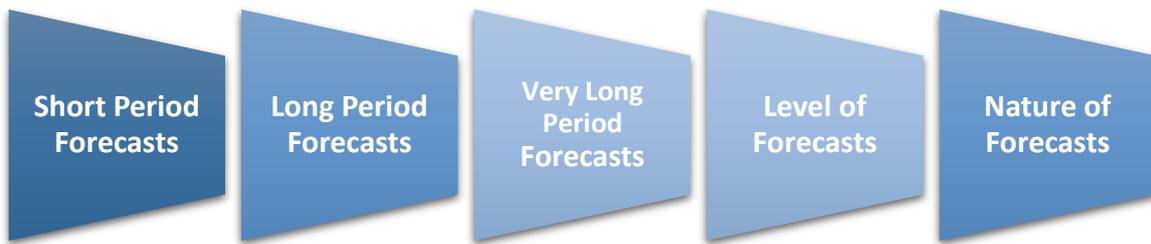


Fig. 1.4.3 Types of Forecasting Method

1. Short Period Forecasts

Generally, short period forecasts are important for deciding the production policy, price policy, credit policy, and distribution policy of the organization based on one-year period.

2. Long Period Forecasts

A long period of 5-10 years and based on scientific analysis and statistical methods. This forecast helps in deciding to introduce a new product, expansion of the business, or requirement of extra funds in an organization.

3. Very Long Period Forecasts

The very Long period consists of more than 10 years. These forecasts are carried to determine the growth of population, development of the economy, the political situation in a country, and changes in international trade in the future. However, among the aforementioned forecasts, short period forecast deals with deviation in the long period forecast. Hence, the short period forecasts are more accurate than the long period forecasts.

4. Level of Forecasts

The level of the forecast can be carried at three levels, namely, macro level, industry level, and firm level. At the macro level, forecasts are undertaken for general economic conditions, such as industrial production and allocation of national income. At the industry level, forecasts are prepared by trade associations and based on the statistical data. Moreover, at the industry level, forecasts deal with products whose sales are dependent on the specific policy of a particular industry. Finally, at the firm level, forecasts are done to estimate the demand for those products whose sales depend on the specific policy of a particular firm. A firm considers various factors, such as changes in income, consumer’s tastes and preferences, technology, and competitive strategies, while forecasting demand for its products.

5. Nature of Forecasts

A general forecast provides a global picture of the business environment, while a specific forecast provides an insight into the business environment in which an organization operates. Generally, organizations opt for both the forecasts together because overgeneralization restricts accurate estimation of demand and too specific information provides an inadequate basis for planning and execution.

Measurement of Demand Forecasting

The Demand forecasting process of an organization can be effective only when it is conducted systematically and scientifically. Basically, it involves a number of steps, which are shown in Fig. 4.4



Fig 1.4.4 Measurement of Demand Forecasting

i. The Setting the Objective of Demand Forecasting Involves the Following

First and foremost, step of the demand forecasting process is to state the purpose of demand forecasting before initiating it. Deciding the time period of forecasting whether an organization should opt for short term forecasting or long term forecasting. Deciding whether to forecast the overall demand for a product in the market or only for the organizations own products. Deciding whether to forecast the demand for the whole market or for the segment of the market. Deciding whether to forecast the market share of the organization

ii. Determining Time Period

Time Involves deciding whether the time perspective for demand forecasting for a long period or short period. In the short run, determinants of demand may not change significantly or may remain constant, whereas, in the long run, there is a significant change in the determinants of demand. Therefore, an organization determines the time period on the basis of its set objectives.

iii. Selecting a Method for Demand Forecasting

The method of demand forecasting differs from organization to organization depending on the purpose of forecasting, time frame, and data requirement and its availability. Selecting the suitable method is necessary for saving time and cost and ensuring the reliability of the data.

iv. Collecting Data

This step requires to gather primary or secondary data. Primary’ data refers to the data that is collected by researchers through observation, interviews, and questionnaires for particular research. On the other hand, secondary data refers to the data that is collected in the past; but can be utilized in the present scenario/research work.

v. Estimating Results

Finally, the estimation result Involves making an estimate of the forecasted demand for predetermined years. The results should be easily interpreted and presented in a usable form. The result should be easy to understand by the readers or management of the organization.

Demand forecasting is a method which helps to predict the demand for an organization's product in the future. It is a series of steps which are useful to anticipate the future demand which is influenced by factors which can be controlled or noncontrolled.

For example, electricity demand in rural areas has not successfully predicted in developing countries, due to uneconomic pricing, low demand and higher per costs. In developing counties like India where only about 4050% of the villages who are electrified and only about 30% of the population in these electrified areas have access to electricity.

However, one of the biggest problems is that the availability of enough observation points, especially because the electrified and nonelectrified regions do not exist separately, but are present in the same Chapter. Studies show that load growth potential forecast demand method can maximize the

electrification by ensuring the higher load factors for the electricity which might greatly help the farmers and the nation.

• **Problem 1**

Use the regression model approach to estimate the simple linear relation between the natural logarithm of GDP and time (T) over the 1966–99 subperiod, where

$$\ln GDP_t = b_0 + b_1 T_t + u_t$$

Where $\ln GDP_t$ is the natural logarithm of GDP in year t, and T is a time trend variable; ($T_{1966} = 1, T_{1967} = 2, \dots, T_{1995} = 30; b_0 = 6.609 | t = 227.74; b_1 = 0.082 | t = 50.19; R^2 = 98.9\%$) and u is a residual term. This is called a constant growth model because it is based on the assumption of a constant percentage growth in economic activity per year. How well does the constant growth model fit actual GDP data over this period?

Solution

The constant growth model is used to estimate the linear relation between the $\log(GDP)$ and time over 1966–95, totally 30 years period (t value (statistic) is given in parentheses), used to forecast GDP over the 1996–2000 (5 year period), is given by

$$\ln GDP_t = 6.609 + 0.082 T_t \quad R^2 = 98.9\%$$

The $R^2 = 99.50\%$ which shows a highly significant statistic for the time trend variable. It indicates that there is a change in GDP over the 1966–95 time horizon. However, the small differences in the intercept and slope can lead to large forecast errors over time.

• **Problem 2**

Constant Growth Model. The U.S. Bureau of the Census publishes employment statistics and demand forecasts for various occupations.

Occupation	Employment (years 1998 and 2008)	
Bill collectors	311	420
Engineers	299	622
Doctors	66	98
Psychoanalysts	86	123
Systems specialists	617	1194

- Using a spreadsheet or handheld calculator, calculate the ten year growth rate forecast using the constant growth model with annual compounding, and the constant growth model with continuous compounding for each occupation.
- Compare your answers and discuss any differences.

Solution

- Using the assumption of annual compounding,

$$E_1 = E_0(1 + g)^t; 420 = 311(1 + g)^{10}; 1.35 = (1 + g)^{10}; \ln(1.35) = 10 * \ln(1 + g)$$

$$\frac{0.300}{10} = \ln(1 + g); e^{0.030} = 1 + g; 1.0311 = g; g = 0.030 \text{ or } 3.1\%$$

b) Using the assumption of annual compounding,

$$E_t = E_0 e^{gt}; 420 = 311 e^{10g}; 1.35 = e^{10g}; g = \frac{0.3000}{10}; 0.03 \text{ or } 3\%.$$

1.5 Case Studies and Report

Son Consumer Equilibrium and Demand & Elasticity

Smoke of Vietnam

The research of Vietnam Public Health University shows that each year, smoking kills 40,000 Vietnamese, four times the fatalities from traffic accidents. Total expenditures of treating three common diseases involving smoking include lung cancer, chronic obstructive pulmonary disease, and ischemic heart disease come to 1,100 billion VND/year.

According to Mrs. Hoang Anh from Health Bridge Organization in Hanoi, at the same brand of cigarette, a pack of it in Vietnam has the cheapest price. The average retail price of cigarettes is 0.22 USD/pack – a price that almost cannot be found anywhere in the world. Thus, the youth is easier to approach smoking since cigarettes are too cheap and too simple to buy. In fact, as the statistics of SAVY (Survey Assessment of Vietnamese Youth) in 2003 – 2004, in the age of 14 – 25, 43.6 percent smoker is male and 1.2 percent is female, the rate of smokers increase with age. 71.7 percent of male smoker continues smoking. Mrs. Hoang Anh said the reason for low cost cigarette is because, in Vietnam, the tax imposed on cigarettes is among the lowest. Recently, the WHO has recommended the cigarette tax should be at 65 percent / retail costs, however, Vietnam has just reached 46 percent. The price elasticity concepts can be used in this case in an effort to deter people from smoking.

Tobacco products are kind of goods with inelastic demand since there are almost no substitute goods for them. Therefore, it is hard to reduce the number of people smoking once they have been addicted. Moreover, cigarettes also have a high income elasticity of demand as people with high income will be willing to buy a lot more of packs of cigarettes, thus, they become more and more addicted.

One way to reduce youth smoking in particular and people smoking, in general, is to raise the price through higher cigarettes taxes. The reduction amount of youth smoking depends on the price elasticity of demand. This elasticity is elastic for teenagers than for adults. It is because teenager income is relatively low, the portion spent on cigarettes usually bigger than that of adult smokers. In addition, peer pressure affects a young person's decision to smoke more than an adult's decision to continue smoking. The impact of a higher price also reduces smoking by peers and thus, drives down the number of young smokers. Moreover, young smokers not yet addicted to nicotine are more sensitive to price rises than adults, who are likely to be heavy smokers. The experience from other countries encourages the efficiency of higher cigarette taxes in reducing people smoking. For example, Thailand government has regularly raised the cigarettes taxes nine times within 15 years (1992 – 2007) and recently, the amount of tax collected is 23 times more than Vietnam and the number of smokers is two thirds less than Vietnam.

Hence, Vietnam needs to base on those determinants involving the price elasticities which bring about effects on demanding for cigarettes to apply in imposing appropriate taxes on that product at the earliest time. In fact, WHO research indicates that if Vietnam raises about 20 percent of the cigarette's taxes, then the retail costs will increase by 10 percent. Thus, the government income will increase 1,500 – 2000 billion VND and avoid 100,000 fatalities by smoking annually.

Question

How the price elasticities are useful in analyzing the different price conditions of a harmful good involving the demand for it so as to take the right actions to solve one of the social problems. Justify your answer.

Marks & Spencer

Does M&S have a Future?

The country's most famous retailer Marks & Spencer's big store in London's Kensington High Street has just had a refit. Instead of the usual drab M&S interior, it is now Californian shopping mall meets modernist chrome and creamy marble floors. Roomy walkways and designer displays have replaced dreary row after row of clothes racks. By the end of the year, M&S will have 26 such stores around Britain – the first visible sign that the company is making a serious effort to pull out of the nosedive it has been in for the past two years.

Things have become so bad that M&S, until recently a national icon, is in danger of becoming a national joke. It does not help that its advertisements featuring plump naked women on mountains – the first ever TV ads the company has produced – have met with an embarrassed titter; nor that, last week, the BBC's Watchdog programme savaged M&S for overcharging and poor quality in its range of garments for the fuller figure. As the attacks grow in intensity, so do the doubts about M&S's ability to protect its core value a reputation for better quality that justified a slight price premium – at least in basic items, such as underwear. It is a long time since any self respecting teenager went willingly into an M&S store to buy clothes. Now even parents have learned to say no. Shoppers in their thirties and forties used to dress like their parents. Now many of them want to dress like their kids.

M&S's makeover comes not a moment too soon. Compared with the jazzy store layouts of rivals such as Gap or Hennes Mauritz, M&S shops look like a hangover from a bygone era. The makeover aims to bring it into the present. People tended to join M&S straight from college and work their way slowly up the ranks. Few senior appointments were made from outside the company. This meant that the company rested on its laurels, harking back to 'innovations' such as machine washable pullovers and chilled food. Worse, M&S missed out on the retailing revolution that began in the mid1980s, when the likes of Gap and Next shook up the industry with attractive displays and marketing gimmicks. Their supply chains were overhauled to provide what customers were actually buying – a surprisingly radical idea at the time. M&S, by contrast, continued with an outdated business model. It clung to its 'Buy British' policy and it based its buying decisions too rigidly on its own buyers' guesses about what ranges of clothes would sell, rather than reacting quickly to results from the tills. Meanwhile, its competitors were putting together global purchasing networks that were not only more responsive but were not locked into high costs linked to the strength of sterling.

In clothing, moreover, M&S faces problems that cannot be solved simply by improving its fashion judgments. Research indicates that overall demand for clothing has at best stabilized and may be set to decline. This is because changing demographics mean that an everhigher share of consumer spending is being done by the affluent over45s. They are less inclined than youngsters to spend a high proportion of their disposable income on clothes. The results of M&S's rigid management approach were not confined to clothes. The company got an enormous boost 30 years ago when it spotted a gap in the food market, and started selling fancy convenience foods. Its success in this area capitalized on the fact that, compared with clothes, food generates high revenues per square meter of floor space. While food takes up 15% of

the floor space in M&S's stores, it accounts for around 40% of sales. But the company gradually lost its advantage as mainstream food chains copied its formula. M&S's share of the British grocery market is under 3% and falling, compared with around 18% for its biggest supermarket rival, Tesco.

M&S has been unable to respond to this competitive challenge. In fact, rather than leading the way, it has been copying rivals' features by introducing inhouse bakeries, delicatessens, and meat counters. Food sales have been sluggish, and operating margins have fallen as a result of the extra space and staff needed for these services. Operating profits from food fell from £247m in 1997 to £137m in 1999, while sales stayed flat. Perhaps the most egregious example of the company's insularity was the way it held out for more than 20 years against the use of credit cards, launching its own store card instead. This was the cornerstone of a new financial services division, also selling personal loans, insurance, and trust investments. When, in April this year, M&S eventually bowed to the inevitable and began accepting credit cards, it stumbled yet again. It had to give away around 3% of its revenues from card transactions to the card companies but failed to generate a big enough increase in sales to offset this. Worse, it had to slash the interest rate on its own card, undermining the core of its own finance business. And this at a time when the credit card business was already becoming more competitive, with new entrants offering rates as low as 5%.

If shrunk to its profitable core, M&S may become an attractive target for another big retailer. At the moment, however, while its food division may be attractive to the likes of Tesco, the clothing side represents a daunting challenge. Why take the risk now, when the brand may be damaged beyond repair?

Review Questions

1. What is the Opportunity cost of seeing a movie?
2. "We can live without the diamond, but not without water. Yet diamond is costlier in the market". Explain the paradox.
3. You are trying to decide whether to take a vacation Most of the costs of the vacation (airfare, hotel, and forgone wages) are measured in dollars, but the benefits of the vacation are psychological. How can you compare the benefits to the costs?
4. Discuss each of the following statements from the standpoints of equity and efficiency.
5. "Everyone in society should be guaranteed the best health care possible."
6. "When workers are laid off, they should be able to collect unemployment benefits until they find a new job."
7. Can an increase in the price of cheese possibly induce a consumer to buy more cheese? Explain.
8. Draw the indifference curve for someone deciding how much to work. Suppose the wage increases. Is it possible that the person's consumption would fall? Is this plausible? Discuss. (Hint Think about income and substitution effects.)
9. Consider a person deciding how much to consume and how much to save for retirement. This person has particular preferences Her lifetime utility depends on the lowest level of consumption during the two periods of her life. That is,
Utility = Minimum {consumption when young, consumption when old.
 - a) Draw this person's indifference curves. (Hint Recall that indifference curves show the combinations of consumption in the two periods that yield the same level of utility.)
 - b) Draw the budget constraint and the optimum.

- c) When the interest rate increases, does this person save more or less? Explain your answer using income and substitution effects.
10. What role does the price elasticity of demand play in determining the short run effects of regulations that increase fixed costs? What if they lead to increased variable costs? What are the factors affecting the elasticity of demand?
 11. The price elasticity of demand for primary education is estimated to be 3.5 in rural Tamil Nadu. What kind of price policy would you suggest to increase revenue?
 12. The cigarette companies seldom go for a price cut. Can you explain the reason with the elasticity concept?
 13. Explain the difference between demand estimation and demand forecasting.
 14. Define trend forecasting, and why is this method often employed in economic forecasting?
 15. How do you measure the demand forecasting? Explain with the suitable examples.
 16. Identify the main factors affecting the demand for M&S products.
 17. Analyze the weaknesses and threats on the demand side of M&S, relating these to controllable and uncontrollable factors.

Chapter 2 Production Analysis

2.1 Cost Approach v/s Resource Approach to Production Planning

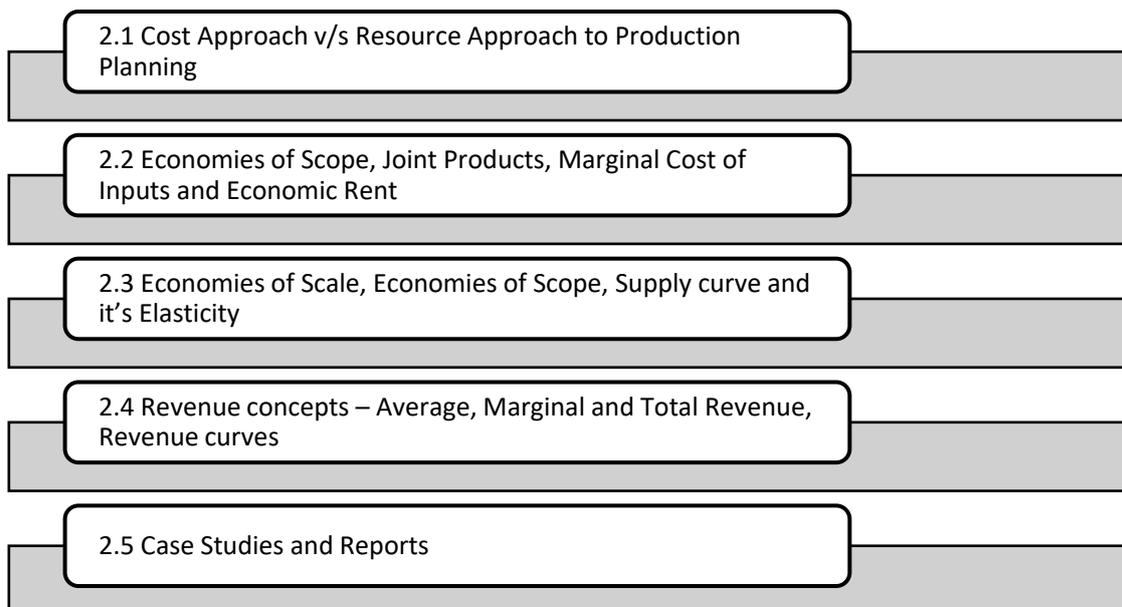
Introduction

This Chapter concerned with the nature of production relationships between inputs and outputs, which in turn determine cost relationships with outputs. In the previous chapter 1, we have seen how firms are usually profit oriented in terms of their objectives and we have focused on the revenue side of the profit equation by examining demand. We now need to examine the other side of the profit equation by considering its costs. However, just as it is necessary to examine consumer theory in order to understand demand. In doing this we shall see that there are a number of close parallels between consumer theory and production theory; there is a kind of symmetry between them. At the end of the chapter we will consider the importance of production theory for managerial decision making, the focus of this text.

Objectives

- To explain the meaning and significance of different time frames.
- To describe the different factors of production and explain the concept of the production function.
- To explain the concept of returns to scale and its relationship to production functions and empirical studies.
- To describe and explain relationships between total, average and marginal product, and the different stages of production.

Structure



To Do Activities

1. Allow students read and understand the concepts of production and its relevance to decision making.
2. Find more information about the factors of production and its significance on production process.
3. Ask students to interview the firm's manager about how firms are usually profit-oriented in terms of the objectives and how the firms are focusing on the revenue side of the profit and the other side of the profit considered as cost.
4. Consider to visit industries, and their respective websites get to know more information about the firm.

Definitions and Factors of Production

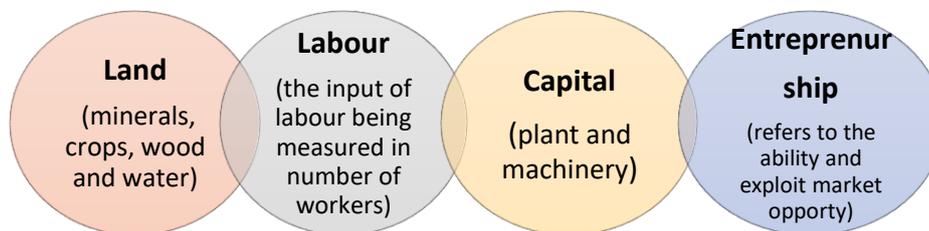


Fig. 2.1.1 Factors of Production

It examines the relationships between inputs and outputs i.e., the variables in which inputs and outputs are measured in terms of number of workers, tons of steel, barrels of oil, number of drilling machines, megawatts of electricity, hectares of land produced and so on. Managers are concerned with these relationships because they want to optimize the production process, in terms of efficiency. Factors define anything used in the production and distribution of goods and services. Certain important factors are taken as given here

Production Function

The Production function signifies a technical relationship between the physical inputs and physical outputs of the firm. In general, it can be expressed as

$$Q = f(X_1, X_2, X_3, \dots)$$

Where X_1, X_2, X_3, \dots various inputs such as land, labor, capital etc. are Q is the level of the output for a firm.

This function is generally represented as

$$Q = f(L, K)$$

Where, L labor and K capital. A company like DaimlerChrysler, for example, uses a huge variety of different inputs and produces many outputs, some of which are also inputs. Components like fuel injection s, headlight s, and brake discs and so on are both inputs into the final product of automobiles and, at the same time, outputs that are sold separately.

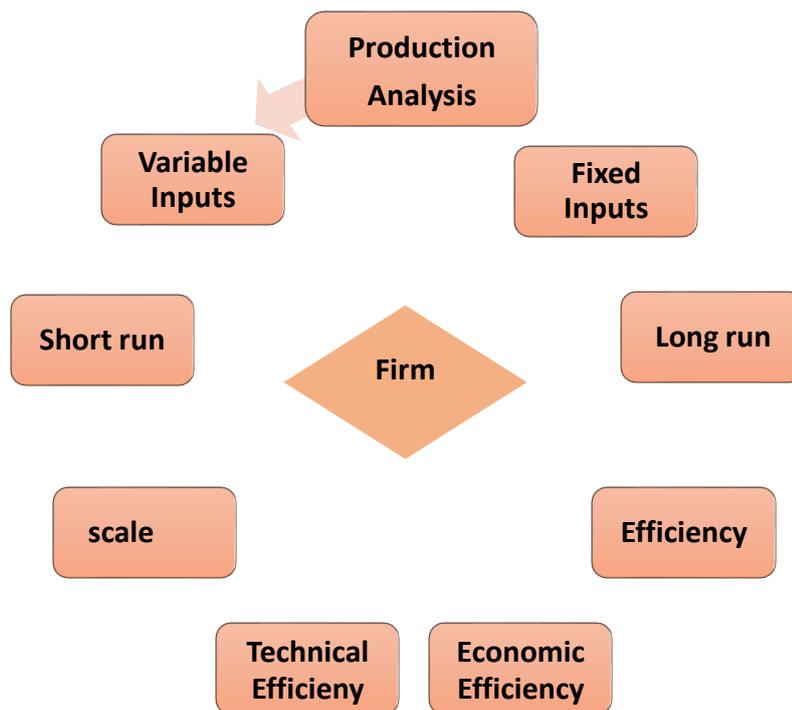


Fig. 2.1.2 Process of Firm's Production Analysis

Production Analysis

It is concerned with the analysis in which the resources such as land, labor, and capital are employed to produce a firm's final product. To produce these goods the basic inputs are classified into two divisions.

Variable Inputs for Production

Variable inputs are inputs that can be varied in both the short and long run.

Fixed Inputs for Production

These are the factors of production that cannot be changed in the short run.

Short Run Decision Making for Production

It defines the period during which at least one factor input is fixed while other inputs are variable.

Long Run Decision Making for Production

This is the converse of the short run, i.e., the period during which all factors used in the production process are variable.

Scale of Production

This term refers to the scale of production or organization. It relates to the number of fixed factors that a firm has. Therefore, a firm cannot change its scale in the short run. A firm's scale determines its capacity; this can be defined as the maximum output of a firm can produce in the short run.

Production of Efficiency

There are two types of efficiency

- i) Technical Efficiency (TE)
- ii) Economic Efficiency (EE)

- **TE** defines that a firm is producing the maximum output from given quantities.
- **EE** involves producing a given output at the least cost. This usually involves a unique combination of inputs, the levels of these inputs depending on their substitutability and complementarity, and also on their prices.

Cost Function

The cost function is defined as the relationship between the cost of the product and the output. It can be represented as follows

$$C = f(Q)$$

The cost function is divided into namely two types is represented in Fig.2.1.3

Law of Variable Proportions

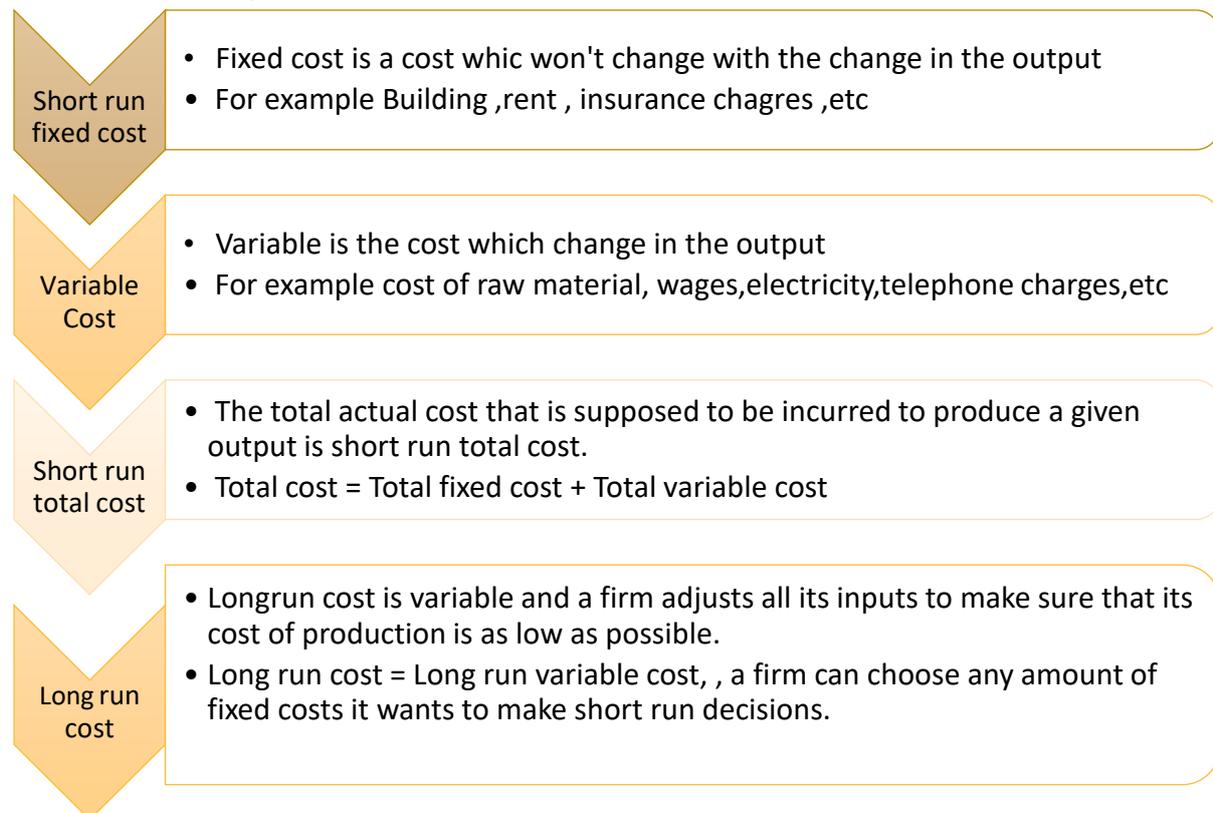


Fig. 2.1.3 Types of Costs

The law of variable proportions has the following three different phases – in this section, we will learn more on each of them.

- Returns to a Factor
- Returns to a Scale
- Isoquants

a) Returns to a Factor

There are three different types of returns to factors. They are constant, increasing and decreasing return to factor.

b) Increasing Returns to a Factor

Increasing returns to a factor refers to the situation in which total output tends to increase at an increasing rate when more of the variable factor is mixed with the fixed factor of production. In such a case, the marginal product of the variable factor must be increasing. Inversely, the marginal price of production must be diminishing.

c) Constant Returns to a Factor

Constant returns to a factor refer to the stage when increasing the application of the variable factor does not result in increasing the marginal product of the factor – rather, the marginal product of the factor tends to stabilize. Accordingly, total output increases only at a constant rate.

Diminishing returns to a factor refers to a situation in which the total output tends to increase at a diminishing rate when more of the variable factor is combined with the fixed factor of production. In such a situation, the marginal product of the variable must be diminishing. Inversely the marginal cost of production must be increasing is shown in the Fig.2.1.4

Diminishing Returns to a Factor

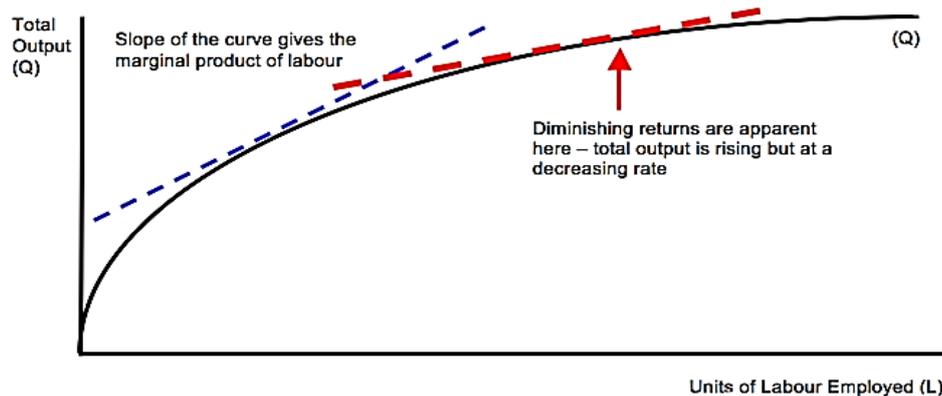


Fig. 2.1.4 Diminishing Returns to Scale

Returns to a Scale

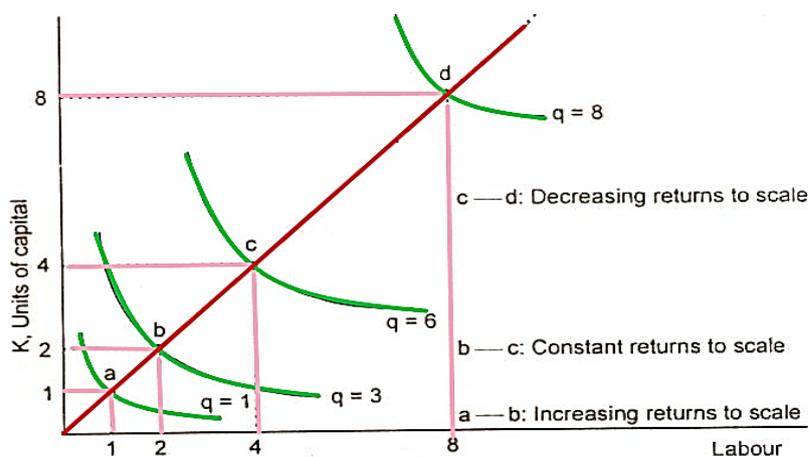


Fig 2.1.5 Types of returns to scale

If all inputs are changed simultaneously or proportionately, then the concept of returns to scale has to be used to understand the behavior of output. The behavior of output is studied when all the factors of production are changed in the same direction and proportion is given in Fig 2.1.5.

Returns to scale are classified as follows –

- a. **Increasing Returns to Scale** – If output increases more than proportionate to the increase in all inputs.
- b. **Constant Returns to Scale** – If all inputs are increased by some proportion, the output will also increase by the same proportion.
- c. **Decreasing Returns to Scale** – If the increase in output is less than proportionate to the increase in all inputs. For example, – If all factors of production are doubled and output increases by more than two times, then the situation is of increasing returns to scale. On the other hand, if output does not double even after a 100 percent increase in input factors, we have diminishing returns to scale.

The general production function is $Q = F(L, K)$.

Isoquants

Isoquants are a geometric representation of the production function. The same level of output can be produced by various combinations of factor inputs. The locus of all possible combinations is called the 'Isoquant'.

Characteristics of Isoquant

1. An isoquant slopes downward to the right.
2. An isoquant is convex to the origin.
3. An isoquant is smooth and continuous.
4. Two isoquants do not intersect.

Types of Isoquants

The production isoquant may assume various shapes depending on the degree of substitutability of factors.

a. Linear Isoquant

This type assumes perfect substitutability of factors of production. A given commodity may be produced by using only capital or only labor or by an infinite combination of K & L .

b. Input Output Isoquant

This assumes strict complementarity, that is zero substitutability of the factors of production. There is only one method of production for any one commodity. The isoquant takes the shape of a right angle. This type of isoquant is called "Leontief Isoquant".

c. Kinked Isoquant

This assumes limited substitutability of K and L . Generally, there are few processes for producing any one commodity. Substitutability of factors is possible only at the kinks. It is also called "activity analysis isoquant" or "linear programming isoquant" because it is basically used in linear programming.

Least Cost Combination of Inputs

A given level of output can be produced using many different combinations of two variable inputs. In choosing between the two resources, the saving in the resource replaced must be greater than the cost of resource added.

The principle of least cost combination states that if two input factors are considered for a given output then the least cost combination will have an inverse price ratio which is equal to their marginal rate of substitution.

Marginal Rate of Substitution

MRS is defined as the s of one input factor that can be substituted for a single of the other input factor. So

$$\text{MRS of } x_2 \text{ for one unit of } x_1 \text{ is } = \left(\frac{\text{Number of unit of replaced resource } (x_2)}{\text{Number of unit of added resource } (x_1)} \right)$$

$$\text{Price Ratio (PR)} = \frac{\text{Cost per of added resource}}{\text{Cost per of replaced resource}} \text{ or } PR = \frac{\text{Price of } x_1}{\text{Price of } x_2}$$

Therefore, the least cost combination of two inputs can be obtained by equating MRS with inverse price ratio is given by $x_2 * P_2 = x_1 * P_1$

Cost Approach Versus Resource Approach to Production Planning

The conventional approach to planning production is to start with the goods and services that a firm intends to provide and then decide what production configuration will achieve the intended output at the lowest cost. This is the cost approach to production planning. Once output goals are set, the expected revenue is essentially determined, so any remaining Opportunity for profit requires reducing the cost as much as possible.

The decision about whether to provide a good or service and how much to provide requires an assessment of marginal cost. Due to scale effects, this marginal cost may vary with the output level, so firms may face a circular problem of needing to know the marginal cost to decide on the outputs, but the marginal cost may change depending on the output level selected. This dilemma may be addressed by iteration between output planning and production/procurement planning until there is consistency. Another option is to use sophisticated computer models that determine the optimal output levels and minimum cost production configurations simultaneously.

This is the resource approach to the planning of production. Conceptually, either planning approach will lead to similar decisions about what goods and services to provide and how to arrange production to do that. However, given the wide ranges of possible outputs and organizations of production to provide them, firms are not likely to attain a truly optimal organization, particularly after the fact.

The cost approach is often easier to conduct, particularly for a firm that is already in a particular line of business and can make incremental improvements to reduce cost. However, in solving the problem of how to create the goods and services at minimal cost, there is some risk of myopic focus that dismisses opportunities to make the best use of core competencies. The resource approach encourages more out of the box thinking that may lead a business toward a major restructuring.

A production function shows the maximum amounts of output that can be produced from a set of inputs. The functional form of a production function is important because it gives information about the marginal products of the inputs, output elasticities and returns to scale. An isoquant shows different combinations of inputs that can produce the same technically efficient level of output. The marginal rate of technical substitution (MRTS) of X for Y shows the amount of one input Y that must be substituted for another X in order to produce the same output.

Problem

The following table shows the total cost of production of a firm at a different level of output. Find out AVC and MC at each level of output. [AVC Average Variable Cost; MC Marginal Cost].

Output (s)	0	1	2	3
Total Cost (Rs)	60	100	130	150

Solution

Output	TC Total Cost	FC Fixed Cost	VC Variable Cost	AVC	MC
0	60	60			
1	100	60	40	40	40
2	130	60	70	35	30
3	150	60	90	30	20

2.2 Economies of Scope, Joint Products, Marginal Cost of Inputs & Economic Rent

In this chapter, we begin our study with what is economies of scope and the different methods of achieving economies of scope. Economies of scope is an economic concept that the cost to produce a product will decline as the variety of products increases. That is, the more different but similar goods you produce, the lower the total cost to produce each one. Then we further discuss the Joint products, Marginal cost of inputs and Economic Rent.

Objectives

Economic Scope

Marginal cost of inputs



• To get you familiarized with Economies of Scope & Joint products

• To help you understand about the marginal cost of inputs and Economic Rent

Economies of Scope

Most businesses provide multiple goods and services; in some cases, the number of goods and services is quite large. Whereas the motivation for providing multiple products may be driven by consumer expectations, a common attraction is the Opportunity to reduce per costs. When a venture can appreciate such cost savings, the Opportunity is called an economy of scope. Economies of scope are cost advantages that result when firms provide a variety of products rather than specializing in the production or delivery of a single product or service. Economies of scope also exist if a firm can produce a given level

of the output of each product line more cheaply than a combination of separate firms, each producing a single product at the given output level is shown in Fig.2.2.1. Computer firms, such as IBM and Toshiba, produce a wide range of computers from mainframes to personal computers.

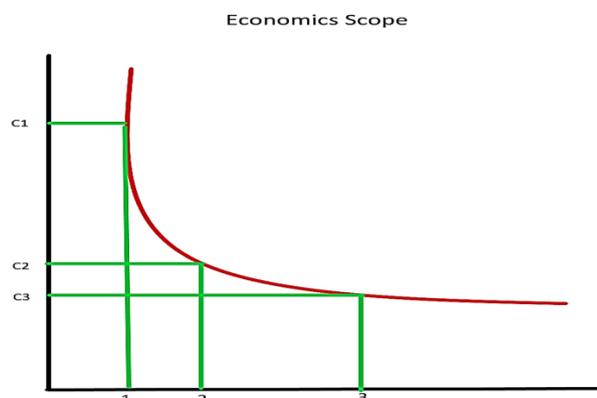


Fig. 2.2.1 Economies of Scope

Consumer products firms, such as Procter & Gamble and General Foods, offer myriad personal, grocery, and household items. Entertainment firms, such as Walt Disney Corporation, produce movies, television programs, toys, theme park entertainment, and vacation services. In many cases, the justification for multiple products is the potential cost advantages of producing many closely related goods.

Methods of Achieving Economies of Scope

a. Flexible Manufacturing

The use of flexible processes and flexible manufacturing systems has resulted in economies of scope because these systems allow quick, low cost switching of one product line to another. If a producer can manufacture multiple products with the same equipment and if the equipment allows the flexibility to change as market demands change, the manufacturer can add a variety of new products to their current line. The scope of products increases, offering a barrier to entry for new firms and a competitive synergy for the firm itself.

b. Related Diversification

Economies of scope often result from a related diversification strategy and may even be termed "economies of diversification." This strategy is made operational when a firm builds upon or extends existing capabilities, resources, or areas of expertise for greater competitiveness. According to Hill, Ireland, and Hoskisson in their bestselling strategic management textbook, *Strategic Management Competitiveness and Globalization*, firm's select related diversification as their corporate level strategy in an attempt to exploit economies of scope between their various business s. Cost savings result when a business transfers expertise in one business to a new business. The businesses can share operational skills and knowhow in manufacturing or even share plant facilities, equipment, or other existing assets. They may also share intangible assets like expertise or a corporate core competence. Such sharing of activities is common and is a way to maximize limited constraints.

Mergers

The merger wave that swept the United States in the late 1990s and early 2000s is, in part, an attempt to create scope economies. Mergers may be undertaken for any number of reasons. "As a rule of thumb," explained Rob Preston in an article about the trouble with mergers, "'scope' acquisitions—moves that enhance or extend a vendor's product portfolio—succeed more often than those undertaken to increase the size and consolidate costs."

Pharmaceutical companies, for example, frequently combine forces to share research and development expenses and bring new products to market. Research has shown that firms involved in drug discovery realize economies of scope by sustaining diverse portfolios of research projects that capture both internal and external knowledge spillovers.



As an example, Kleenex Corporation manufactures a number of paper products for a variety of end users, including products targeted specifically for hospitals and health care providers, infants, children, families, and women.

Their brands include Kleenex, Viva, Scott, and Cottonelle napkins, paper towels, and facial tissues; Depends and Poise incontinence products; Huggies diapers and wipes; PullUps, Goodnites, and Little Swimmers infant products; Kotex, New Freedom, Litedays, and Security feminine hygiene products; and a number of products for surgical use, infection control, and patient care.

All of these product lines utilize similar raw material inputs and/or manufacturing processes as well as distribution and logistics channels.

Linked Supply Chains

Today's linked supply chains among raw material suppliers, other vendors, manufacturers, wholesalers, distributors, retailers, and consumers often bring about economies of scope graphically represented in Fig.2.2.2. Integrating a vertical supply chain results in productivity gains, waste reduction, and cost improvements.

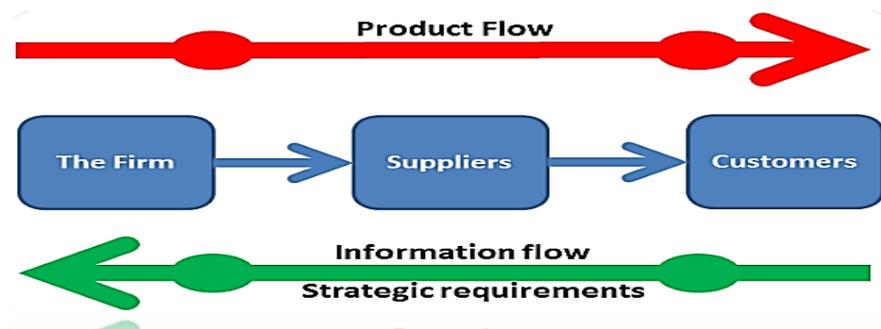


Fig. 2.2.2 Inflow of Strategic Requirement

These improvements, which arise from the ability to eliminate costs by operating two or more businesses under the same corporate umbrella, exist whenever it is less costly for two or more businesses to operate under centralized management than to function independently.

The Opportunity to gain cost savings can arise from interrelationships anywhere along a value chain. As firms become linked in supply chains, particularly as part of the new information economy, there is a growing potential for economies of scope. Scope economies can increase a firm's value and lead to increases in performance and higher returns to shareholders. Building economies of scope can also help a firm to reduce the risks inherent in producing a single product or providing a service to a single industry.

Joint Products

In some cases, two or more products may be natural by products of a production process. For example, in refining crude oil to produce gasoline to fuel cars and trucks, the refining process will create lubricants, fertilizers, petrochemicals, and other kinds of fuels.

Since the refining process requires heat, the excess heat can be used to create steam for electricity generation that more than meets the refinery's needs and may be sold to an electric utility. When multiple products occur at the result of a combined process, they are called joint products and create a natural Opportunity for an economy of scope.

Marginal Cost

Marginal cost is the change in the Opportunity cost that arises when the quantity produced is incremented by one i.e. it is the cost of producing one more of a good. Intuitively, the marginal cost at each level of production includes the cost of any additional inputs required to produce the next. At each level of production and time period being considered, marginal costs include all costs that vary with the level of production, whereas other costs that do not vary with production are considered as a constant point or fixed point.

For example, the marginal cost of producing an automobile will generally include the costs of labor and parts needed for the additional automobile and not the as constant cost or fixed cost of the factory that have already been incurred. In practice, marginal analysis is segregated into short and long run cases, so that, over the long run, all costs (including fixed costs) become marginal. Mathematically, marginal cost can be represented as below

$$\text{Marginal Cost} = \left(\frac{\Delta(\text{Total Cost})}{\Delta(\text{Quantity})} \right)$$

Examples of Joint Products

<p>The processing of crude oil can result in the joint products naphtha, gasoline, jet fuel, kerosene, diesel, heavy fuel oil and asphalt, as well as other petrochemical derivatives. The refinery process has variable proportions depending on the distilling temperatures and cracking intensity.</p>	<p>In a blast furnace, joint products are pig iron, slag and blast furnace gas. The iron is a precursor of steel, the slag can be sold as construction material, and the gas is used to reheat Cowper stoves. With variable process parameters of the iron smelting, the proportions are slightly variable.</p>	<p>The chloralkali process, one of the basic processes in the chemical industry, is the electrolysis of sodium chloride (common salt) providing the joint products chlorine, sodium hydroxide and hydrogen.</p>

Marginal Cost of Inputs

The marginal cost of an input is simply the amount an additional of the input adds to the firm's total cost.⁴ If the firm can hire as many additional workers as it wishes at a constant wage (say, \$160 per day), then the marginal cost of labor is $MCL = \$160$. (In some cases, however, the firm may have to bid up the price of labor to obtain additional workers.)

In cases where inputs are in high supply at the current market price and the market for inputs is competitive, the marginal cost of an input is roughly equal to the actual cost of acquiring it. So, in such a situation, the principle described earlier can be expressed in terms of comparing the marginal revenue product to price to acquire the input(s). If the number of accountants seeking a job is fairly substantial and competitive, the actual per costs involved in hiring one more accountant will be the marginal cost.

If the market of inputs is less competitive, a firm may have to pay a little higher than the prevailing market price to acquire more s because they will need to be hired away from another firm. In this situation, the marginal cost of inputs may be higher than the price to acquire an additional because the resulting price increase for the additional may carry over to a price increase of all s being purchased clearly mentioned in Fig.2.2.3.

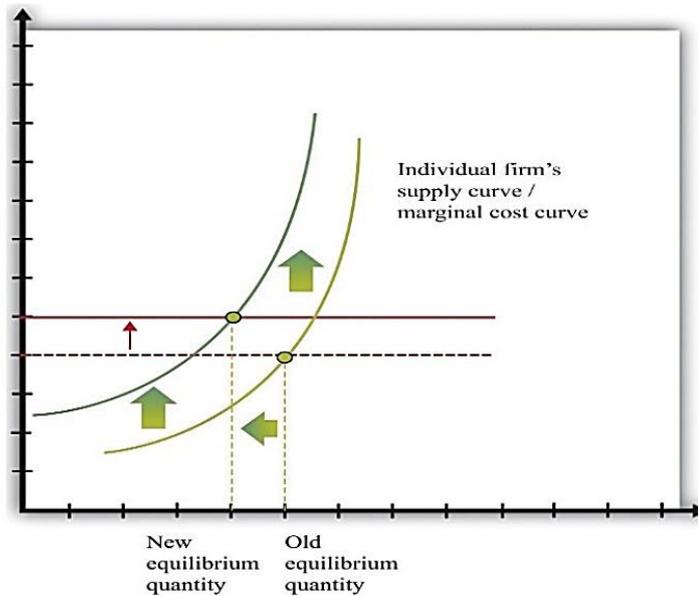


Fig 2.2.3 Individual Firm's Supply and Marginal Cost Curve

Suppose the salary required to hire a new accountant will be higher than what the firm is currently paying accountants with the same ability. Once the firm pays a higher salary to get a new accountant, they may need to raise the salaries of the other similar accountants they already hired just to retain them. In this instance, the marginal cost of hiring one more accountant could be substantially more than the cost directly associated with adding the new accountant. As a result of the impact on other salaries and associated costs of the hire, the firm may decide that the highest salary for a new accountant that the firm can justify may be on the order of \$50,000, even though the resulting marginal revenue product is substantially greater.

If inputs are available in a ready supply, or there are close substitutes available that are in ready supply, the price of an additional of input typically reflects either the Opportunity cost related to the value of the next best use of that input or the minimum amount needed to induce a new to become available. However, there are some production inputs that may be in such limited supply that even further price increases will not attract new s to become available, at least not quickly. In these cases, the marginal revenue product for input may still considerably exceed its marginal cost, even after all available inputs are in use.

The sellers of these goods and services may be aware of this imbalance and insist on a price increase for the input up to a level that brings marginal cost in balance with marginal revenue product. The difference between the amount the provider of the limited input supply is able to charge and the minimum amount that would have been necessary to induce the provider to sell them to the firm is called economic rent.

Economic Rent

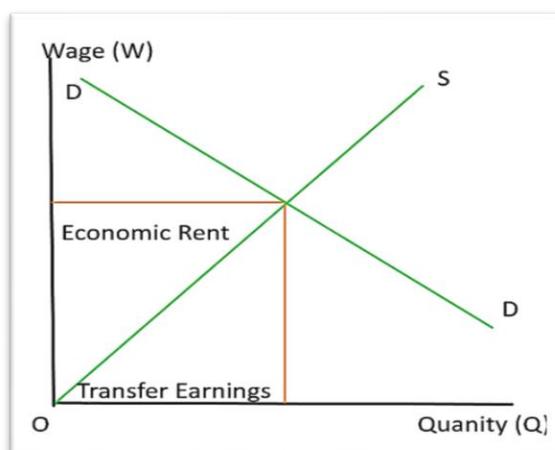


Fig 2.2.4 Economic Rent

The factor of production is any payment to an owner in excess of the costs needed to bring that factor into production. Likewise, economic rent is any payment made (including imputed value) or benefit received for nonproducer inputs such as location and for assets formed by creating official license over natural opportunities for e.g., Patent. Traditionally, economic rent as opposed to normal profit which involves the process of production. Also, it is independent of Opportunity cost which is an essential component in the production process.

Economic rent is viewed in Fig.2.2.4 and mentioned that the unearned revenue while economic profit is a narrower term describing surplus income earned by choosing between risk adjusted alternatives. Unlike economic profit, economic rent cannot be theoretically eliminated by competition because any actions the recipient of the income may take such as improving the object to be rented will then change the total income to contract rent.

Still, the total income is made up of economic profit (earned) plus economic rent (unearned). For a produced commodity, economic rent may be due to the legal ownership of a patent (a politically enforced right to the use of a process or ingredient).

In regard to labor, economic rent can be created by the existence of mass education, labor laws, state social reproduction supports, democracy, guilds, and labour unions (e.g., higher pay for some workers, where collective action creates a scarcity of such workers, as opposed to an ideal condition where labor competes with other factors of production on price alone). For most other products, including agriculture and extraction, economic rent is due to scarcity (uneven distribution) of natural resources (e.g., land, oil, or minerals).

Problem 1

Suppose that type I sellers charged the price of \$96 for the portable TV, type II sellers charged \$98, type III sellers charged \$100, type IV sellers charged \$102, and type V sellers charged \$104. Determine the expected lowest price for the TV from one, two, three, four, and five searches.

Solution

The lowest expected price with one search is $[\$96 + \$8/1+1] = \$100.00$

With two searches, the lowest expected price is $[\$96 + \$8/1+2] = \$9867$.

With three searches, the lowest expected price is $[\$96 + \$8/1+3] = \$9800$,

With four searches, the lowest expected price is $[\$96 + \$8/1+4] = \$9760$.

With five searches, the lowest expected price is $[\$96 + \$8/1+5] = \$9733$.

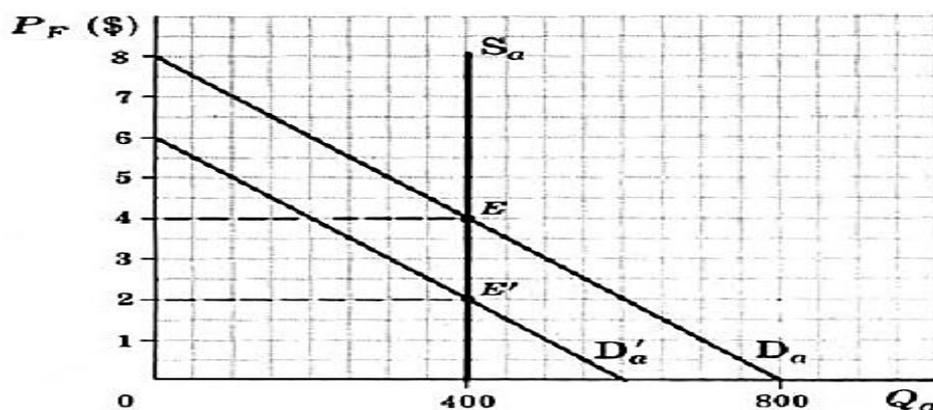
Problem 2

If $QS_a = 400$, regardless of P_a , Find the rent on input A when $QD_a = 800 - 100P_a$ and when $QD'_a = 600 - 100P_a$ (P_a is expressed in dollars).

Solution

The equilibrium $P_a = \$4$ and the rent on input A, equals \$1600. That is, given the fixed QS_a of 400 s, P_a is determined entirely by the height of D_a .

Since QS_a is fixed and this quantity would be supplied regardless of P_a , the entire payment of \$1600 made to input A is a rent. It results entirely because of the perfect inelasticity of S_a . With D'_a , the equilibrium $P_a = \$2$ and the rent on input A equals \$800.



2.3 Economies of Scale, Economies of Scope, Supply curve and Elasticity

In previous chapters, we used the supply curve to summarize firms' production decisions. According to the law of supply, firms are willing to produce and sell a greater quantity of a good when the price of the good is higher, and this response leads to a supply curve that slopes upward. For analyzing many questions, the law of supply is all you need to know about firm behavior.

Objectives

- To get you familiarized with Economies and Diseconomies of Scale, Economies of Scope.
- To help understand the functions of the supply curve.
- To help understand the types of price elasticity and the means to calculate them.

Economies of Scale

Generally, the long run average total cost curve conveys important information about the technology for producing a good. When long run average total cost declines as output increases, there are said to be economies of scale. When long run average total cost rises as output increases, there are said to be diseconomies of scale. When long run average total cost does not vary with the level of output, there are said to be constant returns to scale. For example, Ford has economies of scale at low levels of output, constant returns to scale at intermediate levels of output, and diseconomies of scale at high levels of output.

a. Economies of Scale

Economies of scale give rise to lower per costs for several reasons.

- First, specialization of labor and more integrated technology boost production volumes.
- Second, lower per costs can come from bulk orders from suppliers, larger advertising buys or lower cost of capital.
- Third, spreading internal function costs across more units produced and sold helps to reduce costs. "Internal functions" include accounting, information technology, and marketing.

The first two reasons are also considered operational efficiencies and synergies. The second two reasons are cited as benefits of mergers and acquisitions.

b. Causes of Economies or Diseconomies of Scale

Economies of scale often arise because of higher production levels that allow specialization among workers. This high production permits each worker to become better at his or her assigned tasks. For instance, modern assembly line production requires a large number of workers.

Perhaps Ford is producing only a small quantity of cars, it could not take advantage of the approach and would have higher average total cost. Therefore, diseconomies of scale can arise because of coordination problems that are inherent in any large organization. The more cars Ford produces, the more stretched the management team becomes, and the less effective the managers become at keeping costs down. This analysis shows why long run average total cost curves are often U-shaped.

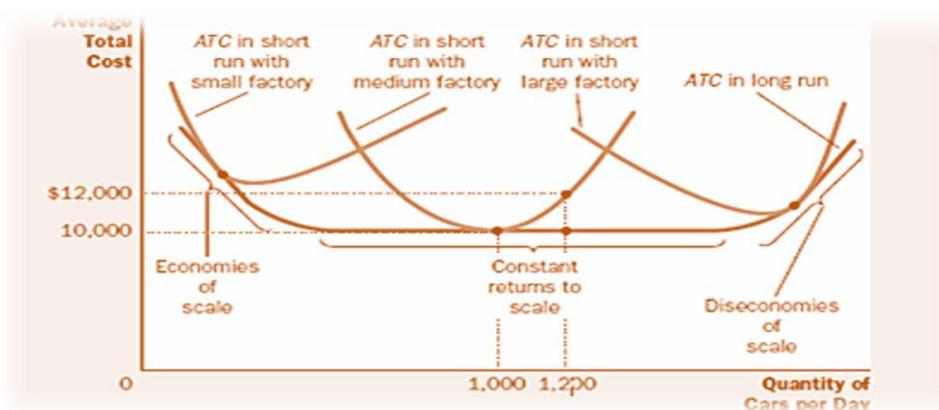


Fig.2.3.1 Causes of Economies or Diseconomies of Scale

The average total cost curve of cars per day differs from the average total cost curve, in the long run, is given in Fig 2.3.1. Because fixed costs are variable in the long run. By contrast, at high levels of production, the benefits of specialization have already been realized, and coordination problems become more severe as the firm grows larger. Thus, the longrun average total cost is falling at low levels of production because of increasing specialization and rising at high levels of production because of increasing coordination problems.

c. **Ways to Achieve Economies of Scope**

Economies of scope are essential for any large business, and a firm can go about achieving such scope in a variety of ways.

- First, and most common, is the idea that this operational efficiency is gained through related diversification.
- This is a similar strategy to that of McDonald's and Proctor & Gamble. Kleenex — using another example — has achieved economies of scope through the diversification of its simple tissue paper.
- The company expanded its product line to service numerous, unrelated end users, such as consumers and hospitals, all of which required a unique type of paper product.
- Merging with or acquiring another company is another a way to achieve economies of scope.
- Two regional retail chains, for example, may merge with each other to combine different product lines and reduce average warehouse costs.
- Finally, a company that wants to achieve economies of scope can link its supply chain through vertical integration.
- The ownership of a supply chain, from raw materials to the point of sale, allows many companies to consolidate the logistical process by combining multiple products into one production process, thus reducing costs.

d. **Advantages of Economies of Scope**

There is always a discrepancy between economists when it comes to the importance of economies of scale because economist believes that the theory can only apply to specific industries. There are some advantages which include

- i. A flexible mix of products and product design
- ii. Quick responses to market demand, production design, and output rates
- iii. Less waste and lower training which lead to a reduction in costs

Economies of Scope vs. Economies of Scale

While economies of scope are characterized by efficiencies formed by variety, economies of scale are characterized by volume.

The latter involves the reduction of the average cost, or the cost per, that stems from increasing production for one type of product.

1. Supply Curve and its Elasticity

The supply curve is a graphical representation of the correlation between the cost of a good or service and the quantity supplied for a given period. In a typical illustration, the price will appear on the left vertical axis while the quantity supplied will appear on the horizontal axis.

2. Breaking Down 'Supply Curve'

The supply curve will move upward from left to right, which expresses the law of supply. As the price of a given commodity increases, the quantity supplied increases, all else being equal, as shown in Fig 2.3.2.

Note that this formulation implies that price is the independent variable, and quantity the dependent variable. In most disciplines, the independent variable appears on the horizontal or x-axis, but economics is an exception to this rule.

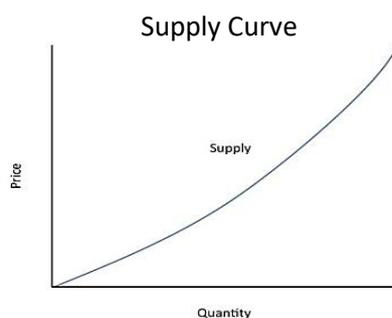


Fig 2.3.2 Effect of Supply Curve Breaking Down

Elasticity of Supply

Basically, consumption is not the only thing that changes when prices go up or down. Businesses also respond to price in their decisions about how much to produce. Economists define the price elasticity of supply as the responsiveness of the quantity supplied of a good to its market price.

The price elasticity of supply is defined as the percentage change in quantity supplied divided by the percentage change in price.

$$\text{Price elasticity of supply} = \frac{\% \text{ change in quantity}}{\% \text{ change in price}}$$

The demand elasticities, there are polar extremes of high and low elasticities of supply. Suppose the amount supplied is completely fixed, as in the case of perishable fish brought to market to be sold at whatever price they will fetch.

This is the limiting case of zero elasticity, or completely inelastic supply, which is a vertical supply curve. On the other hand, a tiny cut in price will cause the amount supplied to fall to zero is given in Fig. 2.3.3, while the slightest rise in price will coax out an indefinitely large supply.

Here, the ratio of the percentage change in quantity supplied to the percentage change in price is extremely large and gives rise to a horizontal supply curve. This is the polar case of infinitely elastic supply. Between these extremes, we call supply elastic or inelastic depending upon whether the percentage change in quantity is larger or smaller than the percentage change in price.

There are numerous factors that directly impact the elasticity of supply for a good, including stock, time period, availability of substitutes, and spare capacity, that will determine whether the price elasticity of supply is elastic or inelastic in regards to a change in price. Figure 2.3.3 shows the different types of elasticities of supply.

Inelastic goods are often described as necessities. A shift in price does not drastically impact consumer demand or the overall supply of the good because it is not something people are able or willing to go without. Examples of inelastic goods would be water, gasoline, housing, and food. Elastic goods are usually viewed as luxury items. An increase in price for an elastic good has a noticeable impact on consumption. The good is viewed as something that individuals are willing to sacrifice in order to save money. An example of an elastic good is movie tickets, which are viewed as entertainment and not a necessity.

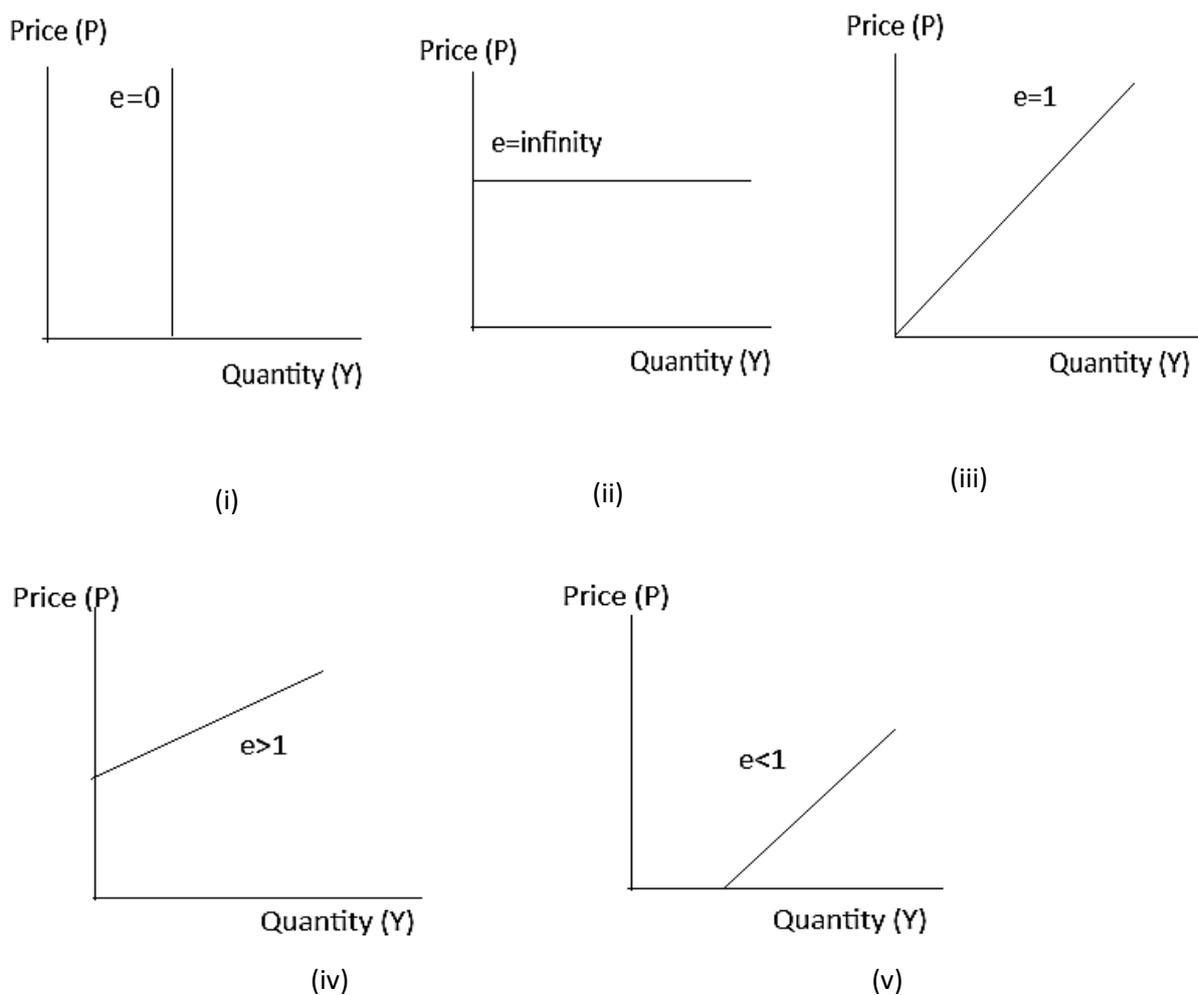


Fig 2.3.3 Determination of Different Price Elasticity of Demand

The price elasticity of supply is determined by the following steps

1. **A number of Producers** ease of entry into the market.
2. **Spare Capacity** it is easy to increase production if there is a shift in demand.
3. **Ease of Switching** if the production of goods can be varied, supply is more elastic.
4. **Ease of Storage** when goods can be stored easily, the elastic response increases demand.
5. **Length of Production Period** quick production responds to a price increase easier.
6. **The Time Period of Training** when a firm invests in the capital the supply is more elastic in its response to price increases.
7. **Factor Mobility** when moving resources into the industry is easier, the supply curve is more elastic

Economies of scale refer to reduced costs per unit that arise from an increased total output of a product. For example, a larger factory will produce power hand tools at a lower price, and a larger medical system will reduce cost per medical procedure. Economies of scope are economic factors that make the simultaneous manufacturing of different products more cost-effective than manufacturing them on their own. The supply curve is a graphical representation of the correlation between the cost of a good or service and the quantity supplied for a given period. The elasticity of supply is the degree of responsiveness of supply of a commodity due to change in price.

Problem

A firm's revenue rises from Rs.400 to Rs.500 when the price of its product rises from Rs.20 to Rs.25 per. Calculate the price elasticity of supply.

Solution

Quantity supplied $TR/R = 400/20=20$; $500/25=20$. $P = 20$; $P_1 = 25$; $\Delta p = 5$; $Q = 20$

$Q_1 = 20$; $\Delta Q = 0$ $E_1 = \frac{\Delta Q}{\Delta P} * \frac{P}{Q}$. Here $E_1 = 0$ which implies the price elasticity is perfectly inelastic.

2.4 Revenue concepts – Average, Marginal and Total Revenue, Revenue curves

This chapter will be able to discuss the revenue concepts under different market conditions. Revenue is the amount of money that a company actually receives during a specific period, including discounts and deductions for returned merchandise. It is the top line or gross income figure from which costs are subtracted to determine net income. Revenue is calculated by multiplying the price at which goods or services are sold by the number of units or amount sold. Revenue is also known as sales on the income statement.

This chapter further discusses Average, Marginal and Total Revenue, revenue curves under different market conditions.

Objectives

- To study about Revenue concepts
- To get you familiarized with Average, Marginal and Total Revenue.
- To help understand revenue curves under different market conditions.

Revenue

Revenue is the amount of money that is brought into a company by its business activities. Revenue is also known as sales, as in the price to sales ratio, an alternative to the price to earnings ratio that uses revenue in the denominator.

There are different ways of calculating revenue, depending on the accounting method a business employ. Accrual accounting will include sales made on credit as revenue, as long as the goods or services have been delivered to the customer. It is, therefore, necessary to check the cash flow statement to assess how efficiently a company collects the money it is owed.

Cash accounting, on the other hand, will only count sales as revenue if the payment has been received. When cash is paid to a company, this is known as a "receipt" to distinguish it from revenue. It is possible

to have receipts without revenue for example, if the customer paid in advance for a service that has not been rendered or goods that have not been delivered, this activity leads to a receipt, but not revenue.

The concept of revenue consists of three important terms; Total Revenue, Average Revenue, and Marginal Revenue are represented in Figure. 2.4.1

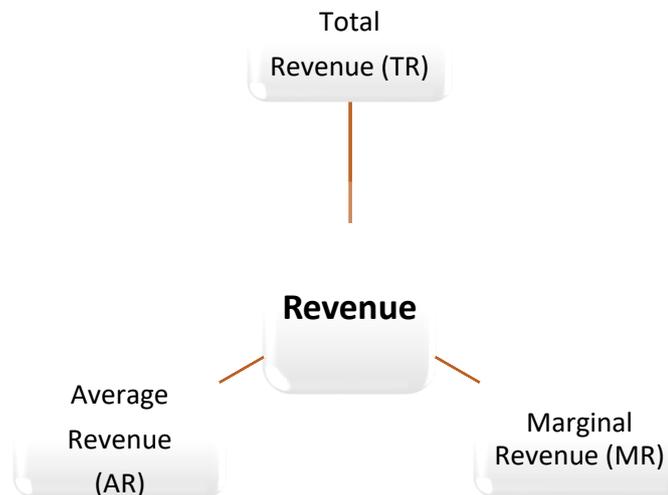


Fig. 2.4.1 Average, Marginal and Total Revenue

1. Total Revenue (TR)

The income earned by a seller or producer after selling the output is called the total revenue. In fact, total revenue is multiple of price and output. The behavior of total revenue depends on the market where the firm produces or sells.

Total revenue is defined as the sum of all sales, receipts or income of a firm. It also defined as the product of planned sales (output) and the expected to sell price (Clower and Due). Total revenue at any output is equal to the price per multiplied by quantity sold (Stonier and Hague). For example, if the price of a commodity is Rs.100 and totals sold are 20, in that case, total revenue will be $TR = AR * Q$

$$TR = 100 * 20 = 2000$$

Where AR –average revenue or price per Q – Quantiy.

2. Average Revenue (AR)

Average revenue refers to the revenue obtained by the seller by selling the per commodity. It is obtained by dividing the total revenue by total output. The average revenue curve shows that the price of the firm’s product is the same at each level of output (Stonier and Hague).

Thus $\frac{AR}{Q}$, according to McDonnell AR is per revenue received from the scale of one of a commodity.

$TR = Pq$; Price * output, $AR = \frac{Pq}{q} = P, P = f(Q)$ is an average curve which shows that price is a function of quantity demanded. It is also called a demand curve.

3. Marginal Revenue (MR)

Marginal revenue is the net revenue obtained by selling an additional of the commodity. “Marginal revenue is the change in total revenue which results from the sale of one more or one less of output.” Ferguson. Thus, marginal revenue is the addition made to the total revenue by selling one more of the good. In algebraic terms, marginal revenue is the net addition to the total revenue by selling n s of a commodity instead of $n - 1$. Therefore,

$$\text{Marginal Revenue (MR)} = \frac{\Delta TR}{\Delta Q}$$

Where $MR_n = TR_n - TR_{n-1}$; TR_n TR of ‘ n ’ s; TR_{n-1} TR of ‘ $n - 1$ ’ s; $MR_{(nth)}$ MR from n th ; n number of the s. According to the Koutsoyiannis, the marginal revenue is the change in total revenue resulting from selling an additional of the commodity. If total revenue from (n) s is 110 and from ($n - 1$) s is 100 in that case,

$$MR_{(nth)} = TR_n - TR_{n-1} = 110 - 100 = 10. \text{ Therefore, } MR_{(nth)} = 10$$

MR in mathematical terms is the ratio of change in total revenue to change in output $MR = \Delta TR / \Delta q$ or $dR/dq = MR$

Revenue Curves under Different Markets

(i) Revenue Curve under Perfect competition

s	TR	AR	MR
1	5	5	5
2	10	5	5
3	15	5	5
4	20	5	5
5	25	5	5

Table. 2.4.1 Revenue Curve Under Perfect Competition

Perfect competition is the term applied to a situation in which the individual buyer or seller (firm) represent such a small share of the total business transacted in the market that he exerts no perceptible influence on the price of the commodity in which he deals. Thus, in perfect competition, an individual firm is a pricetaker because the price is determined by the collective forces of market demand and supply which are not influenced by the individual. When the price is the same for all s of a commodity, naturally AR (Price) will be equal to MR i.e., $AR = MR$.

The revenue schedule for a competitive firm is shown in Table 2.1. From table 2.1, it is observed that as output increases, AR remains the same i.e. Rs. 5. Total revenue increases but at a constant rate. Marginal revenue is also constant i.e. Rs. 5 and is equal to average revenue. Thus, $TR = AR \times Q$ and also $TR = MR \times Q$ [Since $AR = MR$]

In Figure 2.4.2., on the X-axis, we take quantity whereas, on Y-axis, we take revenue. At price OP, the seller can sell any amount of the commodity. In this case, the average revenue curve is the horizontal line. The Marginal Revenue curve coincides with the Average Revenue. It is because additional s are sold at the same price as before. In that case $AR = MR$. A noteworthy point is that the OP price is determined by demand and supply of industry. The firm only follows, (see figure 2.4.2)

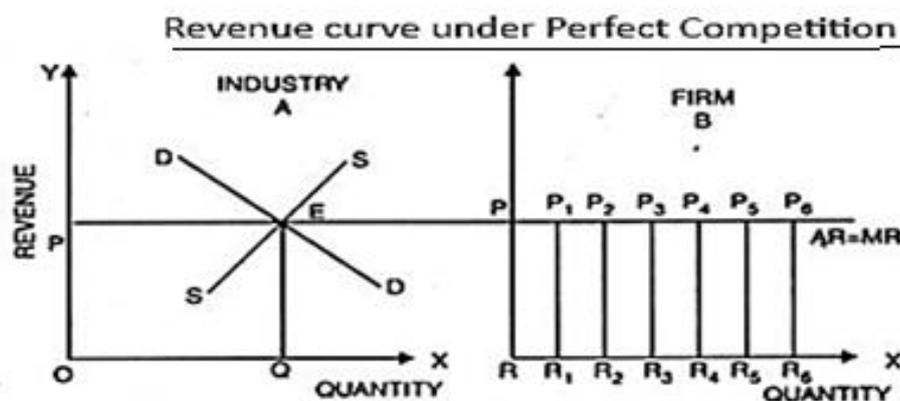


Fig 2.4.2 Revenue Curve Under Perfect Competition

(ii) Revenue Curves Under Monopoly

Monopoly is opposite to perfect competition.

Table. 2.4.2 Revenue Under Monopoly

Sold	Price (Rs.)	TR	AR	MR
5	4	20	4	
10	2	20	2	0
20	1	20	1	0
40	0.5	20	0.5	0
50	0.4	20	0.4	0

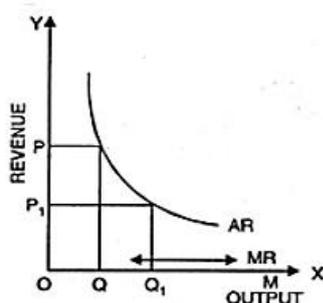


Fig.2.4.3

Under monopoly both AR and MR, curves slope downward. It indicates that to sell more of a commodity, the monopolist will have to lower the price. This can be shown in Table. 2.4.2

In the case of pure monopoly, AR curve can be rectangular hyperbola as has been shown in Figure. 2.4.3. In this situation, a producer is so powerful that by selling his output at different prices, he can make the consumer spend his income on the concerned commodity. In this case, the AR curve is a rectangular hyperbola. It implies that TR of the monopolist will remain the same whatever may be the price.

The area below each point of the AR curve will be equal to each other. When TR is constant MR curve will be represented by OX axis as has been shown in Figure 2.4.3.

(iii) Revenue curve under imperfect competition

When a firm is working under conditions of monopoly or imperfect competition, its demand curve or AR curve is less than perfectly elastic, the exact degree of elasticity being different in different market situations depending upon the number of sellers and the nature of the product. In other words, the demand/AR curve has a negative slope and the MR curve lies below it. This is because the monopolist seller ordinarily has to accept a lower price for his product, as he increases his sales. Under imperfect competition conditions, total revenue increases at a diminishing rate. It becomes maximum and then begins to decline. The position of various revenue curves is shown in Table 2.4.3.

Table. 2.4.3 Revenue Curve Under Imperfect Competition

Price	s Sold	TR	AR	MR
6	1	6	6	6
5	2	10	5	4
4	3	12	4	2
3	4	12	3	0
2	5	10	2	2

From Table 2.4.3, 2 s can be sold at a price of Rs. 5, bringing in total revenue of Rs. 10. When 3 s are sold, the price per is lowered to Rs. 4 to make it possible for larger quantity to be sold. The total revenue, in this case, is Rs. 12. The marginal is not bringing in Rs. 4 which is its price, but only Rs. 2. This is because the additional one is sold at Re. one less and the first 2 s which could have been sold for Rs. 5 are also sold at Rs. 4. i.e., Re. one less. Fig. 2.4.4. (A), shows that as additional s is sold when the price comes down not only for the marginal s but also for another previous s. As a result, marginals do not bring revenue equal to its price. In Fig.2.4.4(B). TR increases at a diminishing rate becomes maximum at point N and then begins to decline. This has been represented by the curve TR. AR at any point on the TR curve is given by the slope of the straight line joining the point to the origin. For instance, AR at any point N on the TR curve is given by the slope of the line.

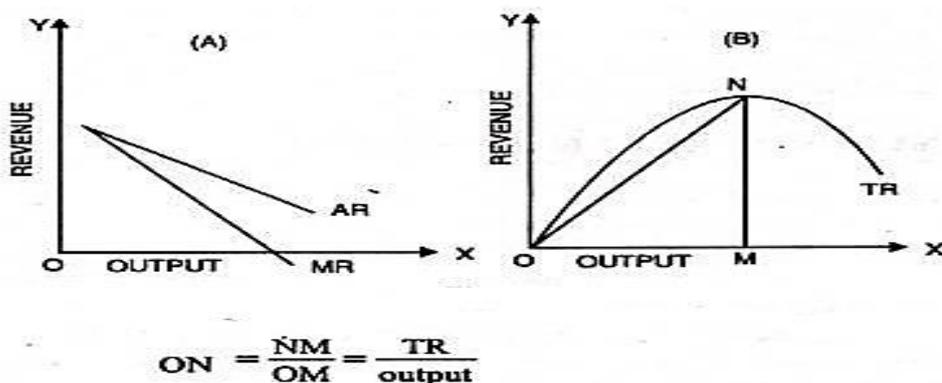


Fig. 2.4.4 Revenue Under Imperfect Competition

But at this point, there is another side to the situation regarding returns that should be considered. Microsoft introduced Office 2000, a program that includes Word, Excel, PowerPoint, and Access, to general retail customers in December 1999. It represented a considerable advance over the previous package, Office 97, by allowing much more interaction with the Internet. It also allows easier collaborative work for firms using an intranet. Thus, many larger firms have been willing to buy upgrades and pay the price of around \$230.

However, there is limited scope for users to take advantage of these improvements. Office 97 was already so full of features that most customers could not begin to exhaust its possibilities. It has been estimated that with Word 97 even adventurous users were unlikely to use more than a quarter of all its capabilities. In this respect, Microsoft is a victim of the law of diminishing returns. Smaller businesses and home users may not be too impressed with the further capabilities of Office 2000. Given the enormous costs of developing upgrades to the package, the question is where Microsoft goes from here. It is speculated that the next version, Office 2003, may incorporate a speech recognition program, making keyboard and mouse redundant. At the moment such programs require a considerable investment in time and effort from the user to train the computer to interpret their commands accurately, as well as the considerable investment by the software producer in developing the package.

The Role of Self-Help Groups in Rural Development

SEARCH, a support organization, collaborates with around 300 NGOs voluntary work with agencies with the dual objectives of human resource development and mobilizing people around development issues. It carries out policy reviews and plays advocacy roles in addition to operating in 150 villages in Dharmapuri district of Tamil Nadu, South India where SEARCH intervened to guide women's development by an empowerment process, organizing women to bring specific changes to their lives, including creating space for women; mobilization; social leadership; economic independence; personal autonomy and political leadership. Its core competence includes women in development and gender relations, NGO management and institution building, empowerment and participatory development and strengthening Panchayat Raj institutions.

Mission Statement Search views development as a multidimensional process involving quantitative and qualitative changes in human life. It encompasses all facets of the masses, i.e. economic, social, political, educational and cultural, which have a strong bearing on their lives. Further, it firmly believes that these changes are interrelated and interdependent and that these go hand in hand. These aspectual changes contributing to development, influence and are influenced by each other. Therefore, development is perceived as a long, multifocal process whereby transformation is brought about in the lives of the poor and marginalized groups. It is a long process as contemplated changes occur slowly and over a long time. Again, it is a process as it involves the operation of a number of factors. Development, therefore, calls for concerted, systematic and planned efforts.

SEARCH believes that development becomes effective, meaningful and sustainable only if and when there is popular participation. People are the main actors in the development of drama and development workers are merely the supporting cast. So, development programmes need to be planned and implemented with the participation of the people and development must be made fully and wholly participatory in nature and in content. Search has functioned since 1975. It has taken upon itself dual roles.

One, it performs the functions of a support institution such as the provision of training and institutional support to the NGOs in the fields of human resource development and people's organization, policy formation, and review, lobbying and advocacy, promotion and development of issuebased networks. Second, it operates as a field agency implementing development programmes for the benefit of the poor and marginalized sections of rural society. It has been striving with the avowed objective of empowerment of the marginalized groups such as Dalits, tribal, agricultural laborers, women, and children. It's Search Extension Programme (SEP) launched in 1986, is working in 150 villages in the backward and drought prone section of Placode taluk in the district of Dharmapuri, Tamil Nadu. It provides an interesting role model for NGO field staff, particularly in three important aspects, i.e. the concept of transfer of power from NGOs to POs, the Women's Bank and women's political empowerment. It has promoted POs, called Sangam's and these are used as catalysts or instruments of development oriented changes. Thus, there is a synthesis or harmonious blend of teaching what is practiced in the field and practicing what is taught in the training programmes.

This unique feature makes Search clearly distinct from other NGOs. Search activities reflect an underlying philosophy that the most effective form of development is the development of people, through their own organizations. Programme beneficiaries are involved in all stages and aspects of development activity both as individuals and commies, for there to be any real positive impact on their lives. The emphasis has always been on a holistic approach to development.

The Role of CSOs and SHOs

Search Extension Programme the Search extension programme launched in 1986 extends over 150 villages in Placode taluk of Dharmapuri district, Tamil Nadu. The main strategy of the programme is to identify the poor families and assist them in improving their living conditions. Development is viewed as a multidimensional process and hence all the aspects of human life are touched in the programmes.

Sangam's (POs/SHGs) Sangam's (POs) are focal points perceived as grass root agencies for planning and executing development programmes. They are 'nodal points' around which bottom up programmes revolve. This is an easily accessible forum for women to discuss problems related to daily routines, children, health, fuel, fodder, drinking water and education, problems related to their status and role within society and the family; as well as problems related to their own personalities and self image as women. With the Sangam's comprising mixed groups of women, the goal of social integration is being actively pursued. This is particularly important in the context of the exacerbation of tensions based on differences in caste and religion. Even when communal passions ran high, the women did not allow divisive forces amidst them and did maintain the sanctity of the Sangam.

- **Linkages of SHGs to Other Activities** Sangam women are increasingly becoming an expert at negotiating with government officials to get work done often for the good of the whole commy. Thus, many villages owe their streetlights, repaired bore wells, water tanks, commy halls to the activism of the Sangams. The active participation of women has given them a sense of pride. Their views are now respected and accepted. These groups are also linked to the existing economic groups which undertake income generation programmes like sheep rearing, dairy, farming etc. These groups are focussing on the issues of poverty alleviation, food security, consumer rights, Dalits issues, special focus on the girl child, health needs and right on

reproductive health, female infanticide, domestic violence against women and political empowerment of women.

- **Economic Programmes** Its economic programmes are structured to tackle the basic problems of poverty, unemployment and underemployment, exploitation and disabilities socioeconomic and political. Economic programmes comprised sheep rearing, dairy, coir, small farmer development, and quarrying. The objectives of the economic programme include generating employment, increasing incomes, arresting migration and empowering marginalized sections.
- **Impact** As a result of economic programmes income levels of the beneficiaries increased considerably as evidenced by such factors as an investment, the position of assets and rises in consumption; employment opportunities increased significantly; the problem of migration is effectively tackled, and purchasing power and the bargaining capacity of the poor women has been increased. Increased incomes and improved social status have contributed to a clearer realization that they are playing a better role in the development process. Obvious economic benefits have altered commy and male attitudes towards the SEP and Sangams. Men now openly support their women participating in SEP programmes. As a man pointed out, "From now onwards we men should think anew on women's issues... Women's status in society can improve if we provide support and cooperation... As men, we must acknowledge the strength and worth of women and treat them as equals".
- **Women's Political Empowerment** Search has been working with marginalized women for the past 10 years to bring about social change and economic independence. In addition, the ultimate aim has been to bring these women into the political process, so that they can assert themselves as a decisionmaker in the local self-government institutions.

In 1995, with Tamil Nadu passing a Panchayat Raj bill providing for panchayat elections, a need for training women candidates was felt. Search helped the Kari Mangalam women's federation start offering different types of training to suit the need of Sangam member, PTAs and women activists. Election funds were also created. They have taken the responsibility to talk to their follow Sangammembers and to identify the contestants. For 45 members, search executive director and extension programme staff were involved in a "Do's and Don't" orientation for candidates. A vigilance committee consisting of staff, women activists, PTAs and representatives of people's organization was formed for each zone. Another committee organized canvassing. NGO staff were not put on this committee for tactical reasons. Only the women activists, PTAs and people's representatives were part of it. A committee of zonal coordinators and commy organizers looked after nominations and withdrawals. One week after filing nominations, 17 women were declared elected unopposed. The table below shows members who contested, withdrew, selected as unopposed and elected.

- **Women's Bank** A women's bank at the SEP was set up in 1996 as a result of the increase in SHG members' savings. People started availing of the loan facility by the bank. At present there are Rs. 70 lakhs in the bank, which is registered under the Cooperative Societies Act and is run by women only. This helped women to handle money transactions independently, which in turn increased their status in their families and villages. It helped the development of women by giving them an Opportunity to save and take loans when in need. It is easy to take a loan to meet the emergency needs. Interest to be paid on the loan is very low 6 percent. The interest is once again circulated among themselves and gives the feeling that the bank is theirs; a real people's bank!
- **Women's Federation** The need for a common forum of all SHGs in the extension area was felt to initiate joint action on issues of common concern as well as issues that cannot be resolved by one

SHG individually. The women's federation has now taken up the entire responsibility of monitoring POs. The federation has a separate office where meetings are held once a week. The expenses of the federation are taken care of by collecting an amount equal to a month's subscription from each PO.

Collaboration between local government and CSOs, Economic independence is essential for women's empowerment, particularly in a patriarchal society, which imposes severe constraints on women. Economic interventions by NGOs like microcredit and income generation programmes can become indicators of women's economic independence. One programme carried out by NGOs on a large scale in Asia has been microcredit for women. In order to manage microcredit and SHGs, staffs require managerial capability. To meet this requirement Search is offering various training programmes to enable NGO staff to build appropriate knowledge and skills to plan, implement and manage microcredit programmes and self help groups that would facilitate women's empowerment. These programmes were offered in different regional languages and in English. Many NGOs have utilized these programmes to upgrade their staff in order to facilitate and strengthen the self help groups in their respective areas.

The content of these programmes includes the relevance and importance of self help groups, the sociopolitical analysis in the micro context, constraints in forming self help groups, microcredit and women's empowerment, skills in leadership, facilitation and problem solving roles and responsibilities of members, planning, monitoring and documentation of microcredit and self help groups. We also offered Training of Trainers to develop trainers in their respective organizations who in turn trained their leaders of self help groups. The Search Extension Programme is a role model for other NGOs in such aspects as the transfer of power to POs, women's empowerment and women's banks. The role of SHGs in bringing about women's development in six dimensions psychological and personal, cultural, social, economic, political and organizational cannot be overemphasized. The SHGs helped develop awareness of the conditions that dominate women's lives and their subordinate role. Hence, they became able to participate in the process of social change.

The unique features of the Search Extension Programme are It aims to empower women, agricultural laborers, small farmers, and other disadvantaged groups; all families in the selected villages have been surveyed to identify target groups. The data has been used to formulate an action plan for integrated allround development of the families; A group of dedicated and highly motivated workers, while not highly qualified educationally, is drawn from local commies so that people's participation is easily achieved; Planning is participatory and decentralized. Programmes are planned and implemented with the active participation of the people concerned; Regular contact with the beneficiaries takes place through periodic meetings of beneficiaries, women activists and other programme personnel to discuss common problems and solutions; Human resource development is stressed through use of available labor in the chosen families. The beneficiaries are disadvantaged groups for whom manual labor is an important source of income. Priorities are worked out in view of using labor available in the family.

Review Questions

1. "Diminishing returns may be in operation even when the total product is rising" explain it.
2. Are the following statements 'true' or 'false'? Give reasons for your answer.
 - a) If the average product is positive, the total product must be rising.
 - b) If the total product is increasing, the marginal product must also be increasing.
 - c) If the elasticity of output for labor is less than one, both average and marginal returns to labor must be diminishing.

- d) A firm should use equal amounts of two inputs if the prices of two inputs are equal.
- e) If the isoquants are straight lines, the firm will use either zero (K/L) ratio or zero (L/K) ratio to achieve optimality.
3. "If a product price increases, a family's spending on the product has to increase". Defend or refute.
 4. "Rent is not a payment for the factor land, but for the land element in all factors of production". In light of this statement, discuss the Modern theory of rent. Or, explain the concept of economic rent. Under what conditions can it arise?
 5. If the production is always characterized by constant returns to scale, what can you infer about the efficient scale of production? Can a small firm survive against a large firm under such condition?
 6. Define economics of scope and what are the different ways to achieve economies of scope?
 7. Explain the effect of a change in the prices of inputs/factors of production on the supply of a product?
 8. Suppose, the market price of a commodity as determined by the forces of demand and supply is Rs4 per . Given this price, draw Average Marginal and Total Revenue curves of a firm at various levels of output. What is the nature of the demand curve faced by the firm?
 9. Does a producer always stop producing a commodity when production means losses to him? Give reasons to support your answer.
 10. A perfectly competitive firm faces market price equal to Rs 15. i) Derive its TR for a range of output from 0 to 10 s. ii) Suppose, market price increases to Rs 17. Will the new TR curve be flatter or steeper?
 11. Is it possible for a firm to experience both increasing and diminishing returns at the same time?
 12. What other firms, in other industries, might be in similar situations to Microsoft, and in what respects?
 13. What is the nature of the fixed factor that is causing the law of diminishing returns in Microsoft's case?
 14. Are there any ways in which Microsoft can reduce the undesirable effects of the law of diminishing returns?
 15. Explain the role of CSOs and SHOs involved in achieving women empowerment?
 16. Illustrate, how SEARCH and other activities can help to improve the process of women development in the rural areas?

Chapter 3 Cost and Demand Analysis

3.1 Cost and Demand Analysis

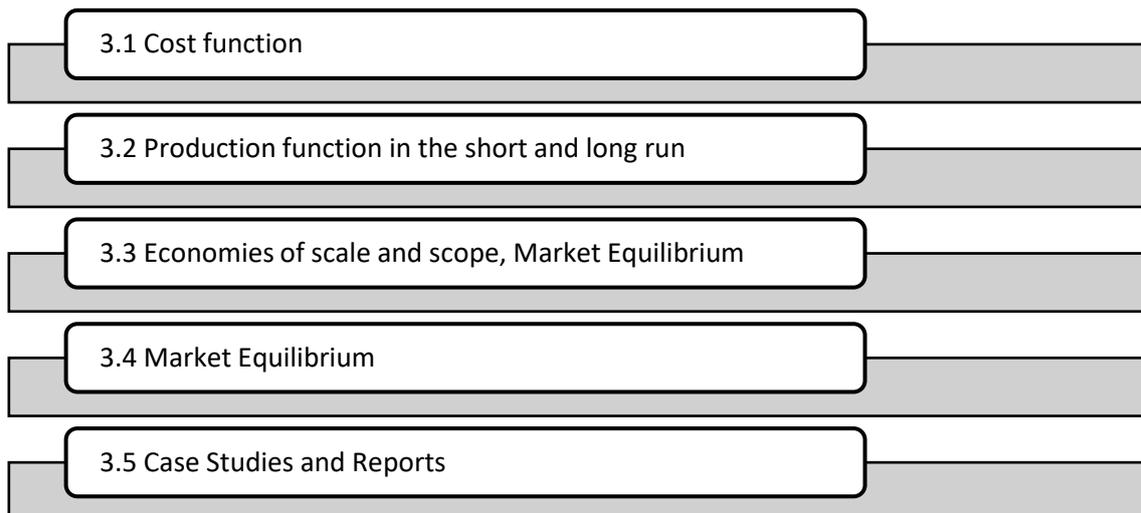
Introduction

This chapter entails information about the technological choices available to the firms. Just as the production function cost function describes the technological possibilities of production of a firm. In the upcoming sections, we will explore the behavior of cost function $c(w, y)$ with respect to price and quantity through the concept of average and the marginal cost function.

Objectives

- To explain the meaning and use of different concepts of cost.
- To explain how production relationships, underlie cost relationships.
- To explain how cost relationships can be derived in mathematical terms.
- To explain the purpose and principles of cost–volume–profit analysis.
- To describe a problem-solving approach for applying cost–volume–profit analysis.

Structure



To Do Activities

1. Discuss interesting initiatives taken by companies across the globe. Use case studies mentioned in the
2. Discuss the various production process and its cost relationships.
3. Encourage the students to take part in the analysis of cost profit analysis.
4. Integrate sources of information, processes and express the increasingly sophisticated ideas for applying the cost profit analysis.
5. Discuss the case studies related with cost and demand analysis.

Cost Function

Generally, the cost function can be represented as below

$$C = f(Q, P_1, I_1, P_2, I_2, \dots, P_N I_N)$$

Where C = cost of production, Q = level of output, P_1, P_2, \dots = the prices of various factors used while I_1, I_2, \dots = the quantities of factor inputs 1, 2 etc. Cost of production depends also on time. Basically, in the short run we ignore the time factor.

Economic cost also includes the Opportunity cost of the resources that the firm uses the implicit costs as well as explicit costs while calculating the total costs of the firm. See Fig. 3.1.1.

i) Explicit Cost

The explicit costs are the payments made by a firm to the resource suppliers for making available the resources. The owner of a firm often uses his own resources, e.g., time and capital in production. These resources have alternative uses. The cost of these resources in production has to be imputed by comparing the remuneration of similar resources in alternative lines of activity.

ii) Opportunity Cost

The Opportunity cost of a given amount of resource input in a particular activity can be measured by the amount of benefit foregone by not using it in its next best alternative use.

i) Implicit Cost

For instance, a roadside tea stall owner sells 200 cups of tea per day at a cost of Rs. 1 per cup. Consider the possibility that the tea stall owner could have taken a waiter's job in a restaurant and earn Rs. 100 per day. Now, to produce 200 cups of tea, the owner producer spends not only Rs. 200 but sacrifice the Opportunity of earning Rs. 100 in wage from alternative employment. Thus, the implicit cost of labour per day in making 200 cups of tea is Rs. 100. Therefore, implicit costs of self-owned resources are given by the returns that could have been earned by employing these resources in their next best alternative use.

ii) Accounting Cost

These costs are the historic outlay of funds, measured by the expenses recorded in the course of, say a financial year i.e. wages to labor, payments to resource suppliers, and depreciation charges for capital invested. The true measure of accounting costs should be given by 'out of pocket' expenses of a firm.

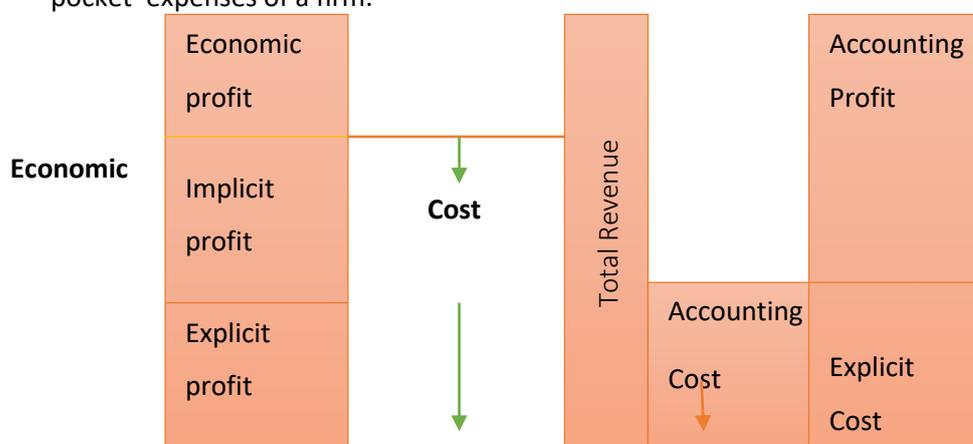


Fig. 3.1.1 Types of Economic cost

iii) Fixed Cost

Fixed costs are the costs that do not change as output changes. It remains the same as all levels of output up to capacity, i.e., whether the firm produces a few or a large volume of output. It occurs even if the firm stops the production for a temporary period. Insurance costs, interest on bank loans, multiple taxes, and license fee, rental payment on office and factory building and wages and compensation of permanent employees are the examples of fixed cost are represented in Fig 3.1.2.

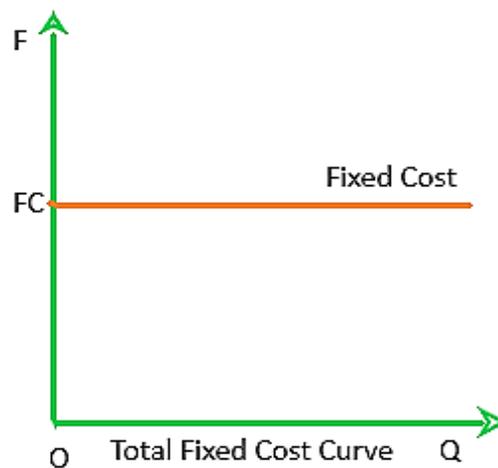


Fig.3.1.2 Total Fixed Cost Curve

In business language, fixed costs are referred to overhead costs or sunk cost because this cost is incurred even if the firm produces nothing in the short run. However, fixed costs apply only to the short run because in the short run some factors of production remain fixed and others are variable. The total fixed cost curve is given in fig.3.1.2.

iv) Variable Cost

It varies with the volume of output. For instance, payments for raw materials, wages of casual workers, fuel, and depreciation associated with production. In other words, variable costs are the operating costs of production and also called direct costs or prime costs is shown in Fig 3.1.3. All costs are variable in the long run because all the factors are variable. In fact, fixed costs are converted into variable costs in the long run.

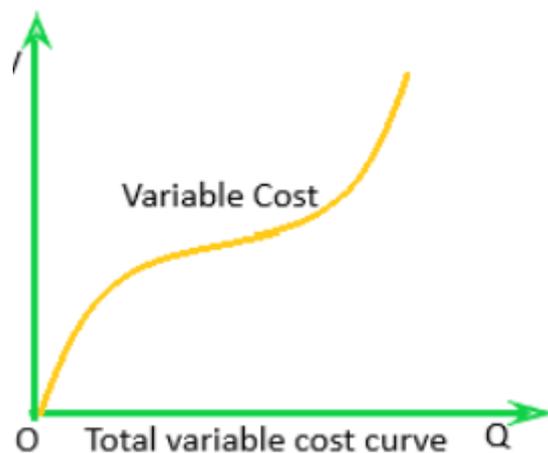


Fig. 3.1.3 Total Variable Cost Curve

The variable cost is plotted in Fig. 3.1.3, by measuring Q on the horizontal axis and V on the vertical axis. The V curve is concave convex with respect to Q axis. While V rises at a decreasing rate over the concave part, it rises at an increasing rate over the convex part.

v) Average Cost

It defines that the minimum cost of producing y units of output is the cost of the cheapest way to produce the output y . therefore, the average cost or average total cost is divided by the number of units produced.

Thus $AC = \frac{C}{y}$. Average total cost (also called cost) consists of average fixed cost (AFC) and average variable cost (AVC) $ATC = AFC + AVC$. In the short run, some of the factors of production is fixed at predetermined levels.

Let X_f be the fixed factor and X_v be the variable factor break up w into $w = w_f, w_v$ the factors of prices of fixed and variable factors. Thus, the short run cost function can be written as,

$$c(w, y, x_f) = w_v x_v(w, y, x_f) + w_f x_f$$

The term $w_v x_v(w, y, x_f)$ is called shortrun variable cost and the term $w_f x_f$ is the fixed cost.

The various derived cost concepts from the basic ones are given below

$$\text{Short – run average cost (SAC)} = \frac{c(w, y, x_f)}{y}$$

$$\text{Short – run average variable cost (SAVC)} = \frac{w_v x_v(w, y, x_f)}{y}$$

$$\text{Short – run average fixed cost (SAFC)} = \frac{w_f x_f}{y}$$

$$\text{Short – run marginal cost (SMC)} = \frac{\partial c(w, y, x_f)}{\partial y}$$

The graphical representation of the average and marginal cost curve is shown in Fig.3.1.4.

Relation between MC and AVC

The relations between marginal cost and average cost may be summarized below. This relationship is sometimes called a magnetic effect of marginal cost on average cost.

- When $MC < AVC$, AVC will fall. The marginal pulls the average down.
- When $MC > AVC$, AVC will rise. The marginal pulls the average up.
- When $MC = AVC$, AVC will neither rise nor fall; it will be at its minimum.

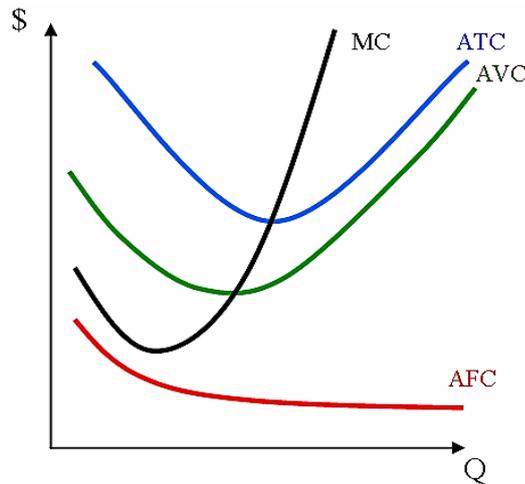


Fig .3.1.4 Average & Marginal Cost Curves

Relation b/w MC and ATC

The curve in Fig.3.1.4.1 which is self explanatory.

- When $MC < ATC$, ATC will fall.
- When $MC > ATC$, ATC will rise.
- When $MC = ATC$, ATC will be at its minimum.

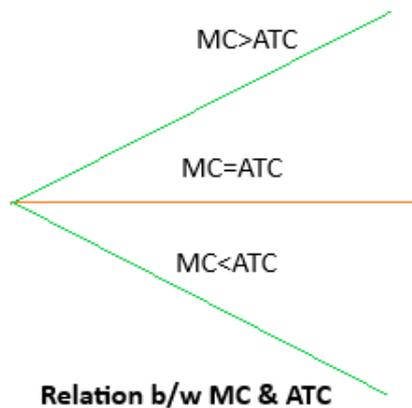


Fig. 3.1.5 Relationship b/w Marginal Cost and Average Total Cost

At low rates of output, MC declines as output expands because of the increasing marginal returns. As long as MC is below ATC, ATC falls as output expands. At higher rates of output, MC increases because of diminishing marginal returns. Where MC exceeds ATC, MC pulls up the ATC. Because MC first pulls down ATC and then pulls up ATC both the AVC and ATC curves have a Ushape. The shape of the AVC curve and ATC curve are determined by the shape of the MC curve, and each is shaped by increasing and diminishing marginal returns.

Problem

1. If the production function is $Q = 2\sqrt{L}$ and $W = \text{Rs. } 100$, determine AVC for $Q=10$.

Solution

From the production function $L = \frac{Q^2}{4}$ for $Q = 10, L = 250$.

Therefore, *Average Variable Cost* $= \frac{100 \times 250}{4} = 2500$.

2. A firm is producing 20 s. At this level of output, ATC and AVC are respectively equal to Rs 40 and Rs 37. Find out TFC of this firm?

Solution

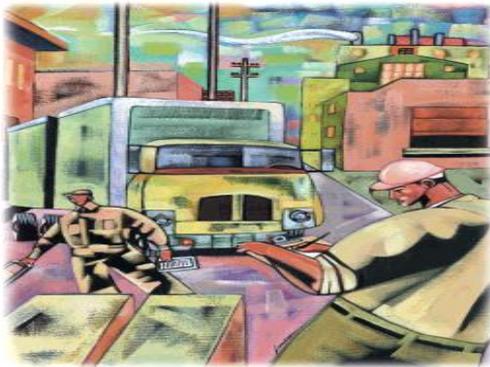
Total Cost=40*20=800 (Average Total Cost*s);

Total Variable Cost=37*20=740 (Average Variable Cost*s);

Total Factor Cost=Total Cost Total Variable Cost=800740=60.

Thus, the TotalFactor Cost is Rs 60.

3.2 Production Function in The Short and Long Run



In the previous chapter we have explored the different types of cost in the short run. This examines the distinction between the short and long run productive factors.

Objectives

- To introduce the concept of production and explain its relevance to managerial decision making.
- To explain the meaning and significance of different time frames.
- To explain isoquant analysis and its applications in both short run and long run situations.
- To explain how an optimal combination of inputs can be determined in both short run and long run situations.

Costs in the Long Run

In the long run, all inputs that are under the firm's control can be varied. So, there is no fixed cost and is best thought of as a planning horizon.

It is said that a firm, in the long run, selects the optimum size of the plant. Once the size of the plant has been selected and the machines have been installed, the firm has fixed the cost and is once a firm is derived from its short run average cost curves. Thus, it is known that the long run is the firm's planning period and the short run is the production period. However, the long run total cost curve is derived from the expansion path of the firm is shown in the Fig.3.2.1.

Derivation of the Long run Marginal Cost Curve

The long run marginal cost curve can be directly derived from the long run total cost curve since the long run marginal cost at a level of output is given by the slope of the total cost curve at the point corresponding to that level of output. Also, the longrun marginal cost curve can be derived from the long run average cost curve, because the longrun marginal cost curve is related to the long run average cost curve in the same way as the short ran mar-ginal cost curve is related to shortrun aver-age cost curve. In

Figure. 3.2.1 (a) and 3.2.1 (b). It is depicted that how the long run marginal cost curve LMC is derived from a long run average cost curve (LAC) enveloping a family of shortrun average and marginal cost curves.

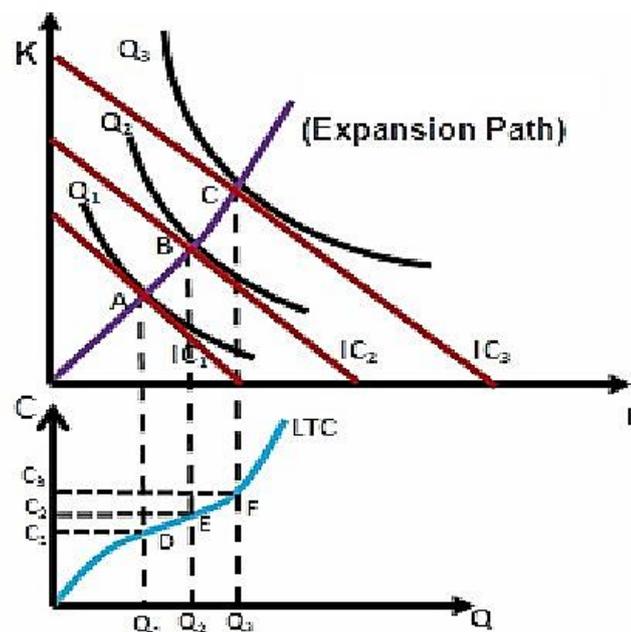


Fig. 3.2.1 (a) Derivation of Long Run Marginal Cost

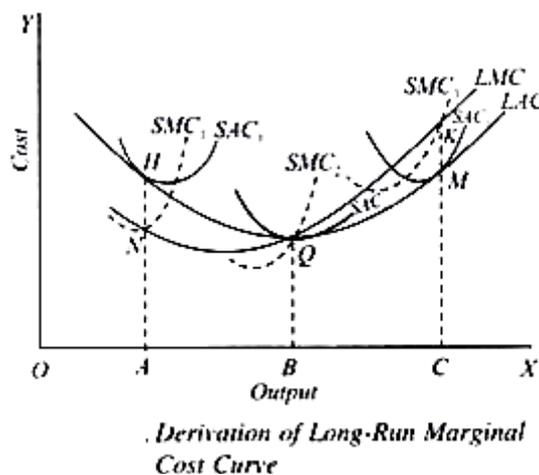


Fig. 3.2.1 (b) Derivation of Long Run Marginal Cost

If the output OA is also produced in the long run, then it must be produced on the long run average cost curve LAC at point H which is a tangency point with the shortrun average cost curve SAC1. Thus, when output OA is to be produced in the long run, it will be produced with the plant corresponding to the shortrun average cost curve SAC1 and the shortrun marginal cost curve SMC1.

Corresponding to the tangency point H between the shortrun average cost curve SAC1 and the long run average cost curve LAC, there is a point N on the shortrun marginal cost curve SMC. This means that the production of output OA, in the long run, involves the marginal cost AN. Therefore point N must lie on the long run marginal cost curve corresponding to output OA. If output OB is to be produced in the long run, it will be produced at point Q which is the tangency point between LAC and SAC2.

Q is also the point on the shortrun marginal cost curve SMC₂, corresponding to output OB. (Q is the common point between SAC₂ and SMC₂ because Q is the minimum point of SAC₂, at which the SMC₂ cuts it from below). Thus, Q must also lie on the long run marginal cost curve corresponding to output OB. Similarly, if output OC is to be produced in the long run, it will be produced at point M which is the tangency point between LAC and SAC₃. Corresponding to point M, the relevant point on the SMC₃ is K which means that the long run marginal cost of producing OC is CK.

Thus, point K must lie on the long run marginal cost curve corresponding to output OC. By connecting points N, Q and K we obtain the long run marginal cost curve LMC. It will be seen from Fig. 3.2.2 that the long run marginal cost curves are flatter than the shortrun marginal cost curves.

It should also be remembered that the relationship between the long run marginal cost curve LMC and the long run average cost curve LAC is the same as that between the shortrun marginal cost curve and the short run average cost curve.

Thus, when the long run marginal cost curve LMC lies below the long run average cost curve, the latter will be falling, and when the long run marginal cost curve lies above the long run average cost, the latter will be rising. When the long run marginal cost is equal to the long run average cost, the latter will be neither rising nor falling.

Relationship of LAC and LMC with SAC and SMC

It is important to note that LAC and SAC curves are related in an important way with SMC and LMC curves. This relationship shows, as will be seen from Fig. 3.2.2, that at the level of output at which a particular SAC curve is tangent to the LAC curve, the corresponding SMC curve intersects the LMC curve.

This relationship can be proved using a shortrun total cost curve and the longrun total cost curve and this has been done in Figure. 3.2.2 where a shortrun total cost curve STC and the long run total cost curve LTC are drawn.

It will be seen from Figure.3.2.2 that long run total cost curve LTC lies below the shortrun total cost curve STC at all levels of output except at output OA at which the two curves are tangent. This means that LAC is less than SAC at all levels of output other than OA.

As will be seen from the bottom of panel Fig.3.2.2 that long run average cost LAC will be equal to the shortrun average cost SAC at output OA at which LTC curve is tangent to the STC curve. But the long run marginal cost LMC must also be equal to shortrun marginal cost SMC at output OA i.e. the tangency points P.

This is because marginal cost is given by the slope of the total cost curve at any point, and the LTC curve and STC curve have the same slope at the tangency point P. It will be seen from the bottom panel of Fig. 3.2.2 that at output level OA, where the SAC is equal to the LAC, SMC is also equal to the LMC.

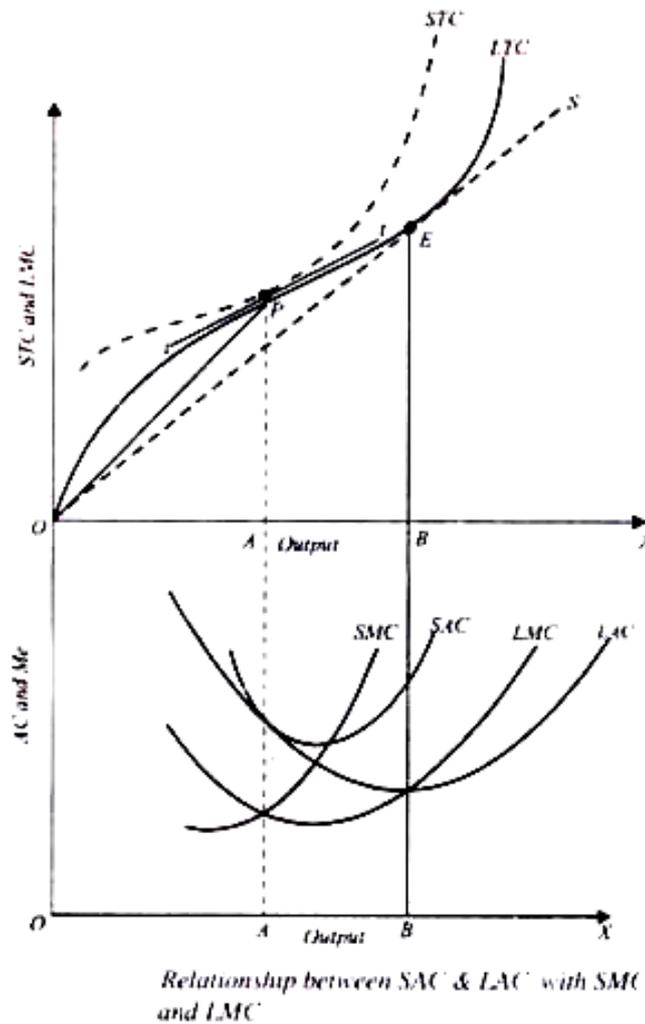


Fig.3.2.2 Relationship of LAC and LMC with SAC and SMC

The purpose of this chapter has been to develop some tools that we can use to study how firms make production and pricing decisions. You should now understand what economists mean by the term costs and how costs vary with the quantity of output a firm produces.

The goal of firms is to maximize profit, which equals total revenue minus total cost. A firm's costs reflect its production process. A typical firm's production function gets flatter as the quantity of an input increases, displaying the property of diminishing marginal product. As a result, a firm's total cost curve gets steeper as the quantity produced rises.

A firm's total costs can be divided between fixed costs and variable costs. Fixed costs are costs that do not change when the firm alters the quantity of output produced. Variable costs are costs that do change when the firm alters the quantity of output produced. When analyzing firm behavior, it is often useful to graph the average total cost and marginal cost.

For a typical firm, the marginal cost rises with the quantity of output. Average total cost first falls as output increases and then rises as output increases further. The marginal cost curve always crosses the average total cost curve at the minimum of average total cost.

A firm's costs often depend on the time horizon being considered. In particular, many costs are fixed in the short run but variable in the long run. As a result, when the firm changes its level of production, the average total cost may rise more in the short run than in the long run.

Problems

1. A bottling plant employs three different types of labor unskilled manual workers, technicians, and supervisors. It has estimated that the marginal product of the last manual worker is 200 s per week, the marginal product of the last technician is 275 s per week and the marginal product of the last supervisor is 300 s per week. The workers earn £300, £400 and £500 per week respectively.
 - a) Is the firm using the optimal combination of inputs?
 - b) If not, advise the firm on how to reallocate its resources.

Solution

- a) The optimal combination is achieved when the marginal product of each type of worker as a ratio of the price of labor is equal, i.e.

$$\frac{MP_m}{P_m} = \frac{MP_t}{P_t} = \frac{MP_s}{P_s}$$

$$\frac{MP_m}{P_m} = \frac{200}{300} = 0.67$$

$$\frac{MP_t}{P_t} = \frac{275}{400} = 0.6875$$

$$\frac{MP_s}{P_s} = \frac{300}{500} = 0.6$$

This combination of inputs is therefore not optimal.

- b) It is better to use more of the most productive input, i.e. technicians, and less of the least productive input, i.e. supervisors. By reallocating resources in this way, the firm will cause the MP of the most productive input to fall and the MP of the least productive input to rise until an optimal point is reached.
2. A firm has the following shortrun production function

$Q = 150L + 18L^2 - 1.5L^3$ Where Q=quantity of output per week; L=number of workers employed. When does the law of diminishing returns take effect?

Solution

$$MP = \frac{dQ}{dL} = 150 + 36L - 4.5L^2$$

MP is at a maximum when diminishing returns occur, therefore we have to differentiate the expression for MP to find the relevant value of L. This is the first order necessary condition for a maximum.

$$\frac{d(MP)}{dL} = 36 - 9L = 0, \text{ Therefore, the diminishing rate is 4\%}$$

3.3 Economies of Scale and Scope, Market Equilibrium

Generally, a firm experiences economy of scale when longrun average cost falls as output expands. For instance, a larger size of a firm often allows for larger, more specialized machinery and later specialization of labor. Therefore, increasing returns to scale exist when an increase in all the inputs leads to a more than proportional increase in output. In a similar way, the minimum efficient scale for a firm occurs at the level of output at which economies of scale are exhausted and constant returns to scale begin. From the results of producing different products together gain the economic efficiency of a firm.

Objectives

- To define and explain the meaning of markets and to understand the concept of returns to scale
- To explain the equilibrium conditions for different types of market in terms of price and output, both in graphical and algebraic terms and to understand it economies of scope

Economies and Diseconomies of Scale

The term economies of scale describe a situation in which LAC decreases as output goes up and diseconomies of the scale describe the opposite average cost increases as output goes up.

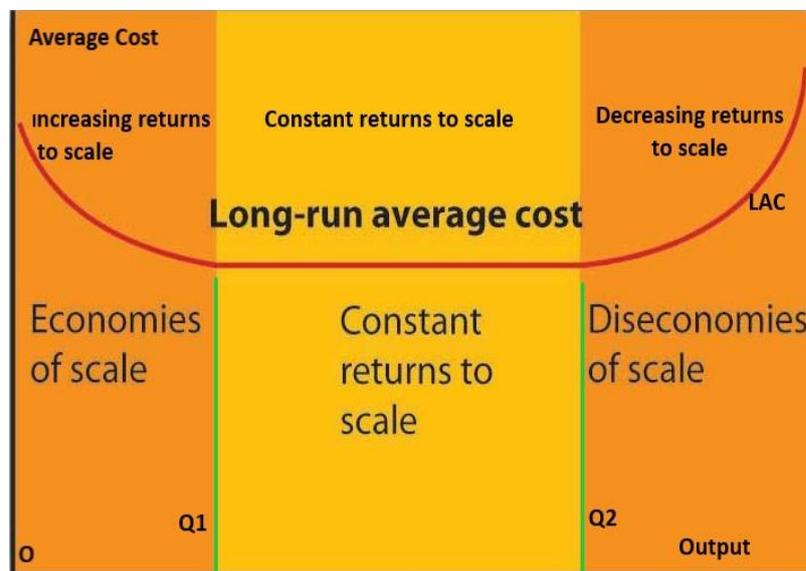


Fig.3.3.1 Measures of Economies and Diseconomies

Economies and diseconomies of scale explain the slope of a firm's LAC curve. Economies of scale can also explain why some firms are more profitable than others in the same industry. When a firm enjoys economies of scale, its production function shows increasing returns to scale, which implies decreasing cost per. When economies of scale are exhausted, a firm's production function shows CRS and its LAC

remains constant. Finally, when diseconomies set in, a firm's production function shows decreasing returns to scale which imply an increasing cost per . These three situations is given in Figure. 3.3.1.

1. Increasing Returns to Scale

If a firm increases all its factors of production by some proportion and as a result, increases its output proportionately more than it increasing returns to scale. Consider the factor (input) prices remain unchanged, increasing returns to scale imply that average cost is falling. The relation between increasing returns to scale and long run cost can be given as shown in Table 3.3.1.

Table 3.3.1 Calculation of Production cost and increasing returns to scale

Inputs K	L	Output s	Total Cost Rs.	Long run Average Cost (Rs.)
3	2	1	8	$8/1=8$
6	4	3	16	$16/3=5.33$

Here, the firm uses two factors of production Labour (L) and Capital (K). Further, that the price of labor is Rs.2 per of time, the price of capital is Rs.1 per of time, and the firm uses three s of labor and two s of capital to produce the first of output. When the firm doubles all its inputs, its output is more than doubles. In fact, its output triples. This is precisely the meaning of increasing return to scale. Production and cost information is shown in the above Table 3.3.1. In the long run average cost falls from Rs.8 to Rs.5.33. simultaneously, Figure 3.3.1. shows that the decreasing costs or increasing returns to scale as the downwards loping section of the long run average cost curve. The firm enjoys increasing returns to scale over the range of output from O to Q_1 which shows that a firm operating under conditions of decreasing cost enjoys economies of scale.

Economies of scale have various causes. They may result from the physical properties of producing s that give rise to increasing returns to scale in inputs. Economies of scale can also arise due to the specialization of labor. As the number of workers increases with the output of the firm, workers can specialize in tasks, which often increases their productivity. Specialization can also eliminate the timeconsuming changeovers of workers and equipment. This would increase worker productivity and lowers average cost.

Economies of scale are needed to employ the indivisible inputs. But, the indivisible input is available only a certain lowest in size. Meanwhile, its quantity cannot be reduced to zero as the firm's output falls to zero. Invisible inputs lead to decreasing average cost because, when a firm purchases the services of an invisible input, it can spread 'the cost' of the indivisible input over more s of output as output goes up.

2. Constant Returns to Scale

A firm operates under constant returns to scale if an increase in all its inputs results in a scale proportional increase in output. Constant returns to scale imply that longrun average cost remains unchanged as output increases. In Table 3.3.2, as the firm doubles its inputs, its output also doubles. In this case, the longrun average cost remains unchanged at Rs.8. Figure 3.3.2

represents the case of constant returns to scale by the horizontal stretch of the LAC curve. The firm operates under constant returns to over the range of output from Q_1 to Q_2 .

Table 3.3.2 Calculation of production cost and constant returns to scale

Inputs K	L	Output s	Total Cost Rs.	Long run Average Cost (Rs.)
3	2	1	8	$8/1=8$
6	4	2	16	$16/2=8$

The level of output at Q_1 has some significance. At this level of output, increasing returns to scale are exhausted and constant returns to scale begins. At a level of output less than Q_1 , the firm is not taking full advantage of economies of scale, and there are no economies of scale to be gained at any level of output beyond Q_1 . The level of output at which economies of scale end and constant returns to scale begin is referred to as the firm's minimum efficient or optimal scale of production

In other words, the smallest quantity of output at which the longrun average cost curve attains its minimum point. This minimum quantity point is called a minimum efficient scale (MES). The magnitude of MSE indicates the market size and the magnitude of sales. It is possible that Thelon run average cost neither increase nor fall with changes in terms of the firm's size. If economies of scale or diseconomies of scale are apparent, then the firm experiences constant longrun average costs. Simultaneously, when the scale of economies exists in such a way that they are offsetting effects.

3. Decreasing Returns to Scale

In an increase in all the inputs of the firm results in a less than proportional increase in the firm's output, then the firm experiences decreasing returns to scale. Decreasing returns to scale imply increasing log run average cost. This could be explained from Table 3.3.3.

Table 3.3.3 Calculation of production cost and decreasing returns to scale

Inputs K	L	Output s	Total Cost Rs.	Long run Average Cost (Rs.)
3	2	1	8	$8/1=8$
6	4	1.5	16	$16/1.5=10.67$

In this case, when the firm doubles its inputs, the resulting output is less than double. Here, the long run average cost is shown graphically in the Figure.3.3.1 by the rising portion of the long run average cost (LAC) curve. The firm faces increasing costs over the range of output beyond Q_2 . At any point beyond Q_2 diseconomies of scale are said to be in effect.

4. Economies of Scale and Returns to Scale

Suppose, a larger scale of production allows firms to employ larger, more efficient machines and allow workers a greater degree of specialization. For instance, if inputs are to increase by 100 %

but output is to increase by 150%, the production function will experience increasing returns to scale. Conversely, if inputs are to be increased by 100 % but output is to increase by less than this, then the production function will exhibit decreasing returns to scale.

Generally, increasing returns to scale are associated with falling average costs which can also be referred to as economies of scale. This is because, in the absence of changes in costs of inputs, if output increases by a greater percentage than input, each will become cheaper to produce.

In a similar way decreasing returns to scale are usually matched by diseconomies of scale, with average costs rising as output increases more slowly than the change in the scale of operation. Constant returns to scale will result in constant costs, i.e. unchanged average costs if again, the cost of inputs remains unchanged.

Table 3.3.4 shows both changes in total output and the change in total cost as a firm increases its scale of output. It is assumed that the proportion of inputs remains unchanged and that the cost of each of the basket of input is constant at Rs. 20.

Table 3.3.4 Measuring the Changes in Input Cost and Output Cost

Total Inputs	Total Cost	Total Outputs	Increase in Inputs	Increase in Outputs	Average Cost
10	200	200			1.00
20	400	500	100%	150%	0.80
30	600	800	50%	60%	0.75
40	800	1067	33.33%	33.33%	0.75
50	1000	1280	25%	20%	0.97

When the inputs increase from 10 to 30, output increases by a greater percentage (increasing returns to scale) and average cost falls (economies of scale). Output rises by the same percentage when inputs rise from 30 to 40 (constant returns to scale) and average costs remain unchanged. Finally, as inputs rise from 40 to 50, output rises by a smaller percentage (decreasing returns to scale) and average cost rises (diseconomies of scale).

Increasing returns to scale result in decreasing cost. However, every economy of scale which reduces cost is not a result of returns to scale. For instance, bulk purchase of raw materials is an example of an internal economy. But it involves no returns to scale since no change in the input/output relationship is involved.

Measuring the Extent of Economies of Scale Output Elasticity of Total Cost

The cost elasticity is the output elasticity of total cost, denoted by C_E . It is defined as the percentage change in total cost per 1% change in output.

$$C_E = \frac{\Delta C/C}{\Delta Q/Q} = \frac{\Delta C}{\Delta Q} \div \frac{C}{Q} = \frac{MC}{AC}$$

The output elasticity of total cost is the ration of marginal cost to average cost, it explains whether there are economies of scale or diseconomies of scale.

This is because the following conditions hold

- If $C_E < 1$, $MC < AC$, so AC decreases with Q and the production function shows economies of scale.
- If $C_E > 1$, $MC > AC$, so AC increases with Q, and we have diseconomies of scale.
- If $C_E = 1$, $MC = ATC$, so AC neither increases nor decreases with Q. The output elasticity is often used to characterise the nature of economies of scale in different industries.

Scope of Economies

One firm produce may produce radios, televisions, VCR's and other electronic goods. The production of audio tapes might affect the cost of producing videotapes since there might be some common elements in the production of both.

When the costs of production fall by producing a set of different goods together rather than separately, the economics of scope are said to exit. This explains why certain firms produce several different but closely related products at the same time, such as refrigerators, washers, dryers, air conditioning s, dishwashers, ovens, and even vacuum cleaners.

In such situations, efficiencies arise when a firm produces more than one product. That is two product firm may be able to manufacture and market its products at a lower total cost than two single product firms would incur when producing a single item. These efficiencies are called economies of scope or return within the scale.

Appropriately, when the total cost of producing given quantities of two goods in the same firm is less than that of producing those quantities in two single product firms disclose that there is a scope for the existence of economies. Mathematically, this can be represented as follows

$$C(X, Y) < C(X, 0) + C(0 + Y)$$

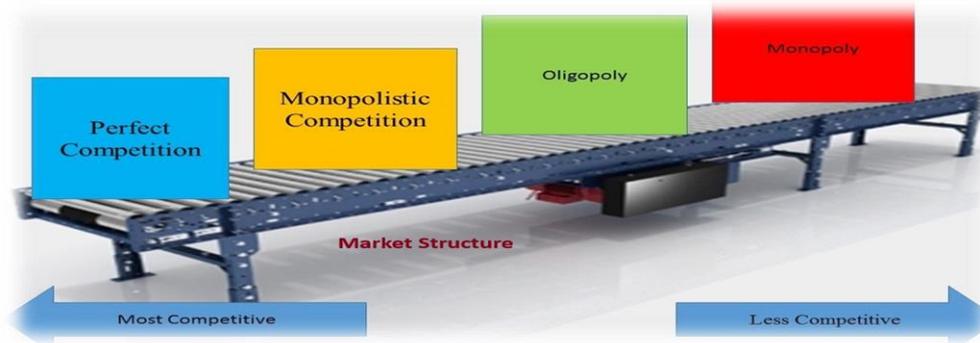
The zeros in two brackets indicate that the single product firms produce positive amounts of one good but none of the other. For instance, economies of scope are less costly for Coca-Cola to add a cherryflavored soft drink to its product line than it would be for a new company starting from scratch.

Long run average cost curve indicates the lowest cost of production at each level of output when the firm size is allowed to vary. It is also called the planning curve and the envelop curve. A firm generally experiences economies of scale if longrun average cost falls as output expands. The elasticity of total cost is the ration of MC to AC. It measures the extent of economies of scale.

Constant returns to scale exist when an increase in all the inputs results in a proportional increase in output. The minimum efficient scale for a firm occurs at the level of output at which economies of scale are exhausted and constant returns to scale begin. Economies of scope refer to the gain in economic efficiency that results from producing different products together rather than separately.

3.4 Market Equilibrium

In the previous chapters, we have examined managerial decisions of typical firms facing demand and cost conditions. Although we have noted specific products and industries, we have carried out the analyses without explicit reference to types of economic environments. In this, we take a closer look at the market environments such as perfect competition, monopolistic competition, oligopoly, and pure monopoly in which firms compete.



Objectives

- To understand how demand and supply determine market equilibrium.
- To explain how the market adjusts to equilibrium given either excess supply or excess demand.
- To give a shift in demand or supply indicate the change in equilibrium price and quantity.

The Basis of Supply and Demand

In a perfectly competitive market, the price is determined by the market demand and supply curves. The demand curve for a good or service shows the total quantities that consumers are willing and able to purchase at various prices, other factors held constant. Fig. 3.4.1 depicts a hypothetical demand curve D for shoes in a local market. As expected, the curve slopes downward to the right. Any change in price represents a movement along the demand curve. The supply curve for a good or service shows the total quantities that producers are willing and able to supply at various prices, other factors held constant. In Fig. 3.4.1, the supply curve for shoes (denoted by S) is upward sloping. As the price of shoe increases, firms are willing to produce greater quantities because of the greater profit available at a higher price. Any change in price represents a movement along the supply curve.

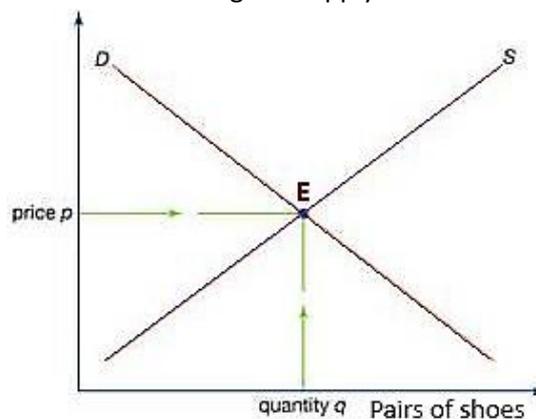


Fig.3.4.1 Demand and Supply Curve

The equilibrium price in the market is determined at point E where market supply equals market demand. Fig. 3.4.1 shows the equilibrium price to be \$25 per pair of shoes, the price at which the demand and supply curves intersect. At the \$25 price, the quantity of output demanded by consumers exactly matches the amount of output willingly offered by producers. The corresponding equilibrium quantity is 8,000 pairs. Consider the situation at different prices. Suppose the market price was temporarily greater than \$25 (say, \$35). At this higher price, the amount of shoefirms supply would greatly exceed the amount consumers would purchase. Given the surplus of supply relative to demand, producers would be forced to reduce their prices to sell their output. Price reductions would occur until equilibrium was restored at the \$25 price. Similarly, if the price were temporarily lower than \$25, consumer demand would outstrip the quantity supplied. The result would be upward pressure on price until the equilibrium price was restored.

a. Shifts in Supply and Demand

Changes in important economic factors can shift the positions of the demand and/or supply curves, causing, in turn, predictable changes in equilibrium price and quantity. For example, the local economy is coming out of a recession and that consumer incomes are rising. As a result, a greater quantity of shoes would be demanded even at an unchanged price. An increase in demand due to any nonprice factor is depicted as a rightward shift in the demand curve. Shifting the entire curve means that we would expect an increase in the quantity demanded at any prevailing price*. Such a shift is shown in Figure 3.4.2 (a). explains the new equilibrium occurs at a higher price and greater quantity of output. The increase in demand causes the price to be bid up. In the process, the amount supplied by firms also increases. The change from the old to the new market equilibrium represents a movement along the stationary supply curve (caused by a shift in demand). Now consider economic conditions that might shift the position of the supply curve. Two principal factors are changes in input prices and technology improvements. For instance, increases in input prices will cause the supply curve to shift upward and to the left.

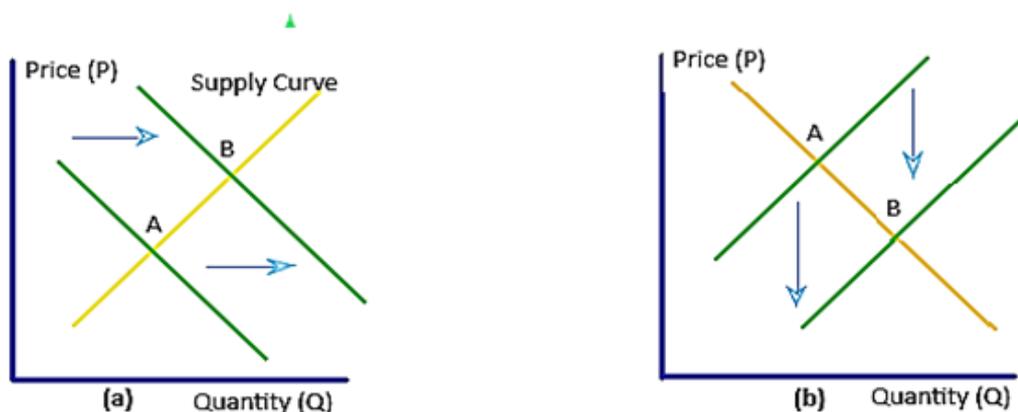


Fig. 3.4.2 Shifts in Supply and Demand

(Any effect that increases the marginal cost of production means that the firm must receive a higher price to be induced to supply a given level of output.) Technological improvements, however, allow firms to reduce their costs of production. As a consequence, the supply curve shifts down and to the right. Such a shift is shown in figure 3.4.2 (b). The result is a greater market

output and a lower price. The favorable shift in supply has moved the equilibrium toward lower prices and greater quantities along the unchanged demand curve.

The effect of a change in price is charted by a movement along the demand curve. (An increase in price means fewer s demanded, but the demand curve has not shifted.) By contrast, the demand curve shifts with a change in any nonprice factor that affects demand.

b. Competitive Equilibrium

Figure. 3.4.3 shows that the relationship among all firms in the competitive market. A large number of firms supply a good or service for a market consisting of a large number of consumers. There are no barriers with respect to new firms entering the market. As a result, the typical competitive firm will earn a zero economic profit. All firms produce and sell identical standardized products. Therefore, firms compete only with respect to price. In addition, all consumers have perfect information about competing prices. Thus, all goods must sell at a single market price. Firms and consumers are price takers. Each firm sells a small share of total industry output, and, therefore, its actions have no impact on price. Each firm takes the price as given—indeed, determined by supply and demand. Similarly, each consumer is a price taker, having no influence on the market price. It is important to remember that these conditions characterize an ideal model of perfect competition.



c. Market Equilibrium

The firm can sell as much or as little output as it likes along the horizontal price line (\$8 in the figure). If it raises its price above \$8 (even by a nickel), its sales go to zero. Consumers instead will purchase the good (a perfect substitute) from a competitor at the market price. When all firms' outputs are perfect substitutes, the "law of one price" holds. All market transactions take place at a single price. Thus, each firm faces the same horizontal demand curve given by the prevailing market price. Figure 3.4.5 provides this market wide perspective. The current equilibrium occurs at E, where the market price is \$6 per unit as shown in Fig.3.4.4 and the industry's total quantity of output is 200,000 units. This output is supplied by exactly 40 competitive firms, each producing 5,000 units (each firm's point of minimum LAC). The market is in equilibrium. Industry demand exactly matches the industry supply. All firms make zero economic profits; no firm has an incentive to alter their output. Furthermore, no firm has an incentive to enter or exit the industry.

Now consider the effect of a permanent increase in market demand. This is shown as a rightward shift in the demand curve (from DD to D'D') in Figure 3.4.5. The first effect of the demand shift is to move the market equilibrium from E to E'. At the new equilibrium, the market price has risen from \$6 to \$8 and industry output has increased to 240,000 units. The higher level of output is supplied by the 40 incumbent firms, each having increased its production to 6,000 units. (According to Figure 3.4.4, this is precisely the firm's profitmaximizing response to the \$8 price.)

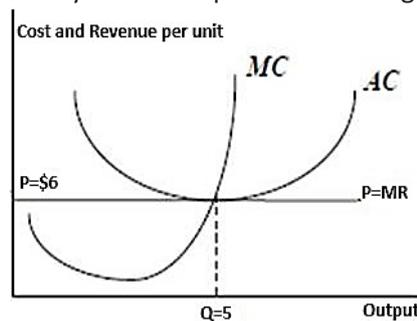


Fig.3.4.4 Measuring Cost and Revenue at P=MR

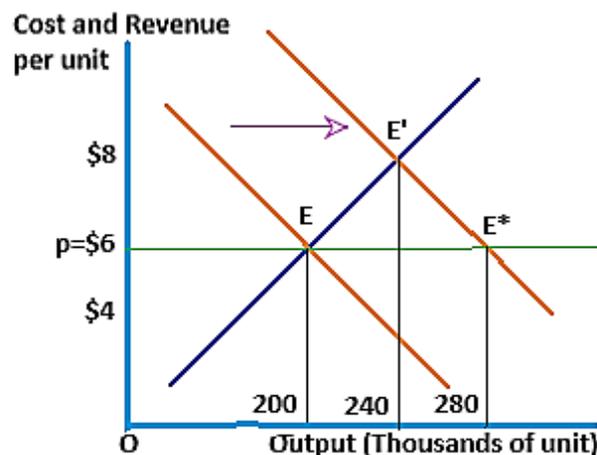


Fig.3.4.5 Market Equilibrium

The equilibrium at E' is determined by the intersection of the new demand curve and the total supply curve of the 40 firms currently in the industry. This supply curve also is shown in Figure 3.4.5 and is constructed by summing horizontally the individual firms' supply curves (i.e., marginal cost curves) in Figure 3.4.4. The shift in demand calls forth an immediate supply response (and a move from E to E'). But

this is not the end of the story. Because the firms currently in the market are enjoying excess profits, new firms will be attracted to the industry. Price will be bid down below \$8 and will continue to be bid down as long as excess profits exist. In Figure 3.4.5, the new longrun equilibrium result is at E*. Price is bid down to \$6 per , its original level. At this price, total market demand is 280,000 s, a 40 percent increase above the 200,000 s sold at equilibrium E. In turn, industry supply increases to match this higher level of demand. With the price at \$6 once again, each firm produces 5,000 s. Therefore, the total output of 280,000 s is supplied by $280,000/5,000 = 56$ firms; that is, 16 new firms enter the industry (in addition to the original 40 firms). In the long run, the 40 percent increase in demand has called forth a 40 percent increase in the number of firms. There is no change in the industry's cost or price; both remain at \$6 per.

Long Run Market Supply

The horizontal line in Figure 3.4.4 represents the case of a constant cost industry. For such an industry, the long run market supply curve is a horizontal line at a level equal to the minimum LAC of production. Recall that any long run additions to supply are furnished by the entry of new firms. Furthermore, in a constant cost industry, the inputs needed to produce the increased industry output can be obtained without bidding up their prices. This is the case if the industry in question draws its resources from large, well developed input markets. (If the industry is a “small player” in these input markets, an increase in its demand will have a negligible effect on the inputs' market prices.) For instance, the market for new housing exhibits a nearly horizontal long run supply curve. In the long run, the industry's two main inputs— building materials and construction labor—are relatively abundant and provided by nationwide markets.

For an increasing cost industry, output expansion causes increases in the price of key inputs, thus raising minimum average costs. Here the industry relies on inputs in limited supply land, skilled labor, and sophisticated capital equipment. For instance, if U.S. drilling activity increased by 30 percent (perhaps due to increases in world oil prices), the typical oil company's average cost per barrel of oil could be expected to rise, for a number of reasons. First, the increase in drilling would bid up the price of drilling rigs and sophisticated seismic equipment. Second, skilled labor (such as chemical engineering graduates), being in greater demand, would receive higher wages. Third, because the most promising sites are limited, oil companies would resort to drilling marginal sites, yielding less oil on average. For an increasing cost industry, the result of such increases in average costs is an upward sloping long run supply curve.

In a perfectly competitive market, a large number of firms sell identical products, and there are no barriers to entry by new suppliers. Price tends toward a level where the market demand curve intersects the market supply curve. In the long run, price coincides with a minimum average cost, and all firms earn zero economic profits. The total value associated with an economic transaction is the sum of consumer and producer surplus. Consumer surplus is the difference between what the individual is willing to pay and what she or he actually pays. For any market, the height of the demand curve shows the monetary value that consumers are willing to pay for each. Consumer surplus in the market is given by the area under the demand curve and above the market price line. In equilibrium, a competitive market generates maximum net benefits. The optimal level of output is determined by the intersection of demand and supply, that is, where marginal benefit exactly equals marginal cost.

Problem

Suppose that demand is given by the equation $Q_D=500 - 50P$, where Q_D is quantity demanded, and P is the price of the good. Supply is described by the equation $Q_S= 50 + 25P$ where Q_S is quantity supplied. What are the equilibrium price and quantity?

Solution

$$Q_d = Q_s = 500 - 50p = 50 + 25p$$

$$450 = 75p$$

$$500 - 50(6) = 200$$

The equilibrium price is 6 and the equilibrium quantity is 200.

3.5 Applications and Case Study Related to Cost and Demand Analysis

Converting to LPG. Is it worth? Green Fuel Runs Out of Gas

The cost of converting a car to run on liquefied petroleum gas (LPG) is about £1,500 in the UK, towards which a government grant would contribute about £700. From September 1, 2004, LPG will on average cost 40.7p per liter, compared with 79.1p for ordinary unleaded petrol. However, LPG cars usually have slightly worse fuel consumption, losing about 13% in terms of miles per gallon.

Questions

1. FastTrack Company owns a fleet of 20 cars, which are bought new and are used for 30,000 miles over two years before being sold off. The cars average 30 miles to the gallon (imperial) on petrol. The conversion to LPG does not affect the price in the second hand market.
2. Calculate the profit contribution per hundred miles of LPG compared with unleaded petrol, for one of the FastTracks cars?
3. Calculate the breakeven mileage for the cars with the LPG conversion.
4. Calculate the effect on the profit of FastTrack of converting to LPG.
5. The government wants to encourage the use of LPG to protect the environment by reducing the breakeven mileage to 10,000 miles; how large a grant should it offer for the LPG conversion?

Problemsolving Approach

This approach is designed as an aid to solving CVP problems. As with problems in demand theory students may 'know' the principles but sometimes do not know how to apply them to practical problems. Assuming linear cost and revenue functions, all CVP analysis is based on the following five equations

$$\text{Cost } (C) = a + bQ$$

$$\text{Revenue } (R) = PQ$$

$$\text{Profit } (\pi) = R - C$$

$$\text{Break even Point } (BEO) = \frac{a}{P - b}$$

$$\text{Profit Contribution } (\pi_c) = P - b$$

Problem 1 CVP Analysis

1. Last month Susie Q sold 24,000 liters of ice cream. The variable costs were £2.70 per liter and each liter contributed 25 percent of its revenue to fixed costs and profits. It has just discovered a new supplier which will enable it both to reduce its cost by £0.40 per liter and to improve its quality. However, it estimates that it will have to spend another £3,000 on advertising per month to inform customers of the improvement. Profits last month were £10,000.

- What is the previous month's cost function?
- What is the new cost function with the new supplier?
- How many liters will Susie Q have to sell to increase profit by 20 percent, assuming it keeps its price the same?
- If Susie Q can raise its price by 10 percent, what difference will this make to the sales in (c) above?

Solution

(a) $Q = 24000$; $AVC = £2.70$; $\pi_c = \frac{0.25R}{Q} = 0.25P$; $\pi = £10000$

It is needed to find $C = a + bQ$

We know that $b = 2.7$ to find a

$$\pi_c = P - b; R = PQ$$

$$\text{Therefore, } 0.25P = P - 2.7 = 0.75P = 2.7 = 3.6$$

$$R = 3.6 * 24000 = 86400$$

$$\pi = R - C = 10000 = 86400 - C \Rightarrow C = 76400$$

$$76400 = a + 2.7 * 24000 \Rightarrow 76400 = a + 64800 \Rightarrow a = 11600$$

$$c = 11600 + 2.7Q; c = 14600 + 2.3Q$$

(b) $C = 14600 + 2.3Q$

(c) From π ; $12000 = 3.6Q - (14600 + 2.3Q) \Rightarrow 26600 = 13.Q; Q = 20462L$

(d) $12000 = 3.96Q - (14600 + 2.3Q) \Rightarrow 26600 - 16.6Q \Rightarrow Q = 16024L$

- XTC Ltd has total costs of £45,000 and it is currently producing 5,000 s. It has examined its cost structure and has found that, of its variable costs, half vary in a linear relationship with output; the other variable costs increase by £1 for every 1,000 increase in output. Fixed costs are £10,000, and these determine the capacity of 6,000 s. The market price is £10.
 - Determine the MC, AVC and ATC functions for the firm.
 - Determine the current profit of the company.
 - Determine the degree of operating leverage at current output.

Solution

(a) $TVC = 45000 - 10000 = 35000$

VC_1 has a linear relationship with output so $AVC_1 = MC_1 = \text{constant}$

$$MC_1 = \frac{17500}{5000} = 3.5; MC_2 = a + 0.001Q, \text{ where } a \text{ is constant}$$

$$VC_2 = 17500 \int (a + 0.001Q) = 17500 \Rightarrow aQ + 0.0005Q^2 = 17500$$

$$5000a + 0.0005(5000)^2 = 17500 \Rightarrow 5000a = 5000; a = 1$$

$$MC_2 = 1 + 0.001Q; MC = 4.5 + 0.001Q; TC = 10000 + 4.5Q + 0.0005Q^2$$

$$AVC = 4.5 + 0.0005Q; ATC = \frac{10000}{Q} + 4.5 + 0.0005Q$$

(b) $TC = 10000 + 4.5(5000) + 0.0005(5000)^2 \Rightarrow 45000$

$$TR = 10 * 5000 = 50000; \pi = £5000$$

(c) $DOL = \frac{d\pi}{dQ} * \frac{Q}{\pi}$

$$\pi = 10Q - (10000 + 4.5Q + 0.0005Q^2); \frac{d\pi}{dQ} = 5.5 - 0.001Q = 5.5 - 0.001(5000) = 0.5$$

$$DOL = 0.5 * 5000/5000$$

$$DOL = 0.5$$

3. A manufacturing company supplies its products to construction job sites. The average monthly fixed cost per site is Rs. 4,500, while each cost Rs. 35 to produce and selling price is Rs. 50 per . Determine the monthly breakeven volume.

Solution

$$\text{Breakeven in volume} = \frac{\text{Total fixed cost}}{\text{price} - \text{variable cost}}$$

$$\text{breakeven in volume} = \frac{4500}{50 - 35} = 300$$

4. Consider the following shortrun production function $Q = 6L^2 - 0.4L^3$
- Find the value of L that maximizes the output?
 - Find the value of L that maximizes the marginal output?
 - Find the value of L that maximizes the average product?

Solution

- a) Output first, find the marginal product and set the marginal product equal to zero.

$$MP = 12L - 1.2L^2 = 0$$

$$12L - 1.2L^2 = 0$$

$$L(12 - 1.2L) = 0$$

$$L=10$$

- b) Marginal output finds the second derivative and set to zero

$$12 - 2.4L = 0$$

$$L = 5$$

- c) Average product finds the first derivative and set to zero

$$6L - 0.4L^2 = AP$$

$$6 - 0.8L = 0$$

$$L = 7.5$$

Review Questions

- Distinguish between fixed cost and variable cost. Why does the short run total cost curve look like a total variable cost curve?
- Explain why the average fixed cost curve declines continuously. Discuss the effects of a change in the price of a firm's variable factor on its short run cost curves.
- Draw the marginal cost and average total cost curves for a typical firm. Explain why the curves have the shapes that they do and why they cross where they do.
- Give examples of daily activities where the law of diminishing returns applies.
- Discuss 'scale economies' and 'scale diseconomies'. Explain the bell shaped LAC curve from the angle of increasing, constant, and decreasing returns to scale.
- If production in an industry is always subject to increasing returns to scale, would you support a government policy of protecting small scale enterprises?

7. If the production is given by $Q = 10\sqrt{L}$ and $W=100$ draw the average variable cost and marginal cost curves for the following values of Q 1, 2, 3, 4, 5. Are the above cost curves consistent with the law of diminishing returns to labour.
8. The renowned Spaniard, Pablo Picasso, was a prolific artist. He created hundreds of paintings and sculptures as well as drawings and sketches numbering in the thousands. (He is said to have settled restaurant bills by producing sketches on the spot.)
 - a. What effect does the existence of this large body of work have on the monetary value of individual pieces of his art?
 - b. Might his heirs suffer from being bequeathed too many of his works? As the heirs' financial adviser, what strategy would you advise them to pursue in selling pieces of his work?
9. Consider the regional supply curve of farmers who produce a particular crop.
 - a. What does the supply curve look like at the time the crop is harvested? (Show a plausible graph.)
 - b. Depict the crop's supply curve at the beginning of the growing season (when farmers must decide how many acres to cultivate).
 - c. Depict the crop's supply curve in the long run (when farmers can enter or exit the market).

Chapter 4 Market Structure

4.1 Factor Pricing in Competitive and Imperfectly Competitive Markets

Introduction

This chapter explains the importance of factor pricing in perfectly and imperfectly competitive markets as well as how they are determined.

This also explores the short run, and long run factors, market performance under the assumptions of labour is variable while other factors are fixed.



Objectives

- To define and explain the meaning of markets.
- To explain the concept of market structure and its significance.
- To describe the characteristics of the different types of market.
- To explain the equilibrium conditions for different types of market in terms of price and output, both in graphical and algebraic terms.

Structure

4.1 Factor Pricing in Competitive and Imperfectly Competitive Markets	
4.2 Monopoly, Oligopoly, Duopoly	
4.3 Cartels, Production Decisions in NonCartel Oligopolies	
4.4 Pricing strategies and Buyer Power	
4.5 Case studies and related Applications	

To Do Activities

1. Display photo slide shows, to understand how the different market structure varies in terms of decision making and strategy in the long and in the short run.
2. Debate the pros and cons of various market structure in the long and short run decision making on changing capacity or entering new markets.
3. Discuss the review questions
4. Explore each market conditions in terms of strategy, decision making process in the long and short run from the given case studies.

Determination of Factor Prices under Perfect Competition

Basically, the factors are the inputs which are used in the process of production. The factors of production are land, labor, capital, and organization. Under perfect competition both the demand and supply of factors which determine the factor prices. Thus, the products possess utility which directly satisfies the desires of the people who are willing to pay price for the products. For example, people demand food to satisfy the pangs of their hunger.

Determination of a Factor Price

According to Marshall Hicks, the marginal productivity of distribution determines the price by demand and supply. The factor of price is determined by both demands for the quantity and supply of the factor. Meanwhile, the factor of price is equal to the marginal revenue of the product, so it is not determined by the marginal revenue product. At equilibrium point, the factor of the product is equal to the marginal revenue of the product. From the figure 4.1.1, the supply curve implies that industry depends upon the transfer earnings of the various s of the factor. Then, the price of a factor is determined by the intersection of these demand and supply curves of the factor.

In other words, the amount of the factor supplied is equal to the amount demanded. This is shown in Fig. 4.1.1 where DD is the demand curve and SS is the supply curve of the factor. Only at price OP , quantity demanded is equal to the quantity supplied. Thus, the price OP is determined.

The price of a factor cannot be determined at a level higher than or lower than price the point OP . because the quantity demanded amount is equal to the quantity supplied of that amount. For example, the price cannot be established at the level OP' , meanwhile at price OP' the quantity presented to supply is $P'S$ which is greater than the quantity demanded $P'S$ of it.

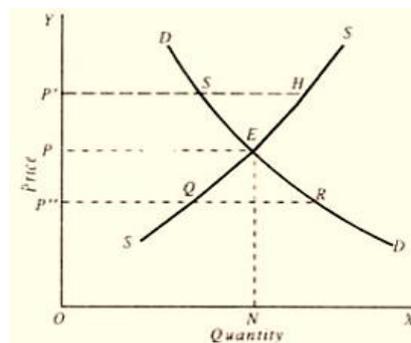


Fig. 4.1.1 Determination of Factor Price

As a result, the competition between the owners will force down the price to the level OP where the quantity supplied is equal to the quantity demanded. Likewise, the price of the factor cannot be determined at the level OP'' , since at price OP'' the quantity demanded of the factor is greater than the quantity offered to supply of it. Consequently, the competition among the producers or entrepreneurs demanding the factor of production will push up the price to the level OP .

Though the price is determined by the demand for and supply of the factor, it is equal to the marginal revenue product of the factor. This is illustrated in Figure. 4.1.2 (a). It will be seen from Figure. 4.1.2 (b) that equilibrium price OP of the factor is determined in the market and ON is equilibrium quantity demanded and supplied of the factor. Perhaps, a firm demands the price OP which represents the position of the firm that employs the OM quantity of factor. In order to maximize the firm's profits, it will equalize the price with the MRP. At the point OM , the price is equal to the marginal revenue product.

Case 1 If the firm employs fewer than OM s of the factor, then the MRP will be greater than the price. This implies that there is a scope for earning profits by increasing the use of the factor.

Case 2 If the firm employs more than OM s of factors, then the MRP s will be less than the price paid. As a result, the firm will incur losses on the marginal s and it will be an advantage of the firm to reduce the employment of the factor.

- i. Thus, the firm maximizes its profits at the equilibrium point, when the firm is employing OM amount of the factor at which MRP is equal to the price. Thus, the price is determined by the demand and supply also is equal to the marginal revenue product of the factor.
- ii. From Fig. 4.1.1, at price OP , the firm is earning supernormal profits, since in equilibrium average revenue product (ARP) is greater than the price. This can happen in the short run, but not in the long run. If the firms are earning supernormal profits, then entrepreneurs will enter the market in the long run to purchase the product.
- iii. Entry of more entrepreneurs to the market will compete away the supernormal profits. As a result, the demand for factors will rise and the demand curve for the factor in Fig. 4.1.2 (a) will shift outward to the right. This shift in demand curve due to a rise in demand for the factor is shown in Figure 4.1.3 with this increase in demand, the price of the factor will rise to OP' .
- iv. From Figure. 4.1.3 that with factor price OP' , the firm will be in equilibrium at H when it is employing OM' amount of the factor. At OM' amount of the factor, the price of the factor is equal to MRP as well as ARP of the factor. Since at OM' the price of the factor OP' is equal to ARP of the factor, the firm is neither making supernormal profits nor having losses. It is earning only normal profits.
- v. If in the short run, firms are having losses, some entrepreneurs will leave and stop purchasing the factor. As a result, the demand for the factor will decrease. The demand curve will shift downward and to the left so that the price of the factor will fall to a level at which price the firms earn only normal profits. Thus, in the long run, under perfect competition in the factor market, the price of the factor is equal to both MRP and ARP of the factor.
- vi. When demand for production increases, given the supply curve, the price will rise. When the supply increases, the supply curve will shift to the right. This new supply curve will intersect the given demand curve at a lower price. Thus, with the increase in the supply, its price will tend to fall. On the other hand, when the supply decreases, the supply curve will shift to the left and,

given the demand curve, the price will rise. It is observed that the marginal productivity of a factor is an important economic force which determines the price of the factor.

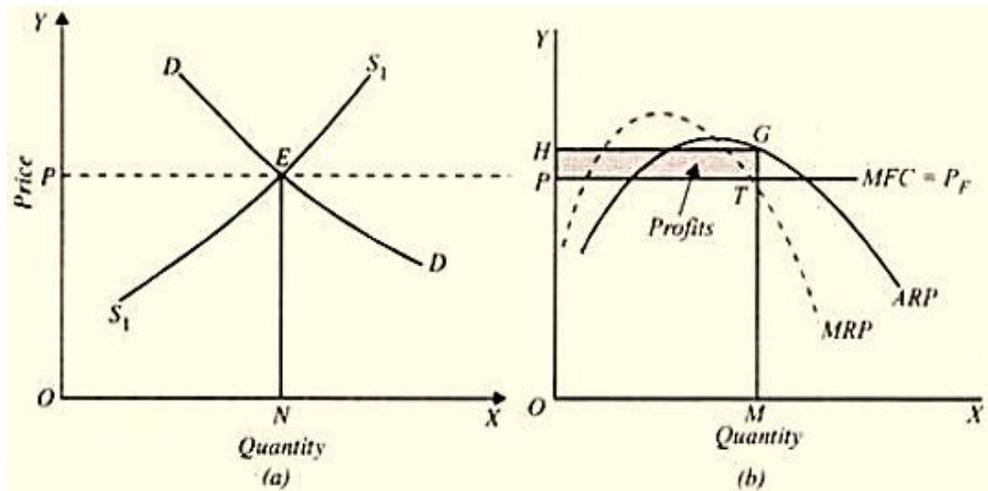


Fig.4.1.2 (a) Equilibrium Price

Fig.4.1.2 (b) Equilibrium Quantity

In the long run, the equilibrium between demand and supply is established at the level where the price of the factor is equal to both the MRP and ARP and thus the firms earn only normal profits.

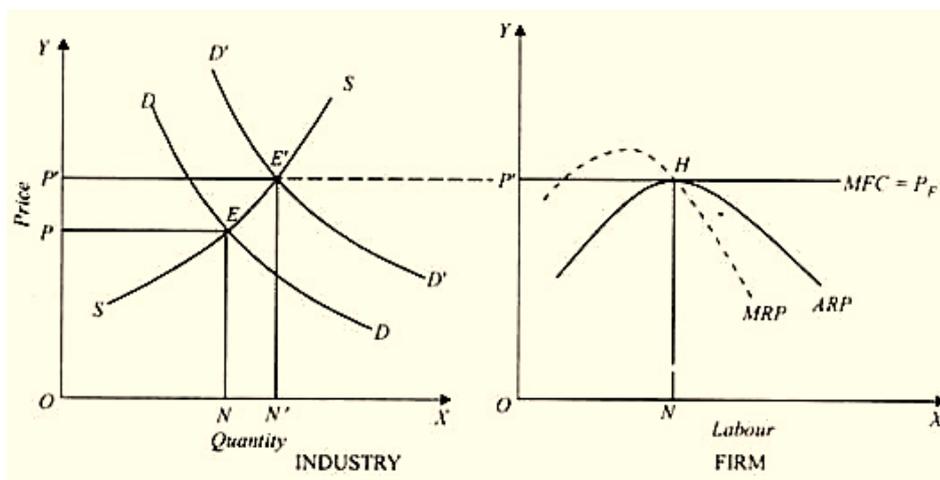


Fig.4.1.3 Measuring the Amount of Factor Price is Equal to MRP and ARP

Determination of Factor Price under Imperfect Competition (or Monopoly)

The price of production is determined when there prevails perfect competition both in the product and factor markets. When there is an imperfect competition (i.e. monopoly, oligopoly or monopolistic competition) in the product market, marginal revenue differs from the price of the product. As a result, under conditions of imperfect competition in the product market, marginal revenue product (MRP) of the factor differs from the value of the marginal product (VMP).

Determination of Factor Price When There is Imperfect Competition (or Monopoly) in the Product Market and Perfect Competition in the Factor Market

Under the perfect competition, the demand for production is determined by the marginal revenue product (MRP) but not the value of the marginal product (VMP). In this case, a price which is determined

by demand and supply will be equal to the marginal revenue product but will be less than the value of the marginal product (VMP) of the factor.

For the market conditions such as perfect and imperfect, the equilibrium conditions are $MRP = MFC$, and MRP curve cuts MFC curve from above. When the firm is working under perfect competition, the factorcost line will be a horizontal and it will not be able to affect the price. Therefore, the firm will be in equilibrium, that is, will be maximising profits when $MRP = MFC = Price\ of\ the\ factor$.

When the firm is working under imperfect competition, it will be able to exercise some influence or control over the price of the product. AR curve for it will slope downward and MR curve will be below it. Consequently, MRP which is equal to $MPP \times MR$ will not be equal to VMP which is equal to $MPP \times price\ of\ the\ product$. Since MR is less than the price of the product under monopoly or imperfect competition, MRP would be less than VMP.

It can be Represented in the Following Terms

$MRP = MPP * MR; VMP = MPP * Price\ of\ the\ product.$

Since, under imperfect competition or monopoly in the product market, $MR < Price\ of\ the\ product$. Therefore, $MRP < VMP$. In equilibrium in the factor market, the firm will make $PF = MRP$.

Therefore, $P_f = MRP < VMP$. Therefore, under conditions of monopoly or imperfect competition in the product market, assuming perfect competition in the factor market, the factor will get price less a than the value of its marginal product.

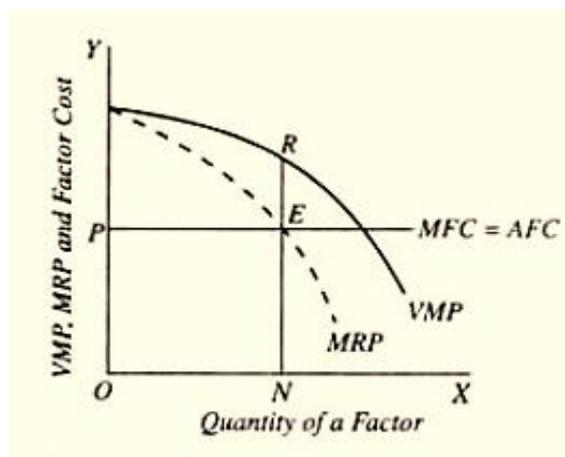


Fig.4.1.4 Equilibrium at MFC = AFC

The equilibrium of the firm when it is working under conditions of perfect is shown in Fig. 4.1.4. Since VMP is greater than MRP when there is imperfect competition in the product market, VMP curve will be above MRP curve (for the sake of convenience, we have drawn only the downward sloping portions of MRP and VMP curves). The firm will be in equilibrium at E, where $MRP = P$. The equilibrium employment of the factor is ON. It will be noticed from the figure that the price of the factor OP is, in equilibrium, equal to marginal revenue product EN but is less than its value of the marginal product which is equal to RN. Therefore, factor gets RE less than the value of its marginal product.

The price of a factor, say labor, is determined by demand and supply in a perfectly competitive market scenario. If there is an excess supply of labor, its price will fall as workers will be willing to work at lower wages. On the other hand, when there is excess demand for labor, their prices will rise since the employers will be willing to pay high wages to them. In the case of imperfect competition, the factor prices are determined by the marginal productivity of labor. The wages received by laborers are less than the value of marginal product but equal to marginal revenue product.

4.2 Monopoly, Oligopoly, Duopoly

Monopoly refers to a market structure in which there is only one seller of a commodity or service. Competition does not exist. In a monopoly situation, only one firm sells a product that has no close substitutes. Since substitutes can be found for most products, pure monopoly is a rarity. Oligopoly, a market structure involving a few sellers, is typical in industries that require huge capital outlays. Duopoly refers to a situation in which there are only two firms in the industry. Because so few firms exist in this market structure, interdependence is crucial.

This is able to discuss the various market structures and its main features in the economy.

Objectives

- To maximize the monopoly's market structure and its profit.
- To understand the oligopoly's market structure and its profit maximization
- To explore the duopoly market structure and its features

Monopoly

Monopoly means a single seller in an industry. However, it is preferable to define a monopoly as being a firm that has the power to earn a supernormal profit in the long run. This ability depends on two conditions

There must be a lack of substitutes for the product. This means that any existing products are not very close in terms of their perceived functions and characteristics. Electricity is a good example.

There must be barriers to entry or exit. These are important in the long run in order to prevent firms from entering the industry and competing away the supernormal profit. Barriers to entry, in turn, have three main sources 1. a key resource is owned by a single firm; 2) the government gives a single firm the exclusive right to produce some good or service; 3) the costs of production make a single producer more efficient than a large number of producers.

Profit Maximization of a Monopoly Firm

The Monopolist's Profit.

The Fig.4.2.1 illustrates the area of the box BCDE which is equal to the profit of the monopoly firm. The height of the box (BC) is the price minus average total cost, which equals profit per sold. The width of the box (DC) is the number of s sold.

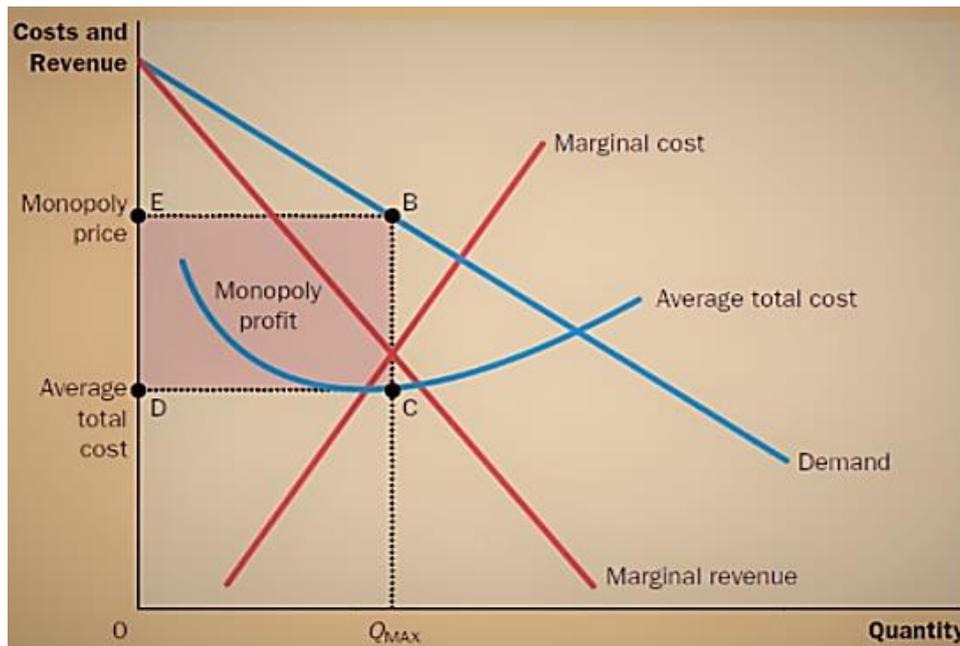


Fig.4.2.1 Measuring the Monopolists Profit

Mathematical Equation for Monopoly Profit Maximization

In order to measure the monopoly's profit, the maximization condition is that the profit equals total revenue (TR) minus total costs (TC)

$$Profit = TR - TC$$

This can be represented as below

$$Profit = (TR/Q - TC/Q) * Q.$$

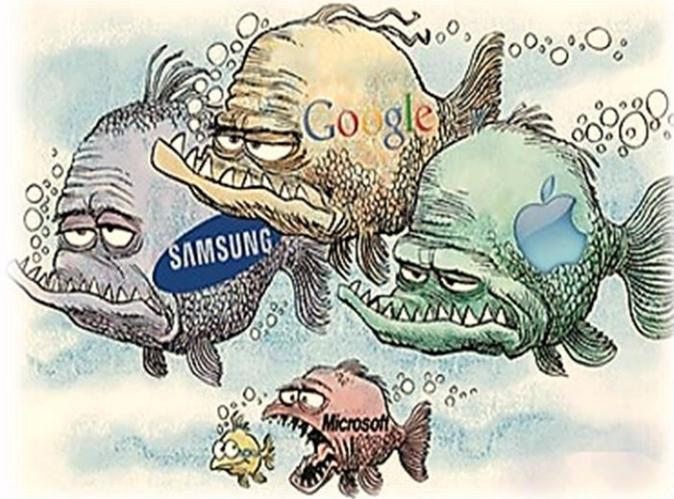
TR/Q is average revenue, which equals the price P , and TC/Q is the average total cost ATC . Therefore,

$$Profit = (P - ATC) * Q.$$

This equation for profit (which is the same as the profit equation for competitive firms) allows the firm to measure the monopolist's profit is given in Fig.4.2.1. Consider the Fig.4.2.1. The height of the box (the segment BC) is the price minus average total cost, $P - ATC$, which is the profit on the typical sold. The width of the box (the segment DC) is the quantity sold Q_{MAX} . Therefore, the area of this box is the monopoly firm's total profit.

Oligopoly

An oligopolistic market structure describes the situation where a few firms dominate the industry. The product can be standardized or differentiated. For examples, the first type is steel, chemicals, and paper. The second type is cars, electronics products, and breakfast cereals.



The most important feature of oligopoly is that firms are interdependent. Strategic decisions made by one firm affect other firms. Thus, the firms have to consider the reactions in determining their own strategies. Such markets are extremely common for both consumer and industrial products, both in individual countries and on a global basis. The main conditions for oligopoly to exist are therefore as follows

- A relatively small number of firms account for the majority of the market.
- There are significant barriers to entry and exit.
- There is interdependence in decision-making.

The first condition is concerned with the measures that are used to indicate the degree of market concentration in an industry. It could be interpreted as the four firm or eight firm concentration ratios. The measure indicates the proportion of the total market sales accounted for by the largest four or eight firms in the industry.

The kinked Demand Curve Model

This model has been developed by Sweezy who used to explain the price rigidities in oligopolistic markets. Price rigidity refers to a situation where firms tend to maintain their prices at the same level in spite of changes in demand or cost conditions. The model assumes that if an oligopolistic cut its prices, competitors will quickly react to this by cutting their own prices in order to prevent losing market share. On the other hand, if one firm raises its price, it is assumed that competitors do not match the price rise, in order to gain market share at the expense of the first firm. In this case, the demand curve facing a firm would be much more elastic for price increases than for price reductions. This results in the kinked demand curve are shown in the Fig.4.2.2.

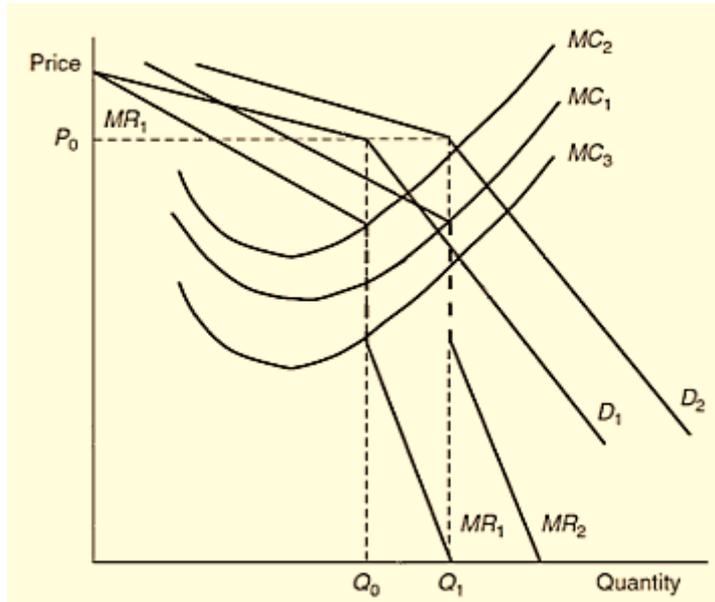


Fig.4.2.2 Kinked Demand Curve

The kink in the demand curve causes a discontinuity or break in the MR curve. If the marginal cost function shifts from the original function MC_1 upwards or downwards within the range from MC_2 to MC_3 , then the profitmaximizing output will remain at Q_0 and the price will remain at P_0 , since the MC curve passes through the MR curve in the vertical break. Similarly, if the demand curve shifts from D_1 to D_2 , the MR curve will shift to the right to MR_2 , but the original MC curve will still pass through the vertical break. This means that the profit maximizing output will increase from Q_0 to Q_1 , but the price will remain the same at P_0 . The reason for this is that the vertical break occurs below the kink in the demand curve, which is at the prevailing price P_0 .

Duopoly Market

Duopoly is a limiting case of oligopoly as there must be at least two sellers to make the market oligopolistic in nature. There are different types of the model ruling in the market.



The Cournot's Duopoly Model; The Chamberlin Duopoly Model; The Bertrand's Duopoly Model; The Edgeworth Duopoly Model.

Cournot's Duopoly Model

A French economist Cournot who developed a formal duopoly model in 1838. The fundamental idea about Cournot is that each vendor eventually supplies one third of the market and charges the same price and the remaining one third of the market will be unsupplied.

Chamberlin's Duopoly Model a Small Group Model

It is a model for the homogeneous product in the market. Chamberlin's model of duopoly identifies the interdependence relationship among firms. In other words, Chamberlin's model is defined based on the assumption of firm's size (same) with identical costs, no entry by new firms and full knowledge of demand.

Bertrand's Duopoly Model

Bertrand, a French Mathematician developed his own model of a duopoly in 1883. With respect to the firm's behavior Bertrand's model differs from Cournot's model. Under Cournot's model, each seller assumes his competitor's output to remain constant. Similarly, under Bertrand's model, each seller determines his price on the assumption that his competitor's price remains constant not his output.

Bertrand's model focuses on price competition along with the factors of duopolists behavior. And this, reaction functions are derived on the basis of its profit curves. An is profit curve, for a given level of profit, is drawn on the basis of various combinations of prices charged by the rival firms.

Edgeworth's Duopoly Model

Edgeworth developed his model of a duopoly in 1897. Following Bertrand's assumptions that each seller assumes his rival's price, instead of his output, to remain constant is the same as in the Edgeworth's model.

Problem

A company produces and sells a product and fixed costs of the company are Rs. 6,000 and variable cost is Rs. 25 per and sells the product at Rs. 50 per.

- Find the total cost function.
- Find the total revenue function.
- Find the profit function, and determine the profit when 1000 s are sold.
- How many s have to be produced and sold to yield a profit of Rs 10,000?

Solution

- $TC = 6000 + 25x$
- $TR = 50x$
- $P = 50x - (6000 + 25x)$; $25x - 6000 = 10000$
 $= 19,000$
- $P = 10,000$, so $10,000 = 25x - 6000$
 $X = 16000/25$
 $X = 640$ s.

4.3 Cartels, Production Decisions in NonCartel Oligopolies



A cartel is a formal organization of producers within an industry that determines policies for all the companies in the cartel, with a view to increase total revenues for the cartel. There are many types of cartels. At one extreme is the cartel that makes all decisions for all member companies. This form of perfect collusion is called a centralized cartel and leads to the monopoly solution.

Objectives

- To describe the market seller concentration and tight competition among oligopolies
- To explore the production and decision making in both cartels and noncartel oligopolies market.

Seller Concentration

Seller concentration means that the number of producers in a particular sector of the economy and their comparative share of that market sector. Where the number of producers of a good or service in a particular sector is very big, each producer will only control a very small share of the market. In the modern economy, the seller concentration describes an automatic competition situation.

Generally, the level of seller concentration determines the type of market structure. It shows the great characteristics of the scenario of strong competition or great control of the market for various market structures. For example, seller concentration includes the following market situation a perfectly competitive market, an oligopoly, and a monopolistic competitive market.

It will definitely provide a platform for the efficient allocation of scarce resources. In a perfectly competitive market, in order for firms in the industry to survive, they have to manage their resources efficiently so that they can keep away the competition. Due to the existence of competition and availability of close substitutes, seller concentration is important in both public and theoretical interest as it prices for goods and services are regulated and kept fair. Also, economic theory promotes for efficient allocation of resources, and it is essential to know that in a seller concentrated market allocates the resources in an efficient way.

Cartel vs. Oligopoly

An oligopoly is a market structure where the industry is dominated by a small number of sellers (oligopolists). The small number of sellers have well informed the actions of dominated sellers in the market. In the decisionmaking process, one firm's decision affects the other firms.

Comparison Chart

Types	Cartel	Oligopoly
Meaning	An explicit, formal agreement between firms in an industry to fix price and production quantity.	An economic market condition where numerous sellers have their presence in one single market. A small number of large firms that dominate the industry.
Prices	Unusually high. Prices are fixed by cartel members.	Moderate/fair pricing due to competition in the market. But much higher than the perfect competition (where there is a large number of buyers and sellers)
Characteristics	A small number of firms dominate the industry. Prices and production quantities are fixed. The product is undifferentiated.	A small number of firms dominate the industry. These firms compete with each other based on product differentiation, price, customer service etc.
Barriers to entry	Barriers to entry are very high as it is difficult to enter the industry because of economies of scale.	Barriers to entry are very high as it is difficult to enter the industry because of economies of scale.
Sources of Power	Market making ability by an explicit agreement between the dominant players in the industry.	Market making ability because of very few firms in the industry. Each firm can therefore significantly influence the market by setting the price or production quantity.
Examples	OPEC, lysine cartel, Federal Reserve	Health insurers, wireless carriers, beer (AnheuserBusch and Miller Coors), media (TV broadcasting, book publishing, movies), etc.

A cartel is a special case of oligopoly when competing firms in an industry collude to create explicit, formal agreements to fix prices and production quantities. In theory, a cartel can be formed in any industry but it is only practical in an oligopoly where there is a small number of firms. Cartels are usually prohibited by antitrust law.

Types of Cartel

According to Von Becker, the cartel has been classified into the following types

- 1. Quota Fixing Cartels** The objective of the cartels is to restrict supply. To achieve this objective, by fixing production quotas for each member and to limit production.
- 2. Price Fixing Cartels** Minimum prices are fixed for products. These cartels regulate prices by restricting the output. No member can sell products at a price lesser than the minimum price.
- 3. Term Fixing Cartels** Terms of trade are fixed by the cartels. Members of this cartels have to adhere to the terms of trade fixed by the cartel. Terms of trade related to the time of delivery, place of delivery, mode of delivery, payment terms, credit period, insurance, packing, interest charges on balance pavement etc.,

4. Customer Assigning Cartels it assures a certain volume of sales to each member which are comparable with other market pools. The entire market is devised among the members of the cartels and a specific group of customers is assigned to each member. The member should sell its products only to those group of customers who have been allotted to it.

5. Zonal Cartels in nature zonal cartels are similar to territorial pools, which are formed to assure a certain volume of sales to each member. The total market is distributed zonal wise and members are given the right to deal in the stated zones. For instance, the entire Indian market can be divided into North, South, East and Western zones and each zone allotted to a certain member.

6. Super Cartels Super are formed on an international basis. These refer to agreements between cartels of one country with the cartels of the other countries.

7. Syndicates In a syndicate, member s enters into an agreement to form a combined selling agency. Member s sell their products to the syndicate at a price known as accounting price. The accounting price will cover the cost of production and also that includes the profit margins.

In this syndicate market structure, the individual's trades will possibly high. Therefore, the prices charged by the syndicate will be different in different markets. So, the prices charged by the syndicate are known as profits earned by the individual than the accounting price. Now, the profits earned are shared among members. Generally, the profit ratios are based on the output given to the syndicate by different members.

Collusion and Cartels

Collusion is defined as the cooperative behavior between firms in an oligopolistic market. Explicit collusion comprises the firms forming a cartel. This is an agreement among firms to determine prices and total industry output, market shares or the distribution of profits and nature of the firm. In an international basis, the cartel can be represented as OPEC (Organization of Petroleum Exporting Countries), which is existed for years with a mixed record of success for its members.

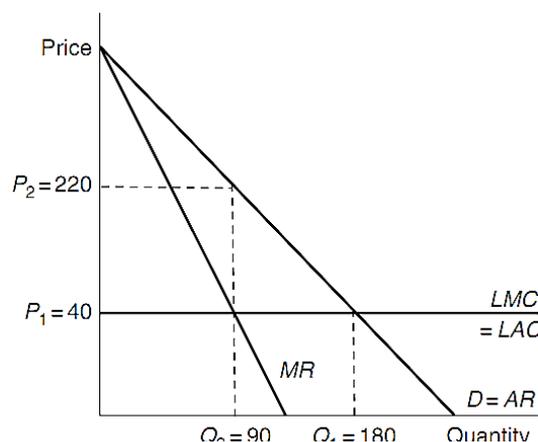


Fig.4.3.1 Measuring the Collusion and Cartels

Incentives

Firms in an oligopolistic market structure can increase its profit by forming a cartel. Consider an industry producing a standardized product, with just two firms; the market demand curve is $P = 400 - 2Q$, with each firm having a constant marginal cost of £40 and no fixed costs. This situation is shown in Figure 4.3.1. If the two firms compete in price (socalled Bertrand competition), the price will be forced down to the level of marginal cost. This is because each firm can grab 100 per cent of the market share by

undercutting the competitor, so this undercutting will continue until all supernormal profit is competed away. Obviously, the price will be £40 in this case, and the total market output will be 180 s (from the demand equation). If the firms form a cartel they can charge the monopoly price. In order to determine this we have to determine the output where $MC = MR$. This is done as follows

$$P = 400 - 2Q$$

$$R = 400 - 2Q^2$$

$$MR = 400 - 4Q$$

$$MC = 40$$

$$400 - 4Q = 40$$

$$4Q = 360; Q = 90$$

$$P = 400 - 2(90); P = £220$$

In this case, the industry will make a profit given by

$$(P - AC)Q = (220 - 40)90 = £16,200.$$

Thus, assuming that the profits are shared equally, each firm can make a profit of £8,100. This usually involves setting output quotas for each firm; in the above example, the quotas would be 45 s each. The enforcement of output quotas creates a problem for cartels; each member firm can usually profit at the expense of the others by 'cheating' and producing more than its output quota, thus making the cartel unstable. We now need to consider the factors that affect the likelihood of success of a cartel.

Market structure, conduct, performance, and technology are all interdependent. In any type of market, the profit maximizing output is always given by the condition $MC = MR$. Firms can only make a supernormal profit in the long run if there are barriers to entry and exit. Barriers can be either structural or strategic. When comparing the performance of markets the key variables to examine are price, output, profits and efficiency (both productive and allocative). Allocative efficiency is concerned with the optimality of resource allocation from the point of view of the economy as a whole, considering the effects on both consumer and producer. This has important implications for government policy. Oligopoly is the most complicated type of market structure to analyse, since the strategic decisions of firms are interdependent. Oligopoly is in practice the most important type of market structure, since the majority of most countries' output is produced in this type of market structure.

Problem Price and Output Under Monopolistic Competition and Oligopoly with Calculus

Suppose that the market demand function for a two firm equal market sharing cartel is

$Q = 120 - 10P; TC' = 0.1Q^2$; Determine, using calculus, the best level of the output of each commodity, and the total profits of each will sell the commodity, and the total profits of each

The half share market faced by each duopolistic is

$$Q' = 60 - 5p; \text{ (or) } P' = 12 - 0.2Q; TR' = P'Q' = (12 - 0.2Q)Q' = 12Q' - 0.2Q'^2$$

$$MR' = \frac{d(TR')}{dQ'} = 12 - 0.4Q'$$

The marginal and average total cost of each duopolistic is

$$MC' = \frac{d(TC')}{dQ'} = 0.2Q'; ATC' = \frac{TC'}{Q'} = \frac{0.1Q'^2}{Q'} = 0.1Q'; \text{ Setting } MC' \text{ equal to } MR'$$

$$\text{we get } P' = 12 - 0.2(20) = \$8; TR' = 12(20) - 0.2(20)^2 = 240 - 80 = \$160$$

$$\pi' = TC' = 160 - 0.1(20^2) = 160 - 40 = \$120.$$

4.4 Pricing Strategies and Buyer Power

This discusses the use of pricing strategy when selling a product or service. The price can be set to maximize profitability for each sold or from the market overall. It can be used to defend an existing market from new entrants, to increase market share within a market or to enter a new market.

Objectives

- To analyze how a business firm sets its price.
- Various pricing strategies in the economy.
- Importance of price strategy.

Business Firm Sets the Price

Pricing strategy is defined as the competitive price of a product or a service. This strategy comprises the most significant ingredients of the mix of marketing as it is motivated on generating and increasing the revenue for an organization, which eventually known as profitmaking strategy for the company.

Various Pricing Strategies

There are different types of strategies. The important action in the businesses is to implement the price ceilings on their products and services. So, the business managers consider a number of factors, such as prices offered by competitors, costs for production and distribution, product image positioning in the minds of consumers, and determining the demographics of potential buyers.

Premium Pricing

A premium priced product means that the product value/ priced is higher than its competitors in the market. Generally, businesses use a premium pricing strategy for launching a new product that must have distinct competitive advantages over similar products. Similar, the small businesses are willing to sell goods with unique properties which are better able to use premium pricing.

However, to create premium pricing, it is essential to building an image in which consumers perceive the products that have the value are higher the prices. For example, for luxury items such as Cunard Cruises, Savoy Hotel rooms, and firstclass air travel higher prices are charged.

Penetration Pricing

Penetration pricing is a marketing strategy used by businesses to attract customers to a new product or service. It includes giving a low price for a new product or service during its initial offering. Thus, this lower price helps to lure customers away from competitors. This marketing strategy depends on the idea of low prices making a customer aware of a new product. The price invites the customer to attempt the new product existing in the market is shown in Fig.4.4.1.

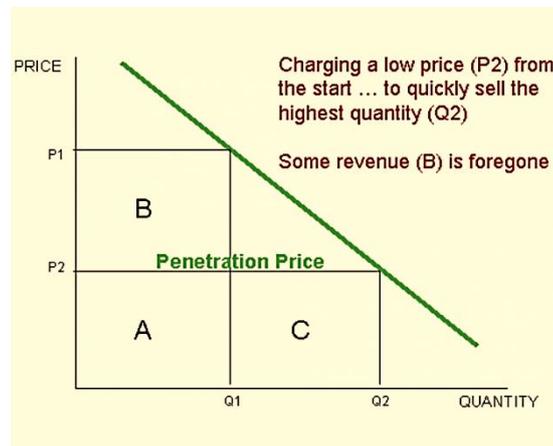


Fig.4.4.1 Measuring the Penetration Price

However, the major disadvantage is that an increase in sales volume may not lead to a profit if prices must remain low. Also, if the low price is part of an introductory campaign, curiosity may prompt customers to choose the brand initially, but once the price begins to rise or levels with a competing brand, they may switch back to the competitor.

a) Economy Pricing

Economy pricing is a plain pricing strategy followed by common food suppliers and discount retailers. It is the situation where suppliers keep the prices of the product minimum by reducing the expenditure on the process of marketing and promotion. This strategy is used in the effect of attracting the most price conscious consumers.

b) Price Skimming

Price skimming is a product pricing strategy by which a firm charges the highest initial price that customers will pay and lowers it over time. When the demand for the first customers is satisfied and competition enters the market, the firm automatically lowers its price to attract more price sensitive segment customers. The skimming strategy becomes successive from skimming layers of cream, or customer segments, as prices are lowered over time.

Firms often use skimming to recuperate the cost of development.

- There are enough prospective customers willing to buy the product at a high price.
- The high price does not attract competitors.
- Lowering the price would have only a minor effect on increasing sales volume and reducing costs.
- The high price is interpreted as a sign of high quality.

Also, price skimming may not be as effective for any competitor follow-up products. Meanwhile, the initial market of early adopters are selected and the other buyers may not purchase a competing product at a higher price without knowing the significance of the product.

Bundle Pricing

Bundle pricing entails retailers selling a set of products for a lower price than each of these products separately. Classical examples are a McDonald's meal, which usually includes the inseparable mix of fries, a coke, and a hamburger, and Microsoft Office, offering a set of features with most customers using a small fraction, but paying for all of them.

Advantages

Customers like purchasing products in groups, as it usually adds value to their buying experience, as they can enjoy the versatility in a single act of purchase; they are grateful cost and time savings; avoid frustration while choosing complimentary products.

Retailers use bundle pricing, as it allows applying competitive pricing to a group of products and outselling competitors; intensifying sales; increasing cost efficiency; fuelling revenue; testing new marketing channels.

Disadvantages

- Customers do not always need all the products in a bundle while paying for all of them.
- It is difficult for retailers to remain transparent in their pricing decisions for bundled products and find a balance between their and customers' total value for the items.

Predatory Pricing

Predatory pricing is the illegal act of setting prices low in an attempt to eliminate the competition.

Predatory pricing breaks antitrust laws, as it makes markets more vulnerable to a monopoly. Companies that participate in predatory pricing might engage in a variety of activities intended to drive out competitors. This may include unethical production methods to minimize costs.

Dynamic Pricing

The process of determining a product's value in commercial transactions in a fluid manner depending on current market conditions. Dynamic pricing is gaining ground among business owners compared to the more traditional fixed pricing method. This is also called realtime pricing. Generally, this strategy is dependent on the internet and is explored by ECommerce websites. These websites usually use cookies and internet surfing history of the users to understand their level of supplies according to the increase of sale and determining the pricing strategy for the products.

Geographical Pricing

Geographical pricing sees variations in price in different parts of the world. For example, rarity value, or where shipping costs increase the price. In some countries, there is more tax on certain types of product which makes them more or less expensive or legislation which limits how many products might be imported again raising the price.

Buyer Power

Buying power, also referred to as excess equity, is the money an investor has available to buy securities when considering the term in a trading context. Buying power is the money an investor has available to buy securities and equals the total cash held in the brokerage account plus all available margin. While buying power can take on a different meaning depending on the context or industry, in the world of trading and investments, buying power refers to the amount of money available for investors to purchase securities in a leveraged account. This is referred to as a margin account, as traders are allowed to take out a loan based on the amount of cash held in the brokerage account.

Buying Power of Margin Accounts

The amount of brokerage can margin a particular customer depends on the brokerage house and the customer. Some margin accounts offer investors twice as much as the cash held in the account. Other margin accounts offer much more. The more leverage a brokerage house gives an investor, the harder it is to recover from a margin call. In other words, leverage gives the investor an Opportunity to make increased gains with the use of more buying power, but it also increases the risk of having to cover the loan. For a nonmargin account, the buying power is equal to the amount of cash in the account.

For example, assume an investor has \$1 million worth of cash in a brokerage account. The investor wants to purchase common shares in company A. A retail investor's initial margin is normally set at around 50 percent to enter a trade, but maintenance margin, which is the amount of equity required for margin trading, can be as low as 25 percent but is normally 30 to 40 percent at retail brokerages. The total buying power is calculated by dividing the amount of cash in the brokerage account by the margin percentage. Thus, we divide the cash balance of \$1 million by the initial maintenance margin requirement of 50 percent, or \$2 million. As a result, the investor can purchase up to \$2 million in securities. That said, the value of the margin account changes with the value of the securities held and the closer an investor gets to margin limits the more likely the chance of a margin call.

Buyer Power is High/Strong

When the buyers are more concentrated than sellers; Buyer switches their costs at low level and the threat of backward integration is high. It is considered as the buyer is price sensitive and having good knowledge to differentiate the product and undifferentiated product. They, purchases product in high volume when the substitutes are available in the market.

Buyer Power is Low/Weak

When the buyers are less concentrated than sellers; Buyer switching costs at a high level and the threat of backward integration is low. It is considered as the buyer is not priced sensitive and they do not have prior knowledge regarding the product whether it is a highly differentiated product or not. Buyer purchases product in low volume when the substitutes are unavailable in the market.

One of the most common questions asked by farmers' market vendors is, "How do I set prices for my products?" Generally, prices at farmers markets are set locally and are often higher than similar products available at local grocery stores. Farmers' market advocates suggest this disparity is crucial to differentiate the farmers' market product from wholesale produce. The two most important factors in

setting your prices are knowing your cost of production and knowing what your product is selling for at other local retail outlets.

4.5 Case Studies and Reports Related to Market Structure

Problem –Solving Approach

The essential problem in the issue of market structure is the determination of price and output, given the different market conditions involved. The starting point is always the demand and cost functions. There is a straightforward five step procedure for solving the problem. In each case, demand and cost problems can be solved using the following general steps

1. Derive demand function in the form $P = f(Q)$.
2. Derive revenue function in the form $R = f(Q)$.
3. Derive marginal revenue function in the form $MR = \frac{dR}{dQ} = f(Q)$.
4. Derive marginal cost function in the form $MC = \frac{dC}{dQ} = f(Q)$
5. Set $MC=MR$ and solve for Q .

Once the value of Q is obtained the value of P can be obtained from the demand equation. Profit can be calculated either by taking revenue minus costs or by using the equation

Profit $(P - AC)Q$

1. The above procedure is very robust and can be used with any mathematical form of demand and cost function. The algebra may vary, as seen for example in the case of monopolistic competition, where a cubic cost function is used, but in each problem the general procedure is identical. It should be noted at this stage that the above procedure is not the only approach that can be used for solving problems.
2. Another approach is to derive the profit function for the firm, in terms of either price or output. This function can then be differentiated and set equal to zero to obtain a maximum.
3. The second order conditions should also be examined in this case to verify that the profit is indeed maximized, rather than minimized.

Problems

Pepsi Company produces a single article. Following cost data is given about its product

Variables (per)	Rs.
Selling Price Per	40
The Marginal Cost Per	24
Fixed Cost Per Annum	16000

Calculate the Following

- a) P/V ratio
- b) breakeven sales
- c) sales to earn a profit of Rs. 2,000
- d) Profit at sales of Rs. 60,000
- e) New breakeven sales, if the price is reduced by 10%.

Solution

- i) We know that $(S-v) /S= F + P$ OR

$s \times P/V \text{ Ratio} = \text{Contribution}$
 So, $P/V \text{ Ratio} = \text{Contribution}/\text{sales} \times 100$
 $= (40-24)/40 \times 100 = 16/40 \times 100 \text{ OR } 40\%$

ii) Break Even Sales

$S \times P/V \text{ Ratio} = \text{Fixed Cost}$ (At breakeven sales, contribution is equal to fixed cost)
 Putting this values $s \times 40/100 = 16,000$ $S = 16,000 \times 100 / 40 = 40,000 \text{ OR } 1000 \text{ s.}$

iii) The Sales to Earn a Profit of Rs. 2,000 $S \times P/V \text{ Ratio} = F + P$

Putting this values $s \times 40/100 = 16000 + 2000$
 $S = 18,000 \times 100/40$; $S = \text{Rs. } 45,000 \text{ OR } 1125 \text{ s.}$

iv) Profit at Sales of 60,000 $S \times P/V \text{ Ratio} = F + P$

Putting this values $\text{Rs. } 60,000 \times 40/100 = 16000 + P$ $24,000 = 16000 + P$ $24,000 - 16,000 = P$
 $P=8,000.$

v) New Break Even Sales, if sale price is reduced by 10%

New sales price = $40-10\% = 40-4 = 36$
 Marginal cost = Rs. 24. Contribution = Rs. 12
 $P/V \text{ Ratio} = \text{Contribution}/\text{Sales} = 12/36 \times 100 \text{ OR } 33.33\%$
 Now, $s \times P/V \text{ Ratio} = F$ (at B.E.P. contribution is equal to fixed cost)
 $S \times 100/300 = \text{Rs. } 16000$
 $S = 16000 \times 300/100$
 $S = \text{Rs. } 48,000.$

1. Assume that fixed costs are Rs. 850, variable cost per item is Rs. 45, and the selling price per is Rs. 65.

Write, i. Cost function ii. Revenue function iii. Profit function.

Solution

i) $C(x) = F + Vx$

$C = \text{Total cost}$; $F = \text{Fixed cost}$; $V = \text{Variable cost per}$; $x = \text{No of s produced and sold}$

Cost Function = Variable cost + Fixed cost

$CF = 45x + 850$

- ii) The revenue function, $R(x)$, reflects the revenue from selling “ x ” amount of output items at a price of “ p ” per item. $R(x) = p(x)$.

Revenue and Cost Functions

Revenue $R(x) = -36x^2 + 2000x$

Cost $C(x) = 125x + 6500.$

iii) **The Profit Function**

$P(x) = R(x) - C(x)$

$-36x^2 + 2000x - (125x + 6500)$

$-36x^2 + 2000x - 125x - 6500$

$-36x^2 + 1875x - 6500$

A Case Study on (Oligopoly) Predatory Roaming

They were in the bank, toting guns, as lots of money happened to go from the vault. That was the essence of last week’s claim by Mario Monti, the European Union’s competition commissioner, that mobilephone operators have gouged customers by colluding to raise rates for roaming – i.e., when you use your mobile phone abroad. Mr. Monti’s case is circumstantial, but he says the network operators will have to answer it.

In December Mr. Monti's office issued a report on the market for roaming. Most countries in the European Economic Area (EEA), the report found, have a roaming market that is ripe for collusion. The product is undifferentiated, and the number of sellers small. Pricing in the wholesale market is transparent, making it easy for a market leader to raise prices, and for other operators to take the hint and follow suit. The costs of running mobile networks do not vary that much. As a result, says the report, sellers' pricing structures tend to run in parallel, at 'high and rigid' levels. Mr. Monti cites 'an almost complete absence of competition', and says that 'prices appear to be converging', towards €1 (89 cents) a minute. To be fair, the conditions for collusion, apart from the small number of sellers cited above, could also be present in a perfectly competitive market. And retail prices in Europe are not quite as similar as Mr. Monti's comments suggest. For a call from Belgium to Britain today, using a British mobile phone, rates range from 51p (73 cents) to 99p a minute. Rates for receiving calls also vary widely. On One2One, a monthly charge of only £2.50 can lower the receiving rate from 76p to 16p. That is an indication of just how low the marginal cost of roaming calls might be. Looking closely at wholesale rates, the commission found that the cheapest in Europe were about €0.46 a minute. In Belgium, Britain, the Netherlands, and Norway, some operators had rates at least twice as high as the average of the five cheapest. Yet even the lowest wholesale rates in Europe may be gouging consumers. Just look at what is on offer in North America. Microcell net, a Canadian operator that has 1m customers, recently launched a flat rate American roaming service for customers on a standard monthly service agreement, the retail price of calls made anywhere to Canada or within the United States is 20 cents a minute – less than half even the lowest wholesale rates in Europe. Perhaps Europe's costs are so different from North America's that they justify BT Cell net's roaming rate of 99p a minute? It seems unlikely. Chris Doyle, an economist at Charles River Associates, points out that roaming generates up to 35% of European operators' revenues, although it accounts for a much smaller share of the time customers spend on the telephone. Asked exactly what costs and market forces determine its roaming rates, BT Cell net says the question is 'too commercially sensitive to answer'. Market concentration also points to a lack of competition. In each of 11 EEA countries, a single operator had a market share of at least 50%. Still, the biggest obstacle to a competitive market for roaming may be the ease with which the operators can exploit consumers. They have little incentive to compete over roaming rates – to quit the cartel, Mr. Monti might say – since mobile users do not usually use rates abroad as a basis for choosing a provider. Few customers know how much they are paying for roaming. Even fewer actively choose which local network to roam on. The commission's report recommends making choice easier for consumers. In the best of worlds, roamers would be able to get rate information piped through to their telephones from various providers, before choosing which service to use. Mr. Doyle believes that call back services, which allow roamers to replace higher calling fees with lower receiving fees, will put pressure on operators to cut rates. If the commission wants to see rates fall swiftly, however, it will have to take action itself.

Review Questions

- 1) Suppose that, due to a successful advertising campaign, a monopolistic competitor experiences an increase in demand for its product. How will that affect the price it charges and the quantity it supplies?
- 2) Continuing with the scenario outlined in question 1, in the long run, the positive economic profits earned by the monopolistic competitor will attract a response either from existing firms in the industry or firms outside. As those firms capture the original firm's profit, what will happen to the original firm's profit maximizing price and output levels?

- 3) Aside from advertising, how can monopolistically competitive firms increase demand for their products?
- 4) Explain why OPEC has been one of the most successful cartels in recent decades. What factors have limited this success?
- 5) Explain what is meant by the kinked demand curve. What shortcomings does this approach have in the analysis of oligopoly?
- 6) What is meant by monopoly power? What factors determine the extent of this power?
- 7) What are some of the natural and artificial barriers to entry into certain oligopolistic industries?
- 8) It is often asserted that businesspeople often have no knowledge of the exact shape of the demand curve and cost curves that they face and so cannot determine their best level of output and price to charge. Therefore, most of the microeconomics is “academic” and irrelevant. How would you counter such charges?
- 9) Explain what has stimulated the growth of the large scale modern enterprise, and indicate what organizational development was introduced in order to contain the tendency toward rising costs. Also, explain why it is important to solve this problem.
- 10) Why is it easy for the operators to exploit consumers in this case?
- 11) If the commission does not take action, do you think it is likely that rates will fall much in the future?

Chapter 5 Market Externalities

5.1 Free Market Economies v/s Collectivist Economies

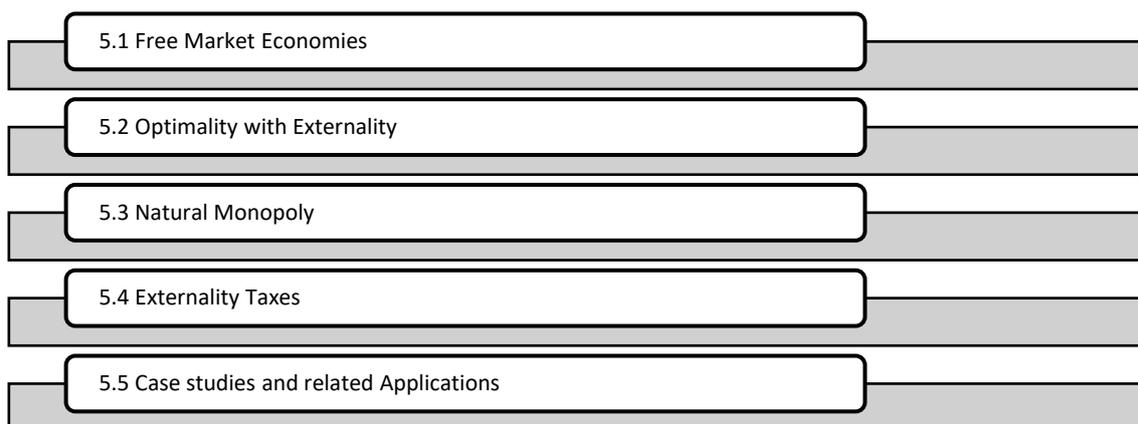
Introduction

It is a consequence of industrial or commercial activity which affects the firm and environment of other agents without being reflected in market prices is known as an externality. There are two types of externality namely positive externality and a negative externality. If the impact on the bystander is adversative then it said to be a negative externality, for example, barking dogs often create noises to the neighbors which give a negative externality. When the impact is beneficial then it is called a positive externality, for instance, the restored historic building, people who can walk or ride and also can enjoy the beauty of the building could provide positive externality.

Objectives

- To explain why government policy is important for managerial decision making.
- To discuss the objectives of government policy.
- To discuss the objectives of government policy in the areas of monopoly and competition policy.
- To understand the concept of tax and their importance.

Structure



To Do Activities

1. Question how students are understanding the difference between the free market economies Vs collectivist economics in the market. Lead the discussion to the continuous with the concept of market efficiency.
2. Discuss about increased inequality and increased growth.
3. Explain the concept optimum level of optimality and the implications of rural development.
4. Make students to clearly understand about collective tax and advantages and disadvantages of tax.
5. Recap of Chapter, open discussion on what topics each student is interested in, scope out possibilities of career development, research or internship opportunities.

Free Market Economies Vs Collectivist Economies

1. Collectivist Economies

Societies and centralized authorities are managed to create and distribute the goods and services are called Collectivist Economies. It is based on the state of ownership of capital. The government owns the resources and decides its allocation based on the demand in the market. Because the government focuses on unemployment and it also thwarts the monopolies' power in the economy. Hence, the effort of the government not only earns zero profit but also bridges the social gap. Japan, China, Korea, Taiwan, Venezuela, Guatemala, Indonesia, Ecuador, Argentina, Brazil, India are the countries following the Collectivist economies.

2. Free Market Economies

The Free Market is an economic system based on supply and demand in the market with little or no government control. This means that the government imposes few or no restrictions and regulations on buyers and sellers.

A number of countries trail towards being either free market base or collectivist, but no country is purely one on the other. For instance, the ed States predominantly follows a free market economy. In the U.S the fire services are provided by public authorities. In a similar way, China also thrives to follow the free market. However, this system is basically focused on the exchange of wealth, or goods and services. Hong Kong, Singapore, Australia, New Zealand, Switzerland are following free market economies.

Efficiency and Equity

First Fundamental Theorem of Welfare Economics has been introduced by Adam Smith's, and are typically stated as "a competitive equilibrium. It implies the occurrences of Pareto Optimality," or $CE \Rightarrow PO$. CE refers to the idealized market economy and PO is the condition that an efficient allocation of resources in production and exchange. There is always a trade off between efficiency and equity in economics.

Efficiency is concerned with the optimal production and allocation of resources which are giving as an existing factor of production. Generally, equity is concerned with how the resources are effectively distributed throughout society.

- Vertical equity is concerned with the relative income and welfare of the whole population e.g. relative poverty when people have less than 50% of average income. It also concerns how equitably resources are distributed and may imply higher tax rates for high income earners.
- Horizontal equity is treated everyone under the same situation e.g. people earning £15,000 should pay the same tax rates.

Concepts of Efficiency

The concept of efficiency deals with the optimum allocation of resources which is related to Pareto efficiency. This Pareto efficiency is dealt with creating a situation where one party better off without making another party worse off.

For example, the commy charge is (POLL TAX) considered to be an economically efficient concept. Because a poll tax doesn't distort economic behavior. (A poll tax doesn't reduce incentives to work). However, by making a millionaire pay the same tax as a poor pensioner, it is considered to be unfair.

For instance, a country may devote 60% of GDP to the manufacture of armaments. For this, it is necessary to achieve technical and productive efficiency and produce on the production possibility frontier. Therefore, they are considered as an efficient firm. But, such an economy may have a great deal of inequality, with large portions of the population who are struggling to have enough to eat.

1. Bank Bailout and Equity

This concept is observed through bailing out of banks which are an economic necessity to prevent from a collapse in the banking system. By bailing out banks, it is expected to enable a more productively efficient economy. However, from another perspective, it is considered to be unfair. Because the government enables bankers to retain high paying jobs whilst they implement cuts for workers on a lower income.

2. Increased Inequality and Increased Growth

Generally, government policies are able to create a situation where the consumer becomes better off (rising real incomes across the population). However, it is found that the consumer's high incomes gain a bigger percentage rise in real incomes. Thus, the consumer becomes better off, but there is also greater income inequality. Therefore, consumer feels that relatively they could appear worse off compared to others in society. This is a Pareto improvement in economic welfare which is given in Fig.5.1.1 also it shows an increase in inequality.

It is considered as the 'trickledown effect' – where the poorest people gain only a small increment in their income. Whilst rich people gain a high increment in income. Therefore, there is always an increased economic efficiency but also increased economic inequality. It is good to have increased efficiency. Though it increases the inequality, it reduces the absolute poverty and increases the real incomes i.e., everyone feels better off than others. However, it also entails the following People value happiness in terms of 'fairness' and relative perspectives. If rich people gain a bigger share of national income, it could create resentment. Due to the diminishing marginal utility of income, rich people struggle to spend their increased income on goods which increase utility.

The final point is that there doesn't have to be a trade off between equality and efficiency. Rather it would need an improvement in efficiency which should generally make the economy better off. There is no reason why improved efficiency has to lead to inequality. It is compatible to improve both efficiency and equity within society.

During the period 1950s and 1960s industrial growth and industrial modernization have been considered as an economic development factor. Meantime, the agricultural sector has relatively been neglected by the national policy, in favor of investment in industry. This agricultural sector had presumed that the benefits of growth would have trickled down to the poor people as they shifted into the modern sector of the economy. Hence, it could have been acting as a reservoir of surplus resources and labor for industrial growth without requiring investment in its own right. In the agricultural sector, job satisfaction eclipses the meagreness of income and remains stagnant. As a result, the poor people, who lived in rural areas, have to vary their extents from the agriculture sector to the industrial sector.

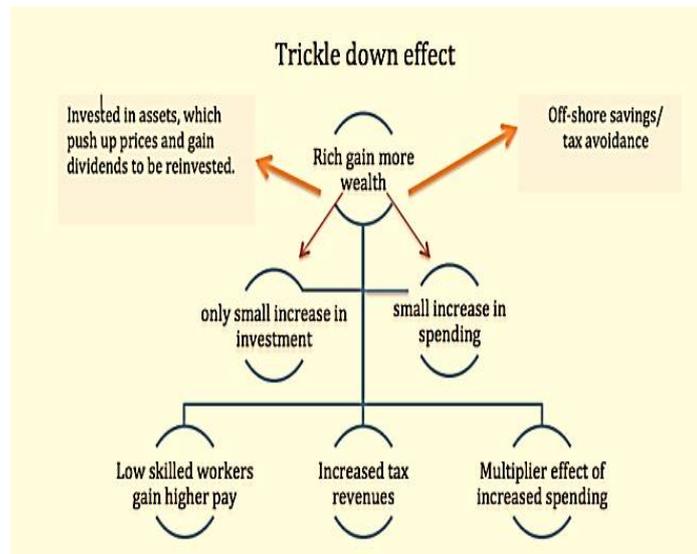


Fig.5.1.1 Concept of Increased Inequality and Increased Growth

In many cases, the industrial sector could have expanded enough to provide the necessary jobs. Additionally, many kinds of literature signpost the policymaker who are taking an active interest in the agricultural sector in respect of efficiency and equity by (Shultz 1964, Mellor 1966). This serves both efficiency and equity to the smallholders who have to endure both the development and rural development policy.

Inefficiency and Inequity of Urban Bias

Despite the increased interest in the agriculture sector and rural development, the rural sector continued to be neglected by comparison with the urban areas where a much smaller proportion of the population live. During the 1970s literature have been suggested the 'urban bias' which is a development policy. It is quite a straightforward plea for the reallocation or redistribution of resources to rural.

The urban bias comes from the result of economic and political dominance of a relatively small urban elite. This elite group comprising of businessmen, politician, bureaucrats, trade union leaders and a supporting Staffs of professionals, academics and intellectuals who have effectively controlled the institutions of power – government parties, law, civil service, trade unions, education, business organizations, and are far better organized than the rural majority. The elites use their power to allocate resources – investments in doctors, teachers, infrastructure, and clean water. In various ways that are heavily biased towards urban needs. This bias is both inequitable and inefficient since the resources are allocated to rural areas often generate greater benefits in terms of poverty reduction and economic returns. Thus, the rural areas getting and enjoying the schemes than the urban areas.

When a transaction between a buyer and seller directly affects a third party, the effect is called an externality. Negative externalities, such as pollution, cause the socially optimal quantity in a market to be less than the equilibrium quantity. Positive externalities, such as technology spillovers, cause the socially optimal quantity to be greater than the equilibrium quantity.

Those affected by externalities can sometimes solve the problem privately. For instance, when one business confers an externality on another business, the two businesses can internalize the externality by merging. Alternatively, interested parties can solve the problem by negotiating a contract. According to the Coase theorem, if people can bargain without cost, then they can always reach an agreement in which resources are allocated efficiently. In many cases, however, reaching a bargain among the many interested parties is difficult, so the Coase theorem does not apply.

When private parties cannot adequately deal with external effects, such as pollution, the government often steps in. Sometimes the government prevents socially inefficient activity by regulating behavior. Other times it internalizes an externality using Pigovian taxes. Another way to protect the environment is for the government to issue a limited number of pollution permits. The end result of this policy is largely the same as imposing Pigovian taxes on polluters.

5.2 Optimality with Externality

The optimum level of externality explains, how the marginal social benefit and marginal social cost intersection achieves the socially optimum level. If output occurs at any other point then it will lead to Market Failure. If marginal social cost is greater than the marginal social benefit, then it will lead to a reduction in Welfare and vice versa.

Objectives

- To entail the information of the optimal level of externality.
- To explain the types of externality where society can enjoy the resources.
- Too explores the relationship between population, consumption, and environment.

Optimum Level of Externality

Consider the Polluter who can be in the form of Individual, Business firms. Similarly, Pollution can in the form of Air, Water, Land, and Noise. From the Fig.5.2.1, it is clear that the marginal benefit to the polluter of producing more pollution tends to decrease as they pollute more.

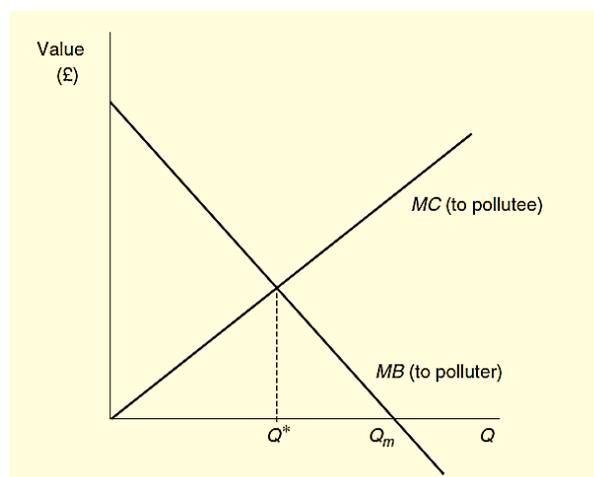


Fig. 5.2.1 Optimum Level of Externality

The people suffering from pollution, the polluter, tend to have increased marginal costs as the number of pollutions increases. From Figure 5.2.1, the level of pollution given by Q^* which can be represented as the optimal level of pollution i.e., the total welfare is maximized at this point. If more pollution is produced than this amount the additional costs to the polluter more than offset the additional benefit to the producer, while if less pollution is produced than this the benefits that the polluter forgoes more than offset the costs to the of suffering more pollution.

Implication of Government Policy

The following implications suggested by the government to improve the people's welfare through optimum social benefit.

1. Do Nothing

It represents the best option if the costs of intervention, in terms of administrative costs, exceed the benefits in terms of resource reallocation.

2. Internalize the Externality

This involves forcing the producer of the externality to become its consumer. The main problem here is that it is often simply not possible, or at least practical.

For instance, a smoker cannot be made to feel the cost of his activity, nor can a firm polluting a river usually be forced to suffer all the costs of doing so.

However, it is essential for the limiting case such as where one firm damages one other firm can a merger of such firms solve the problem.

3. Regulation

If the existence of transaction costs prevents polluter and polluted from reaching an agreement, there will be the amount given by Q_m is given in Fig. 5.2.2.

In order to prevent this nonoptimal situation from occurring the government may regulate the production of pollution, ideally so that the amount Q^* is produced. In effect, this policy divides the property rights between producer and consumer. The government then has the not inconsiderable task of estimating the value of Q^*

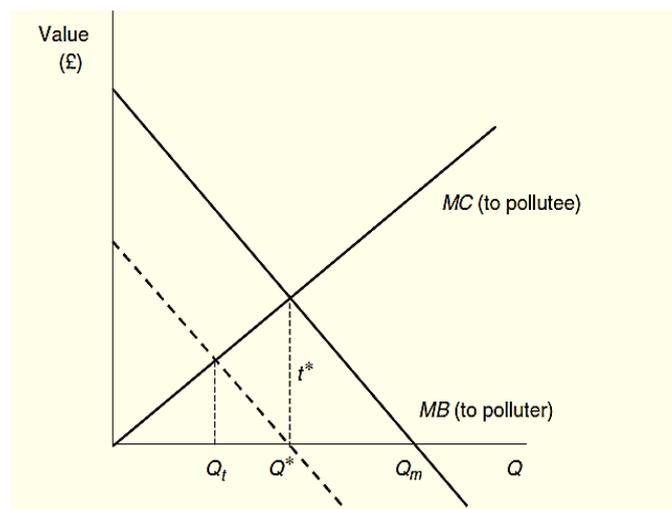


Fig.5.2.2 Under Regulation the Measurement of Internalize Externality

4. Taxes and Subsidies

These have a similar effect to internalization but tend to be much more practical in terms of administration. The principle involved is to tax the producer of negative externalities and subsidize the producer of positive externalities. The effects of this can be seen in the Fig.5.2.2.

Any indirect tax will shift the marginal benefit curve of the polluter down by the amount of the tax; if the externality were positive a subsidy should be used to shift the marginal benefit of the provider upwards.

In order to bring about the optimal level of the externality the level of tax required is t^* is shown in Fig. 5.2.2.

It is obviously very difficult for a government to estimate this amount. Generally, government levy a tax based on output or consumption (petrol for example), but this ignores the possibility that the amount of pollution per of output/consumption can vary according to the technology in place. However, if a tax is based directly on s of pollution produced, this cost may vary according to the level of output.

It is not costless; similar transaction costs to those described earlier are now incurred by the government. The resulting solution will only be optimal if transaction costs are combined with the imposition of the tax, the result will be that the amount of externality given by Q_t will be produced is shown in Fig.5.2.2. which is a nonoptimal solution.

The welfare of the individual parties involved will not be the same as with other solutions. In conclusion, there can be no generalization made regarding which type of policy is best. This will depend on the circumstances, in particular on the type and extent of the transaction costs incurred with each policy option.

For example, the partial regulation is often difficult to enforce compared with a total ban; it is easier to see if a factory is emitting smoke from its chimneys than to measure the amount of this smoke and check whether it is over a certain limit.

The general principle involved may be to maximize total welfare of the community taking into account transaction costs, but in practice, this can be very difficult to implement. Political factors can make arriving at an optimal solution even more difficult.

In other cases, people can solve the problem of externalities on their own. The Coase theorem suggests that the interested parties can bargain among themselves and agree on an efficient solution.

However, an efficient outcome cannot be reached, perhaps because a large number of interested parties makes bargaining difficult. When people cannot solve the problem of externalities privately, the government often steps in. Yet, even now, society should not abandon market forces entirely.

Rather, the government can address the problem by requiring decision makers to bear the full costs of their actions. Pigovian taxes on emissions and pollution permits, for instance, are designed to internalize the externality of pollution. These taxes are the policy of choice for those interested in protecting the environment. Market forces, properly redirected, are often the best remedy for market failures.

Implication of Rural Management

- i. The Rural Development Programmes are evaluated using the objective parameters, such as exhaustion of outlay and achievement of certain physical targets.
- ii. The perception of developmental performance is conveying in new dimensions, encompassing the environmental implications of the programmes.
- iii. Environmental degradation is considered as an outcome of individual actions that do not consider externalities which are forced on both space and time.
- iv. The market mechanism does not provide any internalization costs which actually reinforces the market behaviors. As a consequence, the government ensures the protection of both the current victims of environmental degradation and future generations, without disrupting the process of growth and development.
- v. The Government carries out a lot of programmes for rural people to get the benefit. These Schemes are more helpful to people who are getting the considerable benefit. It gives them positive Externality.

Rural Development Programmes

The following major government programmes are given below swarnjayanti gram swarozgar yojana; jawahar gram samridhi yojana; employment assurance scheme; rural housing; member of parliament local area development programme; rural sanitation; biogas and chulahs; anna marumalarchi thittam; namakkal naame thittam; periyar memorial samathuvapuram; member of legislative assembly constituency development scheme; training programmes.

It is important for managers to understand the principles surrounding government policy in order to be able to respond to it in the best possible way, to anticipate it, and even to influence it. The economic principle regarding government intervention is that it should intervene at that point in the economic system closest to the policy objective in order to maximize total welfare. In practice, this principle tends to be ignored or overruled by political factors.

Governments have an economic reason for intervening in monopolistic markets because of the potential for deadweight welfare loss. Governments tend to have two main strands of policy, one aimed at existing monopolies and one at potential monopolies.

5.3 Natural Monopoly

A natural monopoly arises when average costs are declining over the range of products that satisfies market demand. This typically happens when fixed costs are large relative to variable costs. As a result, one firm is able to supply the total quantity demanded in the market at lower cost than two or more firms—so splitting up the natural monopoly would raise the average cost of production and force customers to pay more.

Objectives

This is able to

- To evaluate the appropriate competition policy for a natural monopoly
- To interpret a graph of regulatory choices
- To contrast the cost plus and price cap regulation

Regulating the Natural Monopolies

In the situation where the average costs are declining over the range of products that satisfies market demand then the natural monopoly will arise in the market. This normally happens when fixed costs are large relative to variable costs. As a result, one firm is able to supply the total quantity demanded in the market at a lower cost than two or more firms. Thus, splitting up the natural monopoly would raise the average cost of production and force customers to pay more. For example, the companies that have usually provided water and electrical service across the area, are a natural monopoly. Fig.5.3.1 shows that the single firm's average total costs of a firm with economies of scale can produce any amount of output at minimum cost. Meaning that, for any given amount of output, a larger number of firms leads to less output per firm and higher average total cost. In the monopoly water supply case, a firm must build a network of pipes throughout the town and provide water for that zone. If two or more firms are providing the same service then there will be a competition of providing this service. So, each firm has to pay the fixed cost of building a network for continuing this service. Therefore, the average total cost of water is lowest if a single firm serves the entire market.

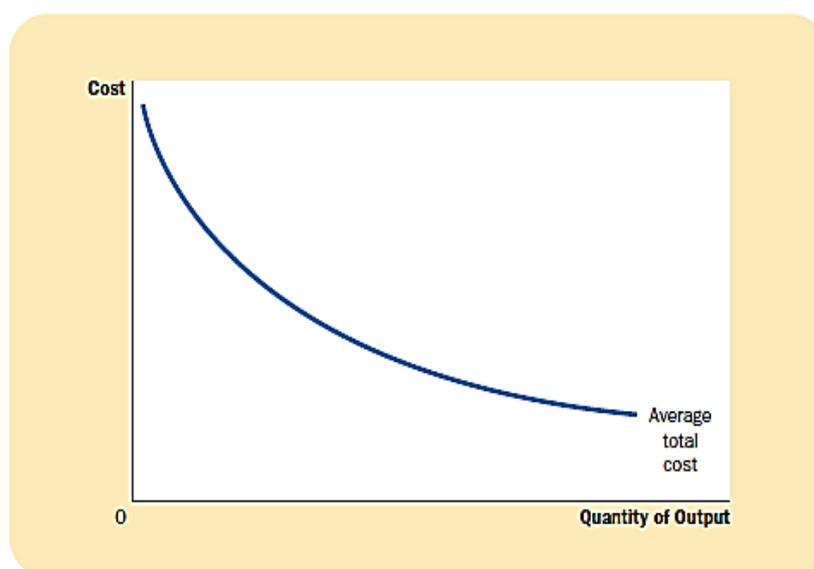


Fig.5.3.1 Natural Monopolies Regulation

In this case, when production is divided among more firms, each firm produces less, and the average total cost rises. As a result, a single firm can produce any given amount at the smallest cost.

The Choices in Regulating a Natural Monopoly

The natural monopoly, with a market demand curve that cuts through the downward sloping portion of the average cost curve, is illustrated in the Fig.5.3.2. Points A, B, C, and F illustrate four of the main choices for regulation. Table 1 outlines the regulatory choices for dealing with a natural monopoly.

Case 1 to Leave the Natural Monopoly Alone

The monopoly follows the normal approach to maximizing his profits. This approach determines the quantity where $MR = MC$, which occurs at point P at a quantity of 4. The firm then looks to point A on the demand curve to find that it can charge a price of 9.3 for that profit maximizing quantity. Since the price is above the average cost curve, the natural monopoly would earn monetary profits.

Case 2 to Divide the Company and Compete with New Firms

Assume, that the company is divided. Thus, instead of one large firm producing a quantity of 4, two halfsize firms each produce a quantity of 2. Because of the declining average cost curve (AC), the average cost of production for each of the halfsize companies each producing 2, as shown at point B, will be 9.75, while the average cost of production for a larger firm producing 4 will only be 7.75. Then, the economy will become less productively efficient, since the product is being produced at a higher average cost.

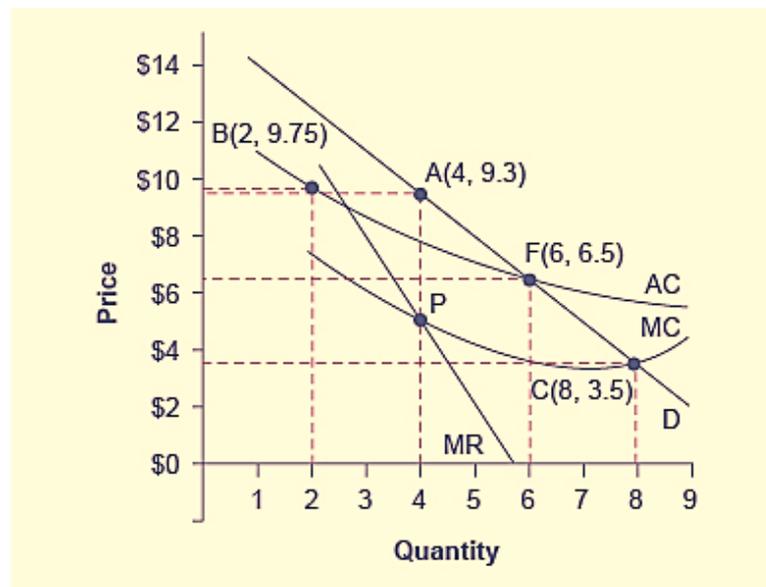


Fig.5.3.2 Competition with New Firm

In the downward sloping average cost curve, two smaller firms will always have higher average costs of production than one larger firm for any quantity of total output. Moreover, the antitrust authorities must concern that splitting the natural monopoly into pieces may be only the start of their problems. If one of the two firms grow larger than the other, it will have lower average costs and may be able to drive its competitor out of the market. Alternatively, two firms in a market may discover subtle ways of coordinating their behavior and keeping prices high.

Case 3 Regulators Decide to Set Prices and Quantities for Firms

The regulators will choose a point along the market demand curve that benefits both consumers and their larger social interest.

Point C illustrates the choice about the regulator who requires the firm's productivity where marginal cost crosses the demand curve at an output of 8 and charges the price of 3.5, which is equal to marginal cost at that point. Because, the firm requires the perfect market situation where the price is equal to its marginal cost, and it will guarantee that the consumers can gain a higher amount of quantity at a lower price of the monopoly choice A.

Actually, efficient allocation of resources will occur at point C, since the value to the consumers of the last bought and sold in this market is equal to the marginal cost of producing it. At point C, the output of 8, a price of 3.5 is below the average cost of production, which is 5.7, and so if the firm charges a price of 3.5, it will be suffering losses. Without the regulators or the government offer the firm's current public subsidy (and there are numerous political problems with that option), will lose money and go out of

business. Then, the most plausible option for the regulator is at point F meaning that the firm can set the price where AC crosses the demand curve at an output of 6 and a price of 6.5.

At an intuitive level, the firm allows the natural monopoly to charge enough to cover its average costs and earn a normal rate of profit. So, it can continue functioning and prevent from raising prices. For the high monopoly's profits, as they would always choose point A.

Table. 5.3.1 Calculating the Total and Marginal Revenue & Total and Marginal Cost

	Price	Total Revenue *	Marginal Revenue	Total Cost	Marginal Cost	Average Cost
1	14.7	14.7	–	11.0	–	11.00
2	12.4	24.7	10.0	19.5	8.5	9.75
3	10.6	31.7	7.0	25.5	6.0	8.50
4	9.3	37.2	5.5	31.0	5.5	7.75
5	8.0	40.0	2.8	35.0	4.0	7.00
6	6.5	39.0	–1.0	39.0	4.0	6.50
7	5.0	35.0	–4.0	42.0	3.0	6.00
8	3.5	28.0	–7.0	45.5	3.5	5.70
9	2.0	18.0	–10.0	49.5	4.0	5.5

Note Regulatory Choices in Dealing with Natural Monopoly. (*Total Revenue is given by multiplying price and quantity. However, some of the price values in this table have been rounded for ease of presentation.)

At this point, the level of output, time constraints, limited information of the real world and price with the political pressures are much harder to identify in the market. For this problem's company/firm decide to come up with a centrally determined price which deals with the demand and supply of price floors and price ceilings.

Cost Plus versus Price Cap Regulation

For many decades' regulators are followed the general approach to choose a point like F in Fig. 5.3.2. The consumer earns the profit by the average cost of production for the water or electricity companies, For this, the normal rate of profit for an additional amount of the firm should earn the price. This method is known as cost plus regulation. If producers are reimbursed for their costs, plus a minimum additional amount, then at this point, the producers are to be concerned with high costs. Because the producers can just permit them along in higher prices. On the other hand, poorest firms under cost plus regulation even have an incentive to generate high costs by building huge factories or employing lots of staff. Because the company can compensate for the cost by linking it with the costs they incur.

Price Cap Regulation

In 1980-1990, the number of regulators started to use price cap regulation, where the regulator sets a price that the firm can charge over the next few years. A mutual pattern is essential to decline the price marginally over time. However, if the firm can find ways of reducing its costs more quickly than the price caps, it can make a high level of profits. Now, suppose the firm cannot continue with the price caps, it suffers losses in the market. After a certain period, the regulators will set a new series of price caps based on the firm's performance.

When the price regulators set the price cap unrealistically low the market changes dramatically ruined to incurring losses. For example, in the world markets, the energy prices rise dramatically the company is selling natural gas or heating oil to domestic that may not be able to meet price caps. Therefore, price cap regulation requires delicacy.

However, if the regulators compare the prices with a new part of producers, then they will affect by the burden of a natural monopoly in one zone to compete with the prices being charged in other zones. Moreover, the likelihood of earning greater profits or experiencing losses can provide a natural monopoly with incentives for productivity and innovation. As an alternative to having an average rate of profit locked in every year by cost plus regulation.

With a natural monopoly, market competition is implausible to yield gain, so the consumers suffer from high prices and restricted output of an unrestricted monopoly. Therefore, government regulation will step into the system of a price cap for the company's incentives. So, the government regulators have a complex task to maintain the whole system.

In the case of a natural monopoly, market competition will not work well and so, rather than allowing an unregulated monopoly to raise the price and reduce output, the government may wish to regulate price and/or output. Common examples of regulation are public utilities, the regulated firms that often provide electricity and water service. Cost-plus regulation refers to government regulation of a firm which sets the price that a firm can charge over a period of time by looking at the firm's accounting costs and then adding a normal rate of profit. Price cap regulation refers to government regulation of a firm where the government sets a price level several years in advance. In this case, the firm can either make high profits if it manages to produce at lower costs or sell a higher quantity than expected or suffer low profits or losses if costs are high or it sells less than expected.

Problem

Consider the firms A, B and C along with the following demand schedules

$P = 100 - 2Q_1$ for Firm A; $P = 70 - 2Q_2$ for Firm B; $P = 60 - 2Q_3$ for Firm C. The product price is Rs 10 per. Find out the sales of the three firms.

Solution

Sales of Firm A

$$10 = 100 - 2Q_1; 2Q_1 = 90, Q_1 = 45.$$

Sales of Firm B

$$10 = 70 - 2Q_2, 2Q_2 = 60, Q_2 = 30.$$

Sales of Firm C

$$10 = 60 - 2Q_3, 2Q_3 = 50, Q_3 = 25.$$

$$\text{Total Sales} = Q_1 + Q_2 + Q_3 = 45 + 30 + 25 = 100.$$

Market Share of the three firms are

Firm A 45%, Firm B 30%, Firm C 25%.

5.4 Externality Taxes

The economic instrument to address market externality is a tax. The optimum tax defined as the value of the marginal externality impairment created by consumption of an additional item from market exchange. There are two main types of externality. In positive externalities, the optimum tax is considered as a negative value. Additionally, the government compensates an amount to seller per in exchange for a reduction of an equal amount in the price.

Objectives

This will be able to describe

- To understand the role of government regulation in addressing externalities.
- To study the role of taxes in addressing externalities
- To evaluate a permit system as a method to address externalities

Regulation

In two ways the government is responsible for the externalities. Directly, the government can use command and control policies to regulate behavior. Alternatively, it can implement market based policies such as taxes and subsidies to incentivize private decisionmakers to change their own behavior.

Command and control regulation can arise in the form of government imposed standards, targets, process requirements, or outright bans. Such measures make certain behaviors either required or forbidden with the goal of addressing the externality. For example, the government may make it illegal for a company to dump certain chemicals in a river. Then, the government anticipations to protect the environment or other companies or individuals that use the river that would otherwise suffer a negative impact. On the other hand, if the government permits too much to be dumped in the river, then the company have failed to mitigate the negative externality. If the government could not effectively activate on the negative externality then the advocates of market based policies help to reduce the negative externalities from the creation of new regulation to enforcing effective regulation. This is the causes that the government should have created the schemes of incentives and disincentives instead of using the strength of regulation.



No Smoking The prohibition of smoking in certain areas is a regulation designed to reduce the negative externalities suffered by non-smokers when they are around smokers.

Tax

Corrective taxes incentivize economic actors to reduce the production of goods or services generating negative externalities. Taxes on negative externalities are intended to make consumers/producers pay the full social cost of the good.

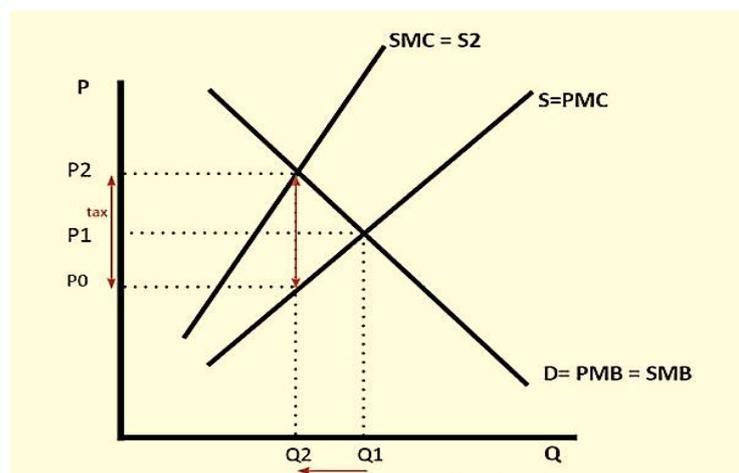


Fig.5.4.1 Tax Implementation

This reduces consumption and creates a more socially efficient outcome. If a good has a negative externality, without a tax, there will be overconsumption (Q_1 where $D=S$) because people ignore the external costs. A tax should be placed on the good equal to the external marginal cost. It means that consumers will end up paying the full social marginal cost. If the external costs of driving a car are estimated at 2p per mile, this is how the tax on petrol should be calculated. A tax enables the harmful effects to be internalised. After the tax is implemented, the output of the good will fall from Q_1 to Q_2 . Q_2 is socially efficient because at this level the social marginal benefit (SMB) = Social marginal cost (SMC)

Advantages of Taxes

Provides Incentives to Reduce Negative Externality such as pollution. E.g. cars have become more fuel efficient due to the increased petrol tax. Social efficiency, the 1st best solution (where $MSC = MSB$). Taxes raise revenue for the government. This can be spent on alternatives, such as public transport or the tax

revenue can be used to tackle the problems relating to the externality, such as Sugar tax – money goes to health care.

Disadvantages of taxes

The level of a negative externality of the firm is difficult to measure. If the demand for pollution from the car is inelastic, then the taxes will be higher and the demand will not reduce. The problem is that the congestion at rush hour if there are no alternatives to driving then taxes will cause inequality. For example Tax on Unhealthy Food, Cigarette tax, Carbon tax, Sugar tax, Pigouvian Tax.

Taxes are a market based policy option accessible to the government to report the externalities. A corrective tax or Pigouvian tax is a market activity that is generating negative externalities (costs for a third party). Therefore, the tax is the value of the negative externality that provides incentives for the allocation of resources for social optimum.

In the negative externalities, the social cost of movement is greater than the private cost of the activity. In such cases, the market outcome is not efficient and may lead to overproduction of the good. So, taxes make it more expensive for firms to produce the good or service generating the externality, thus providing an incentive to yield lesser amount of it. Tax shifts the marginal private cost curve up through which the producers can change the output to the socially optimum level.

Corrective Tax A tax shifts the marginal private cost curve up by the amount of the tax. This offers producers an incentive to reduce output to the socially optimum level.

For instance, consider the environmental pollution. The private cost of pollution to a polluter is less than its social cost is shown in Fig.4.5.2. If the government levies a tax on pollution, it increases the polluter's private cost. The polluter now has an incentive to generate less pollution.

The level of the corrective tax is intended to counterbalance the externality. However, it is extremely difficult for the government to determine the appropriate level for the tax. Moreover, in determining the tax level, the government might come under pressure from various interest groups that would benefit from a higher or lower taxation level. However, by leading corrective taxes in response to negative externalities, the government can not only increase efficiency but also raise the revenues.

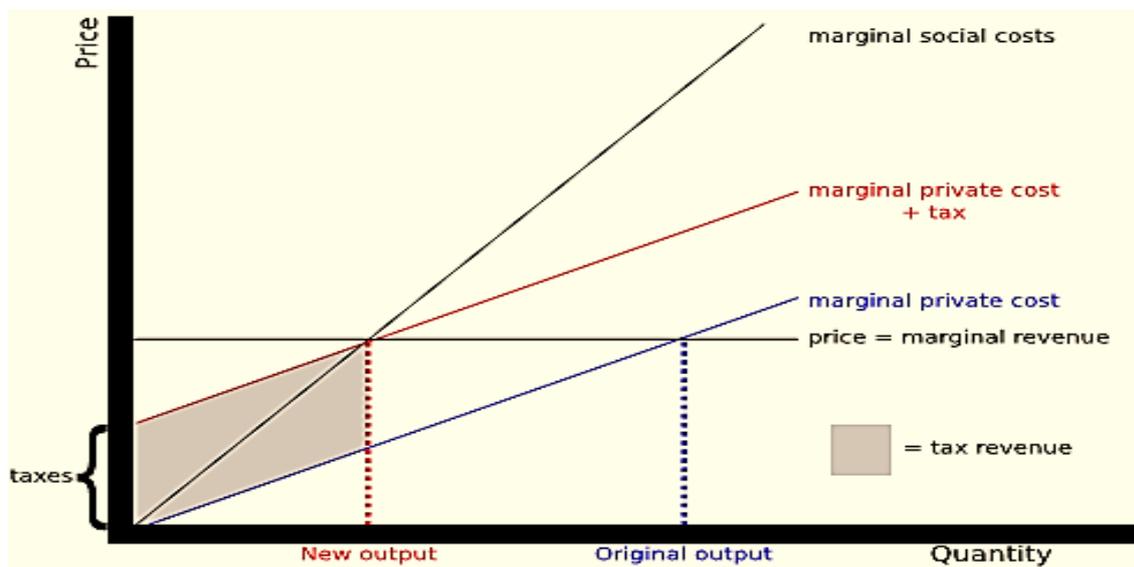


Fig.5.4.2 Representation of Corrective Tax

Quotas

The market based approach involves the tradable permits which are allowing the government to limit negative externalities produced by the group of firms.

The problem of negative externalities can be limited by the governments use a quota system. In this system, the negative externality is enclosed at a certain amount. For example, the government may put a quota on the volume of pollution of a factory that can produce the tradable permits. In the past tradable permits have been primarily used to control pollution.

When following this approach, the government sets a limit or cap on the amount of a pollutant that may be produced. It allocates emissions permits up to the specified limit among firms. The permits represent the right to emit or discharge a specific volume of a specified pollutant. Firms are required to hold a number of permits equivalent to their emissions.



Firms that must increase their volume of emissions necessity to buy permits from firms. This transfer is referred to as a trade. In effect, the buyer is paying a charge for polluting, while the seller is being rewarded for having reduced emissions. The outcome achieved by the market for permits is more efficient, regardless of the initial allocation of permits.

The market for tradable permits creates incentives for firms to produce less pollution. Firms that have a high cost of reducing emissions are willing to pay for the permits, while the firms that can reduce emissions in the most cost efficient manner will do so and sell their permits. Thus, tradable permits reach a desired level of the externality by agreeing on the market to determine which market performers can create the externality.

Private Solutions

Private actors will sometimes effectively address externalities and reach efficient outcomes without government intervention. Government intervention is not always necessary to address externalities. Private actors will sometimes arrive at their own solutions.

There are several types of private solutions to market failures

Moral Codes Moral codes guide individuals' behavior. Individuals know that certain actions are simply not "the right thing to do" or would elicit disapproving reactions from others. This is illustrated in the case of littering. The likelihood of being fined may be small, but moral codes provide an incentive to refrain from littering.

Charities Charities channel donations from private individuals towards fighting to limit behaviors that result in negative externalities or promoting behaviors that generate positive externalities. The former

can be seen in the case of organizations that protect the environment, while the latter is exemplified through organizations that raise money for education.

Business Mergers or Contracts in the Self Interest of Relevant Parties Two businesses that offer positive externalities to each other can merge or enter into a contract that makes both parties better off.

Externalities occur in an economy when the production or consumption of a specific good impact a third party that is not directly related to the production or consumption. Externalities, such as pollution, are one of the main reasons why governments step in with increased regulations. There are two types of externalities positive and negative. Positive externalities occur when there is a positive gain on both the private level and social level. Perhaps, externalities are negative when the social costs outweigh the private costs. Several possible solutions exist to overcome the problems that arise from externalities. These can include those from both the public and private sectors. Taxes are one type of solution to overcome externalities. To help reduce the negative effects of certain externalities (like pollution), governments can impose a tax on the goods affecting them.

5.5 Case Studies and Related Applications

Handout Problems

1. Warren has two regions. In Olivia and, the marginal benefit associated with pollution cleanup is $MB = 300 - 10Q$, while in Linneland, the marginal benefit associated with pollution cleanup is $MB = 200 - 4Q$. Suppose that the marginal cost of cleanup is constant at \$12 per . What is the optimal level of pollution cleanup in each of the two regions?

Solution

The optimal level of cleanup will occur when the marginal benefit just equals the marginal cost.

In Olivia and, the marginal benefit is $300 - 10Q$. And the marginal cost is 12.

Therefore, the equation to solve for Oliviland is $300 - 10Q = 12$, or $288 = 10Q$.

The optimal level in Olivia and is equal to 28.8.

For Linneland, the marginal benefit is $200 - 4Q$. Setting the benefit equal to 12 yields

$200 - 4Q = 12$, or $188 = 4Q$.

The optimal level in Linneland is equal to 47.

2. The marginal private benefit associated with a product's consumption is $MPB = 360 - 4Q$ and the marginal private cost associated with its production is $MPC = 6Q$. Furthermore, the marginal external damage associated with this good's production is $MEC = 2Q$. To correct the externality, the government decides to impose a tax of T per sold. What tax T should it set to achieve the social optimum?

Solution

Find the social optimum by setting

$MSB = MPB = PMC + MEC = MSC$ $360 - 4Q = 8Q$, or $Q^* = 30$.

The marginal external cost at $Q^* = 30$ is $MEC = 2(30) = 60$.

It follows that a Pigouvian tax of $T = 60$ will achieve the social optimum.

3. Suppose the demand for a product is $Q = 1200 - 4P$ and supply is $Q = -200 + 2P$. Furthermore, suppose that the marginal external damages of this product are \$8 per . How many more s of this

product will the market produce relative to the social optimum? Calculate the deadweight loss associated with this externality.

Solution

First to calculate the free market by setting the quantity demanded equal to quantity supplied
 $1,200 - 4P = -200 + 2P$.

It follows that $1,400 = 6P$, or $P^* \approx 233.33$.

This implies that $Q^* = 1,200 - 4(233.33) \approx 266.67$.

The socially optimal quantity is the quantity for which the marginal social benefit equals the marginal social cost. Without loss of generality, we will include the external damages in the calculation of marginal social cost. The marginal private cost function is the inverse of the supply function,

So

$$MP C = (1/2) Q + 100.$$

The marginal external cost function is simple, $MEC = 8$.

It follows that the marginal social cost function is

$$MSC = MP C + MEC$$

$$MSC = (1/2) Q + 100 + 8 = (1/2) Q + 108.$$

Since we have included the externality in the calculation of marginal social cost, marginal social benefit is just equal to marginal private benefit.

The marginal private benefit function is the inverse of the demand function,

So,

$$MPB = 300 - (1/4) Q.$$

It follows that the marginal social benefit function, in this case, is $MSB = 300 - (1/4) Q$.

To find the socially optimal quantity,

$$\text{Set } MSB(Q) = MSC(Q)$$

$$\text{and solve for } Q \quad 300 - (1/4)Q = (1/2)Q + 108, \text{ or } Q^o = 256.$$

Since $Q^* \approx 266.67$ and $Q^o = 256$, the market provides about 10.67 s more than the social optimum.

The deadweight loss is the amount by which marginal social benefit exceeds marginal social cost on a , summed over all s the market produces in excess of the social optimum

$$DWL = (1/2) (266.67 - 256) (8) \approx 42.68$$

Case Study How Much Petrol should be Taxed?

The tax on petrol varies widely around the developed world. America's gasoline tax is currently about 40 cents an American gallon, equivalent to 7 pence a liter. Many Americans are calling for it to be cut, as the summer increase in prices begins to make itself felt, and reflecting a more general alarm about the country's 'energy crisis'. In Canada the tax is half as big again as in America; in Australia, it is more than double. In Japan and most of Europe, the specific tax on petrol is around five times higher than in America, standing at the equivalent of some 35 pence a liter. At the upper extreme is Britain, where fuel duty (paid in addition to value added tax) has risen in recent years to a pive rate of just under 50 pence a liter, seven times the American levy. You would expect well designed petrol taxes to vary from country to country, according to national circumstances – but not, on the face of it, by a factor of seven. In America, it is taken for granted that Europe's petrol taxes, let alone Britain's, are insanely high, and presumably something to do with socialism. In Britain, on the other hand, it is taken for granted that America's gas tax is insanely low, part of a broader scheme to wreck the planet. Protests in Britain last year showed that

petrol tax had finally been raised all the way up to its political ceiling – but nobody expects or even calls for the tax to be cut to the American level.

America and Britain may both be wrong about the gas tax, but it seems unlikely that they can both be right. So how heavily should petrol be taxed? A paper by Ian Parry of Resources for the Future, an environmental thinktank in Washington, DC, looks at the arguments. The most plausible justification for taxing petrol more highly than other goods is that using the stuff harms the environment and adds to the costs of traffic congestion. This is indeed how Britain's government defends its policy. But the fact that burning petrol creates these 'negative externalities' does not imply, as many seem to think, that no tax on petrol could ever be too high.

Economics is precise about the tax that should, in principle, be set to deal with negative externalities the tax on a liter of fuel should be equal to the harm caused by using a liter of fuel. If the tax is more than that, its costs (which include the inconvenience inflicted on people who would rather have used their cars) will exceed its benefits (including any reduction in congestion and pollution). The pollution costs of using petrol are of two main kinds damage to health from breathing in emissions such as carbon monoxide and assorted particulates, and broader damage to the environment through the contribution that burning petrol makes to global warming. Reviewing the literature, Mr. Parry notes that most recent studies estimate the health costs of burning petrol at around 10 pence a liter or less. The harm caused by petrol's contribution to global warming is, for the time being, much more speculative. Recent high damage scenarios, however, put an upper limit on the cost at about \$100 per ton of carbon, equivalent to 5 pence a liter of petrol. Adding these together, you come to an optimal petrol tax of no more than 15 pence a liter.

JAMMED High petrol taxes also help to reduce traffic congestion. However, they are badly designed for that purpose. Curbing the number of car journeys is only one way to reduce congestion. Others include persuading people either to drive outside peak hours or to use routes that carry less traffic. High petrol taxes fail to exploit those additional channels. As a result, Mr. Parry finds, the net benefits of a road specific peak period fee (the gain of less congestion minus the cost of disrupted travel) would be about three times bigger than a petrol tax increase calculated to curb congestion by the same amount.

Still, if politics or technology rules out congestion based road pricing, a second-best case can be made for raising the petrol tax instead. According to Mr. Parry, congestion costs in Britain might then justify an additional 10 pence a liter in tax. This brings you to a total petrol tax of around 25 pence a liter. The pretext price of petrol is currently about 20 pence a liter, so this upper bound estimate of the optimal tax represents a tax rate of well over 100% – a 'high tax', to be sure. Yet Britain's current rate is roughly double this. On the same basis, of course, America's rate is far too low (even a lower bound for the optimal rate would be a lot higher than 7 pence a liter). Britain's rate, judged according to the environmental and congestion arguments, looks way too high – but plainly the British government has another reason for taxing petrol so heavily. It needs money to finance its plans for public spending. Politically, raising money through the tax on petrol, protests notwithstanding has proved far easier than it would have been to collect the cash through increases in income tax or in the broadly based value added tax – or, for that matter, through congestion based road pricing (always dismissed as 'politically impossible').

This seems odd. Supposing that actual and projected public spending justified higher taxation, Mr. Parry's analysis strongly suggests that the country would have been better off paying for it through income taxes

than through a pive petrol tax. And the petrol tax is not only wasteful in economic terms if Mr. Parry is right; it is also regressive in its distributional effects, increasing the cost of living for poor crowning households much more than for their richer counterparts. At last, Britain has found the political ceiling for the petrol tax. What is remarkable is just how high it proved to be.

Review Questions

1. Can an activity generate both positive and negative externalities at the same time? Explain your answer.
2. When the state of Virginia imposed stricter regulations on air pollution in 2003, it also authorized an auction of pollution permits, allowing some plants to emit larger amounts of ozone depleting chemicals that would otherwise be allowed, and some to emit less. Theory predicts that this auction led to a socially efficient allocation of pollution. Describe how this outcome would occur.
3. Different governments have different policies for determining the level of fuel taxes; what implications does this have for firms in different countries?
4. Can government assignment and enforcement of property rights internalize an externality? Will this approach work as well as, better than, or worse than direct government intervention? Explain your answers and describe one of the difficulties associated with this solution.
5. If public utilities are a natural monopoly, what would be the danger in splitting them up into a number of separate competing firms?
6. Why are urban areas willing to subsidize urban transit systems? Does the argument for subsidies make sense to you?
7. Answer the following two questions for each of the following examples
 - (i) Smoking by individuals; (ii) toxic waste production by firms; (iii) research and development by a high tech firm; and (iv) Individual vaccination against communicable illness.
 - (ii) Is there an externality? If so, describe it, including references to whether it is positive or negative, and whether it is a consumption or production externality.
 - (iii) If there is an externality, does it seem likely that private markets will arise that allow this externality to be internalized? Why or why not?
8. Do you agree with the following statements? Why or why not?
 - a) "The benefits of Pigouvian taxes as a way to reduce pollution have to be weighed against the deadweight losses that these taxes cause."
 - b) "A negative production externality calls for a Pigovian tax on producers, whereas a negative curve, the supply curve, and the socialcost curve.
9. What are the economic reasons for fuel taxes being different in different countries?
10. Given that fuel taxes are higher in the UK than the rest of Europe, what implications does this have for UK firms competing with European ones?

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Block 2

Accounting for Rural Management



Mahatma Gandhi National Council of Rural Education

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Chapter 1 Introduction

Accounting is the systematic process of identifying, recording, classifying, summarizing, interpreting and communicating the result. So accounting is termed as “the language of business”. As accounting is integral part of an institution/firm/companies and it is very useful for rural as well as urban areas.

Accounting has rightly been termed as the language of the business. The basic function of a language is to serve as a means of communication. Accounting also serves this function. It communicates the results of business operations to various parties who have some stake in the business viz., the proprietor, creditors, investors, Government and other agencies. Though accounting is generally associated with business, but it is not only business where accounting is involved. People of various categories including housewives, Government officials and officials of various sector also apply accounting. For example, a housewife has to keep a record of the money received and spent with her during a particular period. She can record her receipts of money on one page of her “household diary” while payments for different items such as milk, food, clothing, house, education, etc. on some other page or pages of her diary in a chronological order. Such a record will help her in knowing about

- I. The sources from which she received cash and the purposes for which it was utilised.
- II. Whether her receipts are more than her payments or vice-versa?
- III. The balance of cash in hand or deficit, if any at the end of a period.

Learning Objectives

After reading one will be able to

- Explain meaning and significance of Accounting
- Define the concept of accounting conventions and concepts
- Apply concept of journal entries with its practical implication
- Apply ledger and trial balance its meaning and numerical
- Explain cash book meaning and types of cash book

Structure

1.1 Introduction of Accounting and its Function

1.2 Basic Accounting Concepts and Accounting Conventions

1.3 GAAP and Accounting Standards

1.4 Types of Accounts and Journal Entries, Recording of Journal Entries

1.5 Ledger Posting, Cash Book and Trial Balance

1.1 Introduction of Accounting

Definition of Accounting

Accounting is the systematic recording of all financial transactions related to business. Accounting includes a broad range of activities regarding collecting of data, maintaining records, analyzing the data and interpreting result. According to the American Institute of Certified Public Accountants ('AICPA'), accounting defined as, "the art of recording, classifying and summarizing in a significant manner and in terms of money, transactions and events which are, in part at least, of a financial character and interpreting the results thereof".

According to Bierman and Drebin, "Accounting may be defined as identifying, measuring, recording and communicating of financial information."

Functions of Accounting

Following are the main functions of accounting:

- 1. Maintain Systematic Records:** All the financial transactions are kept in a systematic manner. The purpose of accounting is to keep systematic record.
- 2. Determining the Operational Profit/Loss:** Accounting helps to find out profit and loss from the business activities within a given period of time (generally 12 months). By the help of proper accounting, measured how much profit has been earned or how much loss has been incurred. It is completed with the aid of keeping a right file of incomes and expenses of a particular time period and then matching the sales with the corresponding costs.
- 3. Determining the Financial Position of the Business:** Mainly Balance sheet is prepared to determine the financial position of the firm at the end of a particular period (accounting period). It shows the values of all assets and the liabilities of business.
- 4. Facilitating Rational Decision Making:** For rational decision making, accounting enables to collect, analysis and reporting all information at the required point of time from the required levels of authorities of a business.
- 5. Communicating the Financial Information** Communicate the relevant financial information to their users can be possible, but for this maintaining proper accounting records is must. Users may be internal like employees, management or external users such as government authorities, banks etc. Users may be internal like employees, management or external users such as government authorities, banks etc.
- 6. Assistance to Management:** For proper decision-making financial information is required and it is provided by the help of accounting records.

Accounting as an Information System

Accounting, being the language of business, it is used to link financial and other information to individual, organizations, and governments on various stages of business/non-business entities. For instance, whilst a firm applies for a loan from a bank, it is must to submit details of its commercial business statements in terms of working capital (income or loss) and the financial statements (assets and liabilities). Further, the shareholders need to have financial information with the objective to examine the performance of the management. Many laws require that worthy economic information to be reported to numerous government departments which includes income tax department, sales tax department and so on.

Accounting is a set of tools by which reports collected and interprets financial information from the activities of different organizations. Therefore, accounting is related with communicating the outcomes of an organization.

Users of Accounting Information

Accounting is very significant to the owners and the managers. However, other person like creditors, potential investors, etc. are also interested in the accounting information. Following are users of accounting information

1. **Owners/Shareholders:** The main objective of accounting is to provide essential information to the owners allied to their business. The objective of accounting is to provide all data to the proprietors related to their business.
2. **Managers:** Managers are controlling all the operational activities of a business, and the control totally rely on the correct information at correct time. To improve the performance managers should access periodic updates of information.
3. **Prospective Investors:** The individuals who are planning to invest in a business will like to know about profits and proper financial position. Investors use accounting information to judge the financial soundness of the business.
4. **Creditors, Bankers and other Lending Institutions:** Business creditors, banking institutes and other advancing organizations want to be satisfied that the amount will be paid back within a specific time limit. All the financial statements record, aid them in evaluating for financial position.
5. **Government:** The Government is interested in the financial statements of business enterprise on account of taxation, labor and corporate laws.
6. **Employees:** Interest in financial statements because employees raise in their salaries and wages and payment of bonus based upon the size of the profit earned.
7. **Regulatory Agencies:** Various Government departments and agencies such as Company Law Board, Registrar of Companies, Tax Authorities etc. use accounting reports not only as a basis for tax assessment but also in evaluating how well various businesses are running under regulatory legislation.
8. **Researchers:** Accounting data are utilized by the research scholars in their research in accounting theory as well as business issues and practices.

1.2 Basic Accounting Concepts

Accounting having different concepts which tries to resolve the problem of different terminology which are the following:

Business Entity Concept

In accounting there is difference between business and its owner. Complete accounting is recorded from the perspective of the business rather than from the owner. An organization is economically separate from the owner or proprietor. In that way all business transactions are written and reported separately. Business having itself an existence is the business entity concept.

Money Measurement Concepts

In accounting all the business transactions related to money only and it can be measured in terms of money. Money is not only providing the facility of a medium of exchange but also it provided store

of value, and it became significant advantage, subsequently a number of broadly different assets and liabilities can be articulated in terms of a common base i.e. money. In this concept of accounting all the events are calculated on the bases of Money.

Continuity Concept

This accounting concept are also termed as Going Concern Concept, here it assumes that the business (an accounting entity) will be continue to run for an extensive time in the future. The organization is noticed as a going concern, when the work is done for the future success and growth, all the activities are running in a continuous way. The proprietors have no purpose nor have they the requirement to wind up or liquidate their actions.

Cost Concept

The monetary value of assets are derived from the Cost Concept, assets like land, machinery, plant, buildings, patents etc. all are having its value in monetary form and that is measured by the cost concept. This concept explains that an asset is value the price paid for or cost incurred to purchase it. Therefore, assets are written at their original buying price and this cost is the basis for all succeeding accounting for the assets.

Accrual Concept

It is the basic concept of accounting, in which incomes recorded when they earned, and not when income received in cash. The accrual concept creates a difference between the receiving of cash and the right to accept it, and the compensation of cash and the legal compulsion to pay it. In genuine business operations, the compulsion to pay and the actual movement of cash may not match. The accrual concept recognizes that particular distinction.

Concept of Conservatism

The concept of conservatism, also known as the concept of prudence, is often stated as "anticipate no profit, provide for all possible losses". This means an accountant should follow a careful approach. Accountant would be written lower most possible value for all assets and all business revenues, and the uppermost possible value for all types of liabilities and all business expenses. As per this concept, revenues or gains must be acknowledged only when they are actually realized in the form of cash or assets (generally legally enforceable debts).

Materiality Concept

There are many events in business organization which are insignificant or irrelevant in nature. The cost of posting and writing such events will not be acceptable by the helpfulness of the evidence derived. Materiality concept means that objects of small importance need not be given harsh theoretically accurate treatment.

Consistency Concept

In run through, there are numerous ways to record an event or a transaction in the books of business. Like, the depreciation charged on furniture by its different methods and goods purchased on credit and trade discount on raw material purchased may be deducted from the cost of goods and net amount come into in the books, or instead of it trade discount can be presented as the income with full cost of raw material purchased written in the accounting books.

Periodicity Concept

Although the results of operations of a specific enterprise can be known precisely only after the business has ceased to operate, its assets have been sold off and liabilities paid off, the knowledge of the results periodically is also necessary. Those who are interested in the operating results of business obviously cannot wait till the end. The requirements of these parties therefore force the accountant to report for the changes in the wealth of a firm for short time periods like quarterly, monthly.

Accounting Conventions

1. Convention of Materiality

Materiality concept explain that the items of lesser impact need not be specified for strict theoretically right treatment. In the business there are so many events which are not significant in nature. The way of recording and presenting in financial statement of such events could not be well acceptable by the utility receive from that specific information. For instance, the calculator price Rs. 200 may be last for five years. Though, the determination involved in assigning its price over the five-year period is not worth the advantage that can be received from this operation.

2. Convention of Conservatism

When the transactions are recorded, accountant should be following the rule of safety. Accountant trail the rule, anticipate no profit but charge all possible losses, when business transactions recorded. This convention understands that an accountant would be post all lowest possible value for assets and incomes/gains, and the maximum possible value for liabilities and losses/expenses.

3. Convention of Consistency

This convention explains that when a firm decide its accounting policies, rules and procedure it should be used for some time. The level of consistency should be following in the organization, same process is to be followed year after year. In other ways, accounting practices should be followed same from one period to another.

4. Convention of Materiality

According to the convention of materiality, accountants should report only what is material and ignore insignificant details while preparing the final accounts. The decision whether the transaction is material or not should be made by the accountant on the basis of professional experience and judgment. An item may be material for one purpose while immaterial for another.

1.3 Generally Accepted Accounting Principles (GAAP)

Generally Accepted Accounting Principles are those which are created by some specialized accounting institutes like American Institute of Certified Public Accountants (AICPA) and Institute of Chartered Accountants of India (ICAI). In creating these principles, the accounting specialization has to represent the actual scenario of social factors, economical, legal and laws and political factors in which it works.

Accounting Standards

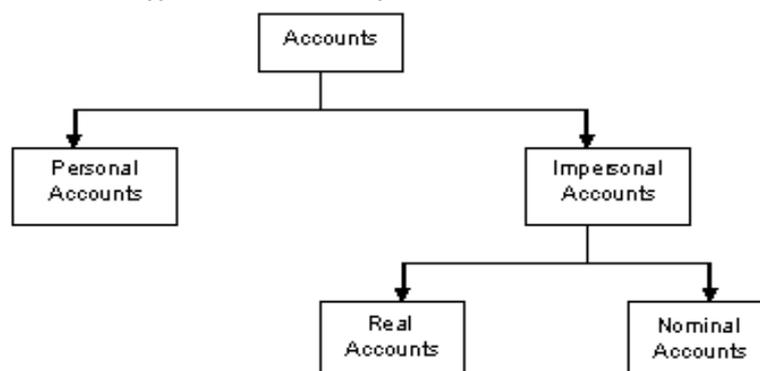
The basic concepts discussed in the foregoing paragraphs are the core elements in the theory of accounting. These concepts (postulates or conventions), however, permit a variety of alternative

practices to coexist. As a result, the financial results of different companies cannot be compared and evaluated unless full information is available about the accounting methods which have been used. The variety of accounting practices have made it difficult to compare the financial results of different companies. Further, the alternative accounting methods have also enabled, the reporting of different results, even by the same company.

Requirement for Accounting Standards The information and facts which are available in printed financial statements is of specific significance to our external users, like shareholders, creditors and investors. For the purpose of investment these published information play very effective role for all type of decision-making process. As like in different countries, Parliament in India has listed in the Companies Act the kind and lowest level of information which a company would be disclose in their financial statements. Now it became the responsibility of the accounting profession to make sure that the requisite information is correctly presented.

1.4 Types of Accounts

All the business transactions and events are recorded in their proper accounts. An account is an individual record of a person, firm, things, income and expense. An account is prepared for each type of asset, liability, owner(s) equity, revenue and expense. For example, the account of cash, show the cash receipts, cash payments and balance of cash in hand, an account of a person would show the business transactions that have taken place with that person and net position in respect of money owed by or to him.



1. **Personal Accounts** These accounts show the transactions with customers, suppliers, money lenders, the banks and the owner. Personal accounts can take the following types
 - a. **Natural Personal Accounts** The term natural persons mean persons who are alive and creation of God. Like owner's account or the account of person, Vikram a customer or supplier.
 - b. **Artificial Personal Accounts** These accounts include accounts which are created by law like business house, corporate bodies or institutions which are acknowledged as persons in business events. For instance, any limited company's account, any bank account, any firm's account, any club's account, etc.
 - c. **Representative Personal Accounts** These are accounts which symbolize to a person or we can say a group of persons. In accounting books, the names of the person or parties

will be appeared. For instance, when salary is outstanding to 15 employees of a firm, the amount may be shown against one name 'Salary Outstanding' presenting all the 15 employees. Wages outstanding, commission receivable are such other examples.

2. Real Accounts

Following are the different types of Real Account

- a. **Tangible Real Accounts** When the object can be touched, feel and physically existed are the tangible accounts. Like Land, Machinery and Furniture.
(Note please note that bank account is a personal account and is not a real account because bank account is the account of some banking company which is an artificial person).
- b. **Intangible Real Accounts** When the object cannot be touched and feel and it measured in terms of money. For example, Goodwill, Patents etc.
- c. **Nominal Accounts** Nominal accounts are related with all the expenses and incomes. Nominal accounts include accounts of all expenses, losses, income and gains.

Double Entry System Concept

There are two main systems of keeping accounting records one is Single Entry System and other one Double Entry System. Single entry system is an unscientific method of accounting but it is timesaving and economical, in this system some transactions are not posted at all while some other transactions are posted partially. On the other hand, the double entry system is totally relying on rules and procedure and it based on scientific principles, therefore it became a popular method of accounting. As the name suggested here all the transaction have two side effect. In this system, every transaction has two side effect, one account is debited and other account credited.

Rules of Debit and Credit

The left-hand side of a ledger account is called the debit and the right-hand side is present the credit side of an account. An entry on the left side of an account is called a debit entry, or simply a debit. An entry on the right side is called a credit entry or credit. The act of recording an entry on the left side of an account is called debiting the account; and recording an entry on the right side of an account is called crediting the account. The difference between the total debits and total credits in an account is the account balance. Double entry system means the recording of both the aspects i.e. debit and credit.

Three rules for recording transaction in accounting books

Personal Accounts 'Debit the Receiver and Credit the giver', i.e. debit the account of the person who receives something and credit the account of the person who gives something. For example, if you bought goods from Rohan on credit, here two accounts get effected i.e. Goods (Purchase) Account and Rohan's Account.

Real Accounts 'Debit What Comes in, and Credit What Goes out', i.e. debit the account of the thing which comes in the business and credit all those accounts of the thing which goes out from the business. For example, where computer is purchased for cash, computer account is debited and cash account is credited.

Nominal Accounts 'Debit all Expenses and Losses and Credit all Incomes and Gains' i.e. debit the accounts of expenses and losses and credit all incomes and gains. For example, if a business paid

wages to its staff, then the two accounts involved are wages account because it's an expenses and cash account. Wages account is a nominal nature.

Illustration 1 From the following transactions, classify the nature of accounts involved and find out which account will be debited and which account will be credited

S. No	Transaction	Accounts Involved	Type of Accounts	Debit/Credit
1	Rohan starts his business with cash Rs. 1,00,000	Cash Account Capital Account	Real Personal	Debit comes in Credit Giver
2	Goods purchased for cash Rs. 45,000	Purchase A/C Cash Account	Real Real	Debit comes in Credit goes out
3	Furniture Purchased for Rs. 20,000	Furniture A/C Cash account	Real Real	Debit comes in Credit goes out
4	Sold goods for cash Rs. 30,000	Cash Account Sales A/C	Real Real	Debit comes in Credit goes out
5	Goods purchased for Rs. 17,000 from Mohit for cash	Purchase A/C Cash Account	Real Real	Debit comes in Credit goes out
6	Sold goods to Ravi for Rs. 22,000.	Ravi Sales	Personal Real	Debit Receiver Credit goes out
7	Paid Rs. 1500 for rent	Rent Account Cash Account	Nominal Real	Debit Expenses Credit goes out
8	Bought goods from Ajay of Rs. 55,000	Purchase Account Ajay	Real Personal	Debit comes in Credit Giver
9	Paid wages	Wages a/c Cash a/c	Nominal Real	Debit Expenses Credit goes out
10	Commission Received	Cash a/c Commission a/c	Real Nominal	Debit Comes in Credit Incomes
11	Outstanding for wages	Wages a/c Outstanding Wages a/c	Nominal Personal	Debit Expenses Personal

Concept of Journal

Journal is the book in which every business transaction is recorded, so it is also called as Primary entry book where all the economic transaction recorded in a chronological (day to day) order. Ledger is maintained after the journal posting. Journalizing is the systematic process to record all the transaction. Following is the specimen

Illustration 2

Journalize the following transaction

2018		Rs.
April 1	Commenced business with cash	3,00,000
April 3	Purchased goods for cash	1,80,000
April 4	Furniture Purchased	50,000
April 7	Deposited with bank	30,000
April 7	Purchase goods from Vishal	65,000
April 8	Sold goods to Naman for cash	25,000
April 10	Cash withdrawal for personal use	8,000
April 10	Sold goods to Mukherjee	50,000
April 13	Rent for two years paid in advance	2250
April 13	Goods taken out by the proprietor for domestic use	1500
April 14	Cash withdrawn from Bank for office use	9,000
April 16	Purchase goods from Sahil	30,000
April 19	Purchased Stationery	1800
April 19	Sold goods to Mohan on credit	20,000
April 19	Purchase of goods, and payment made by cheque	18,000
April 20	Cash received from Mukherjee	
April 22	Cash Paid to Vishal and received discount of Rs. 5,000	
April 23	Cash received from Sahil Rs. 29,000 in his full settlement	
April 23	Mohan became insolvent and only 60 paise in a rupee received	
April 25	Sold goods to Verma & Co.	18,000
April 26	Goods returned from Verma & Co.	3,000
April 26	Purchase office equipment	10,000
April 27	Depreciation on furniture 10% pa	
April 28	Outstanding salary	2400
April 28	Bank Charges	4500
April 29	Interest Received	3000
April 30	Cartage Paid	1250
April 30	Interest on Capital on Month	500

Solution

Journal

Date	Particulars	L.F.	Debit	Credit
April 1	Cash a/c Dr. To Capital (Being business started with cash.)		3,00,000	3,00,000
April 3	Purchases Account Dr. To Cash Account (Being purchase of goods for cash)		1,80,000	1,80,000
April 4	Furniture Account Dr. To Cash Account		50,000	50,000

	(Being purchase of furniture for cash)			
April 7	Bank a/c Dr. To Cash a/c (Being cash deposited into bank.)		30,000	30,000
April 7	Purchase a/c Dr. To Vishal (Being goods purchased from Vishal on credit)		65,000	65,000
April 8	Cash a/c Dr. To sales (Being sold goods to Naman for cash)		25,000	25,000
April 10	Drawing a/c Dr. To Cash a/c (Being cash withdraw for personal use)		8,000	8,000
April 10	Mukherjee a/c Dr. To Sales a/c (Being sold goods to Mukherjee)		50,000	50,000
April 13	Rent Paid in Advance a/c Dr. To Rent a/c (Being Rent for two years paid in advance)		2250	2250
April 13	Drawing a/c Dr To Purchase a/c (Being Goods withdraw by the proprietor for domestic use)		1500	1500
April 14	Office Expenses a/c Dr. To Bank a/c (Being Cash withdrawn from Bank for office use.)		9,000	9,000
April 16	Purchase a/c Dr To Sahil (Being Purchase goods from Sahil)		30,000	30,000
April 19	Stationary a/c Dr To Cash a/c (Being Purchased Stationery)		1800	1800
April 19	Mohan a/c Dr To Sales a/c (Being Sold goods to Mohan)		20,000	20,000
April 19	Purchase a/c Dr. To Bank a/c (Being goods purchased, and payment made by cheque)		18,000	18,000

April 20	Cash a/c Dr. To Mukherjee (Being Cash received from Mukherjee)		50,000	50,000
April 22	Vishal Dr. To Discount Received a/c To Cash a/c (Being Cash Paid to Vishal and received discount.)		65,000	5,000 60,000
April 23	Cash a/c Dr Discount allowed a/c Dr To Sahil a/c (Being Cash received from sahil Rs. 29,000 in his full settlement)		29,000 1000	30,000
April 23	Cash a/c Dr Bad debts a/c Dr To Mohan a/c (Being Mohan became insolvent and only 60 paise in a rupee received)		12,000 8,000	20,000
April 25	Verma & Co a/c Dr To Sales a/c (Being Sold goods to Verma & Co)		18,000	18,000
April 26	Sales return a/c Dr To Verma & Co. a/c (Being Goods returned from Verma & Co.)		3,000	3,000
April 26	Office Equipment a/c Dr To Cash a/c (Being Purchased Office Equipment)		10,000	10,000
April 27	Depreciation a/c Dr To Furniture a/c (Being depreciation charged on furniture @ 10% p.a)		5,000	5,000
April 28	Outstanding Salary a/c Dr To Salary a/c (Being Salary Outstanding)		2400	2400
April 28	Bank Charges a/c Dr To Cash a/c (Being Bank Charges paid)		4500	4500
April 29	Cash a/c Dr To Interest Received a/c (Being Interest Received)		3000	3000
April 30	Cartage a/c Dr To Cash a/c		1250	1250

	(Being Cartage Paid)			
April 30	Interest on Capital a/c Dr To Capital a/c (Being Interest on Capital Paid)		500	500

1.5 Ledger Posting

After recording all the transaction in Journal, the next step is to classify on the basis of similarity of items. Ledger is the next stage where all the similar transaction related to particular person or assets and liabilities, incomes and expenses are recorded. Ledger is also known as the principal book of accounting. The main purpose of a ledger is to categorize all the transactions appear in the journal or other subsidiary books under their suitable accounts so that in the last of the accounting year all account will have the complete information of all the transactions relating to it in a concise form.

Specimen Ruling of Ledger Account

Name of the Account

Dr.

Cr.

Date	Particulars	J.F.	Amount	Date	Particulars	J.F.	Amount

Debit Items In the left side of account debit items are recorded.

Credit items in the right side of account credit items are recorded.

Method of Posting

A Book Store owner bought a computer for his business of Rs. 6000 for cash. In this case the debit side of Computer account in the ledger of owner "To Cash a/c" will be recorded and in the cash account in this ledger in the credit side "By Computer a/c" will be recorded.

Computer a/c

Date	Particulars	J.F.	Amount	Date	Particulars	J.F.	Amount
	To Cash a/c		6,000				

Cash a/c

Date	Particulars	J.F.	Amount	Date	Particulars	J.F.	Amount
					By Computer a/c		6,000

Illustration 3

Prepare Goods account, from the following particulars for the month of March 2018

March 1 Opening Balance of stock of goods Rs. 15,000; Credit purchase from Vimal for the month of March Rs 20,000; Credit sales to Bittu for the month of March Rs. 18,000. Cash purchase during the march Rs. 8,000; Cash sales during the march Rs 22,000; Bittu returned goods Rs 5,000; Returned goods to Vimal 3,000; withdrew by the owner for personal use at sales price Rs. 4,000.

Solution

Ledger Goods a/c

Date	Particulars	J.F.	Amount	Date	Particulars	J.F.	Amount
2018				2018			
March 1	To balance b/d		15,000	March 1	By Bittu		18,000
	To Vimal		20,000		By Cash a/c		22,000
	To Cash a/c		8,000		By Vimal		3,000
	To Bittu		5,000		By Drawing a/c		4,000
					By Balance c/d		1,000
	Total		48,000		Total		48,000

Illustration 4

Enter the following transaction in the journal and ledger posting of Cash, Purchase, Capital and Furniture account of M/s Ramnath

2018		Rs.
April 1	Commenced business with cash	3,00,000
April 3	Purchased goods for cash	1,80,000
April 4	Furniture Purchased	50,000
April 7	Deposited with bank	30,000
April 7	Purchase goods from Vishal	65,000
April 8	Sold goods to Naman for cash	25,000
April 10	Cash withdrawal for personal use	8,000
April 10	Sold goods to Mukherjee	50,000

Solution

Journal Entries in the Books of Ramnath

Date	Particulars	L.F.	Debit	Credit
April 1	Cash a/c Dr. To Capital (Being business started with cash.)		3,00,000	3,00,000
April 3	Purchases Account Dr. To Cash Account (Being purchase of goods for cash)		1,80,000	1,80,000
April 4	Furniture Account Dr. To Cash Account (Being purchase of furniture for cash)		50,000	50,000
April 7	Bank a/c Dr.		30,000	

	To Cash a/c (Being cash deposited into bank.)			30,000
April 7	Purchase a/c To Vishal (Being goods purchased from Vishal on credit)	Dr.	65,000	65,000
April 8	Cash a/c To sales (Being sold goods to Naman for cash)	Dr.	25,000	25,000
April 10	Drawing a/c To Cash a/c (Being cash withdraw for personal use)	Dr.	8,000	8,000
April 10	Mukharjee a/c To Sales a/c (Being sold goods to Mukherjee)	Dr.	50,000	50,000

Ledger

Cash Account

Date	Particulars	J.F.	Amount	Date	Particulars	J.F.	Amount
2018				2018			
1 April	To Capital a/c		3,00,000	3 April	By Purchase a/c		1,80,000
8 April	To Sales a/c		25,000	4 April	By Furniture a/c		50,000
				7 April	By Bank a/c		30,000
				10 April	By Drawings a/c		8,000

Purchase Account

Date	Particulars	J.F.	Amount	Date	Particulars	J.F.	Amount
2018				2018			
3 April	To Cash a/c		1,80,000	30 April	By Balance c/d		2,45,000
7 April	To Vishal a/c		65,000				

Capital Account

Date	Particulars	J.F.	Amount	Date	Particulars	J.F.	Amount
2018				2018			
30 April	To balance c/d		3,00,000	1 April	By Cash a/c		3,00,000

Furniture Account

Date	Particulars	J.F.	Amount	Date	Particulars	J.F.	Amount
2018				2018			
4 April	To cash a/c		50,000	30 April	By balance c/d		50,000

Meaning of Cash book and its practical

Cash book is the book where all transactions related to cash receipts and cash payments are only recorded. Cash Book is maintained in the form of an account. All cash receipts entered on the debit side and all cash payment recorded on the credit side of the Cash book.

Following are the characteristics of Cash Book

- (a) Here only cash transactions recorded.
- (b) It implements the purposes of both journal and ledger.
- (c) All cash receipts are recorded on the debit side and all cash payments are recorded on the credit side.

Types of Cash Book

Simple Column Cash Book

It records only cash receipts and cash payments to its debit (left hand side) and credit (right hand side). Excess of debit over credit is treated as cash balance in hand.

Specimen Simple Column Cash Book

Date	Particulars	V.No	J.F.	Amount	Date	Particulars	V.No	J.F.	Amount

Illustration 5

Shiva starts his business with cash Rs. 50,000, Purchase goods for Rs 20,000, Paid office expenses Rs. 500, Sold goods Rs. 10,000, Paid Postage Rs. 200, Cash received from Tarun Rs. 25,000, Cash paid to Mahesh Rs. 15,000, Purchased furniture Rs. 5,000, Cash withdrawal for personal use Rs. 3,000.

Solution

In the Books of Shiva

Cash Book

Date	Particulars	V.No	J.F.	Amount	Date	Particulars	V.No	J.F.	Amount
	To Capital a/c			50,000		By Purchase a/c			20,000
	To Sales a/c			10,000		By Postage			200
	To Tarun			25,000		By Mahesh			15,000
						By Furniture a/c			5,000
						By Drawing a/c			3,000
						By Balance c/d			41,800
	Total			85,000		Total			85,000

Double Column Cash Book / Two Column Cash Book

It has two amount columns on both sides; one is for cash and another is for discount. Cash column is meant for recording cash receipts and payments while discount column is meant for recording discount received and allowed. The discount column on the debit side represents the discount allowed while discount column on the credit side represents the discount received. Bank column on both sides; one is for bank receipts and another for bank payments.

Specimen of Two Column Cash Book

Date	Particulars	V.No	J.F.	Cash	Bank	Date	Particulars	V.No	J.F.	Cash	Bank

Methods of Recording in Two column and Three Column Cash Book

1. Record of Receipts: When amount is received in cash or by cheque, it is recorded in the debit side in cash column and the discount allowed to the party concerned in this connection is recorded in discount column of debit side.
2. Record of Payments: When payment is made in cash, it is recorded in the credit side in cash column, but when payment is made by cheque, it is recorded in the credit side in bank column. When payment is made through bank it is recorded in the credit side in bank column. Discount related with these payments, i.e., discount received is recorded in the discount column of credit side.
3. Contra Entry: When cash or cheque is received and the same day it is sent to bank for deposit, then in the debit side cash account is debited and credit side cash account is credited and then in the debit side bank account is debited. Such entries are called Contra entries. The letter "C" is recorded in case of contra entries in the L.F. Column. Transfer of amount from Bank Account to Cash Account or from Cash Account to Bank Account is called contra entry. Contra entries show the fact that double entry record of this transaction has been made in cash book, therefore there is no need of its postings in ledger. Contra entries of Cash Book are not posted in ledger.
4. Record of Crossed and Uncrossed Cheques: When crossed cheque is received, it is recorded in the debit side in bank column, but when bearer or order cheque is received, it is recorded in the debit side in cash column.

Method of Posting Cash and bank accounts are not opened in ledger, these accounts in this book act as ledger accounts. Other accounts are opened and the amount of discount is also taken to the discount account. Discount account is posted in the same manner as has been discussed earlier in two columnar cash book.

Illustration 5

Record the following transactions in a bank column cash book for December 2018

01	Started business with cash	1,80,000
04	Deposited in bank	2,50,000
10	Received cash from Rahul	1,00,000
15	Bought goods for cash	40,000

22	Bought goods by cheque	30,000
25	Paid to Shyam by cash	25,000
30	Drew from Bank for office use	9,000
31	Rent paid by cheque	2,000

Solution Cash book									
Dr.					Cr.				
Date	Receipts	L.F.	Cash ₹	Bank ₹	Date	Payments	L. F.	Cash ₹	Bank ₹
2018					2018				
01 Dec	To Capital		1,80,000		04 Dec	By Bank	C		2,50,000
04 Dec	To Cash	C		2,50,000	15 Dec	By Purchases		40,000	
10 Dec	To Rahul		1,00,000		22 Dec	By Purchases			30,000
30 Dec	To Bank	C	9,000		25 Dec	By Shyam		25,000	
31 Dec	To Balance c/d			41,000	30 Dec	By Cash	C		9,000
					31 Dec	By Rent			2,000
					31 Dec	By Balance c/d		2,24,000	
	Total		2,89,000	2,91,000		Total		2,89,000	2,91,000

Three Column/ Triple Column Cash Book

In this cash book three column opened in both sides. Cash column, Discount received and discount allowed column and bank column. The triple column cash book (also referred to as three column cash book) is the best comprehensive practice of cash book where it has three money columns on both receipt (Dr) and payment (Cr) sides to record transactions involving cash, bank and discounts. A triple column cash book is usually maintained by large firms which make and receive payments in cash as well as by bank and which frequently receive and allow cash discounts.

Specimen of Three Column Cash Book

Date	Particulars	V.No	J.F.	Disc.	Cash	Bank	Date	Particulars	V.No	J.F.	Disc.	Cash	Bank

Illustration 6

Record the following in three columnar cash book of Ajay traders

2018

January 1 Opening balance Cash Rs. 5,000 and bank balance Rs. 7,000.

January 3 Purchased goods and payment made by cheque Rs. 4,000.

January 4 Cash Sales 4000.

January 8 Withdrew Rs. 100 by cheque for personal use.

January 9 Received 500 from Varun and allowed him discount Rs. 20

January 9 Paid to Hari Rs. 600 and he allowed discount Rs. 10

January 9 Deposited Rs.200 into bank.

Solution

In the Books of Ajay Traders

Cash Book (with, Cash, Bank and Discount Column)

Date	Particulars	V. No	J. F.	Di sc.	Cash	Bank	Date	Particulars	V. No	J. F.	Disc	Cash	Bank
2018							2018						
Jan 1	To balance				5,000	7,00	Jan 3	By Purchase					4,000
Jan 4	b/d				4,000	0	Jan 8	a/c					100
Jan 9	To Sales a/c			20	500		Jan 9	By Drawings			20		600
Jan 9	To Varun		C				Jan.9	a/c		C		200	
	To Cash a/c					200		By Hari					
								By Bank a/c					
								By Balance					
	Total							c/d					
								Total					

Petty Cash Book

Payments of small amounts expenses like traveling expenses, postage, carriage etc. are termed as petty cash expenses. These petty cash expenses are recorded in the petty cash book. The petty cash book is maintained by cashier known as petty cashier. The firm may adopt Imprest System of maintaining petty cash. The petty cashier is given a certain sum of money at the beginning of the fixed period (e.g. a month/fortnight) which is called float. The amount of float is so fixed that it may be adequate to meet petty expenses of the prescribed period. The balance in the petty cash book shows cash lying with the petty cashier.

Trial Balance and its Practical

Trial balance is a statement where accuracy of journal and ledger posting is evaluated. All the balances of ledger posted into trial balance in debit and credit side. Each transaction has a double effect i.e. every debit has a matching credit and vice versa, the sum total of the debit balances and credit balances derived from the ledger should be equal. Thus, as per the requirement of a business house trial balance prepared i.e. at the end of the accounting period for a year or at the end of every month basis.

Illustration 6

From the following transaction, prepare Trial balance

Particulars	Amount (Rs.)
Building	1,20,000
Machinery	34,000
Return Outwards	5,200
Baddebts	5,600
Cash	800
Discount Received	6,000
Bank Overdraft	20,000
Creditors	1,00,000
Purchases	2,00,000
Capital	1,47,200
Fixtures	11,200
Sales	2,08,000
Debtors	1,20,000
Interest Received	5,200

Solution

Trial Balance (as on 31st December, 2018)

Ledger Accounts	L.F.	Debit	Credit
Building		1,20,000	
Machinery		34,000	
Return Outwards			5,200
Bad debts		5,600	
Cash		800	
Discount Received			6,000
Bank Overdraft			20,000
Creditors			1,00,000
Purchases		2,00,000	
Capital			1,47,200
Fixtures		11,200	
Sales			2,08,000
Debtors		1,20,000	

Interest Received			5,200
	Total	4,91,600	4,91,600

To Do Activity

1. Journalize the following transaction and posted them into ledger

1. On April 01, 2016 Mr. Ram started business with Rs. 500,000 and goods for Rs. 70,000 other transactions for the month are
2. Purchase Furniture for Cash Rs. 25,000.
3. Purchase Goods for Cash Rs. 48,000 and for Credit Rs. 32,000 from Rehman Retail Store.
4. Sold Goods to Ram Avtar Brothers Rs. 75,000 and Cash Sales Rs. 60,000.
5. Ram withdrew of Rs. 8,000 for his personal purpose.
6. Paid Rehman Retail Store Rs. 16,000.
7. Received Rs. 730,000 from Ram Avtar Brothers.
8. Paid Salaries and Rent Rs. 6,000 and 4,000 respectively.

2. Prepare Trial Balance as on 31.03.2018 from the following balances of Ms. Ritu and Firm

Drawings Rs. 74,800	Purchases Rs. 295,700	Stock (1.04.2011) Rs. 30,000
Bills receivable Rs. 52,500	Capital Rs. 250,000	Furniture Rs. 33,000
Discount allowed Rs. 950	Sales Rs. 335,350	Rent Rs. 72,500
Freight Rs. 3,500	Printing charges Rs. 1,500	Sundry creditors 75,000
Insurance Rs. 2,700	Sundry expenses Rs. 21,000	Discount received Rs. 1,000
Bank loan Rs. 120,000	Stock (31.03.2012) Rs. 17,000	Income tax Rs. 9,500
Machinery Rs. 215,400	Bills payable Rs. 31,700	

3. Explain any three accounting concepts? With examples.

References

1. Narang, K.L. and Jain, S.P. *Practical problems in Advanced Accountancy*. Kalyani Publishers, Ludhiana, 2016.
2. Charumathi, B and Vinayakam, N. *Financial Accounting*. S.Chand and Company Limited, New Delhi, 2004.
3. Williams, J.R., Haka,S.F., and Bettner, M.S. *Financial and Managerial Accounting the basis for business decisions*. Tata McGraw-Hill Publishing Company Limited, New Delhi, 2011.

Chapter 2 Preparation of Final Accounts

Accounting has rightly been termed as the language of the business. It records, classifies, analyses and communicates all the business transactions that have taken place during a particular period. It is a system of recording and reporting business transactions in financial terms, to interested parties. According to American Institute of Certified Public Accounts “Accounting is the art of recording, classifying and summarizing in a significant manner in terms of money, transactions and events which are, in part at least, of a financial character and interpreting the results thereof.” Thus accounting is the art of recording, classifying, summarizing, analyzing and interpreting the financial transactions and communicating the results thereof to the interested person.

Final accounts or Financial Statements are the end products of the financial accounting process which involves the preparation of a summary of the accounts with a view to determine:

- i) Net Profit from the trading activities in terms of profit made or loss incurred for a given period and
- ii) Its Financial position in terms of assets and liabilities as on the last date of the given period.

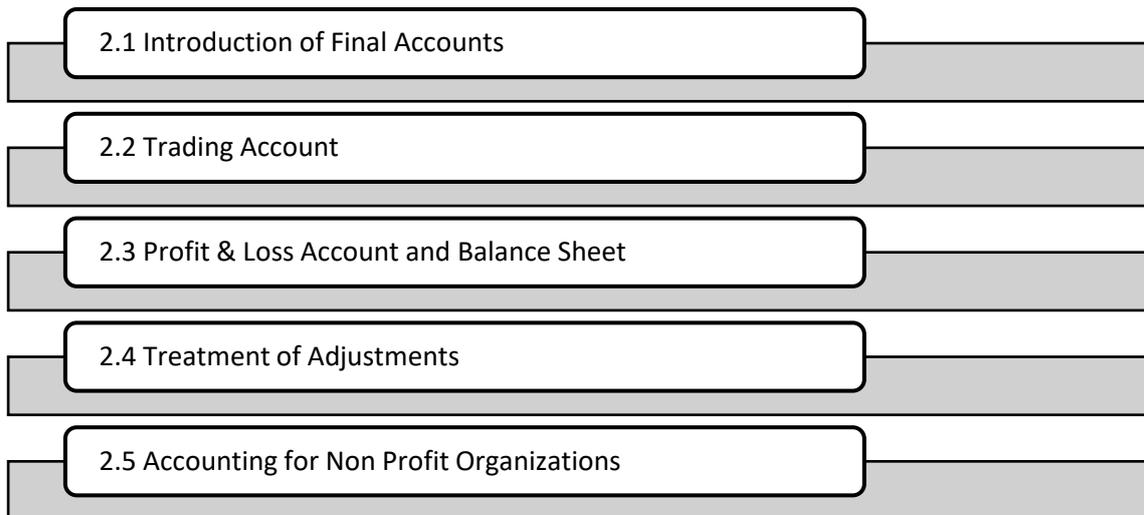
Final accounts are prepared from the balance appearing in the trail balance. Debit balances of assets are transferred on the right hand side of the balance sheet while expenses and losses are debited to the Trading account or to the Profit and Loss Account, depending upon the nature of expenditure or loss. Credit account balances like capital, liabilities, provisions, resource are entered on the left hand side of the balance sheet while incomes and gains are credited to the Trading account or Profit and Loss account.

Learning Objectives

After reading this student will able to understand

- Prepare trading accounts and profit and loss account
- Understand the treatment of all adjustments
- Calculate gross profit and net profit with adjustments
- Prepare balance sheet of a Sole Proprietorship
- Meaning of Non-profit Organization and its relevant accounts

Structure



2.1 Introduction of Final Accounts

To know the financial position of a sole proprietorship, a financial statement is prepared on the basis of trial balance is termed as final accounts. In order to know profit and loss at the end of financial year some accounting records is made, that records are termed as Final Accounts. Final accounts include

1. Trading Account
2. Profit and Loss Account
3. Balance Sheet

2.2 Trading Account

Trading account is prepared to know the gross profit or gross loss of a business, so it is the first step when preparing the final accounts during an accounting year. Before preparing profit and loss account, trading account has to be prepared. It always based on trading activities of a businesslike purchases, sales of goods and services, direct expenses related to business and balances of stock then calculate gross profit or gross loss.

Gross Profit = Net Sales – Cost of Goods Sold

Gross Loss = Cost of Goods Sold – Net Sales

Net Sales = Total Sales Credit Sales

Cost of Goods Sold = Opening stock of goods + net purchases - closing stock of goods at the end
+ All direct expenses

Net Purchases = Total Purchases - Purchase Return

Format of Trading Account

TRADING ACCOUNT (Horizontal Format) for the year ended.....

Dr.			Cr.	
Particulars		Rs.	Particulars	Rs.
To Opening Stock		xxx	By Sales	xxx
To Purchases	xxx		Less: Returns inwards	(xxx)
Less: Returns			By Closing Stock	xxx
outwards (xxx)		xxx	By Gross Loss c/d*	xxx
To Frieght & Carriage		xxx		
To Customs & Insurance		xxx		
To Wages		xxx		
To Gas, Water & Fuel		xxx		
To Factory Expenses		xxx		
To Royalty on Production		xxx		
To Cargo Expenses		xxx		
To Shipping Expenses		xxx		
To Import Duty		xxx		
To Custom Duty				
To Dock Charges				
To Octroi				
To Commission on Purchases				
To Gross Profit c/d*				
		xxx		xxx

* Either of two will appear

Illustration 1

Opening stock		1,20,000
Purchases		3,20,000
Carriage inward		6,800
Carriage outward		10,000
Wages		64,000
Sales return		3,800
Purchasereturn	4,000	
Sales		9,60,000

*Closing stock was valued 1,80,000.

Solution

Trading Account (For the year ended 31st March 2018)

To Opening Stock	1,20,000	By Sales	9,60,000	
To Purchase	3,20,000	Less Returns		9,56,200
Less Return	4000	3,800		1,80,000
To Carriage inward	6,800	By Closing Stock		
To Wages	64,000			
To Gross Profit transferred to P&L account	6,29,400			
	11,36,200			11,36,200

2.3 Profit and Loss Account

Profit and loss account is prepared to know the net profit and net loss on the basis of trading account balance i.e. gross profit or gross loss. When the total of debit side is more than credit side it called as net loss and if the total of credit side is more than debit side it called as net profit. In profit and loss account all the incomes and gains are recorded on credit side and all the losses and expenses recorded on debit side.

Difference between Trading and Profit and Loss Account

Trading Account	Profit and Loss Account
Gross profit and gross loss extracted from trading account	Net profit and net loss derived from profit and loss account.
In trading account items shown like purchases, sales, stock and all direct expenses.	In profit and loss account all indirect expenses and all incomes recorded.
The balance of the trading account transferred to profit and loss account	The balances of profit and loss account is adjusted to capital in the balance sheet.

Net profit and net loss are calculated by the help following formula

Net Profit = Total Incomes and gains – Total expenses and losses

Net Loss = Total expenses and losses - Total Incomes and gains

From the help of above equation net profit and net loss can be easily calculated in the following prescribed format of profit and loss account and trading account

Particulars	Amount (Rs)	Particulars	Amount (Rs)
To opening stock	By sales	.....
To purchases	less: returns	.....
less: returns	By closing stock	.....
To carriage inward		
To wages		
To gross profit c/d (in case of gross profit)	By gross loss c/d (in case of gross loss)	.....

To gross loss b/d (in case of gross loss)	By gross profit b/d (in case of gross profit)	.....
To salaries	By interest earned	.....
To carriage outward	By dividend earned	.....
To rates and taxes	By rent earned	.....
To insurance	By discount received	.....
To depreciation	By profit on sale of fixed assets	.....
To bad debts	By profit on sale of investments	.....
To advertising		
To interest paid		
To travelling expenses		
To discount allowed		
To loss on sale of fixed assets		
To loss on sale of investments		
To loss by fire		
To net profit transferred to B/S (in case of net profit)	By net loss transferred to B/S (in case of net loss)	.....

Preparation of Balance Sheet

Business financial position is representing by financial statements. Balance Sheet is a financial statement which is prepare after profit and loss account on a prescribed date or at the end of a financial year. A balance sheet is prepared for all assets and liabilities.

According to Francis R. Stead," A Balance Sheet is a Screen picture of the financial position of a going business at a certain moment".

$$\text{Assets} = \text{Liabilities} + \text{Capital}$$

The total of both sides must be tally in the balance sheet. If the total is mismatched it means that there was some error in previous process. All the real accounts and personal accounts items recorded here. Right-hand side termed as Assets side and left-hand side termed as Liabilities side. Following are the format of Balance Sheet

Balance Sheet of (firm's name) as on (closing date)

Liabilities	Amount	Assets	Amount
Current Liabilities:		Current Assets:	
Bills Payables		Cash in hand	
Sundry Creditors		Cash at bank	
Bank Overdraft		Sundry debtors	
Outstanding Expenses		Bills Receivables	
Income received in advance		Prepaid Expenses	
Long-term Liabilities:		Accrued Income	
Mortgage Loans		Closing Stock	
Debentures		Investments:	
Owner's Equity:		Government Securities	
Reserves and Surplus		Other investments	
Capital		Fixed Assets:	
Add Net Profit		Furniture	
Interest on Capital		Plant and Machinery	
Less Drawings		Land and Buildings	
Income tax		Patents	
		Goodwill	

2.4 Treatment of Adjustments

Generally, trial balance is the main source or base statement to prepare final accounts. But, sometimes balances in the trial balance do not show the right 'amount' after measured in relative to accounting period. Like, receipt on account of incomes, say, interest, may be less or more than the actual receipt that should have been made during the particular accounting period. Like the same condition may arise in respect of some expense's items also, say rent and wages.

This requires adjustment entries which are utilized to set up right estimations of record balances toward the finish of a bookkeeping period. In this manner, adjustment entries are those entries which are passed toward the finish of each bookkeeping period to adjust different ostensible and different records with the goal that genuine net profit or loss is demonstrated in profit and loss account and the balance sheet speaks to a genuine and reasonable perspective on the budgetary state of an undertaking.

Balance Sheet as on 31st March 2018

Liabilities	Rs.	Assets	Rs.
Outstanding Wages	1,000		

3. Prepaid Expenses or Unexpired Expenses

Amount of expenses which is paid in advance are termed as prepaid expenses. Its amount paid extends to the next year so it is also called as unexpired expenses.

Adjustment Entry

Prepaid Expenses a/c Dr

To Expenses a/c

Effect on Final Accounts

- It will be deducted from their respective expenses shown in Profit and Loss account.
- These expenses amount shown in assets side of Balance sheet.

4. Accrued Income or Earned Income

Accrued income is the income which is earned by the business but not received in the accounting year. It is a due income, which not so far received by the firm.

Adjustment Entry

Accrued Commission a/c Dr.

To Commission a/c

Effect on Final Accounts

- It will show in the credit side of profit and loss account.
- These expenses amount shown in assets side of Balance sheet.

5. Unearned Income or Income received in advance

When an income received in advance at the end of the accounting year and the services yet not be given are termed as Unearned Income. The income is received but the services relates for the next year are the unearned income.

Adjustment Entry

Income a/c Dr

To Unearned Income a/c

Effect on Final Account

- Unearned income will be deducted from concerned income in the credit side of Profit and loss account.
- It will also be shown in the Liability side of Balance Sheet.

6. Interest on Capital

Interest on capital is treated as the business expenses, which is charged on capital. Interest on capital calculated with the specific percentage for a given year.

Adjustment Entry

Interest on Capital a/c Dr.

To Capital a/c

Effect on Final Account

- Interest on capital charges as a expenses so it will be recorded in debit side of Profit and Loss a/c
- It will be added in the capital in Balance sheet

7. Interest on Drawings

Interest on drawings is treated as the business income which charged on drawings.

Adjustment Entry

Drawings a/c Dr

To interest on drawing a/c

Effect on Final Account

- It shown in the credit side of Profit and Loss account.
- Amount of interest added in the drawings and total drawings deducted from capital in Balance Sheet.

8. Deferred Revenue Expenditure

When any heavy expenditure incurred on some income head and its paybacks will be received in the upcoming years, then the complete amount is not written in the profit and loss account of the expenses, for the same accounting year instead of some portion of such expenses recorded in the profit and loss account are known as deferred revenue expenditure. For example advertisement expenditure, Preliminary expenses etc.

Adjustment Entry

Expenditure a/c Dr.

To Cash a/c

9. Bad and Doubtful Debts, Provision and Discount

Bad Debts

When a debtor fail to pay us, or those debts which are not recovered are called as bad and doubtful debts.

Adjustment Entry

Bad debts a/c Dr.

To Debtor's a/c

If the amount of bad debts given in the trial balance then it will not be treated as an adjustment, it will be recorded in the debit side of profit and loss account, but if the amount of bad debts given outside of trial balance its termed as "further Bad Debts" and it's an adjustment and following are the treatment

Effect on Final Account

- Further bad debts amount added in the bad debts in debit side of profit and loss account.
- It will be deducted from the debtors in the balance sheet.

Provision for Bad and Doubtful Debts

When a provision is made on the debtors for expected loss at the end of an accounting year for possible doubtful debts in the next year.

Adjustment Entry

Provision for Bad and Doubtful Debts a/c Dr

To Bad debts a/c

Effect on Final Account

- It will be recorded in the debit side of Profit and Loss account
- It will be deducted from debtors in the Balance Sheet.

For Example

If debts of 201617, prove to be bad in 201718 the loss is to be treated as one for 201617. But on 31st March, 2017 when final accounts are be prepared, it will not be possible to know accurately, which debts will prove bad in 201718. Hence, only an estimate is made on the base of previous practice. If it is expected that 8% of the debts may prove bad and on 31st March, 2017 Debtors amount to 1,000,000, then 8,000 will be provided for future bad debts.

Recovery of Bad Debts

When an amount declared as bad debts in the past year books and is recovered or received later on in any future years, it is the concept of bad debts recovered.

Adjustment Entry

Cash a/c Dr

To Bad Debts Recovered a/c

Provision on Discount on Debtors

If a debtor makes the payment on the due date some discount is allowed to encourage them for cash payment. For the purpose of that discount one provision is made on debtors are termed as Provision on Discount on Debtors. The process to make a provision is same like provision on doubtful debts made.

Debtors	.....
Less Further bad debt (If Any)	.....
Less Provision on bad and doubtful debts	.....

After deducting above items from debtors, now a provision on discount on debtors is made on the final amount of debtors.

Adjustment Entry

Profit and Loss a/c Dr

To Provision on Discount on Debtors a/c

Effect on Final Account

- It will be recorded in the debit side of Profit and loss account
- It will be deducted from debtors.

10. Provision on Discount on Creditors

In our business can like to make a reserve for our creditors i.e. discount on its creditors in which discount received entered in the books and a provision is also created for the expected receipts.

Adjustment Entry

Provision on Discount on Creditors Dr.

To Profit and Loss a/c

Effect on Final Account

- It will be shown on the credit side of Profit and loss account.
- It will be deducted from the creditors in the balance sheet.

Note As per the conservatism principle of accounting, the provision for discount on creditors is frequently not created in practical.

11. Depreciation

Depreciation is the amount which reduces from the value of any fixed assets, fixed assets (except land) are used in business for increasing the productivity and because of continuous usage, wear and tear and passage of time, the value of fixed assets decreases. That reduction is known as depreciation, which is charged on fixed assets at a specific percentage. There are so many methods to calculate amount of depreciation, but usually fixed installment method and written down value methods used.

Adjustment Entry

Depreciation a/c Dr.

To Assets a/c

Effect on Final Account

- It will be shown on the debit side of Profit and Loss account
- It will be deducted from concerned assets in the Balance Sheet

If Delivery Van purchased for Rs. 50,000 on 1 January 2017, charged depreciation @ 10% p.a. by fixed installment method. Books closes on 31st December every year.

Calculation of Depreciation

Depreciation = 50,000 * 10/100 = 5,000 Rs.

Entry will be

Depreciation a/c	Dr	5,000	
			To Delivery Van a/c
			5,000

Depreciation Rs.5,000 posted in profit and loss account as To depreciation a/c and 50,000 5,000= 45,000 posted in delivery van account in Balance Sheet.

12. Loss of Stock by Fire

In business sometimes goods are damaged or destroyed by fire, stolen or due to some natural causes. If the goods are not insured then the whole amount of loss is bear by the business but if the goods insured partial loss is bear and cash received from insurance company

Adjustment Entry

1. When goods are not insured

Profit and Loss a/c	Dr	
		To Trading a/c

The whole amount of loss is borne by the business.

2. When goods are fully insured

Insurance Company a/c	Dr	
		To Trading a/c

3. When goods are not fully insured and partial amount is received from insurance company

Profit and Loss a/c	Dr	
Insurance Company a/c	Dr	
		To Trading a/c

Effect on Final Account

- Total Loss deducted from the purchase in the Trading account.
- Loss of goods/stock recorded in the Profit and Loss account.
- Insurance claim amount shown in the Balance Sheet.

13. Goods Distributed as Samples and Charity

Several times goods are distributed as a free sample or given in charity or donation. It can be taken as an advertisement by the business firm.

Adjustment Entry

Advertisement a/c Dr.

To Purchases a/c

OR

Charity/ Donation a/c Dr

To Purchases a/c

Effect on Final Account

- It will be deducted from the purchases in Trading account or it can be shown in the credit side of Trading account.
- It will also show in the debit side of Profit and Loss account.

14. Goods Taken out for Personal Use

When some goods are taken out by the owner for his/her personal purpose are treated as the drawing of goods.

Adjustment Entry

Drawing a/c Dr

To Purchases a/c

Effect on Final Account

- It will be deducted from the purchases in Trading account
- It will also be added in the drawings.

15. Interest on Loan

Interest is charged on loan amount with specific percentage and that is an expense for a business.

Adjustment Entry

Interest on Loan a/c Dr.

To Loan a/c

Effect on Final Account

- Interest on loan credit in the profit and loss account.
- It will be added in the loan in liabilities side of Balance Sheet.

16. Manager's Commission

Some times in the business firm manager charged commission for his work on the net profit with the specific percentage. There are two option for charging commission

1. If the manager charged commission on the net profit before charging such commission, then the calculation is like

Net Profit before Charging such Commission x Percentage of Commission

100

2. If the manager charged commission on the net profit after charging such commission, then the calculation is like
- $$\frac{\text{Net Profit before Charging such Commission} \times \text{Percentage of Commission}}{100 + \text{Percentage of Commission}}$$

Adjustment Entry

Profit and Loss a/c Dr

To Manager's Commission a/c

Effect on Final Account

- It will be recorded in the debit side of profit and loss account.
- It will be shown on the Liabilities side of Balance Sheet.

17. Goods Sale on Approval Basis

Sometimes goods are sold to consumers on approval basis. If goods are not approved during the accounting year it will not be treated as sales.

Adjustment Entry

On Sales Price

Sales a/c Dr.

To debtors a/c

On Cost Price

Stock a/c Dr

To Trading a/c

Effect on Final Account

- It will be deducted from sales in trading account on sales price and added in the closing stock on cost price.
- It will be deducted from debtors on sales price and added in the closing stock on the cost price in the assets side of balance sheet.

Illustration 2

Prepare a trading and P & L A/c for the year ending 31.03.2018 and a balance sheet as on that date from the following trial balance

Particulars	Dr. Rs	Cr Rs.
Opening Stock	32,000	
Capital		90,000
Salaries	26,000	
Drawing	8,000	
Carriage inwards	1,000	
Carriage outwards	2,000	
Sales Return/Purchase return	2,000	1,400
Loan to Mr.R	22,000	
Loan from Mr. Q		14,000
Outstanding Wages		400
Rent	2,600	
Purchases/Sales	80,000	1,46,200
Debtors/ Creditors	50,000	16,000
Bad Debts	1,600	
Provision for Bad and Doubtful Debts		2,400
Discount Received /Allowed	1,200	600
Furniture	23,400	
Cash	1,400	
Bank	16,000	
Wages	1,000	
Insurance Premium	24,00	
Rent by Subletting		1,600
Total	2,72,600	2,72,600

Adjustments

1. Closing Stock Rs. 21,000 but the market value of closing stock was Rs. 19,000.
2. Insurance premium prepaid Rs. 400.
3. Loan to Mr. X, given at 20% interest p.a. and loan taken from Mr. Y carries 18% interest p.a.
4. Depreciation is to be provided at 10% on furniture.
5. Goods worth Rs. 1,000 have been taken by the proprietor for private use.
6. Bad and doubtful debts are to be provided at 20%.

Solution

Trading and Profit and Loss Account

For the year ended 31st March 2018

Particular	Amount	Particular	Amount
To Opening Stock	32,000	By Sales	1,46,200
To Purchase	80,000	Less Return	2,000
Less Return	1,400	By Proprietor	1,000
To Carriage Inward	1,000	By Closing Stock	19,000
To Wages	1,000		
To Gross Profit b/d	51,600		

	Total	1,63,200		Total	1,63,200
To Salary		26,000	By Gross Profit c/d (From Trading A/c)		51,600
To Carriage Outward		2,000	By Discount Received		600
To Rent		2,600	By Rent by Subletting		1,600
To Bad Debts 1,600			By Interest Receivable		2,200
Add Further Bad Debts 5,000					
Less Old Provision 2400		4,200			
To Discount Allowed		1,200			
To Insurance Premium 2,400					
Less prepaid 400		2,000			
To Interest Payable to Mr. Y		1,260			
To Depreciation A/c		1,170			
To Net Profit		15,570			
	Total	56,000		Total	56,000

Balance Sheet as on March 31, 2018

Liabilities		Amount	Assets		Amount
Capital	90,000		Furniture	23,400	
Less Drawings	8,000		Less Depreciation	1,170	22,230
Less Goods taken by owner	1,000		Loan to Mr. X	22,000	
Add Profit during year	15,570	96,570	Add Outstanding interest	2200	24,200
Loan from Mr. Y	14,000		Debtors	50,000	
Add Interest	1,260	15,260	Less Provision for Bad Debts	5,000	45,000
Rent Outstanding		400	Prepaid Insurance		400
Creditors		16,000	Cash		16,000
		1,28,230	Bank		1,400
			Closing Stock		19,000
					1,28,230

2.5 Accounting of Non-Profit Organizations

All the business organization are engaged in the buying and selling of goods and services in terms of money, with the objective to earn more and more profit. Apart of this some institutes are established not to earn profit but to provide their services to common public are termed as Non Profit Organizations. For example, charitable institutes, schools, Sports club, hospitals etc.

Such type of organization provides services to their members and common public and also engaged in financial transactions and the sources of income like donation, fees, subscription and grants and meet expenses of an organization. For recording of all financial transaction some accounts are maintained. To find out some results statements and account are prepared for the particular time period. These statements and accounts maintained with the objective of statutory requirement and also to control and manage the funds of an organization.

Characteristics of Non-Profit Organization

Following are the characteristics or essential features of Non-Profit Organizations

- Such organization is not to earn profit but provide services to the society.
- In NPOs source of income generated by donation, subscription and charities.
- One managing committee manage all the organization functions, committee elected by the members themselves.
- Likewise, business organization, nonprofit organization also maintained their accounts and statements on the same accounting principles.

Accounting for Non-Profit Organizations

Following are the financial statements that are usually prepared by the Non-Profit organizations

1. Receipt and Payment Account
2. Income and Expenditure Account
3. Balance Sheet

Receipt and Payment Account

In Non-Profit Organization receipt and payment account maintained where all cash receipts and cash payments recorded and it is prepared at the end of the year. It is based on same accounting principles as follows in the cash book so the debit side is the receipt side and credit side is the payment side. It starts with opening balance of cash and bank and closes with the closing balance of cash and bank, bank overdraft is also treated as same in the cash book.

Specimen of Receipts and Payment Account

Format			
Receipts	Amount	Payments	Amount
To Bal b/d Cash xxxx		By Bal b/d (Bank O/D)	xxx
Bank xxxx	xxx	By Revenue Payments	
To Revenue Receipts		Wages & Salaries	xxx
Subscription	xxx	Rent, Rates & Taxes	xxx
General Donations	xxx	Insurance	xxx
Sale of newspaper	xxx	Printing & Stationary	xxx
Sale of periodicals	xxx	Postage	xxx
Sale of old sports material	xxx	Advertising	xxx
Locker rent	xxx	Sundry Expenses	xxx
Sale of scraps	xxx	Telephone charges	xxx
Proceeds of show	xxx	Audit fees	xxx
Miscellaneous Receipts	xxx	Honorarium	xxx
Entrance fee	xxx	Conveyance	xxx
Grant in aid	xxx	Newspapers	xxx
To Capital Receipts		Repairs	xxx
Legacies	xxx	By Capital Payments	xxx
Life Membership fees	xxx	Purchase of fixed Assets	xxx
Specific Donation	xxx	Purchase of investments	xxx
Sale of Investment	xxx	Fixed deposits	xxx
Sale of fixed assets	xxx	By Bal Bank xxx	
Endowment Fund	xxx	Cash xxx	xxxx
To Bal c/d (Bank O/D)	xxx		

Receipts and Payment Account

For the year ended onIllustration 2

On the basis of above discussion prepare Receipt and Payment account for the following information

Cash in hand 1500, Purchase of Books 8000, Cash at Bank 16000, Purchase of Sports Material 18000, Subscription 15000, Purchase of Bicycle 4500, Entrance Fees 1800, Sale of Investment 22000, Donation 20000, Life Membership Fees 3500, Salaries 14000, Rent paid 11000, Stationery 200, Purchase of Development Bonds 10000, Insurance Premium 1000, Lockers Rent 5000, Sale of old Furniture 1400, Interest on Securities 2500.

Solution

Receipts & Payments A/c for the year ending 31st Dec. 2018

Receipt	Amount	Payment	Amount
Balance b/d		Salaries	14,000
Cash in Hand	1,500	Stationary	200
Cash at Bank	16,000	Insurance premium	1,000
Entrances Fees	1,800	Purchase of Books	8,000
Donation	20,000	Purchase of sports material	18,000
Sale of Old Furniture	1,400	Purchase of bicycle	4,500
Interest on Securities	2,500	Rent Paid	11,000
Lockers Rent	5,000	Purchase of	10,000
Sale of Investment	22,000	developmentbonds	
Subscription	15,000	Balance c/d	
Life membership Fees	3,500	Cash	
		Bank	
Total		Total	

Income and Expenditure Account

Income and Expenditure account is just like a Profit and Loss account where all the income and expenditure recorded on accrual basis. In profit and loss account net profit and net loss calculate but here net profit termed as surplus and net loss termed as deficit for the particular one accounting period. All the incomes and expenses related to current year only recorded. This account is prepared on the basis of Receipt and Payment account. Depreciation, Profit and Loss on sale of fixed assets and Provisions are also considered while preparing Income and Expenditure account.

Following is the example of income and expenditure account with some items

Income and Expenditure Account (For the year ended 31st march 2018)

Expenditure	Amount	Incomes	Amount
Lighting		Subscriptions	
Telephone Charges		Donation	
Rent		Life membership fees	
Insurance Premium		Interest on Investment	
Postage and Courier		Locker Rent	
Printing and Stationary		(if any)	
Interest Received			
Depreciation			
Surplus (if any)			

Balance Sheet

As like business houses, Non-Profit Organizations made their Balance Sheet for determining the financial position of the organization. The way to prepare their Balance Sheet is almost similar like the business accounting follows. It appears all the assets and liabilities as at the closing of the year. Though, instead of capital here capital fund exists and the amount of surplus and deficit derive from Income and Expenditure Account which is one or the other added to/deducted from the capital fund. It is such anormal exercise in which some of the capitalized items like legacies, entrance fees and life membership fees directly added in the capital fund.

In addition the Capital or General Fund, some other specific funds generated for particular purposes like match fund, Prize fund building fund, sports fund, etc. Such types of funds are recorded individually in the liabilities side of the balance sheet.

In some cases opening balance sheet also prepare to calculate the opening balance of the capital fund.

Format of Balance Sheet for Non-Profit Organization

BALANCE SHEET			
<i>as at</i>			
Liabilities	₹	Assets	₹
Capital Fund:		Fixed Assets:	
Opening Balance	xxx	Opening Balance	xxx
Add: Surplus	xxx	Add: Additions	xxx
(or less Deficit)	(xxx)		xxx
	xxx		
Add: Life Membership Fees	xxx	Less: Book value of	
	xxx	assets sold	
Add: Entrance Fees	xxx	during the year	xxx
	xxx		xxx
Add: Legacies	xxx	Less: Depreciation	xxx
Specific Fund/ Donations:	xxx		xxx
Opening Balance	xxx	Investments:	
Add: Receipts during	xxx	Specific Fund Investments	
the year	xxx	(like Building Fund Invest-	
	xxx	ments, Prize Funds	
Add: Income earned	xxx	Investments etc)	
on fund investments	xxx		

Specific items of Non-Profit Organization

1. Subscription

It is a consistent fee paid by the members to the organization. Usually the amount of subscription received yearly and it is the main source of revenue for such organization. In the Receipts and Payments Account it comes on the debit side. Amount of subscription is written for current year as well previous year and for next year also.

2. Admission Fees

Every time when a new person wishes to take membership in the organization, one definite amount is charged from him/her and then give permission to be a part of an organization, this is termed as the admission fee or it also calls entrance fees. In the Receipts and Payments Account it is recorded as an income to the debit side.

3. Life Membership Fees

Subscription for the current year	.....
Less Outstanding for the beginning of the year	.....
Less Advances for the ending of the year	.....
Add Outstanding for the ending of the year	.....
Add Advances for the beginning of the year	.....
Income from the subscription for the Current Year	

When a person wants membership for a lifetime some special fees charged from him/her is called as Life Membership Fees. The fees charged once in a life of a member. It is a capital nature of receipt.

4. Endowment Fund

An endowment fund is an investment fund recognized by a foundation that creates regular taking out from the invested capital. The capital in endowment funds, frequently used by universities, nonprofit organizations and hospitals, is mostly applied for specific necessities or to further a company’s operating process. Endowment funds are typically funded entirely by donations that are deductible for the contributors.

5. Donation

When a person, a firm and a company give some amount by his own will to the Organization as a gift are called as Donation. It is the receipt item, it can be two types

- a. Specific Donation
- b. General Donation

6. Legacy

Legacy means when deceased person donate his property by will to the organization. It is capital nature receipt.

7. Honorarium

This is another entry of compensation. This is an amount paid to persons who are not the personnel of the organization but takings part in the management of the organization. Payment paid to them is termed as honorarium. For example, payment made to the secretary of the club as honorarium. This is the revenue nature payment.

Illustration 3

Record the following information in financial statements of a Non-Profit Organization

- Match Expenses 20,000
- Match Fund 10,000
- Sale of Match tickets 8,000
- Donation for Match Fund 5,000

Solution

Balance Sheet

As on 31st March 20....

Liabilities		Amount	Assets		Amount
Match Fund	10,000				
Add Donation	5,000				
Add Sale of tickets	8,000				
	23,000				

Less Match Expenses 20,000	4,000		
	4,000		

Illustration 4

Prepare Income and Expenditure Account and Balance Sheet for the year ended March 31, 2018 from the following information.

Receipt and Payment Account for the year ending March 31, 2018

Receipts	Amount	Payments	Amount
Balance b/d	82,000	Salaries and Wages	
Subscriptions		201617	9,600
201617	14,400	201718	1,66,400
201718	6,75,200	Sundry Expenses	74,000
20181924,000	7,13,600	Freehold Land	1,20,000
Entrance fees	32,000	Stationary	32,000
Locker Rent	1,16,000	Rates	48,000
Revenue from Refreshment	96,000	Refreshment Expenses	75,000
Income from Investments	1,12,000	Telephone Charges	8,000
		Investments	5,00,000
		Audit fee	12,000
		Balance c/d	1,06,600

The following additional information is provided to you

1. There are 1800 members each paying an annual subscription of Rs. 400, Rs. 16,000 were in arrears for 201617 as on April 1, 2017.
2. On March 31, 2018 the rates were prepaid to June 2018; the charge paid every year being Rs. 48,000.
3. There was an outstanding telephone bill for Rs. 2,800 on March 31, 2018.
4. Outstanding sundry expenses as on March 31, 2017 totaled Rs. 5,600.
5. Stock of stationery as on March 31, 2017 was Rs. 4000; on March 31, 2018, it was Rs. 7,200.
6. On March 31, 2017 Building stood at Rs. 8,00,000 and it was subject to depreciation @ 2.5% p. a.
7. Investment on March 31, 2017 stood at Rs. 16,00,000.
8. On March 31, 2018, income accrued on investments purchased during the year amounted to Rs. 3,000.

Solution

Income and Expenditure Account For the year ended 31st March 2018

Expenditure		Amount	Income		Amount
Salaries and Wages		1,66,400	Subscriptions		7,20,000
Sundry Expenses	74,000		Entrance fees		32,000
Less Outstanding	5,600	68,400	Locker rent		1,16,000
Stationery (consumed)			Income from refreshment		
Opening stock	4,000		Revenue from	96,000	
Add Purchases	32,000		Refreshment		
Less Closing stock	7,200	28,800	Less Refreshment Exp.	75,000	21,000
Rates	48,000		Income from		
Less Paid for 201516	12,000		1,12,000		
Add Prepaid in 201415	12,000	48,000	Investment		1,15,000
Telephone charges	8,000		Add Accrued income	3,000	
Add Outstanding	2,800	10,800			
Audit fee		12,000			
Depreciation on building		20,000			
Surplus		6,49,600			
(excess of Income over expenditure)		1,004,000			1,004,000

Balance Sheet as on March 31st, 2018

Liabilities		Amount	Assets		Amount
Outstanding Telephone Expenses		2,800	Cash and Bank Balance		1,06,600
Subscription received in advance		24,000	Subscription in Arrears		46,400
General Fund	2,498,800		Stock of Stationery		7,200
Add Surplus	6,49,600	3,148,400	Rates Prepaid		12,000
			Accrued interest on investment		
			Investments	16,00,000	3,000
			Additions	5,00,000	21,00,000
			Building	8,00,000	
			Less Depreciation	20,000	7,80,000
			Land		
					1,20,000
		3,175,200			3,175,200

Balance Sheet as on March 31st, 2017

Liabilities	Amount	Assets	Amount
Outstanding Sundry Expenses	5,600	Cash and Bank balance	82,000
Outstanding Salary and Wages	9,600	Subscription in arrears	16,000
General Fund	2,498,800	Stock of stationery	4,000
(Balancing figure)		Rates prepaid	12,000
		Investments	16,00,000
		Building	8,00,000
	2,514,000		2,514,000

To Do Activity

1. Difference between Trading account and Profit and Loss account.
2. Trial balance shows Bad Debts Rs. 400; provision for Bad Debts and doubtful debts Rs. 1,800; Debtors Rs. 16,000. Make a Provision on Debtors at 5% for Bad and Doubtful debts.

3. From the following trial balance and additional information, prepare a trading and profit and loss account for the year ended 31 March 2007 and a balance sheet as at the same date.

Trial balance as at 31 March 2017

	Dr (Rs)	Cr (Rs)
Tax payable		45,000
Net sales		465,000
Net purchases	160,000	
Stock	15,000	
Salaries & wages	90,000	
Rent & rates	70,000	
Water & electricity	10,500	
Trade creditors		59,800
Trade debtors	160,500	
Insurance	25,500	
Cash in hand	10,000	
Cash at bank	67,000	
Plant & machinery	210,000	
Furniture & fittings	48,800	
Capital		350,000
Drawings	75,000	

Fixed deposits with bank	150,000	
Bank loan		65,000
Provision for depreciation – plant & machinery		15,000
Provision for depreciation – furniture & fittings		5,000
	1,024,800	1,024,800

Additional information

- (a) Closing stock amounted to Rs 35,000.
- (b) Provision for depreciation is to be made for the current year
 - Plant & machinery @ 10% on book value.
 - Furniture & fittings @ 8% on book value
- (c) Accrued expenses Wages 4,000.
Water & electricity 1500.
- (d) Prepaid expenses Rent & rates 7,000
Insurance 12,500.
- (e) Accrued income Accrued interest up to and including 31 March 2017 6,500.
- (f) Provide for doubtful debts 4% of total debtors.

Required

Prepare a trading and profit and loss account for the year ended 31 March 2017 and a balance sheet as at that date.

4. Difference between Income and Expenditure account and Profit and Loss account?

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Chapter 3 Financial Statement Analysis

Introduction

The process of critical evaluation of the financial information contained in the financial statements in order to understand and make decisions regarding the operations of the firm is called 'Financial Statement Analysis'. It is basically a study of relationships among various financial facts and figures as given in a set of financial statements, and the interpretation thereof to gain an insight into the profitability and operational efficiency of the firm to assess its financial health and future prospects.

The term 'Financial Analysis' includes both 'analysis and interpretation'. The term analysis means simplification of financial data by methodical classification given in the financial statements. Interpretation means explaining the meaning and significance of the data. These two are complimentary to each other. Analysis is useless without interpretation, and interpretation without analysis is difficult or even impossible.

Financial Statement Analysis is a judgmental process which aims to estimate current and past financial positions and the results of the operation of an enterprise, with the primary objective of determining the best possible estimates and predictions about the future conditions. It essentially involves regrouping and analysis of information provided by the financial statements to establish relationships and throw light on the points of strengths and weaknesses of a business enterprise, which can be useful in decision-making involving comparison with other firms (cross sectional analysis) and with firms' own performance, over a time period (time series analysis).

Learning Objectives

After studying this chapter, you will be able to

- explain the nature and significance of financial analysis;
- identify the objectives of financial analysis;
- describe the various tools of financial analysis;
- state the limitations of financial analysis;
- prepare comparative and common size statements and interpret the data given therein;

Structure

3.1 Meaning and Objectives Of Financial Statement Analysis

3.2 Limitation Of Financial Analysis

3.3 Comparative Size and Common Size Statements, Trend Analysis

3.4 Ratio Analysis, Liquidity, Solvency, Performance and Profitability

3.5 Fund Flow and Cash Flow Statement

3.1 Meaning of Financial Statement

The financial statements include only two statements; they are profit and Loss Account and Balance Sheet. It is observed that the mere presentation of these statements does not serve the purpose of anybody in anyway. The importance of these statements lies in their analysis and interpretation. In the beginning, analysis was done only for extending credit, but now it is being used as most important function of Management Accountant for providing various useful information to many persons. Some of the schedules are prepared and submitted along with the financial statements for meaningful presentation. Such schedules are schedule of fixed assets, schedule of debtors, schedule of creditors, schedule of investments and the like.

Meaning of Analysis of Financial Statements

The process of critical evaluation of the financial information contained in the financial statements in order to understand and make decisions regarding the operations of the firm is called 'Financial Statement Analysis'. It is basically a study of relationship among various financial facts and figures as given in a set of financial statements, and the interpretation thereof to gain an insight into the profitability and operational efficiency of the firm to assess its financial health and future prospects. The term 'financial analysis' includes both analysis and interpretation'. The term analysis means simplification of financial data by methodical classification given in the financial statements. Interpretation means explaining the meaning and significance of the data. These two are complimentary to each other. Analysis is useless without interpretation, and interpretation without analysis is difficult or even impossible.

According to Myers, "financial analysis is largely a study of the relationship among the various financial factors in a business as disclosed by a single set of statements and a study of the trend of these factors as shown in a series of statement."

Objectives of Financial Statement Analysis

Analysis of financial statements is an attempt to assess the efficiency and performance of an enterprise. Thus, the analysis and interpretation of financial statements is very essential to measure the efficiency, profitability, financial soundness and future prospects of the business s. Financial analysis serves the following purposes

Measuring the Profitability

The main objective of a business is to earn a satisfactory return on the funds invested in it. Financial analysis helps in ascertaining whether adequate profits are being earned on the capital invested in the business or not. It also helps in knowing the capacity to pay the interest and dividend.

Indicating the Trend of Achievements

Financial statements of the previous years can be compared and the trend regarding various expenses, purchases, sales, gross profits and net profit etc. can be ascertained. Value of assets and liabilities can be compared and the future prospects of the business can be envisaged.

Assessing the Growth Potential of the Business

The trend and other analysis of the business provides sufficient information indicating the growth potential of the business.

Comparative Position in Relation to Other Firms

The purpose of financial statements analysis is to help the management to make a comparative study of the profitability of various firms engaged in similar businesses. Such comparison also helps the management to study the position of their firm in respect of sales, expenses, profitability and utilizing capital, etc.

Assess Overall Financial Strength

The purpose of financial analysis is to assess the financial strength of the business. Analysis also helps in taking decisions, whether funds required for the purchase of new machines and equipment's are provided from internal sources of the business or not if yes, how much? And also, to assess how much funds have been received from external sources.

Assess Solvency of the Firm

The different tools of an analysis tell us whether the firm has sufficient funds to meet its short term and long term liabilities or not.

Significance of Analysis of Financial Statements

Financial analysis is the process of identifying the financial strengths and weaknesses of the firm by properly establishing relationships between the various items of the balance sheet and the statement of profit and loss. Financial analysis can be undertaken by management of the firm, or by parties outside the firm, viz., owners, trade creditors, lenders, investors, labour unions, analysts and others. The nature of analysis will differ depending on the purpose of the analyst. A technique frequently used by an analyst need not necessarily serve the purpose of other analysts because of the difference in the interests of the analysts. Financial analysis is useful and significant to different users in the following ways

Finance Manager Financial analysis focusses on the facts and relationships related to managerial performance, corporate efficiency, financial strengths and weaknesses and creditworthiness of the company. A finance manager must be well-equipped with the different tools of analysis to make rational decisions for the firm. The tools for analysis help in studying accounting data so as to determine the continuity of the operating policies, investment value of the business, credit ratings and testing the efficiency of operations. The techniques are equally important in the area of financial control, enabling the finance manager to make constant reviews of the actual financial operations of the firm to analyze the causes of major deviations, which may help in corrective action wherever indicated.

Top Management The importance of financial analysis is not limited to the finance manager alone. It has a broad scope which includes top management in general and other functional managers. Management of the firm would be interested in every aspect of the financial analysis. It is their overall responsibility to see that the resources of the firm are used most efficiently and that the firm's financial condition is sound. Financial analysis helps the management in measuring the success of the company's operations, appraising the individual's performance and evaluating the system of internal control.

Trade Payables Trade payables, through an analysis of financial statements, appraises not only the ability of the company to meet its short-term obligations, but also judges the probability of its

continued ability to meet all its financial obligations in future. Trade payables are particularly interested in the firm's ability to meet their claims over a very short period of time. Their analysis will, therefore, evaluate the firm's liquidity position.

Lenders: Suppliers of long-term debt are concerned with the firm's long-term solvency and survival. They analyze the firm's profitability over a period of time, its ability to generate cash, to be able to pay interest and repay the principal and the relationship between various sources of funds (capital structure relationships). Long-term lenders analyze the historical financial statements to assess its future solvency and profitability.

Investors: Investors, who have invested their money in the firm's shares, are interested about the firm's earnings. As such, they concentrate on the analysis of the firm's present and future profitability. They are also interested in the firm's capital structure to ascertain its influences on firm's earning and risk. They also evaluate the efficiency of the management and determine whether a change is needed or not. However, in some large companies, the shareholders' interest is limited to decide whether to buy, sell or hold the shares.

Labour Unions: Labor unions analyze the financial statements to assess whether it can presently afford a wage increase and whether it can absorb a wage increase through increased productivity or by raising the prices.

Others: The economists, researchers, etc., analyze the financial statements to study the present business and economic conditions. The government agencies need it for price regulations, taxation and other similar purposes.

3.2 Limitations of Financial Statement Analysis

Financial statements are some limitations of the analysis. Therefore, anyone who uses this technique should take into account the following limitations.

Based on Past Data

The nature of financial statements is historical. Past cannot be the index of future and cannot be cent percent basis for future estimation, forecasting, budgeting and planning.

Financial Statement Analysis Cannot be an Option of Decision

Analysis is a tool that can be used as useful by an expert but may lead to erroneous conclusion by skilled analysts. The analyzed results cannot be regarded as a decision or conclusion.

Reliability of Figures

The accuracy and reliability of analysis, depends on reliability of figures derived from financial statements. If financial statements are manipulated by window dressing, analysis based on those figures will be misleading or meaningless.

Different Interpretations

Results of the analysis may be interpreted differently by different users.

Change in Accounting Method

If the figures obtained from financial statements are comparable, the analysis will be effective. If there are frequent changes in accounting policies and methods, then the figures of different periods will be different and incomparable. Then there will be very little meaning and value of analysis.

Price Level Changes

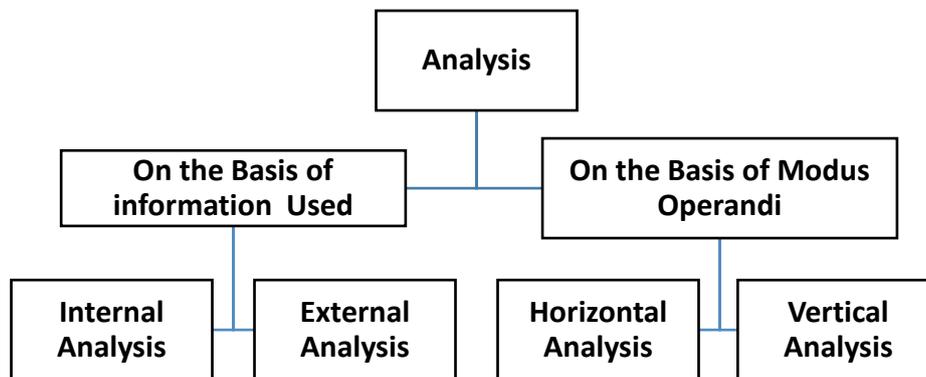
Ever rising inflation erases the value of money in the current financial situation, thereby reducing the validity of the analysis.

Limitations of the Tools of Analysis

Different techniques of analysis are used by an analyst. These tools are suitable for different types of analysis. Application of a particular tool or technique depends on the skill and expertise of the analyst.

Types of Financial Statement Analysis

The process of analysis may partake the varying types and classified as



According to information used financial analysis can be two type

External Analysis This analysis is done by outsiders who do not have access to the business firm's detailed internal accounting records. These outsiders include Investors, Creditors, Suppliers and Government Agencies, etc. For financial analysis, these external parties depend on almost fully published financial statements. Thus, analysis done by outsiders is known as external analysis and it serves a very limited purpose.

Internal Analysis The internal analysis conducted by persons who have access to the internal accounting records of a business firm is known as internal analysis. Such an analysis can be performed by executives and employees of the organization. Such an analysis serves meaningful purpose of internal management and employees.

According to Modus Operandi of financial analysis can be two type:

Horizontal Analysis Horizontal analysis refers to the comparison of financial data of a company for several years. The figures of this type of analysis are presented horizontally over a number of columns. The figures of the various year are compared with base year. This type of analysis is also called Dynamic Analysis.

Vertical Analysis vertical analysis refers to the study of relationship of the various items in the financial statements of one accounting period. In this type of analysis the figure from financial statement of a year compared with a base selected from the same year statement. It is also known as Static Analysis.

3.3 Various Tools Available to the Financial Analysis

The analysis of financial statements consists of a study of relationships and trends to determine whether or not the financial position of the concern and its operating efficiency have been satisfactory. In the process of this analysis, various tools or methods or devices are used by the financial analysis. The analytical tools generally available to an analyst for this purpose are as follows:

1. Comparative Financial Statements
2. Common size Statements
3. Trend Ratios and Trend Analysis
4. Average Analysis
5. Statement of changes in working capital
6. Funds flow and Cashflow Analysis
7. Ratio Analysis

Comparative Financial Statements

These statements summaries and present related data for a number of years, incorporating therein changes (absolute and relative) in individual items of financial statements. These statements normally comprise comparative balance sheets, comparative profit and loss account, and comparative statements of change in total capital and in working capital. They help in making inter-period and interfirm comparisons, and also highlight the trends in performance efficiency, and financial position.

Comparative Income Statements

The income statement gives the results of the operations of a business over a period of time. The changes in absolute data in money values and percentages can be determined to analyses the profitability of the business. Like comparative Balance Sheet, the income statement also has four columns. The first two columns are used to give figures of various items for two years, and the third and the fourth columns are used to show increase or decrease in figures in absolute amounts and percentages, respectively.

Guideline for Interpretation of Income Statements The analysis and interpretation of income statement will involve the following steps

1. The increase or decrease in sales should be compared with the increase or decrease ' in cost of the goods sold. An increase in sales will not always mean an increase in profit. The profitability will improve if increase in sales is more than the increase in cost of the goods sold. The amount of gross profit should be studied in the first step.
2. The second part of analysis should be the study of operational profits. The operating expenses, such as office administrative and selling distribution, should be deducted from gross profit to find out operating profits. An increase in operating profit will result from the increase in sales position and control of operating expenses. A decrease in operating

profit may be due to an increase in operating expenses or decrease in sales. The change in individual expenses should also be studied. Some expenses may increase due to expansion of business activities while others may go up due to managerial inefficiency.

3. The increase or decrease in net profit will give an idea about the overall profitability of the concern. Nonoperating expenses such as interest paid, losses from sale of assets, writing off of deferred expenses and payment of tax, decrease the figure of operating profit. When all nonoperating expenses are deducted from operating profit, we get a figure of net profit. Some nonoperating incomes may also be there which will increase net profit. An increase in net profit will give us an idea about the progress of the concern.
4. An opinion should be formed about profitability of the concern and it should be given at the end. It should be mentioned whether the overall profitability is good or not.

Illustration

The income statements of a concern are given for the years ending on 31 December 2017 and 2018. Rearrange the figures in a comparative form and study the profitability position of the concern.

	2017 (Rs.'000)	2018 (Rs.'000)
Net sales	785	900
Cost of goods sold	450	500
Operating expenses		
General and administrative expenses	70	72
Selling expenses	80	90
Nonoperating expenses		
Interest paid	25	30
Incometax	70	80

Solution

Comparative Income Statements

For the Years Ended 31 Dec. 2017 and 2018

	31 December		Increase (+)	Increase (+)
	2017 (Rs.'000)	2018 (Rs.'000)	Decrease () (Rs.'000)	Decrease () (Percentage)
Net sales	785	900	+115	+14.65
Less Cost of goods sold	450	500	+50	+11.0
Gross profit	335	400	+65	+19.4
Less Operating expenses				
General and administrative expenses	70	72	+2	+2.8

Selling expenses	80	90	+10	+12.5
Total operating Expenses	150	162	+12	+8.0
Operating Profit	185	238	+53	+28.65
Less Nonoperating expenses				
Interest paid	25	30	+5	+20
Net profit before Tax	160	208	+48	+30
Income tax	70	80	+10	+14.3
Net profit after tax	90	128	+38	+42.22

Interpretation

The comparative income statement given above reveals that there has been an increase in net sales of 14.65% while the cost of goods sold has increased nearly by 11% thereby resulting in an increase in the gross profit of 19.4%.

The operating expenses have increased by 8%, the increase in gross profit is sufficient to compensate for the increase in operating expenses and, hence, there has been an overall increase in operational profits amounting to Rs. 53,000, i.e. 28.65 % in spite of an increase in financial expenses of Rs. 5,000 for interest and Rs. 10,000 for income tax.

There is an increase in net profits after tax amounting to Rs. 38,000, i.e.42.22%. It may be concluded that there is a sufficient progress in the company and the overall profitability of the company is good

Comparative Balance Sheet

Comparative Balance Sheet analysis is the study of the trend of the same items, group of items and computed items in two or more Balance Sheets of the same business enterprise on different dates. The changes in periodic Balance Sheet items reflect the conduct of a business. The changes can be observed by the comparison of the Balance Sheet in the beginning and at the end of a period, and these changes can help in forming an opinion about the progress of an enterprise. Two columns of the comparative Balance Sheet are for the data of original Balance Sheet. The third column is used to show increases in figures, and a fourth column may be added for giving percentages of increases or decreases.

Guideline for Interpretation of Comparative Position Statement

While interpreting comparative balance sheet, the interpreter is expected to study various aspects, Such as they are 1. Current financial position and liquid position, 2 Long term financial position and 3. profitability of the concern.

1. For studying the current short term financial position of a concern, we have to see the working capital in both the years. The excess of current assets over current liabilities will give the figures of working capital. The increase in working capital will mean improvement in the current financial position of the business. An increase in current assets accompanied by the increase in current liabilities of the same amount will not show any improvement in the short term financial position. So, we should study the increase or decrease in current

assets and current liabilities and this will enable us to analyse the current financial position.

2. The second point to note in current financial position is the liquidity position of the concern. If liquid assets such as cash in hand, cash at bank, bills receivables, and debtors, show an increase in the second year over the first year, this will improve the liquidity position of the concern. The increase in inventory can be on account of accumulation of stocks for want of customers, Decrease in demand or inadequate sales promotion efforts. An increase in inventory may increase working capital of the business but it will not be good for the business.
3. The long-term financial position of a concern can be analyzed by studying the changes in fixed assets, long-term liabilities and capital. The proper financial policy of a concern helps to finance fixed assets by the issue of either long-term securities such as debentures, bonds, loans from financial institutions or fresh share capital. An increase in fixed assets should be compared with the increase in long-term loans and capital. If the increase in fixed assets is more than the increase in long-term securities, then a part of the fixed assets has been financed from the working capital. On the other hand, if the increase in long-term securities is more than the increase in fixed assets, then not only the fixed assets have been financed from long term sources but part of the working capital also. A wise policy will be to finance fixed assets by raising long-term funds. The nature of assets, which have increased or decreased, should also be studied to form an opinion about the future production possibilities. The increase in plant and machinery will increase production capacity of the concern. On the liabilities side, the increase in loaned funds will mean an increase in interest liability whereas an increase in share capital will not increase any liability for paying interest. An opinion about the long-term financial position should be formed after taking into consideration the abovementioned aspects.
4. The next aspect to be studied in a comparative Balance Sheet question is the profitability of the concern. The study of increase or decrease in retained earnings, various reserves and surpluses, and so on will enable the interpreter to see whether the profitability has improved or not. A increase in the balance of Profit and Loss Account and other reserves created from profits will mean an increase in profitability to the concern. The decrease in such accounts may mean issue of dividend, issue of bonus shares or deterioration in profitability of the concern.
5. After studying various assets and liabilities, an opinion should be formed about the financial position of the concern. We cannot interpret that if short term financial position is good then long-term financial position will also be good, or vice versa. A concluding word about the overall financial position must be given at the end.

Illustration

Following are the Balance Sheets of a concern for the years 2017 and 2018, prepare a comparative Balance Sheet and study the financial position of the concern.

Liabilities	2017 (Rs.)	2018 (Rs.)	Assets	2017 (Rs.)	2018 (Rs.)
Equity share capital	6,00,000	8,00,000	Land and Buildings	3,70,000	2,70,000
Reserves and Surplus	3,30,000	2,22,000	Plant and Machinery	4,00,000	6,00,000
Debentures	2,00,000	3,00,000	Furniture and Fixtures	20,000	25,000
Long term loans on mortgage	1,50,000	2,00,000	Other fixed assets	25,000	30,000
Bills payable	50,000	45,000	Cash in hand and bank	20,000	80,000
Sundries creditors	1,00,000	1,20,000	Bills receivable	1,50,000	90,000
Other current liabilities	5,000	10,000	Sundry debtors	2,00,000	2,50,000
			Stock	2,50,000	3,50,000
			Prepaid expenses	Nil	2,000
	14,35,000	16,97,000		14,35,000	16,97,000

Solution

Comparative Balance Sheet of a Company

For the years ended 31 Dec. 2017 and 2018

	31 December		Increase(+)	Increase(+)
	2017 (Rs.'000)	2018 (Rs.'000)	Decrease() (Rs.'000)	Decrease() (Percentage)
Assets				
Current Assets				
Cash in hand and bank	20,000	80,000	+60,000	+300
Bills receivable	1,50,000	90,000	60,000	40
Sundry debtors	2,00,000	2,50,000	+50,000	+25
Stock	2,50,000	3,50,000	+1,00,000	+40
Prepaid expenses	Nil	2,000	+2,000	
Total Current Assets	6,20,000	7,72,000	+1,52,000	+24.52
Fixed Assets				
Land and Buildings	3,70,000	2,70,000	1,00,000	27.03
Plant and Machinery	4,00,000	6,00,000	+2,00,000	+50
Furniture and Fixtures	20,000	25,000	+5,000	+25
Other fixed assets	25,000	30,000	+5,000	+20

Total Fixed Assets	8,15,000	9,25,000	1,10,000	+13.49
Total Assets	14,35,000	16,97,000	+2,62,000	+18.26
Liabilities and capital				
Current Liabilities				
Bills payable	50,000	45,000	5,000	10
Sundries creditors	1,00,000	1,20,000	+20,000	+20
Other current liabilities	5,000	10,000	+5,000	+100
Total Current Liabilities	1,55,000	1,75,000	+20,000	+12.9
Debentures	2,00,000	3,00,000	+1,00,000	+50
Long term loans on mortgage	1,50,000	2,00,000	+50,000	+33
Total liabilities	5,05,000	6,75,000	+1,70,000	+33.66
Equity share capital	6,00,000	8,00,000	+2,00,000	+33
Reserves and Surplus	3,30,000	2,22,000	1,08,000	32.73
	14,35,000	16,97,000	+2,62,000	+18.26

Interpretation

1. The comparative Balance Sheet of the company reveals that, during 2017, there has been an increase in fixed assets of 1,10,000 (i.e. 13.49%) while long-term liabilities to outsiders have relatively increased by Rs. 1,50,000 and equity share capital has increased by Rs. 2 lakh. This fact depicts that the policy of the company is to purchase fixed assets from long-term sources of finance, thereby not affecting the working capital.
2. The current assets have increased by Rs. 1,52,000 (i.e. 24.52%) and cash has increased by Rs. 60,000. On the other hand, there has been an increase in inventories amounting to Rs. 1 Lakh. The current liabilities have increased only by Rs. 20,000 (i.e. 12.9%). This further confirms that the company has raised long-term finances even for the current assets resulting into an improvement in the liquidity position of the company.
3. Reserves and surpluses have decreased from Rs. 3,30,000 to Rs. 2,22,000 (i.e. 73%) which shows that the company has utilized reserves and surpluses for the payment of dividends to shareholders either in cash or by the issue of bonus shares.
4. The overall financial position of the company is satisfactory.

Common Size Statements

The common size statements, common Balance Sheet and common Income Statement are shown in analytical percentages. The figures are shown as percentages of total assets, total liabilities and total sales. The total assets are taken as 100 and different assets are expressed as a percentage of the total. Similarly, various liabilities are taken as a part of total liabilities. These statements are also known as component percentage or 100 statements because every individual item is stated as a percentage of the total 100. The shortcomings in comparative statements and trend percentages, where changes in items could not be compared with the totals, have been covered up. The analyst is able to assess the figures in relation to total values. The common size statements may be prepared in the following way

1. The total of assets or liabilities are taken as 100.
2. The individual assets are expressed as a percentage of total assets, i.e. 100 and different liabilities are calculated in relation to total liabilities.

Common Size Balance Sheet

A statement in which Balance Sheet items are expressed as the ratio of each asset to total assets and the ratio of each liability is expressed as a ratio of total liabilities is called common size Balance Sheet. It can be used to compare companies of differing size. The comparison of figures in different periods is not useful because the total figures may be affected by a number of factors. It is not possible to establish standard norms for various assets. The trends of figures from year to year may not be studied and even they may not give proper results.

Illustration

The Balance Sheets of X Co. and Y Co. are given as follows

	X & Co.	Y & Co.
Liabilities		
Share capital and reserves		
Preference share capital	1,20,000	1,60,000
Equity share capital	1,50,000	4,00,000
Reserves and Surpluses	14,000	18,000
Long-term loans	1,15,000	1,30,000
Bills payable	2,000	
Sundry creditors	12,000	4,000
Outstanding expenses	15,000	6,000
Proposed dividend	10,000	19,000
Total Liabilities	4,38,000	8,08,000
Assets		
Land and Buildings	80,000	1,23,000
Plant and Machinery	3,34,000	6,00,000
Temporary investment	1,000	40,000
Inventories	10,000	25,000
Book debts	4,000	8,000
Prepaid expenses	1,000	2,000
Cash and bank balances	8,000	10,000
Total Assets	4,38,000	8,08,000

Compare the financial position of two companies with the help of common size Balance Sheet.

Solution

Common size Balance Sheet

As on 31 December, 2018

Assets	X & Co.		Y & Co.	
	Amount	%	Amount	%
Fixed assets				
Land and Buildings	80,000	18.26	1,23,000	15.22
Plant and Machinery	3,34,000	76.26	6,00,000	74.62
Total fixed assets	4,14,000	94.52	7,23,000	89.48
Temporary investment	1,000	0.23	40,000	4.95
Inventions	10,000	2.28	25,000	3.08
Book debts	4,000	0.91	8,000	0.99
Prepaid expenses	1,000	0.23	2,000	0.25
Cash and bank balances	8,000	1.83	10,000	1.25
Total current assets	24,000	5.48	85,000	10.52
Total assets	4,38,000	100	8,08,000	100
Share capital and Reserves				
Preference share capital	1,20,000	27.39	1,60,000	19.80
Equity share capital	1,50,000	34.25	4,00,000	49.50
Reserves and Surpluses	14,000	3.19	18,000	2.23
Total capital & reserves	2,84,000	64.83	5,78,000	71.53
Long-term loans	1,15,000	26.25	1,30,000	16.09
Current liabilities				
Bills payable	2,000	0.46		.49
Sundry creditors	12,000	2.74	4,000	.74
Outstanding expenses	15,000	3.44	6,000	11.15
Proposed dividend	10,000	2.28	90,000	12.38
Total current liabilities	39,000	8.92	1,00,000	100
Total of liability side	4,38,000	100	8,08,000	

Interpretations

1. An analysis of pattern of financing of both the companies shows that X & Co. is more traditionally financed as compared to Y & Co. The former company has depended more on its own funds as is shown by the Balance Sheet. Out of the total investments, 71.53% of the funds are proprietors' funds and outsiders' funds account only for 28.47%. In Y & Co. the proprietors' funds are 64.83% while the outsiders' share is 35.17%, which shows that this company has depended more upon outsiders' funds. In current scenario economic world, generally, companies depend more on outsiders' funds. In this context, both the companies have good financial planning but X & Co. is more financed on traditional lines.
2. Both the companies are suffering from inadequacy of working capital. The percentage of current liabilities is more than the percentage of current assets in both the companies. The first company is suffering more from working capital position than the second company because current liabilities are more than current assets by 3.44 % and this percentage is 1.86% in the case of the second company.

- A close look at the Balance Sheets shows that investments in fixed assets have been financed from working capital in both the companies. In Y & Co., fixed assets account for 94.52 % of the total assets while long term funds account for 91.08 % of the total funds. In X & Co., fixed assets account for 89.48% whereas long term funds account for 87.62% of the total funds. Instead of using long term funds for working capital purposes. The companies have used working capital for purchasing fixed assets.
- Both the companies face working capital problems and immediate steps should be taken to issue more capital or raise long term loans to raise working capital position.

From the following Balance Sheet of Kiran Ltd., prepare a comparative Balance Sheet comment on the financial position of the concern

Balance Sheet of Kiran Ltd.

liabilities	2017 (Rs.)	2018 (Rs.)	Assets	2017 (Rs.)	2018 (Rs.)
Equity shares	2,20,000	2,50,000	Buildings	1,40,000	1,70,000
Debentures	1,00,000	1,20,000	Machinery	1,20,000	1,50,000
Reserves and Surplus	60,000	80,000	Furniture	60,000	40,000
Sundry creditors	40,000	25,000	Sundry debtors	40,000	60,000
Bills payable	35,000	40,000	Marketing Securities	55,000	30,000
Outstanding Misc. exp.	20,000		Stock	40,000	55,000
			Cash balance	20,000	10,000
	4,75,000	5,15,000		4,75,000	5,15,000

Solution

Comparative Balance Sheet

Particulars	31 December		Increase or decrease in amount (Rs.)	Increase or decrease in Percentage
	2017 (Rs.)	2018 (Rs.)		
Assets				
Current Assets				
Sundry debtors	40,000	60,000	+20,000	+50.00
Marketable securities	55,000	30,000	25,000	45.45
Stock	40,000	55,000	+15,000	+37.50
Cash balances	20,000	10,000	10,000	50.00
Total Current assets	1,55,000	1,55,000		
Fixed assets				
Buildings	1,40,000	1,70,000	+30,000	+21.43
Machinery	1,20,000	1,50,000	+30,000	+25.00
Furniture	60,000	40,000	20,000	33.00
Total Fixed Assets	3,20,000	3,60,000	+40,000	+12.50
Total assets	4,75,000	5,15,000	40,000	8.42
Liabilities				

Current liabilities				
Sundry creditors	40,000	25,000	15,000	37.5
Bills payable	35,000	40,000	+5,000	+14.29
Outstanding (Misc. exp)	20,000		20,000	100.00
Total Current Liabilities	95,000	65,000	30,000	31.58
Longterm liabilities				
Equity shares	2,20,000	2,50,000	+30,000	13.64
Debenture	1,00,000	1,20,000	+20,000	20.00
Reserves and Surplus	60,000	80,000	+20,000	33.33
Total Fixed Liabilities	3,80,000	4,50,000	+70,000	18.42
Total Liabilities	4,75,000	5,15,000	+40,000	8.42

Interpretations

The analysis of the above comparative Balance Sheet reveals that the monetary balance in each account has increased between the end of 2017 and 2018, with the exception of marketable securities, cash balances, furniture, sundry creditors and outstanding. The significant changes, which have occurred in specific Balance Sheet during the two-year period, are

1. There is 50% increase in sundry debtors, 37.50% increase in stock, 45.45% decrease in marketable securities and 50% decrease in cash balances. Slow payment to customer's and/or slower moving merchandise might explain this combination of changes.
2. There has been no change in the amount of current assets during the two period, but current liabilities have decreased by 31.58%. This change has contributed to the liquidity of the company.
3. There has been increase in share capital and debentures by 13.64% and 20% respectively. This is due to fresh issue of shares and debentures.
4. The increase in fixed assets during the two periods has been 12.50%. This does not seem a financially sound sign when compared with the amounts of current assets which have remained constant during the period under study.

Trend Analysis

The comparative and the common size statements suffer from a major limitation. absence of a basic standard to indicate whether the proportion of an item is normal or abnormal. Trend analysis overcomes this limitation. This method is also an important and useful technique of financial statement analysis. The calculation of trend ratio involves the ascertainment of arithmetical relationship which each item of several years has to the same item of base year. Thus, one particular year out of many years is taken as base. The values of this particular item shown in the financial statements are converted into ratio or percentage taking that item in base year as equal to 100.

Illustration

From the following data relating to the purchase of a firm. Prepare Trend Percentages and Trend Ratios.

Year	2013	2014	2015	2016	2017	2018
Purchases Rs.('00,.000')	1672	1789	1873	1923	2123	1463

Solution

1. Trend percentage

Year	2013	2014	2015	2016	2017	2018
Decrease/increase (in percentage) Base Year = 2013		+7	+12	+15	+27	12.5

The above type of analysis cannot be regarded as good in the sense that it contains plus and minus signs. A better way will be to express the figures for each year as a percentage to the value of base year.

2. Trend ratios

Year	2013	2014	2015	2016	2017	2018
Trend ratio (in percentage) Base Year = 2013	100	107	112	115	127	87.5

Common size Balance Sheet

Trend Analysis

3.4 Ratio Analysis

Meaning of Ratio

A ratio is a mathematical relationship between two related items expressed in quantitative form. When this definition of ratio is explained with reference to the items shown in financial statements, then it is called 'accounting ratio'. Hence, an accounting ratio is defined as quantitative relationship between two or more items of the financial statements connected with each other. This quantitative relationship (i.e., ratio) may be expressed in either of the following ways

- (a) **In Proportion** In this form the amounts of the two items are being expressed in a common denominator. The example of this form of expression is the relationship between current assets and current liabilities as "2 1".
- (b) **In Rate or Times or Coefficient** In this form, a quotient obtained by dividing one item by another item is taken as of expression. The example of this form is sales divided by stock (say it comes 6); thus 6 times is the ratio between sales and stock. It is important to note that when ratio is expressed in this form, it is called as 'turnover' and is written in 'times'.
- (c) **In Percentage** In this form, a quotient obtained by dividing one item by another is multiplied by one hundred and it becomes the 'percentage' form of expression. For example, the relationship between gross profit and sales may be expressed as 25%.

Objectives of Ratio Analysis

The main Objectives of Ratio Analysis are

1. **To Determine Liquidity** (Short term Solvency) (i.e., ability of the enterprise to meet its short-term obligations as and when they become due).
2. **To Determine Long term Solvency** (i.e., ability of the enterprise to pay the interest regularly and to repay the principal on maturity Orin predetermined instalments at due dates).

3. **To Determine Operating Efficiency** with which Resources are utilized in generating Revenue.
4. **To Determine Profitability** with respect to Revenue from Operations and Investment.
5. **To Compare Intra Firm Position** (i.e., evaluating the Financial Position and Performance of the same enterprise over a period of time) and to identify the strong and weak areas (if any) and to take the necessary corrective action.
6. **To Compare Inter Firm Position** (i.e., evaluating the Relative Financial Position and Performance of the enterprise in the industry) and to identify the strong and weak areas (if any) and to take the necessary corrective action.

Advantages and Uses of Ratio Analysis

The various Advantages and Uses of Ratio Analysis are as follows

1. **Useful in Determining Liquidity** (Short term Solvency) The short-term creditors like bankers and suppliers of material can determine the ability of the enterprise to meet its short-term obligations as and when they become due with the help of Liquidity Ratios such as Current Ratio and Quick Ratio.
2. **Useful in Determining Long term Solvency** The long-term creditors like debenture holders and financial institutions can determine the ability of the enterprise to pay the interest regularly and to repay the principal on maturity or in predetermined instalments at due dates with the help of Solvency Ratios such as Debt Equity Ratio.
3. **Used in Determining Operating Efficiency** The management can determine the Operating Efficiency with which Resources are utilized in generating Revenue with the help of Activity Ratios such as Working Capital Turnover Ratio, Inventory Turnover Ratio, and Debtors Turnover Ratio etc.
4. **Useful in Determine Profitability** the management and investors can determine the Profitability with revenue from operation and investment with the help of Profitability Ratios such as Gross Profit Ratio, Operating profit ratio, net profit ratio, returns on investment etc. After analyzing the relevant ratios, the present investors can decide whether to hold, sell or purchase the shares and the prospective investor can decide whether or not to buy the shares.
5. **Useful in Intra Firm Comparison** Ratio Analysis is useful (a) in evaluating the Financial Position and Performance of the same enterprise over a period of time by comparing the ratios of one period with those of another period, (b) in identifying the strong and weak areas (if any) and (c) in taking the necessary corrective action.
6. **Useful in Inter Firm Comparison** Ratio Analysis is useful (a) in evaluating the relative Financial Position and Performance of the enterprise in comparison to a standard enterprise belonging to the same industry by comparing the actual ratios of the enterprise with the ratios of a standard enterprise belonging to the same industry, (b) in identifying the strong and weak areas (if any) and (c) in taking the necessary corrective action.
7. **Useful in Pattern /Industry Comparison** Ratio Analysis is useful in evaluating the relative Financial Position and Performance of the enterprise in the industry by comparing the actual ratios of the enterprise with the ratios of industry to which the firm belongs, (a) in identifying the strong and weak areas (if any) and (b) in taking the necessary corrective action.

Limitations of Ratio Analysis

The major limitations of Ratio Analysis are as follows

Ratio Analysis Ignores Qualitative Factors The ratio analysis is only quantitative analysis and not qualitative analysis For Example. While conducting the credit analysis of a customer seeking credit, he may deserve a credit to be granted on the basis of financial statements submitted by him but in reality, his character (i.e., intention to repay) and credit worthiness may be doubtful.

Ratio Analysis ignores Price Level changes A ratio can be accurately interpreted only if the effect of change in prices which may have taken place, is adjusted in the figures used in the ratio. For Example, Fixed Asset Turnover Ratio would not give a brighter picture than that justified by the circumstances unless the fixed assets are revalued at their current replacement cost.

Ratio Analysis is not free from Personal Bias in many situations, the accountant has to make choice out of various alternatives available, e.g., choice in the method of depreciation (e.g., Straight line or Written Down), choice in the method of inventory valuation (e.g., FIFO, LIFO etc.). Since the subjectivity is inherent in personal judgment, the financial statements, are therefore not free from personal bias. As a result, the ratio analysis also cannot be said to be free from personal bias.

Ratio Analysis is a Historical analysis Ratio analysis is basically historical in nature because the financial statements on the basis of which the ratios are established, are historical in nature unless the ratio analysis is based on the projected financial statements prepared to plan for the future.

Ratio Analysis provides only symptoms and not cure Ratios are at best only symptoms and like the symptoms displayed by a human body may have their origin at a place different from where the symptom appears. Like doctor, it becomes the duty of the management to unearth underlying causes.

Ratio Analysis does not consider the reality behind the Financial Statements The relationship between the two figures can be well interpreted only after studying the reality behind the statements on the basis of which the ratio has been established. For Example, the Quick Ratio of a dry fruit merchant, calculated just 1015 days before Deepawali (i.e., an Indian festival) may be lower because of heavy accumulation of inventories. An analyst may find that the short-term financial position of this concern is not a satisfactory one unless he takes into account the fact that accumulation of inventories is in anticipation of demand in near future.

Classification of Ratios

In ratio analysis the ratios may be classified into the four categories as follows;

1. Liquidity Ratios
2. Profitability Ratios
3. Activity Ratios
4. Solvency Ratios

Liquidity Ratios "Liquidity" refers to the ability of the firm to meet its current liabilities. The liquidity ratios, therefore, are also called 'Short term Solvency Ratios.' These ratios are used to assess the short term financial position of the concern. They indicate the firm's ability to meet its current obligations out of current resources.

Liquidity ratios include two ratios

1. Current Ratio
2. Quick Ratio

Profitability Ratios The main object of all the business concerns is to earn profit. Profit is the measurement of the efficiency of the business. Equity shareholders of the company are mainly interested in the profitability of the company.

Profitability ratios include the following

1. Gross Profit Margin Ratio
2. Operating Profit Margin Ratio
3. Net Profit Margin Ratio
4. Return on Capital Employed Ratio
5. Return on Net worth Ratio
6. Earnings per Share Ratio

Activity Ratios These ratios are calculated on the basis of 'cost of sales' or 'sales'; therefore, these ratios are also called as 'Turnover Ratios'. Turnover indicates the speed or number of times the capital employed has been rotated in the process of doing business. In other words, these ratios indicate how efficiently the capital is being used to obtain sales; how efficiently the fixed assets are being used to obtain sales; and how efficiently the working capital and stock is being used to obtain sales. Higher turnover ratios indicate the better use of capital or resources and in turn lead to higher profitability.

Turnover ratios include the following

1. Inventory Turnover Ratio
2. Debtors Turnover Ratio
3. Fixed Assets Turnover Ratio
4. Investment Turnover Ratio

Solvency Ratios These ratios are calculated to assess the ability of the firms to meet its linearizabilities as and when they become due. Long term creditors including debenture holders are primarily interested to know whether the company has ability to pay regularly interest due to them and to repay the principal amount when it becomes due. Solvency ratios disclose the firm's ability to meet the interest costs regularly and long-term indebtedness at maturity.

Solvency ratios include the following ratios

1. Debt Equity Ratio
2. Interest Coverage Ratio

Questions for Practice

1. The comparative Balance sheet of Bharat Ltd. are as under

Liabilities	2007	2008	Assets	2007	2008
Share Capital	5,00,000	6,50,000	Goodwill	20,000	15,000
Share Premium	50,000		Trade Investment	1,50,000	2,00,000
P&L Account		25,000	Fixed Assets	5,50,000	5,50,000
Debenture	2,00,000		Debtors	60,000	40,000

Bank Overdraft	80,000	1,00,000	Stock	1,20,000	80,000
Creditors	60,000	75,000	Cash	12,000	5,000
Proposed Dividend	10,000	15,000	Prepaid Expenses	8,000	
Provision for Taxation	20,000	25,000			
	9,20,000	8,90,000		9,20,000	8,90,000

Additional Information

- Net profit for 200708 before tax and dividend was Rs. 63,000.
- Provision for tax made during 200708 was Rs. 23,000 and actual tax paid was Rs. 18,000
- Proposed dividend for 200708 was Rs. 15000 and the payment of the dividend was 10,000.
- Depreciation charged in current year was Rs. 80,000.
- Bonus shares issued out of share premium Rs. 50,000.
- Prepare
 - A statement of sources and application of funds for the year ended 31st December, 2018
 - A schedule of changes of working capital changes
- Current Ratio is 3.5 1. Working Capital is Rs. 90,000. Calculate the amount of
- Current Assets and Current Liabilities.
- Shine Limited has a current ratio 4.5:1 and quick ratio 3 : 1; if the inventory
- is 36,000, calculate Current Liabilities and Current Assets.
- Current Liabilities of a company are Rs. 75,000. If current ratio is 4:1 and liquid Ratio is 1:1, calculate value of Current Assets, Liquid Assets and Inventory.

3.5 Meaning of Flow of Funds

The word 'funds' means working capital, the word 'flow' means change hence flow in funds means change in working capital.

Now we have to see which transactions bring flow in funds and other transactions which do not affect the flow of funds.

(A) Transactions that will Affect the Flow of Funds

- Current Assets and Noncurrent Assets** Whenever in any transaction one aspect affects the current assets and the other noncurrent assets, there is flow in the working capital for example, when building is purchased for cash, noncurrent assets will increase and current assets will reduce without any corresponding change in current liabilities. So, working capital will decrease. Similarly, if any fixed asset is sold, there is increase in current assets (without corresponding change in current liabilities) and reduction in noncurrent assets; so, it will increase the working capital
- Current Assets and Noncurrent Liabilities** If in any transaction, one aspect affects the current assets and the other noncurrent liabilities, there will be flow in the working capital. For example, if equity shares are issued for cash, it will increase the cash (current assets) without any corresponding increase in current liabilities and also increase the equity share capital (noncurrent liabilities), there is increase in working capital. On the other hand, if long term liabilities. debentures are paid in cash; it will decrease the current assets and

decrease the noncurrent liabilities without any change in current liabilities so it will reduce the working capital

- 3. Current Liabilities and Noncurrent Liabilities** If in any transaction, one aspect affects the current liabilities “and the noncurrent liabilities, there will be flow in the working capital. For example, if debentures are issued to the creditors it will increase the noncurrent liabilities and decrease the current liabilities without any change in current assets; so, there will be increase in the working capital.
- 4. Current Liabilities and Noncurrent Assets** If in any transaction, one aspect affects the current liabilities and the other noncurrent assets there is flow in the working capital. For example, if building is purchased on credit, it will increase the noncurrent assets and also current liabilities (without any change in current assets); so, there will be decrease in the working capital.
- 5.** In short, it can be said that when one aspect is of noncurrent category, and the other of current category, there will be flow in funds.

(B) Transactions that will not Affect the Flow of Funds

The following transaction will not bring any change in the working capital and thus, there will be no flow in funds.

- 1. Current Assets and Current Liabilities** When in any transaction one aspect affects the current assets and other current liabilities, there is no flow in fund. For example, if goods are sold on credit, it will increase the debtors (current assets) and will reduce the stock of goods. So there will be no change in the working capital. Similarly, if cash is paid to creditors, it will decrease the current assets and decrease the current liabilities, there will be no change in the working capital.
- 2. Non-Current Assets and Non-Current Liabilities** If in any transaction, one aspect affects the noncurrent assets and the other noncurrent Liabilities, there will not be any change in the working capital. For example, if building is purchased by the issue of equity shares, it will increase the noncurrent assets and noncurrent liabilities, but there will not be any change in working capital. Similarly, if debentures are redeemed out of the amount received from the sale of machinery, it will reduce the noncurrent assets and noncurrent liabilities. But there will be no change in working capital.
- 3. Noncurrent Liabilities and Noncurrent Assets** If there is any transaction both aspects of which affect Noncurrent Liabilities (or non current assets). It will not affect the working capital. For example, if debentures are converted into share capital it will on one hand increase the noncurrent liabilities and on the other hand decrease the noncurrent liabilities

Conclusion

1. When both aspects of a transaction belong to noncurrent category (either noncurrent assets or non current liabilities or one aspect is noncurrent asset and the other noncurrent liability) or are of current category i.e., current assets or current liabilities or when one aspect is a current asset and the other current liability or only of noncurrent liabilities, then such transactions will not bring flow in funds.
2. When out of both aspects of a transaction one aspect belongs to noncurrent category and the other current category i.e., one aspect is current asset or liability and the other noncurrent asset or noncurrent liability, this will bring the flow in funds.

Practical Steps involved in the Preparation of Funds Flow Statement

Step 1 Prepare Schedule of Changes in Components of Working Capital.

Step 2 Analyze the Changes in noncurrent assets and noncurrent liabilities to find out whether there is inflow or outflow of funds on account of these noncurrent items.

Step 3 Compute the Funds from Operations.

Step 4 Prepare Funds Flow Statement.

Schedule of Changes in Working Capital

This statement is prepared from current assets and current liabilities in order to calculate the increase or decrease in working capital. The followings rules may be applied to current assets and currents liabilities for preparing this statement

1. An increase in in current assets increases working capital
2. A decrease in current assets decreases working capital
3. An increase in current liabilities decreases working capital
4. A decrease in current liabilities increases working capital.

Schedule of Changes in Working Capital

Particulars	Absolute Amount		Changes in W.C.	
	Previous year (Rs.)	Current Year (Rs.)	Increase (Rs.)	Decrease (Rs.)
Current Assets (A)				
Stock in trade
Debtors (Gross)
Cash Balance
Bank Balance
Bills Receivable
Prepaid Expenses
Accrued Incomes
Short term Loans and Advances
Marketable Investments (Short term)
Current Liabilities (B)				
Creditors for goods
Bills Payable
Outstanding Expenses
Bank Overdraft
Unclaimed/Unpaid dividend
Unaccrued Incomes
Short term Loans and Advances
Provision for Doubtful Debt
Provision for Discount on Debtors
Dividend Payable
Income Tax Payable
Provision for Legal Damages

Working Capital (A B)	...	...	...	...
Increase /decrease in Working Capital	...	...	...	...

Meaning of Funds from Operations

Fund from operations refer to those funds which are generated in the business as a results of carrying out the operations during the normal course of the business and are computed by taking out the difference between the operating revenues that provided funds during the accounting period and operating expenses that involved an outflow of funds during the accounting period.

Methods of Computation of Funds from Operations

The amount of funds of operations may be computed either following direct method or indirect method as follows

Direct Method

Under direct method the fund from operation is computed as follows

Particulars			
(A) Operating Revenues			
Cash Sales		xxx	
Credit Sales		xxx	
Other operating revenues(e.g., Trading Commissions earned)		xxx	xxx
(B) Less Total Operating Cost (other than Depreciation)			
a) Cost of goods sold			
Opening stock	xxx		
Purchases	xxx		
Direct Expenses	xxx		
Less Closing Stock	xxx	Xxx	
b) Office and Administration Expenses (including outstanding but excluding prepaid)		Xxx	
c) Selling and Distribution Expenses (including outstanding but excluding prepaid)		Xxx	xxx
(C) Funds from operation (AB)			xxx

Indirect Method

Under Indirect Method fund from operations is computed as follows

Particulars	Rs.	Particulars	Rs.
To Depreciation	XXX	By Opening Balance (Cr.)	XXX
To Loss on Sale of noncurrent Assets	XXX	By Gain tram sale of noncurrent Assets	XXX
To Goodwill/Patent/ trade mark/other intangible assets amortized	XXX	By Transfer fees	XXX
To Discount on Issue of Shares/Debentures etc., written off	XXX	By Dividend and Interest on Investments	XXX

To Transfer to Reserves	XXX	By Rent Received	XXX
To Reserve for Doubtful Debts (if all debtors are good)	XXX	By Compensation on acquisition of Noncurrent Assets	XXX
To Interim Dividend (for Current year)	XXX	By Refund of Taxes	XXX
To Proposed Dividend (for Current year)	XXX	By Profit on Revaluation of Assets	XXX
To Provision for Tax (for Current year)	XXX	By Funds from Operations xxx (Balancing figure)	XXX
To Closing Balance (Cr.)	XXX		
	XXX		XXX

Tutorial Notes

1. In case, the opening balance of P & L A/c is a debit balance (which represents loss), it should be shown on the debit side of Adjusted P & L A/c and similarly if the closing balance of P & L A/c is a debit balance (which represents loss), it should be shown on the credit side Adjusted P & L A/c.
2. Provision for Tax is not shown on the debit side of Adjusted P & L A/c if this item is treated as a current item.

3.6 Flow Statement

The fund statement is a financial statement which reveals the methods by which the business has been financed and how it has used its funds between the opening and closing balance sheet dates. The funds flow statement describes the sources from which additional funds were derived and the uses to which these funds were put. The analysis of such statements over periods of time clearly shows the sources from which past activities have been financed and brings to highlight the uses to which such funds have been put. The statement is known by various titles, such as, Statement of sources and Applications of Funds, where Got and Gone Statement and Statement of Resources provided and applied

Format of Funds Flow Statement

The fund flow statement can be presented either in 'T' form or in Single Columnar Form. In Single Columnar Form, first the Sources of funds and then the Application of Funds are shown. In 'T' Form, sources of funds are shown on the lefthand side and the application of funds are shown on the right hand side. A format of Fund Flow Statement in 'T' form is shown below

Sources of Funds		Applications of Funds	
Issue of share (including Premium but net of Discount)	XXX	Redemption of Redeemable Preference Shares (including premium on redemption)	XXX
Issue of Debenture (including Premium but net of Discount)	XXX	Redemption of Debentures (including premium on redemption)	XXX
Raising of Noncurrent Loans/deposits	XXX	Buyback of Shares	XXX
Sale of Noncurrent Assets	XXX	Repayment of Noncurrent Loans Deposits	XXX

Non operating Incomes (e.g Dividend, Interest, Rent Received)	XXX	Purchase of Noncurrent Assets	XXX
Funds from Operations Decrease in Working Capital	XXX	Payment of Final Dividends (for previous year)	XXX
		Payment of Interim Dividend	XXX
		Payment of Tax	XXX
		Payment of Nonoperating Expenses	XXX
		Funds used in Operations	XXX
		Increase in Working Capital	XXX
	XXX		XXX

Tutorial Notes

1. Issue of Shares Debentures on purchase of a noncurrent asset, or on conversion of Debentures and the purchase of a Noncurrent Asset against the issue of Shares Debentures do not appear in the Funds Flow Statement (prepared on Working Capital Basis) because these transactions do not involve any inflow outflow of working Capital.
2. Payment of tax is not shown as an application of funds if this item is treated as a current item.

Cash Flow Statement

The cash flow statement means the Statement of Changes in Cash and Cash equivalents during a particular accounting period it shows

- Net Cash flows from Operating Activities
- Net Cash flows from Investing Activities
- Net Cash flows from Financing Activities
- Net Change in Cash and Cash Equivalents

Notes

- Cash Flow Statement is not a substitute for Income Statement because it does not disclose the calculation of Profit or Loss.
- Cash Flow Statement is not a substitute for Position Statement (Balance Sheet) because it does not disclose the Total Financial Position.
- Cash Flow Statement is historical in nature because it is prepared on the basis of Historical Financial Statements.

Objectives of Cash Flow Statement

The objectives of Cash Flow Statement are as follows

1. To ascertain Net Cash Flows from Operating, investing and Financing Activities of an enterprise
2. To ascertain the Net Change in Cash & Cash Equivalent indicating the aggregate of Net Cash Flows from Operating, Investing and Financing Activities of an enterprise between the dates of two consecutive Balance Sheets.

Uses advantages of Cash Flow Statement

The various uses of Cash Flow Statement are as follows

Facilitates to Ascertain Net Cash Flows Cash Flow Statement facilitates to ascertain Net Cash Flows from Operating, Investing and Financing Activities and Net Change in Cash and Cash Equivalents.

Facilitates to Evaluate Cash Financial Performance It facilitates to evaluate Cash Financial Performance by providing information on Net Cash flows from Operating Activities.

Facilitates to Evaluate Cash Financial Position It facilitates to evaluate Cash Financial Position by providing Information on Net Cash flows from investing Activities and Financing Activities.

Facilitates Efficient Cash Management. The management can know the situation of shortage or surplus cash and can plan for the effective use of surplus cash or can make the necessary arrangement in case of an shortage of cash.

Facilitates Comparison It facilitates the comparative study of the operating performance of different enterprises because it eliminates the effects of using different accounting treatments for the same transactions and events.

Facilitates Capital Budgeting Decisions It facilitates Capital Budgeting Decisions by providing information on Net Cash flows from Investing Activities.

Facilitates Capital Structure Decisions It facilitates Capital Structure Decisions by providing information on Net Cash flows from Financing Activities

Facilitates Planning the Projected Cash Flow Statement enables the management to plan its future investments, operating and financial activities such as the repayment of long term loans and interest thereon, modernization or expansion of plant, payment of cash dividend etc.

Limitations of Cash Flow Statement

The major limitations of Cash Flow Statement are as follows

Ignores Noncash Transactions It ignores the noncash transactions. In other words, it does not take into consideration those transactions which do not affect the cash For Example, Issue of Shares against the purchase of Fixed Assets or Stock-in-trade, Conversion of Debentures into Shares

Examples of Cash Flows

Cash inflow

- Cash Sales of Goods
- Cash received from Trade Debtors
- Cash received from commission Royalty
- Sale of Investments (whether Current or Non-Current) for cash
- Loans Advances repayment received (whether short term or Long term)
- Income received on Investments
- Issue of Equity Shares for Cash
- Issue of Preference Shares for Cash

- Issue of Debentures for Cash
- Loans taken (whether short term or Long term)

Cash outflow

- Cash Purchases of goods
- Cash paid to Trade Creditors More
- Operating Expenses paid (e.g. Salary, Wages, Administration Exp., Selling Exp)
- Cash Purchase of investment.
- Redemption of Preference Share for cash
- Redemption of Debentures for Cash
- Loans repaid (whether short term or long term)
- Interest on Debentures and loan paid. (Whether short term or Long term)
- Final Dividend on Equity Shares paid.
- Dividend on Preference Shares paid.
- Interim Dividend on Equity Shares paid.

Cash Flow Statement (Indirect Method) As per Accounting Standard 3

	Net profit for current year	***	
Less	Net profit for Previous year	(***)	
	Net Profit After Tax and Extraordinary items	***	
Add	Provision for tax made during the year	***	
Add	Extraordinary income included in Profit and loss A/C	***	
	Net Profit Before Tax and Extraordinary items	***	
	Adjustments for Non cash and Nonoperating Items		
Add	Depreciation on Fixed Assets	***	
Add	Loss on sale of Assets	***	
Add	Discount on Issue of share and debenture	***	
Add	Loss on issue of share and Debenture	***	
Add	Goodwill written off	***	
Add	Preliminary Expenses written off	***	
Add	Provision for dividend/interim dividend	***	
Add	Transfer to reserve	***	
Less	Gain on sale of assets	(***)	
Less	dividend received	(***)	
Less	Excess Depreciation	(***)	
Less	Transfer from Reserve	(***)	
	Net Profit before Tax and Working capital changes	***	
	Adjustments for Working capital changes		
Add	Decrease in current assets other than cash and cash equivalent	***	
Add	Increase in current liabilities	***	
Less	Increase in current assets other than cash and cash equivalent	(***)	
Less	Decrease in current liabilities	(***)	
	Cash generated before Tax and extraordinary items		
Less	Tax paid during the year	(***)	

Less	Extraordinary items	(***)	
	Net cash flow from Operating Activities (A)		***
Add	Cash flow from Investing Activities	***	
Add	Sale of fixed Assets	***	
Add	Sale of Investment	***	
Add	Interest and dividend received on Investment	***	
Less	Purchases of Fixed Assets	(***)	
Less	Purchases of Investment	(***)	
Less	Loan to subsidiaries	(***)	
	Net cash flow from Investing Activities (B)		***
Add	Cash flow from financing Activities	***	
Add	Issue of share capital Type equation here.	***	
Add	Issue of debenture	***	
Add	Proceeds from Long Term Loan	***	
Less	Repayment of long Term Loan	(***)	
Less	Redemption of share Capital	(***)	
Less	Redemption of Debentures	(***)	
Less	Dividend paid	(***)	
Less	Interest paid on debentures	(***)	
	Net Cash flow from financing Activities (C)		***
	Net Increase (Decrease) in cash and cash equivalents during the period	(A+B+C)	***
Add	Cash and Cash equivalents at the beginning of the year		***
	Cash and Cash equivalents at the end of the year		***

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Chapter 4 Cost Accounting

Introduction

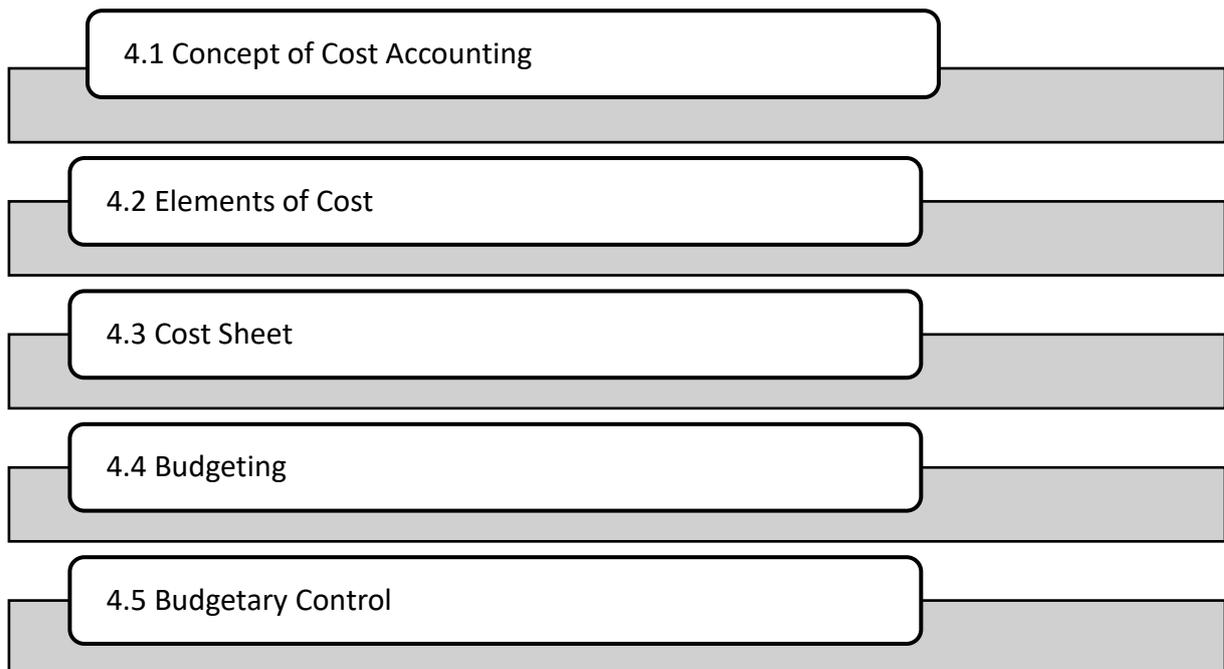
Cost Accounting is a branch of accounting and has been developed due to the limitations of financial accounting. Financial accounting is primarily concerned with record keeping directed towards the preparation of Profit and Loss Account and Balance Sheet. It provides information regarding the profit and loss that the business enterprise is making and also its financial position on a particular date. The financial accounting reports help the management to control in a general way the various functions of the business but it fails to give detailed reports on the efficiency of various divisions.

Learning Objectives

After studying this chapter, you will be able to

- explain the concept of cost accounting;
- understand the concept of cost sheet;
- explain budgeting and budgetary control;

Structure



4.1 Meaning and Definition of Cost Accounting

Cost Accounting is the special aspect of management accounting. According to the Chartered Institute of Management Accountants of England "The establishment of budgets, standard costs and actual costs of operations, processes, activities or products and the analysis of variance, profitability or the social use of funds." — C. I. M. A. London

Objectives Following are three objectives of cost accounting

- 1) Cost Determination
- 2) Cost Control

3) Decision Making

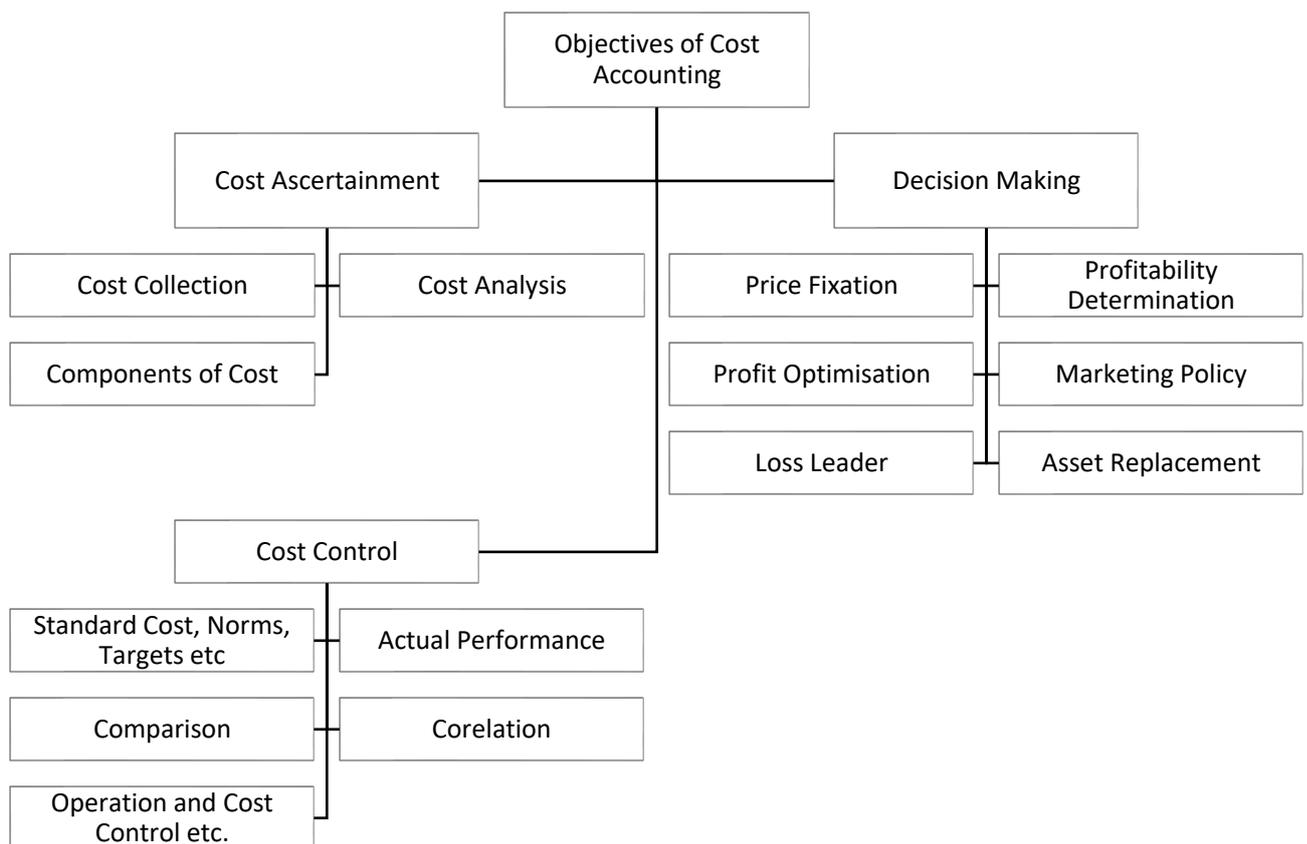
In brief Cost Accounting, guides the managers about price determination, profit determination, ideal profit, marketing policy, loss possibilities, substitution of assets etc., by making proper analysis of cost data and their interpretation & presentation.

Difference between Financial accounting and Cost Accounting

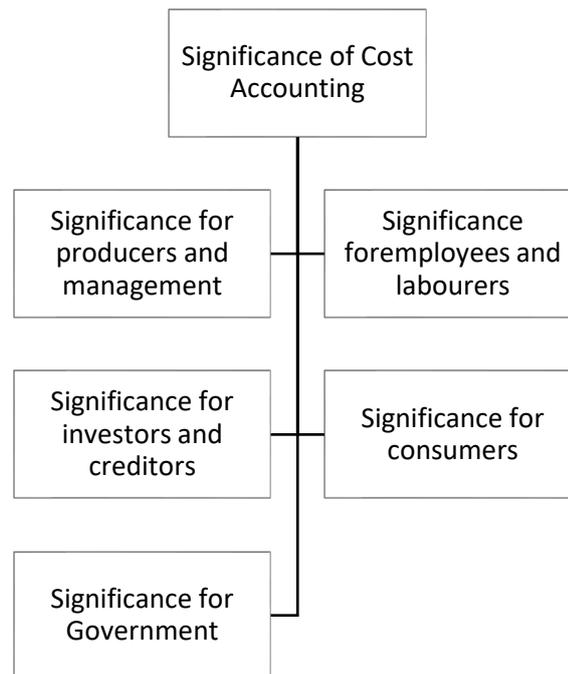
S.No	Basis of Difference	Financial accounting	Cost Accounting
1.	Propriety	Financial account are useful for all types of business	Cost accounts are useful only to manufacturing organisations
2.	Transaction	In financial accounts all financial transactions are recorded	But in cost accounts only those transactions are recorded which are related to the manufacturing and sales of materials and services
3.	Item	In financial accounts, all items relating to expenses and losses and incomes and profits are recorded	In cost accounting only those transaction of expenses are recorded which are related to manufacturing cost
4.	Objectives	The object of financial accounting is to measure financial results of the whole business	There are three main objects of cost accounting— Determination of cost, Cost control, Analysis of cost for managerial decision
5.	Accounting Principle	Financial accounts are generally based on accepted accounting principles.	Cost accounts are based on costing concepts and principles
6.	Data	Financial accounts use historical, quantitative, monetary and actual data	Cost accounts use descriptive, numerical and imaginary data
7.	Control	Financial accounts do not make stress on the control of material, labor and expenses	Cost accounts make a detailed provision for the control of material labor and overheads
8.	Communication	Generally financial information's are communicated at the end of financial year	As per managerial decision making cost accounting information's are communicated every day, every week, every fortnight, etc.
9.	Valuation of Stock	The stock is valued on cost or market price whichever is less	Stock is always valued on cost price
10	Information of Efficiency	Financial accounts do not give information about relative efficiency of workers plants and machines	While cost accounts give important information's about the relative efficiency, of workers, plants and machineries
11	Classification	In financial accounting,	In cost accounting costs are

	of cost	classification of cost of any type is not made	classified in seven clear parts
12	Classified information	Financial accounts do not present such classified information by which per cost can be ascertained on each stage of production	Cost accounts classify and present all information's in such a way that per cost on each stage of production can be ascertained.
13	Sales/ Tender price	Financial accounts are not helpful in the determination of sales/tender price	Cost accounts are helpful in determining sales/tender price.
14	Compulsion	It is compulsory to keep the financial accounts.	It is not compulsory to keep cost accounts.

Objectives of Cost Accounting



Significance of Cost Accounting



Significance for Producers and the Management

At present no field of business is untouched with the significance of cost accounting. In brief, while playing important role in the following fields of business it gives full help to producers and managers.

1. Production
2. Sales and Distribution
3. Management

1. Production	
Materials	<p>Under the cost accounting</p> <p>There is strict control in the purchase of materials, in keeping them in store and in issuing them to different departments. And, it gives very good result</p> <p>Materials are purchased at the right time, in proper quantity from right place, of right quality and of right price.</p> <p>Storekeeper keeps the materials in the store in proper way and use of the same in the right manner</p> <p>In addition to this there is continuous counting of the same by perpetual inventory system.</p>
Labor	<p>Under the cost accounting</p> <p>There is full control on the wages payable to the workers.</p> <p>Skilled and unskilled labors are recognized and skilled laborers are paid more remuneration than unskilled one. The idle time of the laborers is also sufficiently controlled</p>
Machines	Under the cost accounting

	<p>Efforts are always made to maintain and increase the efficiency of all the machines installed in the business</p> <p>The efficiency of each machine is ascertained by machine hour rate</p>
Works Overheads	<p>The expenditure made in the factory is called works overheads. Under the cost accounting</p> <p>They are analyzed from time to time and are compared from the overheads of previous period</p> <p>From such comparison, if there is a trend of improper increase in the overheads, the same is at once controlled</p>
Cost per	<p>Under the cost accounting</p> <p>Not only the cost of total output is ascertained, but per cost is also ascertained</p> <p>The cost per of previous period is also compared by it.</p> <p>With the result, all types of expenditure are properly controlled by it.</p>
Production policy	<p>It helps in determining production policy by presenting necessary data about cost of materials, labor and overheads and by estimating future situations and competitions</p>

2. Selling and Distribution

Selling Price	<p>Under the cost accounting</p> <p>Per cost is ascertained. So the selling price can also be easily ascertained.</p> <p>This is the reason that under this method tender price is easily disclosed even before the production</p> <p>If due to any reason, odd competition has to be faced, this accounting system also guides that up to which limit selling price can be reduced</p>
Selling & Distribution Overhead	<p>Under the cost accounting</p> <p>The account of selling and distribution overhead are kept separately</p> <p>From time to time they are also compared with the expenditure of previous period.</p> <p>From time to time they are also compared with the expenditure of previous period.</p>
Sales Policy	<p>Under the cost accounting many significant decisions about the sales policy are taken. For example</p> <p>How should be the arrangement of the store of finished goods?</p> <p>In which manner advertising policy should be conducted. • How should the efficiency of sales personnel be increased?</p> <p>How much high from the cost, selling price should be fixed?</p>

3. Management

Comparison	<p>Under the cost accounting</p> <p>The costs of manufactured goods are separately ascertained.</p> <p>In the same way separate costs are ascertained for every department. In this manner the comparisons of different departments are being done.</p> <p>And in this manner the proper control of cost is maintained. By cost accounting unprofitable activities, losses, wastage, residual etc., at once come into light. So proper control can be exercised on them.</p>
Unprofitable	<p>By cost accounting unprofitable activities, losses, wastage, residual etc., at once</p>

Activities	come into light. So proper control can be exercised on them.
Standard Cost	Under the cost accounting Costs can be controlled with the help of standard cost and budgetary control. Standard, cost is a prefixed cost, determined scientifically on the basis of each element of cost. After the ascertainment the real cost of these elements, they are compared with the standard cost. And, the variance ascertained from such comparison, is controlled by tracing their causes.
Efficiency	Under the cost accounting special study of plant and machinery is made. About this, managers are acquainted with new inventions, so that efficiency might be increased.
Reliable Data	From the cost accounting such reliable. data are obtained which are helpful to the organisation in presenting its side in several matters with authorities, wages tribunal, labor union etc. And, it also helps in getting decision in favour of the organisation.
Cost Data	From the cost accounting records such cost data are also obtained which are helpful to managers in taking significant decisions. For example Should an article be either manufactured or should be purchased from the market? Should we stop the manufacturing of loss making product or should it be continued. Should we enter in foreign market?

Significance for Employees and Laborers

Under the cost accounting employees and laborers are paid their remuneration as per their efficiency. By the motivating plans of remuneration inefficient laborers are tried to be made efficient. Laborers are acquainted of this fact that for how much hours they have worked. The calculation of bonus and overtime is easily done and the unnecessary struggle between employers and laborers are easily avoided.

Significance for Investors and the Creditors

Investment/Lending Each investor wants to invest his money on the place which has bright future and in the same way each lender wants to provide loan to the organisations of bright future. As such, an investor while investing his money and a lender while lending, examine whether proper costing system is followed by the organisation or not. Because the future of that organisation is accepted as good which has adopted cost accounting system? In America and England, several Banks follows this policy that they will not provide loan to the organisations who have not adopted this system. In the words of Chapterer and Weltmer "It has become a policy of many banking institutions that no loans will be made to industrial firms unless such concerns have complete cost accounting systems which produce cost reports showing satisfactory trends."

Significance for the Consumers

Under the cost accounting	
Less Price	Due to complete control of cost, cost of product comes less. Hence, they are made available to consumers at low price.
Stability	The producer always keeps in his mind the cost of his production. So they

	do not indulge them so much in competition that, they might be compelled to sell the product on the price less than cost. With the result the environment of stability is created.
New/good materials	With the result the environment of stability is created. With the result of daily new inventions consumers get the opportunity of consuming good quality of materials.

Significance for the Government

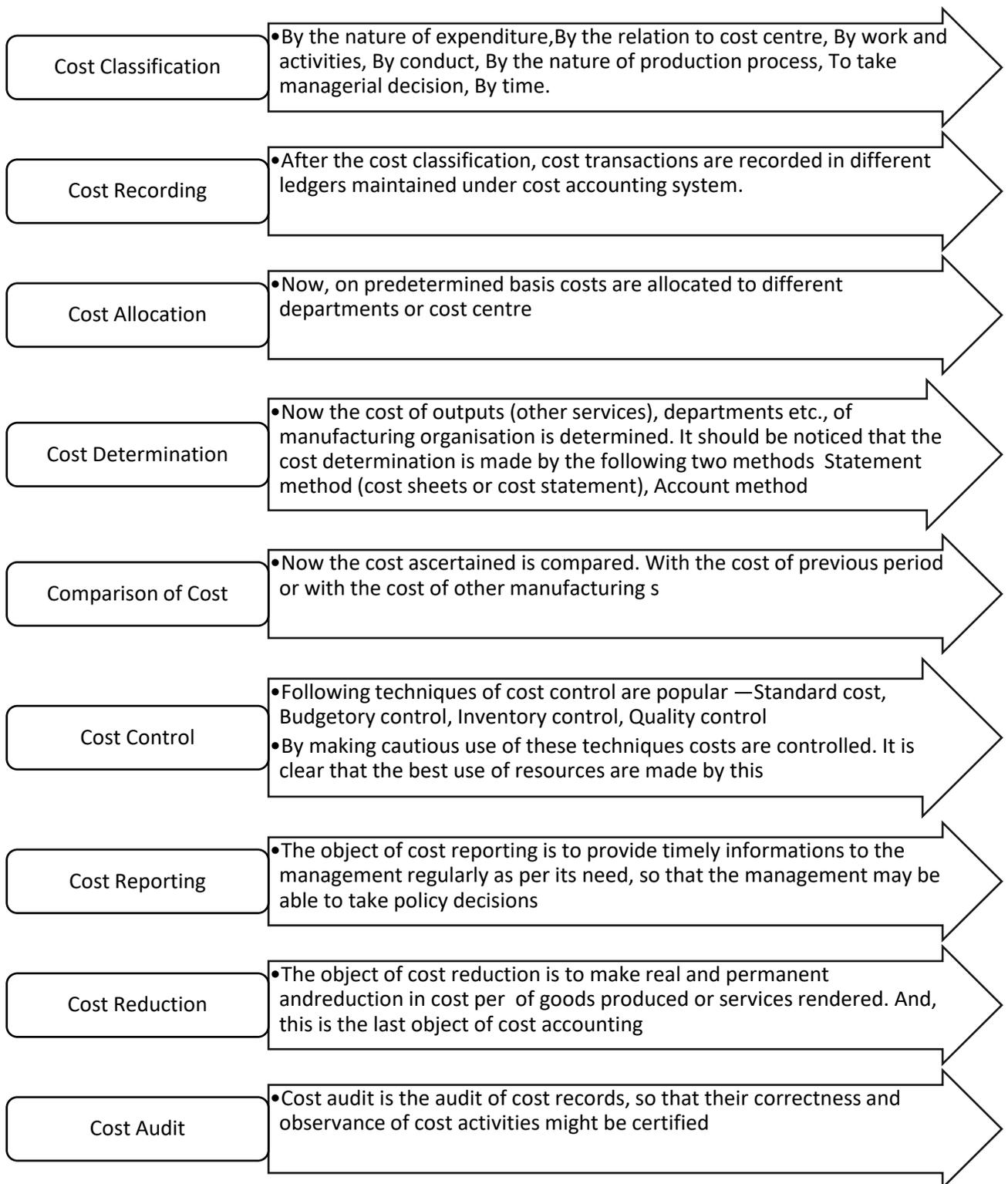
The Government also obtains significant cost data from the cost accounting decides its policies and prepares the outline of the future development of the country.

Conclusion

In this way, we see that cost accounting is useful for each part of society. So, its use is increasing day by day. However, it has not been adopted on the place where, there is lack of competition or there is imperfect competition or the managers have incomplete knowledge of the ascertainment of profit in comparison to the expenses to be made on it. But this situation is not to remain for a long time. Now producers and managers have also started to understand that Cost accounting discloses not only the cost of product, but also disclose that what should its cost in real sense. In addition to this, cost accounting discloses all the weak or areas of the business and suggests the way to make it healthy. So, that day is not far when there will be cost awareness in these business organisations.

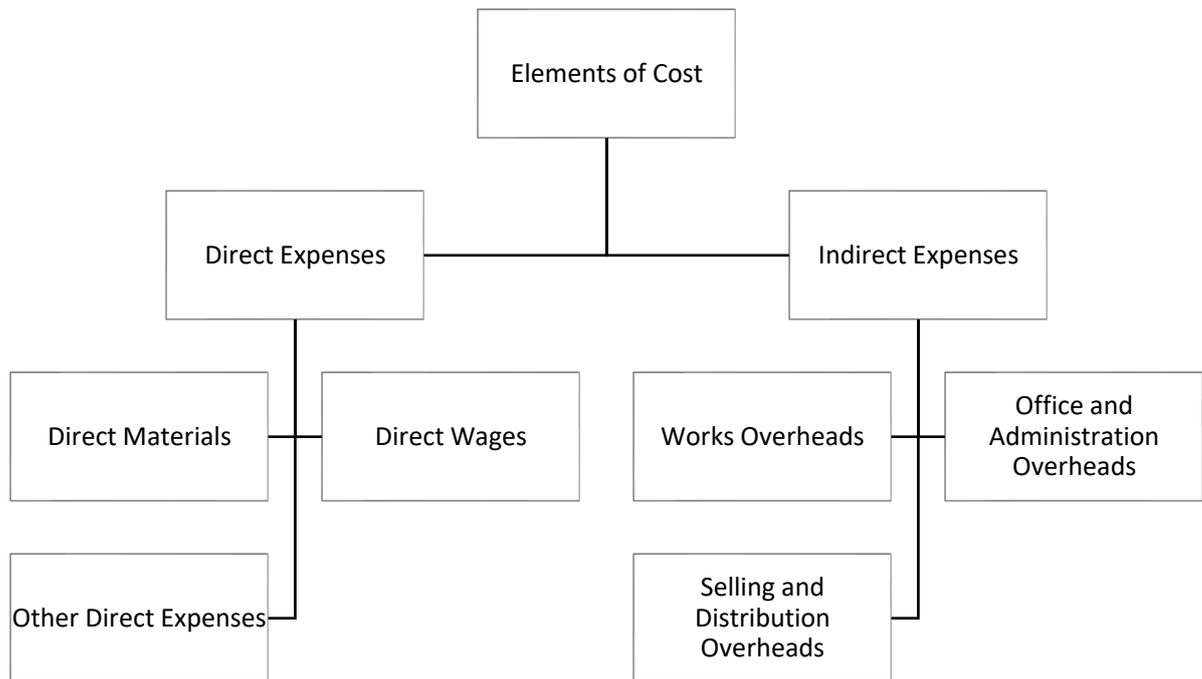
Scope of Accounting

The purpose of the scope of cost accounting is to study the different areas of the accounting. In brief the scopes are as follows



4.2 Elements of Cost

The various elements of cost can be remembered with the help of following diagram



As it is clear from the above diagram, there are two elements of Cost Direct Expenses and Indirect Expenses.

Direct Expenses

There are three types of Direct Expenses

1. Direct Materials

Those materials are called direct materials which are directly used for the production of an article or a product and become a part of that article or product. For example

For preparing furniture Wood

For the production of cloth Yarn

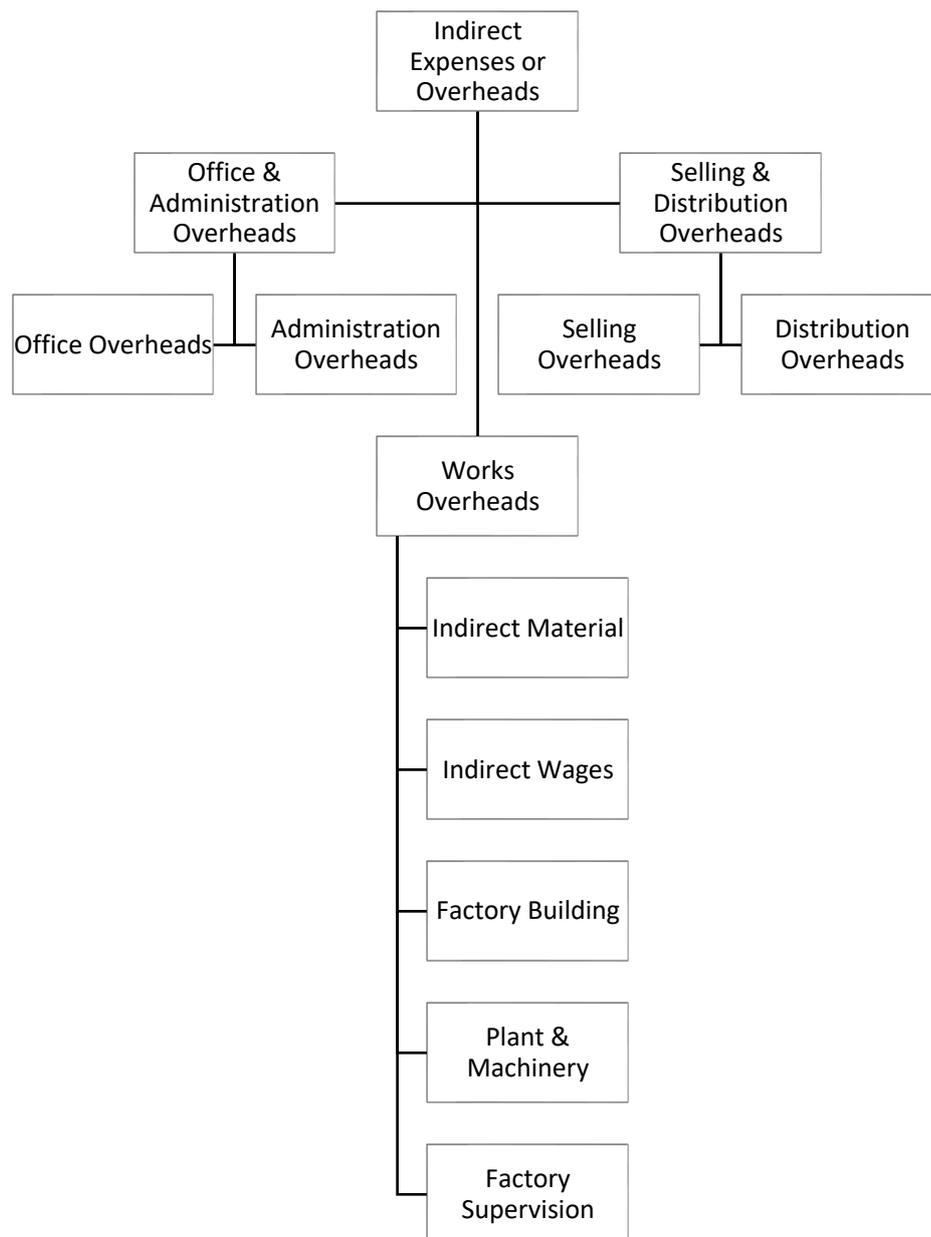
2. Direct Wages

The remuneration related to such labor is called direct wages which is paid for making direct materials finished goods. For example, the labor charges paid for making a furniture out of wood is called direct labor and the remuneration relating to the same, will be called direct wages.

3. Other Direct Expenses

In addition to direct materials and direct wages, all other remaining expenses are called 'other direct expenses' which are directly related to the production of a product. For example, the expenses made for the preparation of a special type of design, sample etc

Indirect Expenses OR Overheads



1. Works Overheads

The expenses incurred within the premises of factory are called works overhead. Following are some examples of works overheads

a. Indirect Materials

The materials which are indirectly helpful in the production of a product are called indirect materials. For example, the oil for keeping a machine in working order, cloth for the cleaning of machines, sundry materials etc. Following are some examples of indirect materials

Consumable Stores,

Materials used in Factory,

Indirect Consumption of Materials,

Store Keeping and

Normal Losses etc.

b. Indirect Wages

The labor engaged in addition to direct labor for the purpose of production, is called indirect labor and the remuneration paid for the same is called indirect wages. Following are some examples of Indirect Wages

Wages of Indirect Labor,

Unproductive wages,

Welfare expenses,

Normal Idle Time,

Encashment of leave,

Maternity benefits etc.

c. Factory Building

All the expenses relating to factory building are included in works overhead. Following are some examples of such items

Depreciation,

Repairs,

Rent,

Cleaning and

Lighting etc.

d. Plant & Machinery

All the expenses relating to plant and machinery are also included in works overhead. Following are some examples of such expenses

Depreciation,

Repairs,

Insurance,

Maintenance,

Power,

Fuel and

Water etc.

e. Factory Supervision

The expenses relating to factory supervision are included in works overhead. Some examples of such expenses are as below

Supervisor's Salary,

Foreman's Salary,

Factory Manager's Salary etc.

f. Other Expenses related to Factory

In addition to above expenses other expenses related to factory are also included in works overhead. Generally in questions the word factory or works is written either in front or after the items related to such expenses. Following are some examples of such items

- Drawing Office Expenses,
- Estimating Expenses,
- Production Expenses,
- Haulage,
- Stationary,
- Telephone etc.

2. Office and Administrative Overheads

The expenses related to office are called office overheads and the expenses related to the administration of the entire organisation are called administrative overheads and collectively they are called Office and Administrative Overheads.

a. Office Overheads

Following are some examples of Office Overheads

- Depreciation, Repairs and Insurance of Office Premises and Equipment's,
- Rent, Rates and Taxes of Office, Salary to Office Staff,
- Establishment Charges,
- Postage and Telegram,
- Printing and Stationary,
- Bank Charges,
- Telephone,
- Materials used in office and
- Public Relation Expenses etc.

b. Administrative Overheads

Following are some examples of Administrative Overheads

- Managerial Remuneration,
- Director's Fee,
- Auditor's Fee,
- Legal Expenses,
- Management Expenses and
- Administrative Office Expenses etc.

3. Sales and Distribution Overheads

The expenses related to the Sales and Distribution of finished goods is called Sales and Distribution Overheads.

a. Selling Overheads

Some, of the examples of Selling Overheads are as below

- Rent, Insurance and Salaries of Sales Office,

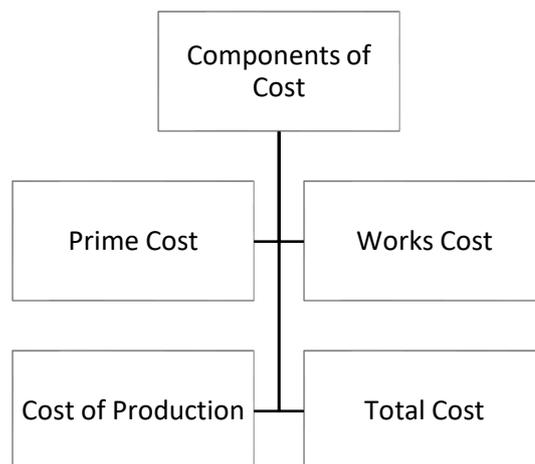
Sales Depot Expenses,
Show Room Expenses,
Commission of Agents and Travelers,
Travelling Expenses,
Marketing Expenses,
Advertisement and Publicity,
Bad Debts,
Cash Discount Allowed etc.

b. Distribution Overheads

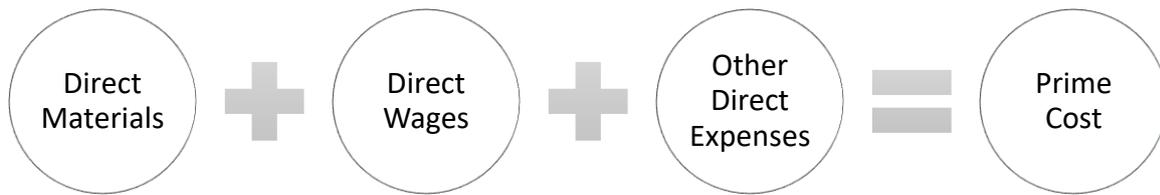
Following are some examples of Distribution Overheads

Materials used in Packing,
Packing and Forwarding,
Carriage and Freight Outwards,
Delivery Expenses,
Upkeep and Depreciation of Delivery Vans,
Rent of Warehouse or Godown,
Counting House Expenses etc

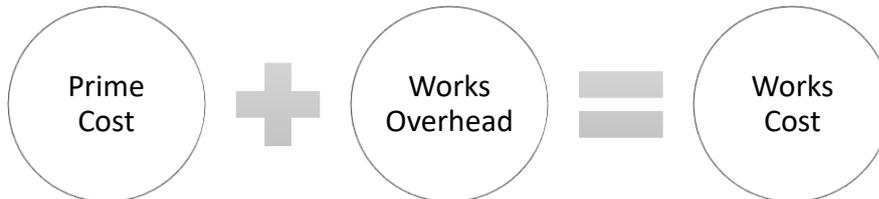
Components of Cost



1. Prime Cost



2. Works Cost



3. Cost of Production



4. Total Cost



4.3 Cost Sheet

The statement prepared for a definite period in, order to ascertain the total amount of production, its per prime cost, factory cost, production cost etc., and to present the same in definite order representing the different elements of cost for the sake of comparison, is called cost sheet.

A format of simple cost sheet is given below. The same cost sheet will take the form of comparative cost sheet if two columns for period are made in it for the purpose of comparison.

COST SHEET

(for the month ended 31st March, 2005)

Output 1,000 tons, Per ton

		Cost of 1,000 tons	Cost per ton
Direct Expenses		Rs	Rs
Direct Materials		3,000	3.00
Consumed Direct Wages		1,400	1.40
Other Direct Expenses		100	0.10
	(a) Prime Cost	4,500	4.50
Works Overheads		1,000	1.00
	(b) Works Cost	5,500	5.50
Office and Administration Overheads		1,500	1.50
	(c) Cost of Production	7,000	7.00
Selling and Distribution Overheads		1,000	1.00
	(c) Cost of Sales	8,000	8.00
Profit		2,000	2.00
	Sales	10,000	10.00

Characteristics of Cost Sheet

From the above definition of the cost sheet and its format following characteristics are

Definite Period	<ul style="list-style-type: none"> •Cost sheet is prepared for a certain period i.e., week, fortnight, month, quarter month, half year, year etc
Per Cost	<ul style="list-style-type: none"> •Cost sheet presents at a time the total amount of production, per prime cost, works cost, cost of production, total cost etc.
A definite Order	<ul style="list-style-type: none"> •In this the different elements of cost (Direct material, direct wages, other direct expenses, works overheads, office and administrative overheads and sales and distribution overheads) are disclosed in a definite order.
Relation with Total Cost	<ul style="list-style-type: none"> •Each element of the cost are related with the total cost.
Comparison	<ul style="list-style-type: none"> •With the preparation of comparative cost sheet, the comparison of cost with the other periods can be done.

Objectives of Cost Sheet

Following are the objects of preparing cost sheets. These objects can also be treated as the advantages of preparing cost sheets



Numerical

Q1. Following information's are obtained from the books of Lime factory for these months ended 31st March, 2005

	Rs.		Rs
Raw Materials Consumed	28,000	Light and Water	400
Fuel	6,900	Rent	2,000

Electric Power	1,340	Rates and Insurance	300
Wages	63,500	Office Salaries	7,000
Repairs	2,400	Administration Expenses	5,000
Haulage	1,060	Depreciation on Machine	2,500

If the output was 17,200 tons, prepare a Cost Sheet showing the cost per tons of each item of expenses and the total cost per ton for the period.

Solution

COST SHEET
(for the period ended 31st March, 2005)

Output 17,200 tons, per ton

	Cost of 17,200 tons		Cost per ton	
	Rs.	Rs.	Rs.	Rs.
Direct Expenses				
Direct Materials Consumed		28,000		1.63
Direct Wages		63,500		3.69
(a) Prime Cost		91,500		5.32
Works Overheads				
Fuel	6,900		0.4	
Electric Power	1,340		0.08	
Repairs	2,400		0.14	
Haulage	1,060		0.06	
Light and Water	400		0.02	
Rent	2,000		0.12	
Rates and Insurance	300		0.02	
Depreciation on Machine	2,500	16,900	0.14	0.98
(b) Works Cost		1,08,400		6.3
Office and Administration				
Office Salaries	7,000		0.41	
Administration Expenses	5,000	12,000	0.29	0.70
Cost of Production		1,20,400		7.00

Q2. From the following particulars, prepare a Cost Sheet showing the total cost per ton for the period ended 31st March, 2005

	Rs.		Rs
Raw Materials	33,000	Factory Insurance	2,300
Productive Wages	35,000	Office Insurance	500
Direct Expenses	3,000	Legal Expenses	1,400
Unproductive Wages	10,500	Rent of Warehouse	300

Factory Rent	7,500	Depreciation on Plant	2,000
Factory Lighting	3,700	Depreciation on Delivery Vans	200
Motive Power	4,400	Bad Debts	100
Haulage	4,000	Advertising	300
Directors Fee (Office)	2,000	Sales Depot Salaries	1,500
Factory Cleaning	500	Bank Charges	50
Sundry Office Expenses	200	Commission on Sales	2,200
Estimating Expenses	800	Factory Stationery	750
Office Stationery	900	Loose tools written off	600
Rent and taxes (Office)	500		

The total output for the period has been 14,775 tons

Solution

COST SHEET
(for the period ended 31st March, 2005)

			Cost of 14,775 tons	Cost per ton
			Rs.	Rs.
Direct Expenses				
Direct Materials Consumed			33,000	2.233
Direct Wages			35,000	2.369
Other Direct Expenses			3,000	0.203
	a)Prime Cost		71,000	4.805
Works Overheads		Rs		
Unproductive Wages		10,500		
Factory Rent		7,500		
Factory Lighting		3,700		
Motive Power		4,400		
Haulage		4,000		
Factory Cleaning		500		
Estimating Expenses		800		
Factory Insurance		2,300		

Depreciation on Plant		2,000		
Factory Stationery		750		
Loose Tools written off		600	37,050	2.508
	b)Work Cost		108,050	7.313
Office and Administration Overheads		Rs		
Directors' Fee (Office)		2,000		
Sundry Office Expenses		200		
Office Stationery		900		
Rent and Taxes (Office)		500		
Office Insurance		500		
Legal Expenses		1,400		
Bank Charges		50	5,550	0.376
	c)Cost of Production		113,600	7.689
Selling and Distribution Overheads		Rs		
Rent of Warehouse		300		
Depreciation on Delivery Vans		200		
Bad Debits		100		
Advertising		300		
Sales Depot Salaries		1,500		
Commission on Sales		2,200	4,600	0.311
	d)Cost of Sales		118,200	8.000

4.4 Concept of Budgeting and Budgetary Control

Budget

A budget is a definite arrangement of tasks for some particular future period. The term 'Budget' got from the French word 'baguette' which signifies 'little pack', or a compartment of records and documents. It is a bookkeeping plan. It is a formal arrangement of activity communicated in financial terms. It could be viewed as an announcement of anticipated pay and costs under certain foreseen

working conditions. It is a measured arrangement for future exercises – quantitative blue print for activity.

According to CIMA (Chartered Institute of Management Accountants) UK, a budget is “A plan quantified in monetary terms prepared and approved prior to a defined period of time, usually showing planned income to be generated and, expenditure to be incurred during the period and the capital to be employed to attain a given objective.”

Budgetary Control

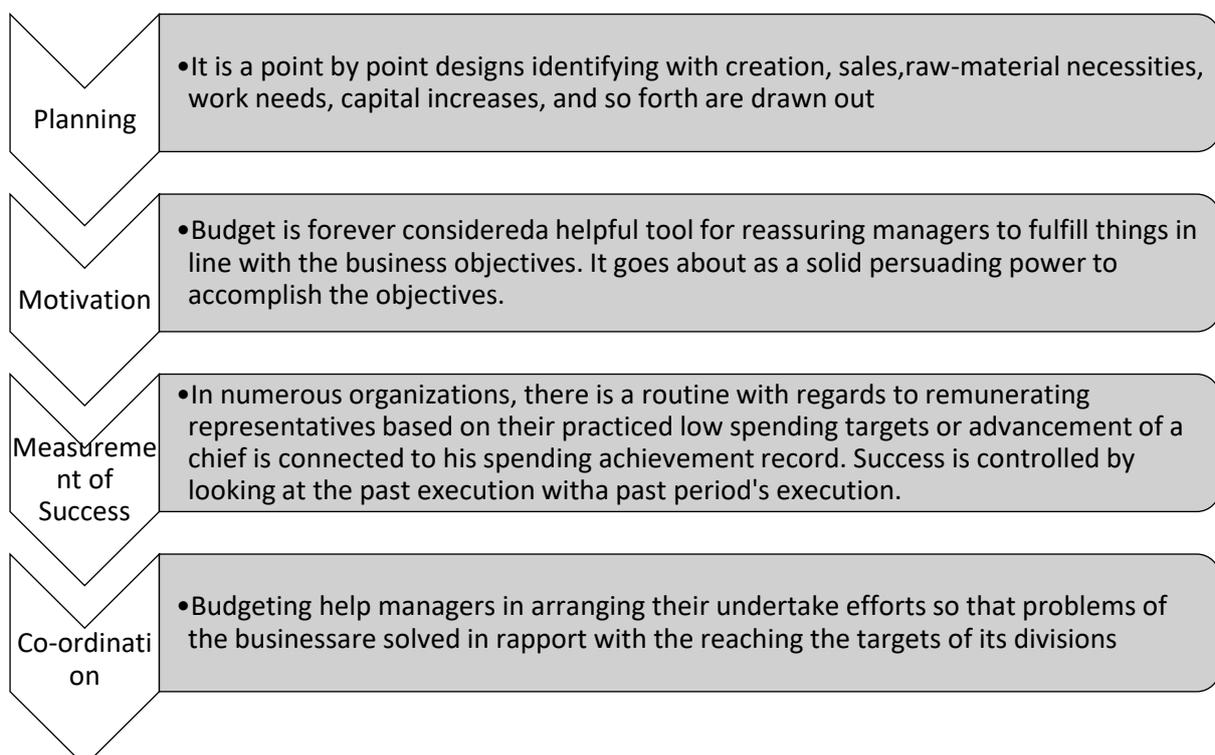
According to CIMA, “Budgetary control is the establishment of budgets relating to the responsibilities of executives of a policy and the continuous comparison of the actual with the budgeted results, either to secure by individual action, the objective of the policy or to provide a basis for its revision.”

Budgetary Control is a strategy of taking care of or overseeing costs through planning of budgets. Budgetary is a piece of budgetary control.

Features of budgetary control

1. Calculation and foundation of budget plans for some particular reason for the business.
2. To audit of spending budget in perspective on changes in conditions.
3. Help to examination of real exhibitions with the financial plan on a nonstop basis.
4. To make proper healing move, if necessary.
5. Analysis of varieties of real execution from that of the planned execution to know the reasons thereof.

Objectives of Budgetary control



Advantages of Budgetary Control

1. Budgetary control gives fundamental methodologies, guidelines, plan and approaches for activities.
2. It serves to the administration to perform business in the most expert way
3. It affirms collaboration among representatives; make cooperation and common comprehension among the staff.
4. It expands productivity of the generation work, takes out piece, waste and controls the expenses.
5. It shows to the administration where activity is expected to cure a position.
6. Planning additionally helps in getting bank credit.
7. It surveys the current circumstance and pinpoints the progressions which are fundamental.

Essentials of Budgetary control



4.5 Numerical of Budgeting and Budgetary Control

Q1. Prepare a production budget for three months finished March 31, 2018 for a processing plant delivering four items, based on following data

Type of product	Estimated stock on 1 st Jan, 2018	Estimated sales during Jan March	Desired Closing Stock on 31 st March, 2018
	(in s)	(In s)	(In s)
I	4000	20000	6000
II	6000	30000	10000
III	8000	26000	6000
IV	6000	24000	4000

Solution

Production Budget for three months to 31st March, 2018

Product I	Estimated sales	20000	
	Add Desired Closing Stock	6000	
		26000	
	Less Estimated Opening Stock	4000	22000
Product I	Estimated sales	30000	
	Add Desired Closing Stock	10000	
		40000	
	Less Estimated Opening Stock	6000	34000
Product I	Estimated sales	26000	
	Add Desired Closing Stock	6000	
		32000	
	Less Estimated Opening Stock	8000	24000
Product I	Estimated sales	24000	
	Add Desired Closing Stock	4000	
		20000	
	Less Estimated Opening Stock	6000	14000
	Total s to be produced		94000

Q2. From the accompanying figures set up the Raw Material Purchases Budget for January, 2018

	Material (in s)					
	A	B	C	D	E	F
Estimated stock on 1st January	8000	3000	12000	1000	7000	14000
Estimated stock on 31st January	10000	4000	14000	2000	8000	16000
Estimated consumption	60000	22000	66000	18000	44000	86000
Standard price per	25p.	5p.	15p	10p	20p.	30p

Solution

Raw Material Purchase Budget for January, 2018

Type	Materials						
	A	B	C	D	E	F	TOTAL
Consumption (s)	60000	22000	66000	18000	44000	86000	2,96,000
Add							
Estimated stock on 31st January, 2018 (s)	10000	4000	14000	2000	8000	16000	54000
Less							
Estimated stock on 1st January, 2018(s)	70000	26000	80000	20000	52000	102000	350000
Less							
Estimated stock on 1st January, 2018(s)	8000	3000	12000	1000	7000	14000	45000
Estimated Purchase (s)	62000	23000	68000	19000	45000	88000	305000
Rate per (Rs)	0.25	0.05	0.15	0.10	0.20	0.30	
Estimated Purchase (Rs)	15500	1150	10200	1900	9000	26400	64,150

Q3. You are requested to prepare a Sales Overhead Budget from the estimated given below

Salary for sales department 10000

Advertisement 5000

Expenses of sales department 3000

Counter salesmen's salary and DA (Dearness Allowance) 12000

Commission to counter salesman at 1% on their sales

Travelling salesmen's commission at 10% on their sales and expenses at 5% on their sales

The sales during the period were estimated as follows

Counter Sales

Travelling salesmen's sales

Rs.

Rs.

160000

20000

240000	30000
280000	40000

Solution

Sales Overhead Budget

Particular	Rs.	Rs.	Rs.
Estimated sales	180000	270000	320000
Fixed Overhead			
Salary for sales department	10000	10000	10000
Advertisement	5000	5000	5000
Expenses of sales department	3000	3000	3000
Counter salesmen's salary and DA (Dearness Allowance)	12000	12000	12000
	30000	30000	30000
Variable Overhead			
Commission to counter salesman at 1% on their sales	1600	2400	2800
Travelling salesmen's commission at 10%	2000	3000	4000
expenses at 5%	1000	1500	2000
	4600	6900	8800
Total Sales Overheads	34600	36900	38800

4.5 To Do Activity

Q1 You are requested to prepare a Sales Overhead Budget from the estimated given below

Salary for sales department	20000
Advertisement	10000
Expenses of sales department	6000
Counter salesmen's salary and DA (Dearness Allowance)	14000

Commission to counter salesman at 1% on their sales

Travelling salesmen's commission at 10% on their sales and expenses at 5% on their sales

The sales during the period were estimated as follows

Counter Sales	Travelling salesmen's sales
Rs.	Rs.
260000	40000
440000	20000
480000	30000

Q2 Discuss various elements of cost accounting?

Q3 Write difference between cost accounting and financial accounting?

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Chapter 5 Application of Software

Introduction

Tally.ERP 9 is the world's fastest and most powerful concurrent Multilingual business Accounting and Inventory Management software. Tally.ERP 9, designed exclusively to meet the needs of small and medium businesses, is a fully integrated, affordable and highly reliable software. Tally.ERP 9 is easy to buy, quick to install, and easy to learn and use. Tally.ERP 9 is designed to automate and integrate all your business operations, such as sales, finance, purchasing, inventory, and manufacturing. With Tally.ERP 9, accurate business information is literally at your fingertips anywhere. The powerful new features and blazing speed and power of Tally.ERP 9 combined with enhanced MIS, Multilingual, Data Synchronization and Remote capabilities help you simplify all your business processes easily and cost effectively.

Learning Objectives

After studying this chapter, you will be able to

- Discuss the characteristics of Tally ERP 9
- Explain the uses of Tally software in recording transaction
- Understand the posting of transaction in Tally ERP 9

Structure

5.1 Fundamentals of Tally. ERP 9

5.2 Creating Accounting Masters in Tally ERP 9

5.3 Creating Inventory Masters in Tally ERP 9

5.4 Vouchers and Invoicing Entry in Tally ERP 9

5.5 Types of Vouchers in Tally ERP 9

5.1 Fundamentals of Tally ERP 9

Salient Features of Tally.ERP 9

A leading accounting package The first version of Tally was released in 1988 and, through continuous development, is now recognized as one of the leading accounting packages across the world, with over a quarter million customers. Tally's market share is more than 90%.

No accounting codes Unlike other computerised accounting packages which require numeric codes, Tally.ERP 9 pioneered the 'no accounting codes' concept. Tally.ERP 9 users have the freedom to allocate meaningful names in plain English to their data items in the system.

Complete business solution Tally.ERP 9 provides a comprehensive solution to the accounting and inventory needs of a business. The package comprises financial accounting, bookkeeping and inventory accounting. It also has various tools to extract, interpret and present data.

Integrated/ Nonintegrated accounting and inventory With Tally.ERP 9, the user is able to choose between accounting and accounting with inventory. If accounting with inventory is opted for, the user can choose whether it should be integrated or not.

Flexible and easy to use Tally.ERP 9 is very flexible. It mimics the human thought process, which means that Tally.ERP 9 can adapt to any business need. Tally.ERP 9 users need not change the way their business is run to adapt to the package.

Speed Tally.ERP 9 provides the capability to generate instant and accurate reports, which assists the management to take timely and correct decisions for the overall productivity and growth of the company.

Power Tally.ERP 9 allows the user to maintain multiple companies and with unlimited levels of classification & grouping capabilities. It also allows drill down facility from report level to transaction level.

Flexibility Tally.ERP 9 provides flexibility to generate instant reports for any given period(month/year) or at any point of time besides providing the facility to toggle between Accounting & Inventory reports of the same company or between companies.

Concurrent multilingual capability Tally.ERP 9 offers you the exclusive capability of maintaining your accounts in any Indian language, viewing them in another language and printing them in yet another Indian language.

Real time processing Immediate posting & updation of books of accounts as soon as the transactions are entered, thereby facilitating instant statements & Reports. It also facilitates real time multiuser environment.

Versatility Tally.ERP 9 is suitable for a range of organisations, from small grocery stores to large corporations with international locations and operations.

Multiplatform availability Tally.ERP 9 is available on Windows 95, 98, ME, 2000. It runs on a single PC or on a network. On a network, it supports access via any combination of platforms.

Online Help The Tally.ERP 9 Online Help (Alt+H) provides instant assistance on basic and advanced features or any other relevant topics of Tally.ERP 9.

Tally.NET is an enabling framework which establishes a connection through which user can access the Client's data without copying / transferring the data.

Remote Access Tally.ERP 9 provides remote capabilities to access the data from anywhere and anytime.

Control Centre works as an interface between the user and Tally.ERP 9 installed at different sites and enables the user to centrally configure and administer Site/User belonging to an account.

Functional Features of Tally. ERP 9

Complete bookkeeping	Stock categories
Books, registers and statements of accounts	Stock query by stock group, or stock category
General ledgers	Multiple godowns
Accounts receivable and accounts payable	Stock transfers to godowns and branches
Flexible voucher numbering	Multiple stock valuation methods
Flexible classification of account heads	Batchwise/ Lotwise, including expiry date handling
Panoramic view	Alternate s of measure and tail s.
Drilldown display	Tracking through receipt notes/ delivery notes/ rejections inwards/ rejections out wards
Database reporting	Additional costs incurred on purchase
Voucher and cheque printing	Movement/ Profitability analysis Party wise/ Itemwise/ Stock Groupwise
Columnar reports	Customizable sales invoices using price lists with multiple prices
Bank reconciliation	Sales and purchase order processing

Advanced Accounting	Advanced Inventory
Multiple companies	Stock items classified as raw materials, workinprocess, finished goods
Multicurrency	Bill of Material with autoadjustment of stocks
Multiple financial years	Jobworking concepts, including subcontracting
Comparison of data using multicolumnar reporting.	Additional cost of manufacturing with notional value and percentage
Memo vouchers	CENVAT support
Postdated vouchers	Reorder levels
Userdefined voucher types	Stock ageing analysis
Sales and purchase extracts	Batch related stock reports
Cash flow statement	Point of Sale (POS)

Technology Advantages

Simple and rapid installation Tally.ERP 9 has a simple, menu driven installation procedure. The user can install the program files on any drive if the hard disk has partitions. The user can also specify the name and directory location of the program files. Tally.ERP 9 uses minimum hard disk space in the local drive. Its installation on the local disk takes just a few seconds.

Unlimited multiuser support A multiuser version of Tally.ERP 9 can be installed on a network, having any number of computers with different operating systems such as Win 95, 98, NT, 2000, XP and Linux.

Internal backup/ restore Tally.ERP 9 has an inbuilt, user friendly 'backup and restore' option. It helps the user to take a backup of one or more companies or all companies, in a single directory, in the local hard disk, or in any external media.

Data reliability Tally.ERP 9 offers reliable data. It uses a flexi field, flexilength, selfindexed, weighted file structure for an extremely compact and fast database. Tally.ERP 9 is robust and even if there is a power failure or the computer is incorrectly shut down, data is not lost. Tally.ERP 9 uses signaling quality data integrity checks, at regular levels, to ensure the complete reliability of data.

User defined security levels Tally.ERP 9 offers high levels of security. Users can define multiple levels of security according to their requirements. Every authorized user in the company can have an individual password, with rights to use specific features only. The user with the administrator level password will have full access and can set controls for other users.

Data security Tally.ERP 9's data integrity checks ensure that there are no external changes to the data. Tally.ERP 9 also uses a binary encoding format of storage to prevent devious grouping of information.

Tally audit The Tally.ERP 9 audit feature provides the user with administrator rights and the capability to check the entries made by the authorized users and alter these entries, if necessary. Once the entries are audited, Tally.ERP 9 displays the altered entries, if any, along with the name of the user, who has altered the entry, and the date and time of the alteration.

Removal of data into a separate company Tally.ERP 9 allows users to maintain a company for any number of financial years. Once the books of accounts have been completed for the earlier financial years, the user can split the company data into multiple companies as per financial periods required. Tally.ERP 9 also has a feature to split company data. The user can specify the date from which the company has to be split and Tally.ERP 9 will split the company to form two companies as per periods specified. Once the data has been split, the closing balance of the first period (first company) becomes the opening balance for the next period (second company).

Multidirectory for company management The user can create multiple directories to store data. The data stored in these directories can be accessed directly in Tally.ERP 9, by specifying the path.

Import/ Export of data Any transaction can be exported and imported to other software after suitably altering the current structures to accept the Tally.ERP 9 data structure. Data can also be imported to Tally.ERP 9 by writing a TDL program. The data which is to be exported from Tally.ERP 9 can be in XML, HTML or ASCII format.

Tally.ERP 9 Synchronization Synchronization is the process of exchanging Tally.ERP 9 data between two or more locations. This process enables a branch office to send its data to the head office, over the Internet or a private network.

Graphical analysis of data Tally.ERP 9 provides graphical analysis of data which helps the user to perform deeper analysis. The user can generate graphical analysis reports such as Sales register, Purchase register, Ledgers, Funds flow, Cash flow, Stock Item registers and so on. This helps the management to quickly judge performance and be better prepared for difficult times.

ODBC (Open Database Connectivity) compliance It allows other programs to use data from Tally.ERP 9, directly. Thus, any program such as MS Excel or Oracle, which is ODBC compliant, can use data from Tally.ERP 9. Data connectivity is dynamic, which means that any update in Tally.ERP 9 is reflected in real time in other ODBC compliant software. The user can also extract data from Tally.ERP 9 and design his/ her own report formats in other ODBC compliant software.

Protocol support Tally.ERP 9 provides protocol support for HTTP, HTTPS, FTP, SMTP, ODBC and raw sockets with data interchange formats such as XML, HTML with XML islands, SOAP and related formats. Protocol refers to a mechanism by which information (data) can be put into or taken from Tally.ERP 9. Formats refer to the standard for information to be generated from Tally.ERP 9 or from other applications which can exchange data with Tally.ERP 9.

Direct web browser access While working on Tally.ERP 9, the user can directly log on to the Tally website, provided he/ she has access to the Internet. The website lists details of all the facilities offered by Tally.ERP 9. The user can also download the latest release of Tally.ERP 9 as and when it is available. The Tally website also offers Tally Chat, by which a user can communicate with a Tally representative and get required information.

Ability to preview and publish reports and documents on the Internet Companies which want to publish reports and price lists on their website can do so directly from Tally.ERP 9.

Email Facility Tally.ERP 9 facilitates the mailing of any Tally.ERP 9 report or document.

Multilingual capability Tally is the world's first accounting and inventory software with multilingual capability. Currently, Tally.ERP 9's multilingual capability extends to 12 languages which include nine Indian languages (Hindi, Gujarati, Punjabi, Tamil, Telugu, Marathi, Kannada, Malayalam and Bengali), Bahasa Melayu and Bahasa Indonesia. Tally.ERP 9 enables you to enter data in one language and have it transliterated into different languages. You can generate invoices, purchase orders or delivery notes in the language of your choice after entering data for the same in any of the nine specified languages. Also, the phonetic keyboard allows you to spell the term phonetically based on how it sounds and Tally.ERP 9 displays the data in the language selected after transliteration.

Point of Sale (POS) POS is an acronym for Point of sale. Point of Sale can be a retail outlet, a checkout counter in a shop, or any other location where a sales transaction takes place. It is a computerized cash register which adds up the sales totals, calculates the balance to be returned to buyer and automatically adjusts the inventory level to reflect the quantity sold. The equipment required for POS to work effectively is cash registers, card readers, barcode scanners and so on.

Payroll

Tally.ERP 9 Payroll is integrated with Accounting and benefits the user by simplifying Payroll processing and accounting. Tally.ERP 9 Payroll enables users to set up and implement salary structures, ranging from simple to complex, as per the organization's requirements. The user can also align and automate payroll processes and directly integrate them with main stream accounting applications. Tally.ERP 9 Payroll also supports configurable formats for pay slip printing; flexible salary/wage, attendance, leave and overtime registers; gratuity and expert reports.

Data Migration Capability

Tally.ERP 9 has the ideal solution for those who have their data in Tally 7.2 and now want to use Tally.ERP 9. Tally.ERP 9 provides a migration tool which helps the user to migrate the data easily to the latest version and continue with day to day transactions. Tally 6.3 users can also use the migration tool which will rewrite the version to Tally 7.2 and then migrate the data to Tally.ERP 9. Tally 8.1 users and Tally 9 Release 2.14 users can rewrite the version of their data to Tally.ERP 9.

Features pertaining to Duties and Taxes

The allnew package provides statutory reporting capability for GST (Goods & Service Tax).

5.2 Creating Accounting Masters in Tally.ERP 9

Loading a Company

Loading company data in Tally.ERP 9 can be done automatically or manually. When creating a company, Tally.ERP 9 creates a subdirectory under its DATA directory. The data saved here is allotted a number in serial order starting with 0001. These are the systemgenerated codes for the company.

To load company data manually

1. Open the Tally.ini file which is located in the Tally folder.
2. Set **Default Companies** to **No**, or insert two semicolons before **Load = 00001** (this number may vary).
3. Open Tally.ERP 9.
4. Click **Select Company**.
5. Select the company to load from the **List of Companies**.
6. Press **Enter** to select the company.

To load company data on starting Tally.ERP 9

1. Open the Tally.ini file located in the Tally folder.
2. Set **Default Companies** to **Yes**.
3. Specify the company to be loaded automatically, for example, **Load = 00001**. The company is loaded automatically when you open the application.

To load multiple companies data

1. Go to **Gateway of Tally > F1 Select Company**.
2. Select the company to be loaded.

Note If two or more companies are loaded, click the company which you want to work on. The selected company will be highlighted, and will appear on top of the list.

To load Company Features

In Tally ERP 9, you can enable and use the available features as required for your company. **F11 Features**, when enabled or disabled will apply to the current company only.

To enable company features

1. Go to **Gateway of Tally > click F11 Features**.
2. Select the required features in the **Company Features** menu.
3. Enable the required features.
4. Press **Ctrl+A** to accept.

5.3 Creating Inventory Masters in Tally.ERP 9

Handling Stocks of Different Parties

In today's business, where manufacturers, buyers or resellers keep multiple stock items belonging to different parties, maintaining stock items and carrying out stock evaluation can become a challenge. Many times a manufacturer has to send stock items for Job Work or receive third party's stocks for servicing and in such situation generating accurate stock report can become more complicated. However, the new enhanced Godown feature in Tally. It allows users to create Godowns based on the possession type for the stock items, and this function enables users to track which Godown stores third party stocks and also allows tracking which stocks are lying in third party Godowns. Based on the options selected for each Godown, the Stock Valuation gets affected. Hence, this feature helps users get better stock management and more accurate Stock Summary report.

Creating Godown with Different Options The new Godown enhancement feature in Tally.ERP 9 gives users the option to define Godowns of different types like 'Use for Third Party Stock with Us' and 'Use for Our Stock with Third Party'. The first option 'Use for Third Party Stock with Us' does not affect company's Books of Accounts as the Godown stores stock items which are third party's assets. Alternatively, the second option 'Use for Our Stock with Third Party' affects company's Books of Accounts as the stock items are owned by the company regardless of which Godown they are lying in. To make use of these features, we first need to enable 'Multiple Godowns' in Tally.ERP 9. • Go to 'Gateway of Tally> F11 Inventory Features' • Set 'Yes' to 'Maintain Multiple Godowns.'

Company: Laptop Solutions

Inventory Features

General		Invoicing	
Integrate Accounts and Inventory	? Yes	Allow Invoicing	? Yes
Allow Zero valued entries	? No	Enter Purchases in Invoice Format	? Yes
Storage & Classification		Use Debit/Credit Notes	? No
Maintain Multiple Godowns	? yes	Use Invoice mode for Credit Notes	? No
Maintain Stock Categories	? No	Use Invoice mode for Debit Notes	? No
		Separate Discount column on Invoices	? No

To create a Godown, go to 'Gateway of Tally> Inventory Info. > Godowns>Create' The three different types of creating Godowns are shown

Godown Creation

Name : XXXXXXXXXX

Under : **Primary**

Allow Storage of materials ? **Yes**

Use for:

Our Stock with Third Party	? No
Third Party Stock with us	? No

- When this option is set as 'Yes' Godown is used to track company's stock lying with Third Party
- When this option is set to 'Yes' Godown is used to track Third Party's stock lying with us
- When both the options are set to 'No' Godown works as default

Note Both the options – 'Our Stock with Third Party' and 'Third Party Stock with Us' cannot be set as 'Yes' at the same time. Allocating Items to Godown There are two ways to allocate items to Godowns – during Item creation or alteration and while passing transactions. Item Allocation to Godown during Item Creation Let's assume a company receives 50 quantity of third party's stocks 'Item A' for servicing and let's allocate these items to company's Godown 'GDThird Party Stock'.

- Go to 'Gateway of Tally> Inventory Info> Stock Items>Create'
- Enter 'Item A' in 'Name'
- Define 's of Measurement' as 'nos'
- Enter '50' in 'Opening Balance' and press 'Enter'.

Name : **Item A**

Under : **Primary**

Units : **nos**

Set Standard Rates ? **No**

Tax Information

Tariff Classification : **Not Applicable**

Rate of Duty (eg 5) : **0**

Behaviour

Costing Method : **Avg. Cost**

Market Valuation Method : **Avg. Price**

Ignore Diff. due to Physical Counting ? **No**

Ignore Negative Balances ? **No**

Treat all Sales as New Manufacture ? **No**

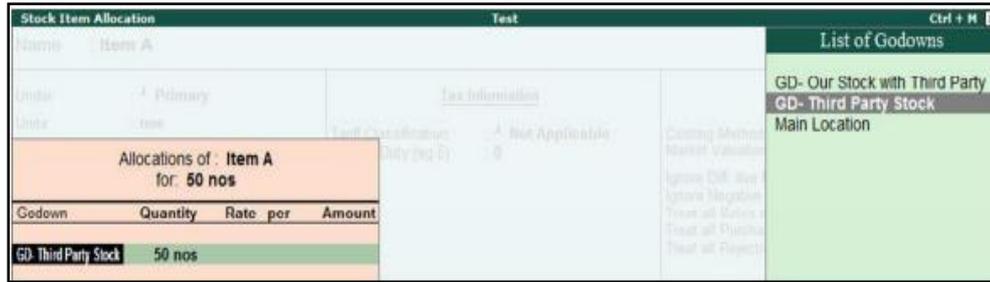
Treat all Purchases as Consumed ? **No**

Treat all Rejections inward as Scrap ? **No**

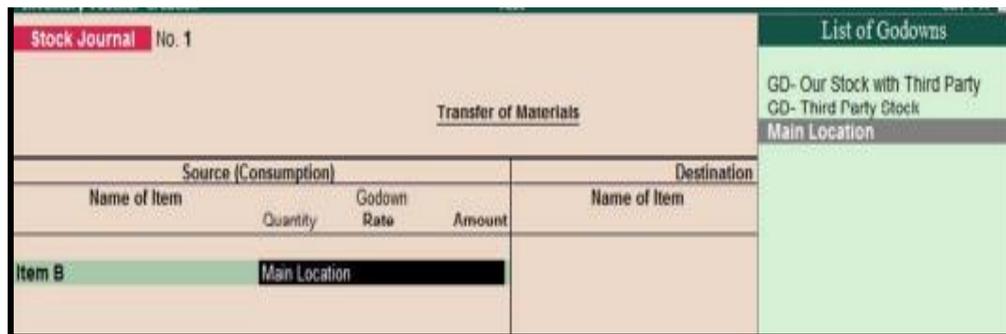
	Quantity	Rate per	Value
Opening Balance	50 nos	100.00 nos	5,000.00

The

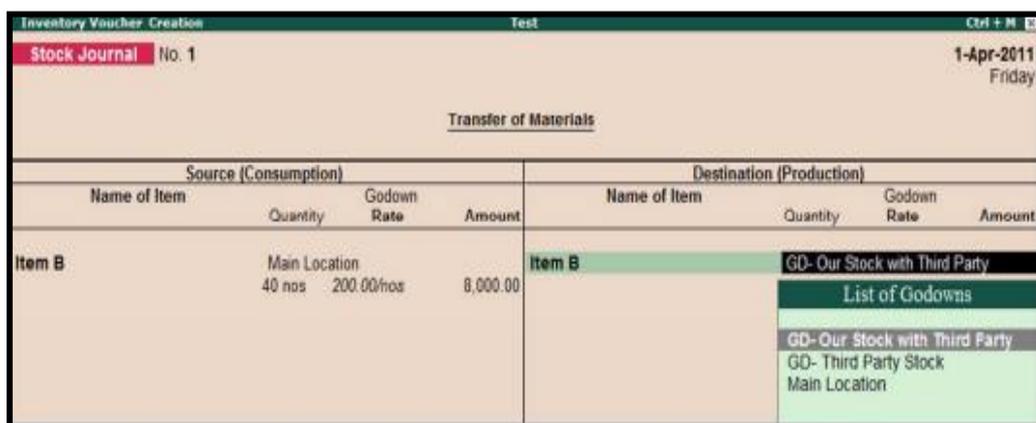
'Stock Item Allocation' screen will be displayed on the screen; here you can allocate the 'Item A' to 'GDThird Party Stock with Us' which is a Godown of type 'Third Party Stock with Us'.



Press 'Enter' and click 'Yes' to accept the screen. Item Allocation to Godown while Recording Transaction The second way of allocating items to Godown is while passing a transaction. Let's create a Stock Journal for transferring company's own stock 'Item B' lying in company's Godown to third party's Godown 'GDOur Stock with Third Party'. • Go to 'Gateway of Tally>Inventory Voucher>F7 Stock Journal' • Select 'Item B' in 'Name of Item'.



Select 'Main Location' under 'Godown' • Enter 'Quantity' and 'Rate'. • In the 'Destination' side, select the same 'Item B' for 'Name of Item'. Enter the same 'Quantity' and 'Rate' but for 'Godown', select 'GD Our Stock with Third Party' as shown. This way, company's own stock 'Item B' is allocated to third party's Godown during transaction.



Stock Summary The Stock Summary in Tally.ERP 9 is a report that shows upto date information about the quantity, rate, closing value and location of stocks. The Godown enhancement feature enables Stock Summary report to drilldown and show indepth details of the stocks lying in thirdparties' or company's own Godown. To view the Stock Summary, go to 'Gateway of

Particulars	Test For 1-Apr-2011 Stock details for : All Types		
	Closing Balance		
	Quantity	Rate	Value
English Text Book	200 nos	50.00	10,000.00
Excercise Book	50 nos	25.00	1,250.00
GK Text Book	60 nos	25.00	1,500.00
Instrument Box	100 nos	35.00	3,500.00
Item A	50 nos	100.00	5,000.00
Item B			8,000.00
Maths Text Book	100 nos	95.00	9,500.00
Paper	120 nos	15.00	1,800.00
Pen	35 nos	15.00	525.00

Tally>Stock Summary'.

Note The default view of the Stock Summary shows items which affect company's Book of Accounts i.e. company's own items lying in its Godown and third party's Godown.

5.4 Voucher Entry in Tally.ERP 9

Accounting Vouchers

Invoicing

In accounting terms, a voucher is a document containing the details of a financial transaction. For example, a purchase invoice, a sales receipt, a petty cash docket, a bank interest statement, and so on. For every such transaction made, a voucher is used to enter the details into the ledgers to update the financial position of the company. This feature of Tally.ERP 9 will be used most often.

Tally.ERP 9 follows the Golden Rule of Accounting

	Real Accounts	Personal Accounts	Nominal Accounts
Debit	What Comes in	The Receiver	Expenses and Losses
Credit	What Goes out	The Giver	Incomes and Gains

5.5 Types of Accounting Vouchers

Tally.ERP 9 is preprogrammed with a variety of accounting vouchers, each designed to perform a different job. The standard Accounting Vouchers are

- Contra Voucher (F4)

- Payment Voucher (F5)
- Receipt Voucher (F6)
- Journal Voucher (F7)
- Sales Voucher /Invoice (F8)
- Purchase Voucher (F9)

The following exercises are sample entries for understanding Voucher entry in Tally.ERP 9.

Contra Voucher (F4)

For example withdrawing money from the bank for petty cash.

Description	Records funds transfer between cash and bank accounts		
Voucher Entry	Account	Amount	Amount
	State Bank of India(Bank Accounts)		Credit
	Petty Cash (Cashinhand)	Debit	

Use a Contra Voucher to record the entry.

Setup InVoucher entry mode, press **F12 Contra Configuration** and set the following to **Yes**

Go to the **Gateway of Tally > Accounting Vouchers > F4 Contra**.

Accounting Voucher Creation Indus Enterprises Ctrl + M

Contra No. 1 1-Apr-2009 Wednesday

Particulars	Debit	Credit
Cr State Bank of India Cur Bal: 30,000.00 Dr		5,000.00
Dr Petty Cash Cur Bal: 5,000.00 Dr	5,000.00	
	5,000.00	5,000.00

Narration:
Ch. No. :235648 Cash Transferred from State Bank of India to Petty Cash.

Accept ?
Yes or No

Use a Contra Voucher to record the entry.

Press **Y** or **Enter** to accept the screen.SS

Payment Voucher (F5)

For example, a company settles a creditor's bill by Cheque.

Description	Records all bank and cash payments		
Voucher Entry	Account	Amount	Amount
	Ledger account paid Kaltronic Ltd. (Sundry Creditors)	Debit	
	Bank or cash account State Bank of India(Bank Account)		Credit

Use a Payment Voucher to record the entry.

Go to the Gateway of Tally > Accounting Vouchers > F5 Payment.

Accounting Voucher Creation		Indus Enterprises		Ctrl + M
Payment No. 1				1-Apr-2009 Wednesday
Particulars		Debit	Credit	
Dr	Kaltronic Ltd <i>Cur Bal: 500.00 Dr</i> On Account	500.00		
	500.00 Dr			
Cr	State Bank of India <i>Cur Bal: 29,500.00 Dr</i>		500.00	
Narration:		500.00	500.00	
Ch. No. :		Accept ?		
		Yes or No		

Payment in Single Entry Mode

In Voucher entry mode, use F12 Payment Configuration and set Use Single Entry mode for Pymt /Rcpt/Contra to Yes

Description	Records all bank and cash payments		
Voucher Entry	Account	Amount	Amount
	Ledger account paid Conveyance Postage (Indirect Expenses)	Debit	
	Bank or cash account Petty Cash (Bank Account)		Credit

The entry made in the single entry mode appears as shown below

Accounting Voucher Creation		Indus Enterprises	Ctrl + M
Payment	No. 2		1-Apr-2009 Wednesday
Account: Petty Cash Cur Bal: 5,300.00 Dr			
Particulars			Amount
Conveyance			300.00
Cur Bal: 300.00 Dr			
Postage			800.00
Cur Bal: 800.00 Dr			
Narration:			4,100.00
			Accept ?
			Yes or No

Press **Y** or **Enter** to accept the screen.

Receipt Voucher (F6)

For example, the company receives a bank advice that the interest has been credited to its deposit account.

Description	Records all receipts into bank or cash accounts		
Voucher Entry	Account	Amount	Amount
	Ledger account receiving Bank Interest (Indirect Incomes)	Debit	
	Bank or cash account Deposit Account		Credit

Use a Receipt Voucher to record the entry.

Ensure in **F12 Payment Configuration**, **Use Single Entry mode for Pymt/Rcpt/Contra** is set to **No**.

Go to the **Gateway of Tally > Accounting Vouchers > F6 Receipt**.

The entry made appears as shown below

Particulars	Debit	Credit
Cr Bank Interest <i>Cur Bal: 1,000.00 Cr</i>		1,000.00
Dr Deposit Account <i>Cur Bal: 1,000.00 Dr</i>	1,000.00	
	1,000.00	1,000.00

Narration:
Ch. No.:

Accept?
Yes or No

Press **Y** or **Enter** to accept the screen.

Journal Voucher (F7)

For example, the company has entered some expenditure on advertising as general office costs, rather than recording the transaction in the separate ledger for advertising.

Description	Records adjustments between ledger accounts		
Voucher Entry	Account	Amount	Amount
	Advertising (Indirect Expenses)	Debit	
	Office Costs (Indirect Expenses)		Credit

Use the Journal Voucher to adjust the two accounts.

Go to the **Gateway of Tally > Accounting Vouchers > F7 Journal**.

The entry made appears as shown below

Accounting Voucher Creation		Indus Enterprises		Ctrl + M
Journal No. 1		1-Apr-2009 Wednesday		
Particulars	Debit	Credit		
Dr Advertising <i>Cur Bal: 1,500.00 Dr</i>	1,500.00			
Cr Office Costs <i>Cur Bal: 1,500.00 Cr</i>		1,500.00		
Narration:		1,500.00	1,500.00	
		Accept ? Yes or No		

Press **Y** or **Enter** to accept the screen.

Sales Voucher (F8)

Description	Records all sales		
Voucher Entry	Account	Amount	Amount
	Buyer's ledger account Milton & Co. (Sundry Debtors)	Debit	
	Sales Accounts (Local Sales)		Credit

For example, a company sells software on credit.

Use a Sales Voucher for making this entry.

Go to the **Gateway of Tally > Accounting Vouchers > F8 Sales.**

The entry made appears as shown below

Particulars	Debit	Credit
Dr Milton & Co <i>Cur Bal: 5,000.00 Dr</i>	5,000.00	
Cr Local Sales <i>Cur Bal: 5,000.00 Cr</i>		5,000.00

Narration:

5,000.00 5,000.00

Accept?
Yes or No

Press **Y** or **Enter** to accept the screen.

Purchase Voucher (F9)

A company buys computer parts on credit.

Description	Records all purchases		
Voucher Entry	Account	Amount	Amount
	Supplier's ledger account Beltron Ltd (Sundry Creditor)		Credit
	Purchase Accounts (Local Purchases)	Debit	

Use a Purchase Voucher to record this entry.

Go to the **Gateway of Tally > Accounting Vouchers > F9 Purchase**.

The entry made appears as shown below

Accounting Voucher Creation		Indus Enterprises		Ctrl + M
Purchase	No. 1			1-Apr-2009
Supplier Invoice No. :	Date :			Wednesday
Particulars	Debit	Credit		
Cr Beltron Ltd		3,000.00		
<i>Cur Bal: 3,000.00 Cr</i>				
Dr Local Purchases	3,000.00			
<i>Cur Bal: 3,000.00 Dr</i>				
Narration:			3,000.00	3,000.00
				Accept ?
				Yes or No

Press **Y** or **Enter** to accept the screen. **General**

Option	Functionality	Additional Information
Integrate accounts and inventory?	<p>Enable this option to include the stock or inventory balance from the inventory records.</p> <p>Provides a drill down to the stock registers from balance sheet.</p> <p>Disable this option to maintain accounts and inventory separately.</p>	Stock records often contain compensating errors caused by wrong allocation to items. This feature enables finalization of financial books without waiting for the reconciliation of stocks.
Enable zerovalued transactions?	Enable this option to allow zerovalued transactions in Inventory vouchers.	

Storage and Classification

Option	Functionality
Maintain multiple Godowns / Excise s?	Enable this option if you have more than one stock storage locations or godowns, and you want to track stock movement across these Locations.
Maintain stock categories?	Enable this option to create and maintain stock categories
Maintain batchwise details?	Enable this option to maintain batch information pertaining to Stock Items. A new field Maintain in Batches is displayed in the Stock Item Creation screen.
Set expiry dates for batches?	Enable this option to set expiry dates for the batches. This displays an additional field Use Expiry Dates in the Stock Item Creation screen.
Use separate actual and billed quantity columns?	Enable this option to specify quantities that are different from those delivered / received, when invoicing.

Order Processing

Option	Functionality
Enable purchase order processing?	Enable this option to create purchase orders. This feature can also be used for preclosure of purchase order.
Enable sales order processing?	Enable this option to create sales orders.

Enable job order processing?

Enable this option to create job work out or in orders.

Inventory accounting includes recording of stock details like the purchase of stock, the sale of stock, stock movement between storage locations or Godowns and providing information on stock availability. Tally.ERP 9 makes it possible to integrate the inventory and accounting systems so that the financial statements reflect the closing stock value from the Inventory system.

The inventory system operates in much the same way as the accounting system.

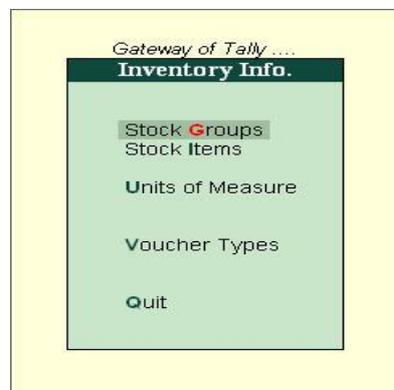
First you set up the inventory details, which is a similar operation to creating the chart of accounts although, in this case, there are **no predefined set of stock groups**.

Second, you create the individual stock items, which is similar to setting up the ledgers.

In a newly created company the Inventory Info. Menu comprises of four types of Masters, viz. Stock Groups, Stock Items, s of Measure and Voucher Types.

Go to the **Gateway of Tally > Inventory Info.**

Inventory Info. Menu



Suggested Readings

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Block 3

Financial Management of Rural Organisations



Mahatma Gandhi National Council of Rural Education

Department of Higher Education

Ministry of Human Resource Development, Government of India

Hyderabad - 500004



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Chapter 2 Investment Decisions

- 2.1 Capital Budgeting Techniques
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- 5.4 Factors Influencing Dividends
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Chapter1 Introduction

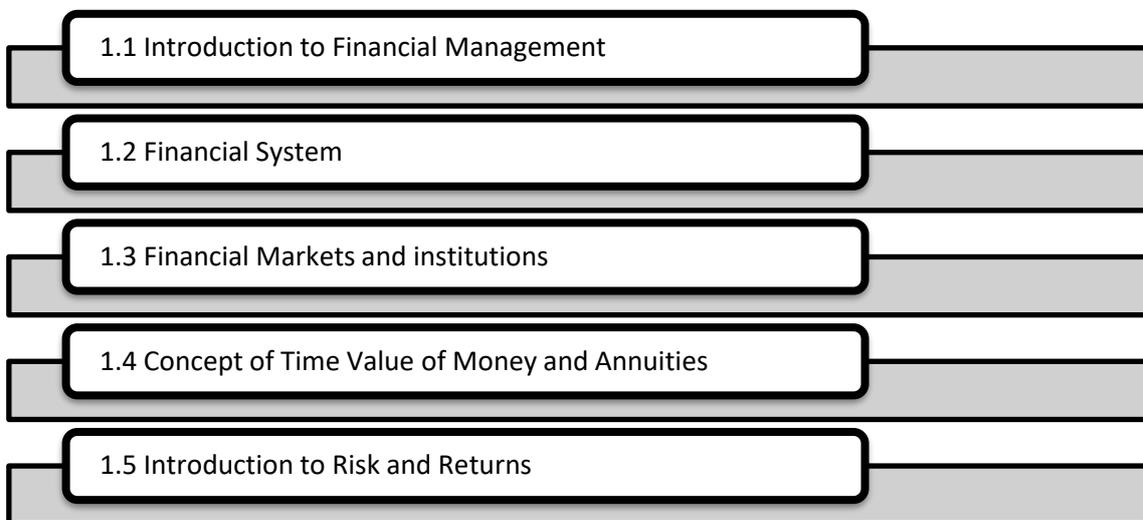
Finance is one of the important requirements of business. It is necessary to understand the meaning of Finance prior to study of management of finance. Amount of finance and its timely availability helps the development of business of any organization. All organizations viz., Schools, Colleges, hospitals, a factory, banks etc. require finance for day to day function. Finance is very important for any organization to strengthen themselves to survive in a competitive world of business. Finance may be compared to life blood of an economy.

Objectives

This helps the students to know the following issues in this

- To understand the terms finance and management
- To know the relation between Finance and Management
- To study Financial System
- To make acquainted with Financial Markets and institutions, time value of money and annuities
- To make acquainted to risk and returns

Structure



1.1 Introduction to Financial Management

Definition of Finance¹

According to F.W.Paish, Finance may be defined as the position of money at the time it is wanted.

In the words of John J. Hampton, the term finance can be defined as the management of the flows of money through an organization, whether it will be a corporation, school, bank or government agency.

¹<https://www.coursehero.com/file/p4glg1l/AccordingtoFWPaishFinancemaybedefinedasthepositionofmoneyatthe/>

According to Howard and Upton, “finance may be defined as that administrative area or set of administrative functions in an organization which relates with the arrangement of each and credit so that the organization may have the means to carry out the objectives as satisfactorily as possible.

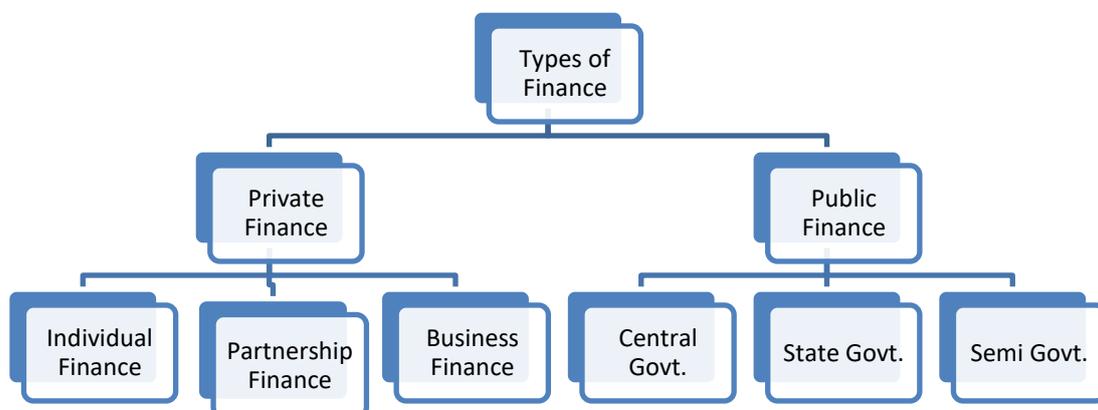
In the words of Bonneville and Dewey, Financing consists in the raising, providing, managing of all the money, capital or funds of any kind to be used in connection with the business. As put forth by Husband and Dockery in his book ‘Modern Corporation Finance’, finance is defined as “an organism composed of a myriad of separate enterprise, each working for its own ends but simultaneously making a contribution to the system as a whole, some force is necessary to bring about direction and coordination. Something must direct the flow of economic activity and facilitate its smooth operation. Finance is the agent that produces this result”.

The Encyclopedia Britannica defines finance as "the act of providing the means of payment." It is thus the financial aspect of corporate planning which may be described as the management of money. After studying the above explained various definitions of ‘Finance’ one can able to understand that finance guides the movement of various socioeconomic activities and enables the unhindered functions. Finance offers the essential impetus for nonstop business processes of all categories. Finance is crucial for development, divergence, transformation, formation of new ventures and so on. The financial strategy of any institute or business organizations to a larger magnitude, decides not only its existence and existence but also the performance and achievement of that organization or institute.

Types of Finance

Finance is one of the vital and fundamental parts of organizations or business firms; therefore, finance plays a very crucial role in each and every chunk of the business actions. Thus, it may be mentioned here that without finance running a business organization is not possible. Types of finance are depicted in following flow chart

Mainly there are two types of finance viz., (i) Private Finance and (ii) Public finance. Former type of finance includes activities of Individual, Firms, Business or Corporate to meet the requirements. Public Finance includes financial activities of Central Government, State Government and Semi



Government Financial matters.

Fig 1.1 Types of Finance

Nature of Finance Function

The finance function is the procedure of obtaining and using funds of a business. It related to general management of an organization. Finance function is related with the policy decisions viz., type of business, size of firm, type of equipment used, requirement of debt, liquidity position of organization. Policy decisions decide the size of the cost effectiveness and riskiness of the business of the firm.

According to Prof. K. M. Upadhyay following are nature of finance function

- i. Most of the organizations follow centralized financial operations and these results in economies.
- ii. In all business firms finance functions are undertaken irrespective of their sizes / legal systems of organization.
- iii. Financial functions contribute to the survival and growth of the firm.
- iv. It is primarily involved with the data analysis for use in decision making.
- v. Finance functions are helpful inoperating basic business activities of a firm, in addition to external ecological issues which affect basic business actions, namely, production and marketing.
- vi. It also comprises control functions
- vii. Valuation of the firm is the central focus of finance function.

Financial Management – Scope

Organizations need mainly two types of finances viz., (i) Short Term and (ii) Long Term. Financial management helps in arranging sufficient finance for needs of short term and long term of organization. While making financial decisions, a financial manager needs to consider following areas of finance function.

a. Financial Requirements and Estimation

Financial manager need to estimate short term and long term financial requirements of his organization/business. For this purpose, financial manager have to prepare existing and future financial plan. Estimation of financial requirement helps in purchasing fixed assets as well as in acquiring working capital.

b. Capital Structure

It concerned with types and share of different securities for accruing funds. Before deciding the type of securities raised, it is necessary to decide the quantum of funds required. Usually long-term debts are used to finance fixed assets. In this case share capital may be the most suitable, if maturation period is longer. Similarly, working capital also raised by Long term funds, either wholly or partially. More dependence on overdrafts and cash credits for meeting working capital requirements may not be suitable. A decision about cost of raising funds needs to be linked to various sources for funds.

c. Selection of a Source of Finance

After preparing a capital structure, an appropriate source of finance is carefully chosen which includes share capital, debentures, financial institutions, public deposits etc. The source of funds depends on the types of funds, for financial needs of short-term periods the appropriate sources are viz., banks, public deposits and financial institutions. For long term finance, share capital and debentures may be the appropriate.

d. Selection of a Pattern of Investment

Taking of decision for investment after procuring funds is very crucial. Use of funds depends on selection of an investment pattern. After accruing funds, a decision in purchasing of assets need to made. Fixed assets need to be purchased first and working capital and for other requirements next.

e. Cash Management

Important task of finance manager is proper cash management. His tasks include assessing various cash needs at various times and then making arrangements for arranging cash. Mainly cash is required to purchase of raw materials, make payments towards loan repayment, meet wage and salary bills and meet daily recurring expenses. There should not be idle cash left with the organization because it shows that cash was not properly used.

f. Financial Controls

Use of various control devices is warranted for an efficient financial management system. Various control devices include Rate of Interest (ROI), break even analysis, cost control, ratio analysis, cost and internal audit. In evaluating the performance of various financial policies ROI is used as best control device.

g. Appropriate Use of Surpluses

Financial management is also helpful in utilization of profits or surpluses. A sensible use of excesses is crucial for expansion and divergence plans and also in caring the benefits of shareholders. Using of profits is the best policy of further financing but it clangs with the benefits of shareholders. Therefore, the financial manager needs to take care in using funds for paying dividend as well as in retaining profits for financing growth plans also.

‘Finance’ guides the movement of various socioeconomic activities and enables the unhindered functions. Finance offers the essential impetus for nonstop business processes of all categories. Finance is crucial for development, divergence, transformation, formation of new ventures and so on. The financial strategy of any institute or business organizations to a larger magnitude, decides not only its existence and existence but also the performance and achievement of that organization or institute.

Organizations need mainly two types of finances viz., (i) Short Term and (ii) Long Term. Financial management helps in arranging sufficient finance for needs of short term and long term of organization. While making financial decisions, a financial manager needs to consider different areas of finance function.

1.2 Financial System

Financial System contents two words Financial and System. It indicates a set of composites and closely associated or blended guidelines, agents, practices, markets, transactions, claims and liabilities in the economy. Finance is helpful in study of money, and it also studies nature, creation, behavior, regulations and administration of money. Therefore, it also includes activities dealing in finance, planned into a system. Financial system plays a vital role in the working of the economy because it allows transfer of resources from savers to investors. The financial system comprises of financial institutions, financial markets, financial tools and the services provided by the financial institutions.

The financial system includes four major components. These components are

- a. Financial Institutions

- b. Financial Markets
- c. Financial Instruments
- d. Financial Services

The financial system of an economy is depicted in following figure²

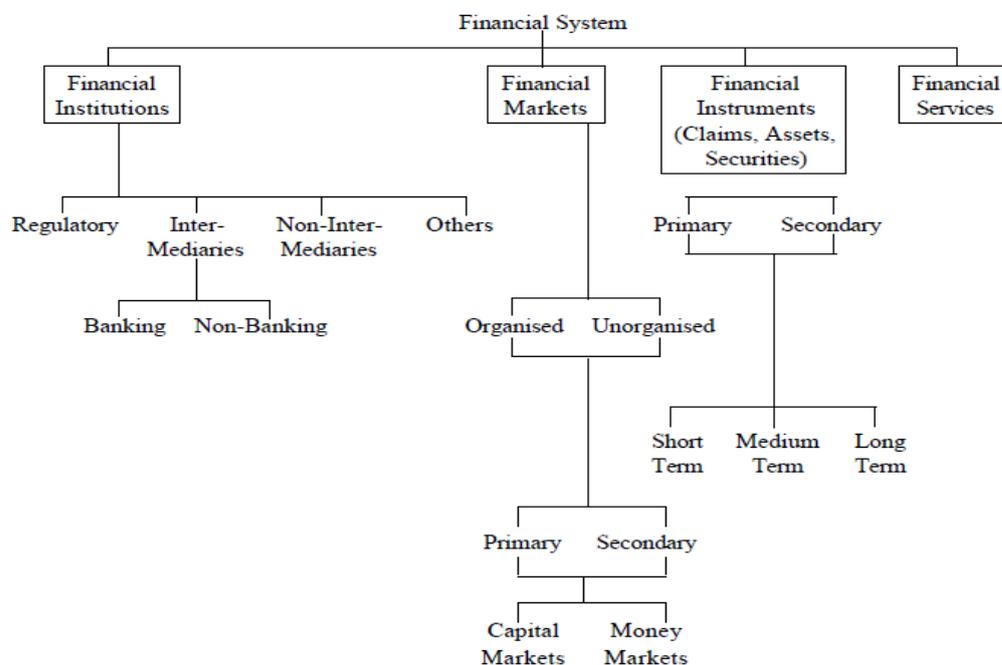


Fig 1.2 Financial System

Savings are mobilized directly or indirectly through financial markets by Financial Institutions. While mobilizing savings, various financial instruments and services of various financial services providers are used.

- a. **Financial Institutions** Financial institutions mobilize savings from surplus s and transfer the funds to deficit s . In Flow Chart 1.1 these institutions are classified as Regulatory, Intermediaries, Non-intermediaries and Others. These financial institutions deal with only financial assets like; deposits, securities, loans, etc. These institutions take part in financial markets and mobilize the savings either directly or indirectly from the surplus s .
- b. **Financial Markets** Financial market is a place or device to transfer savings from surplus s to deficit s . Broadly, these markets may be classified into (i) money markets and (ii) capital markets. Former types of market deals with short term claims or financial assets (less than a year). On the other hand, latter types of markets deal with financial assets with maturity period of more than a year. Both these markets perform the similar function of transferring surplus funds to needy s . Other types of markets existing are (i) Primary markets which deal with new issue of securities, and (ii) secondary markets make transaction with securities already issued and available in the market. Thus, savings are directly mobilized by Primary markets by issuing new securities. While Secondary markets provide liquidity to the securities already issued in Primary markets and indirectly help in mobilizing the savings.

²Bhole, L.M., Financial Institutions and Markets Structure, Growth and Innovations, Tata McGrawHill Publishing Company Ltd., New Delhi

- c. **Financial Instruments** Financial System dealt with financial assets or securities or financial instruments in a financial market. The requirements of lenders and borrowers are varied, thus there is also a variety of securities in the financial markets. Financial assets include the repayment of principal at a future date and/or payment of a periodic or terminal sum in the form of interest or dividend. Equity shares, preference shares debentures, bonds, etc. are some of the examples of financial instruments.
- d. **Financial Services** Financial services are another part of financial system and they include the services offered by both types of companies viz., (i) Asset Management Companies and (ii) Liability Management Companies. Asset management companies include the leasing companies, mutual funds, merchant bankers, issue/portfolio managers. On the other hand, a Liability management company includes the bill discounting houses and acceptance houses. The financial services help to raise the required funds with ensuring their efficient deployment. Financial services help in servicing lenders by deciding the financing mix. Services such as bill discounting, factoring of debtors, parking of short term funds in the money market, ecommerce and securitization of debts are provided by the financial services firms to ensure an efficient management of funds. Along with banking and insurance facilities, it also provides specific services such as credit rating, venture capital financing, lease financing, factoring, mutual funds, merchant banking, stock lending, depository, credit cards, housing finance, book building, etc. Regulative authorities viz., the Securities and Exchange Board of India (SEBI), Reserve Bank of India (RBI) and the Department of Banking and Insurance, Government of India, regulate services provided by stock exchanges, specialized and general financial institutions, banks and insurance companies, through a plethora of legislations.

Financial institutions and financial markets enable the operational of the financial system through financial tools. In order to accomplish the tasks allocated, they require number of services of financial environment. Thus, Financial services are considered as the fourth element of the financial system. An efficient and well-ordered working of the financial system rest on a great deal on the range of financial services rendered by the providers and their efficacy and usefulness.

Financial Markets

The word 'market' generally denotes physical place for people to exchange goods and services. But it does not show whole view of market because the term market also includes mechanisms. Financial market, facilitates the exchange of financial assets among the traders. In other terms, it is the place or mechanism for selling and buying of financial assets. Further, transaction in financial market may undertake at specific place or location, e.g. transaction take place through a particular mechanism like telephone, telex, or any other electronic media. Financial markets facilitate trading in financial assets in stock exchange. These assets are also called as financial instruments or securities. Financial assets are not consumed. These are claims to obtain consumable goods or services. Other than financial markets, goods and services are traded through price mechanism. Similarly, in the financial markets, interest paid on a loan is the price for the use of investible funds. The rate of interest payable determined by various factors like; size of the fund, length of the period of loan, risk involved, etc. Thus, the rate of interest, often known as discount rate, is the rate charged to get present funds in exchange for future funds.

Role of Financial Markets

For economic development and growth of countries, there is need of funds. These funds are acquired from the savings of household individuals, business firms, public sector central Government, State Governments, Local Governments, Semi Governments, etc. On the other hand, there are definite investors or shortfalls whose consumption or investment is more than their current income. So, financial markets play an important role in moving these surpluses from savings to investments. This procedure is known as 'transmission mechanism'.

In country, movement of surplus funds from surplus to deficits is crucial for needed accomplishment of national aims and priorities. Therefore, this movement must be in correct direction and for productive purposes. For this, suitable financial tools and chances must be accessible. Financial markets facilitate flow savings and exchange the appropriate financial assets as per his necessity. Therefore, the efficiency of financial market rest on the efficient flow of funds in an economy. Further, the financial market must encourage people to become producers/entrepreneurs and inspire individuals and institutions to save more.

The financial markets help in fast growth of industry, economy and contribute to the society's welfare thus raising of the standard of living people. Therefore, financial markets ought to grow at a fast rate and they should be efficient and more diversified. The financial market plays a major role in the distribution of the economy's savings for efficient production of goods and services, and thus, contributes in realizing the desired national objectives.

Functions of Financial Markets

Functions of a financial market are broadly classified into two viz., (a) Economic Functions, and (b) Financial Functions.

a) Economic Functions

- It facilitates the transfer of funds from creditors to ultimate borrowers.
- Creditors earn interest/dividend on their surplus funds, thus increasing their earnings, and as a result, increasing national income.
- Borrowers need to use borrowed funds effectively, if invested in new assets, and later growing their income and gross national products finally.
- By helping movement of real resources, it serves the economy and finally the welfare of the general public.
- It offers a channel through which new savings flow into capital formation of a country.

b) Financial Functions

- It enables the borrowers carry out their plans by providing funds.
- It provides the earning facility to lenders with their assets, their wealth may be held in a productive form without the necessity of direct ownership of real assets.
- It offers liquidity in the market, thus assets against money can be resold at any time.

Along with the above, the financial markets perform following three more economic functions

1. The price of the traded asset; or equivalently, the required return on a financial asset is determined by interaction of buyers and sellers in a financial market. The required rate of return that investors demand is crucial for firms to acquire funds, thus it is called as price discovered process.

2. Financial markets give an instrument for an investor to sell a financial asset. Therefore, financial market offers liquidity, which is an attractive feature to sell. If there is no liquidity, the owner will be forced to hold a debt instrument till it matures and an equity instrument till the company is, either willingly or otherwise, liquidated. While all financial markets give some form of liquidity.
3. Financial market reduces the search and information costs of transaction. There are several costs involved in transaction viz., explicit cost including advertisement cost and implicit costs including the value of time spent in locating a matching part. The existence of some form of organized financial market decreases search costs.

The financial markets help to earn income on surplus through movement of savings from new industry/production and provide opportunities for financial investment. Thus, financial markets carry out both financial and nonfinancial functions. The financial markets enable both financing of physical capital formation, viz., tangible fixed assets and inventories, and consumption expenditure. Therefore, financial markets deal with the flow of funds not only between individual savers and investors but also between institutional savers and investors.

Classifications of Financial Markets

As already explained the financial market consists of all banking and nonbanking financial institutions, this also includes procedure and practices followed in these markets, and financial tools for facilitating the movement of funds. The classification of financial markets in an economy is depicted in Flow Chart 1.3. There are two types of Financial Markets viz., (i) Primary and Secondary Markets; and (ii) Money and Capital Market.

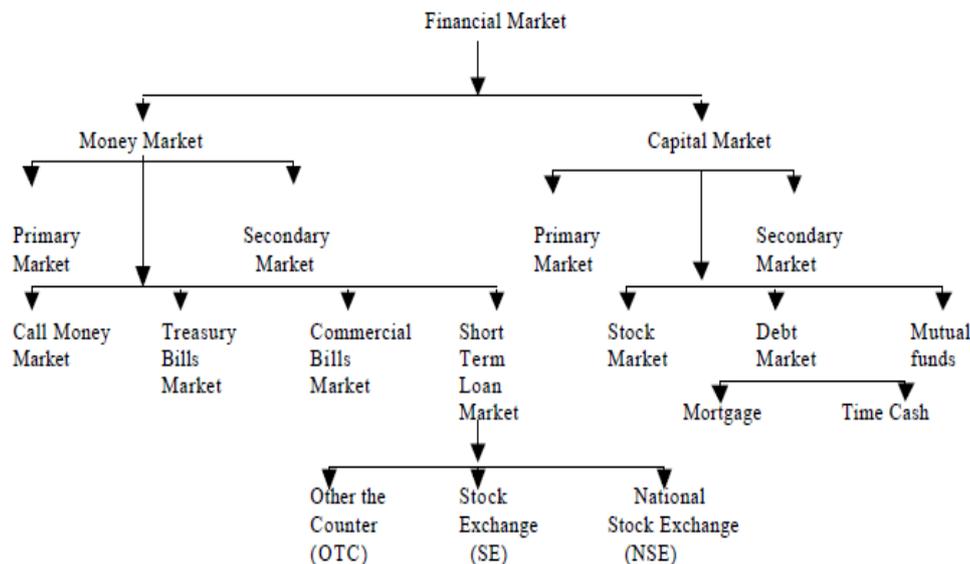


Fig 1.3 Financial Market

Indian Money Markets

The Indian Money Market is classified into organized and unorganized money markets. The unorganized money market includes local bankers and money lenders. The unorganized money market varies from organized market in the matter of organization, operations, interest rate structure, etc. The local bankers and money lenders are active in the small towns and villages, and partly in big cities, and they provide credit facility to farmers, artisans, small traders with high rate of

interest because of nonexistence of organized money market in rural and remote areas. Normally, they provide loan against collateral security to people known to them. They are not regulated by Central Bank.

The organized money market in India include of Reserve Bank of India, State Bank of India and its subsidiaries, commercial banks. Apart from Nationalized banks and Commercial banks other type of organized money markets are finance corporations, bill market and bullion market. Mumbai, Kolkata and Delhi. Mumbai is the prominent center of finance because of presence of head office of Reserve Bank of India, some of the commercial banks, leading stock exchanges, well organized market for gilt edged securities, bullion market.

Classification of Global Financial Markets

The term Globalization indicates the integration of financial markets all over the world into an international financial market. Since globalization of financial markets, entities in any country search for raising funds need not be restricted to their domestic financial market. Similarly, investors in a country need not limited to the financial assets issued in their national market. The factors responsible for integration of financial markets are

1. Deregulation or liberalization of markets and the actions of market participants
2. Key financial centers of the world
3. Technological improvements for monitoring world markets, executing orders
4. Analyzing financial opportunities
5. Increased institutionalization of financial markets.

There is no uniform method for categorizing the global financial markets. From the perspective of a given country, financial markets can be classified as either internal or external. The classification of global financial markets is explained in flow chart 1.4.

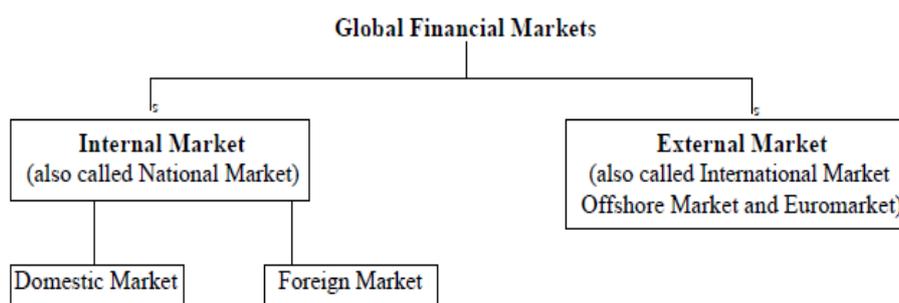


Fig 1.4 Global Financial Markets

Financial system comprises of activities dealing in Finance, organised into a system. The financial system includes Financial Institutions, Financial Markets, Financial Tools and the Financial Services. Financial Institutions comprise both regulatory and intermediary institutions. Financial markets consist of both primary and secondary markets.

A financial market is a place or tool where funds or savings are moved from surplus s to deficit. These markets can be broadly categorized into money markets and capital markets. Money markets take care of short-term claims or financial assets, whereas capital markets take care of financial assets having maturity period of more than a year. The functions of financial markets can be

categorized into two Economic and Financial. From the perspective of a given country the global financial markets can be classified as either internal or external.

1.3 Financial Markets and institutions

The main function of financial market is to interchange funds, from one party to another. In commercial world, the demand for funds arises for diverse purposes and periods. For example, Rural village industry needs short term funds for working capital it may range from one month to one year, on the other hand long term funds are required for fixed assets ranging from ten to twenty years. Therefore, various types of financial market are existed in the country; viz., markets for corporate bonds and equity shares, Government and semi Government securities, mutual funds, other types of markets such as foreign securities, public sector bonds and equities, etc. Funds or securities transacted in these markets reflect difference in purposes, maturities and risks. Thus, financial markets are classified into two broad categories as given below

- a. Money Market
- b. Capital Market.

a. Money Market

The term 'Money Market' and foreign exchange market are not similar. Different currencies are traded or exchanged, in foreign exchange market. But, money market is associated with short term loans or securities, normally maturing within one year. Short term financial instruments that mature within a year or earlier are traded in money market. Short term financial instrument includes short term loans or deposits of banks, commercial papers, certificates of deposits of banks, commercial papers, treasury bills and notes, etc.

Short-term financial assets or Money Market instruments are called as near substitutes for money. Under this type of markets, the risk of capital losses or money risk and risk of default are very low as compared to capital market. Due to short period maturity, the change in interest rates does not affect their prices very much, thus money market risk is very low. Similarly, the default risk is also very low as main members in this market are governments, central bank, commercial banks and other important institutions. Therefore, liquidity of instruments in money market is very high and can be turned over quickly at low transaction cost without loss. The other objective of money market is to arrange for the funds by which individuals, institutions and governments may be able to rapidly adjust their actual liquidity position to the amount wanted. In this market temporary cash surpluses are adjusted with temporary cash deficits. This market enables both borrowers and lenders to obtain short term funds quickly and to convert their short term financial assets into cash respectively. Money supply and operations in the money market are regulated and controlled by the Central Bank of the country, and Central Bank is a major participant in the money market.

b. Capital Market

The term capital market itself denotes that it is a market which provides capital funds to the needy persons or firms. It shows that capital market deals with capital to use as money instruments for long term claims to assets. In capital market, financial instruments such as long term and medium term funds are traded. Various financial institutions assist in this process. Capital markets are the compound of various institutions and mechanism and long term resources are pooled and transferred to the interested business firms, governments, individuals

and other agencies through these institutions. Based on the purpose and requirement of the borrowers these funds are available. Further, the capital market is classified into various categories viz., primary and secondary market, equity and debt market, mortgage market, stock market, securities market and so on.

In this type of market, most of the investment is made directly and it is internally financed. For example, a large funds are internally created by the commercial s from their business earning and directly invested in the long term fixed assets such as plant and machinery, equipment's, premises and other assets. These funds are directly engaged by the debtors without the support of financial institutions. Further, it is also prominent that in the capital market the individual investors also meet the long term funds obligation of the borrowing firms. Occasionally, they directly invest through primary markets and sometimes through other financial institutions; popularly known as indirect financing.

Agencies in Money Markets

As mentioned earlier, the money market is the place or device for raising of short term funds. The rate of interest on these funds is based on the sources of funds, the credit rating of the borrowers, maturity period, etc. In the secondary market old outstanding short term claims or securities are traded at the rates fixed by the condition of demand and supply of these assets.

Further, money market comprises of specialised submarkets dealing with specific type of short term funds and instruments. Among these call money market, treasury bills market, commercial bills market; short term loan market are important. The following are important participants in these specialised submarkets in money market are

i) Central Bank

Apex monetary institution of the money market in any country is the Central Bank. The functions of the Central Bank are to regulate and announce policies relating to monetary management in the country. As it performs the major financial operations of the government, thus it serves as the government bank. The Central Bank also participate in a big way in the market to purchase and sell various securities related to Government hence it is one of the major participants in the money market. Functions of the Central bank in financial market are given as bellow

a) Supply of Currency Notes

The Central Bank is the agency to control and supply the currency notes in the country. For example, in our India RBI has the sole authority to issue various currency notes except one rupee notes and coins and lesser coins. The RBI functions this activity through its Issue Department.

b) Agent and Adviser of the Central Government

RBI functions as agent and adviser of the Central Government in the financial matters, such as loans, advances, servicing of debts, etc. RBI also performs various functions related to Government Departments, Government Boards and public undertakings. It also takes decision to meet the short term as well as long term financial requirements; through the collection of taxes or raising funds from the public. Further, the RBI also advises the government in preparation of its financial and economic policies related to both national and international matters.

c) Banker's Bank

RBI regulates banking operations in financial market as bankers' bank in the country. RBI regulates rate of interest on advances and deposits by the bankers. Absolutely, the Central Bank

holds honored position and a pre-decided fixed percentage of all the commercial banks deposits have to deposit with it. The Central Bank has the power to take decision to increase or decrease this percentage up to the specific limit.

d) Foreign Exchange

RBI maintains sufficient foreign exchange reserve to meet the requirements of foreign trade and serve foreign debts. It also takes steps for the stability of the currency at international level. Therefore, Central Bank participates in a big way in domestic as well as foreign financial markets. These are some major functions of RBI in money market.

ii) Commercial Banks

Commercial banks are also another important Government agencies to participate in money market of a country. Commercial banks are operating a major portion of the total operations of the money markets. Borrowing and lending of money are basic functions of commercial banks. They accept all kinds of deposits from the public at large and they are repayable on demand or otherwise. The instruments used for withdrawal of deposits are cheques, drafts, pay order or otherwise. The banks utilize these deposits to lend loans and advances to persons or organisations who need funds.

By accepting small amount of savings from public and then combining the all deposits into a huge lot for the purpose of investment into business sector. These banks extend short term financial help in the form of working capital needs of the business firms with the help of tools such as cash credit, discounting bills, hundies, promissory notes, overdraft facility and other short term debt instruments.

Commercial banks along with accepting deposits lending loans and advances, they also provide a range of other services in the capacity of agent, for their clients. They extend the facilities of payment of subscription, insurance premium, rent, royalty, interest dividend, etc. on behalf of their clients. Further, Commercial Banks also collect the amounts arisen due to interest, dividend, rent, salary and wages, commission for their customers. They advise their customers regarding to sale and purchase of various securities and in planning their investment portfolio. This service is called as 'Portfolio Management Service'.

a. Indigenous Financial Agencies

Indigenous financial agencies comprise of money lenders (Village Sahukars) and indigenous bankers still today also they are important participants in money market, especially in unorganized sector including rural organizations. Money lenders are normally providing financial assistance to rural farmers, artisans and others. Indigenous banker is an individual or private firm receiving deposits and dealing in hundies or lending money. The banking commission has pointed out in this regard as, "while the former lends his own funds, the latter acts as a financial intermediary by accepting deposits, or avails himself of bank credit".

These agencies provide short term loans to both urban as well as rural borrowers. Normally they finance farmers and others in rural areas. The rate of interest charged by these agencies is as compared to the commercial banks.

b. Discount Houses

Discount houses are important components of the money market. The major function of these houses is to provide adequate liquidity in the market by discounting trade bills of traders. These houses are normally found in the developed money market, e.g. London Money Market.

c. **Acceptance Houses**

Acceptance house is another important participant in the money market. They borrow short term loans from the banks and lend the same to the traders and play a significant role in providing more liquidity in the money market. In other words, they accept the bills of exchange drawn on them either by the seller or the buyer of the goods and accepted bill further discounted from the discount house.

Agencies in Capital Markets

Following two types of institutions participate in capital markets

- a. Banking institutions
- b. Nonbanking financial institutions

a. Banking Institutions

Banking institutions are such banks which accept the long term deposits from the public and then lend to the borrowing community. Various types of these Banking Institutions are commercial banks, cooperative banks, land development banks, foreign banks, regional rural banks, etc. Some of the important activities of these banks are given briefly as below.

Commercial banks, besides participating in money market they also participate in capital market activities. Under the capital market banks accept long term deposits from the public at large providing opportunity to invest their savings. They also lend to meet long term funds requirement of business organizations including rural organizations and all types of business undertakings like tiny, small, medium and large s. Banking institutions also provide long term finance to transport operators for buying the vehicles, dealers in various goods, farmers, professionals, rural and small-scale industries in rural areas and self-employed persons, etc.

b. Nonbanking Financial Institutions

Nonbanking financial institutes also play a very major role in capital market. They under take capital transformation process from savings to investments in an economy. They accept deposits and collect funds from individuals and others and lend them to trade, industries, government, rural organizations etc. As per different needs of the savers they purchase and sell instruments and also create new instruments. The various types of nonbanking Financial Institutions are briefly given as below

i) Investment Banks

Investment banking institution is responsible for collecting the savings of economical people and guiding these funds into the business enterprise including rural organizations. Some of basic functions of these investment banks are given as below

- Long term financing of business undertakings
- Marketing of shares and debentures
- Acting as security middlemen
- Advising in marketing of an issue
- Acting as an insurer instead of outright purchase of security etc.

Investment banks are very much prevalent in developed countries specifically in USA. The functions of investment bankers in USA, are (1) formation of new capital; (2) subordinate to capital formation. The purpose concerning formation of a new capital is connected with the involvement in formation of new capital for both new as well as old undertakings. The second category deals with working as broker or dealer, offering security, counselling, advising, security substitutions and other allied

services. These institutions play an important role in providing the necessary capital for the long term needs of business organization's including rural organizations. Therefore, these are also known as the 'entrepreneurs of entrepreneurs. In India, some of these functions have been taken over by merchant banks.

ii) Merchant Banks

In early nineteenth centuries trade between countries was financed by bills of exchange drawn on the principal merchant houses and at that time merchant banking activities were firstly developed in the U.K.. Recently, all financial and consultancy firms made attention to it. Merchant banks provide specific services like acceptance of bills of exchange, corporate issue management, portfolio management services, project counselling and financing, corporate restructuring, etc. Activities of merchant banking are an institutional arrangement to provide financial advisory and intermediary services to the corporate sector. Financial activities of merchant banking are viz., Corporate Counselling, Project Counselling, Capital Restructuring, Issue Management, Portfolio Management, Credit syndication, Corporate restructuring, Working capital finance, Credit Bills Discounting. Types of participants in financial market including Money Market and Capital Market are given in following figure.

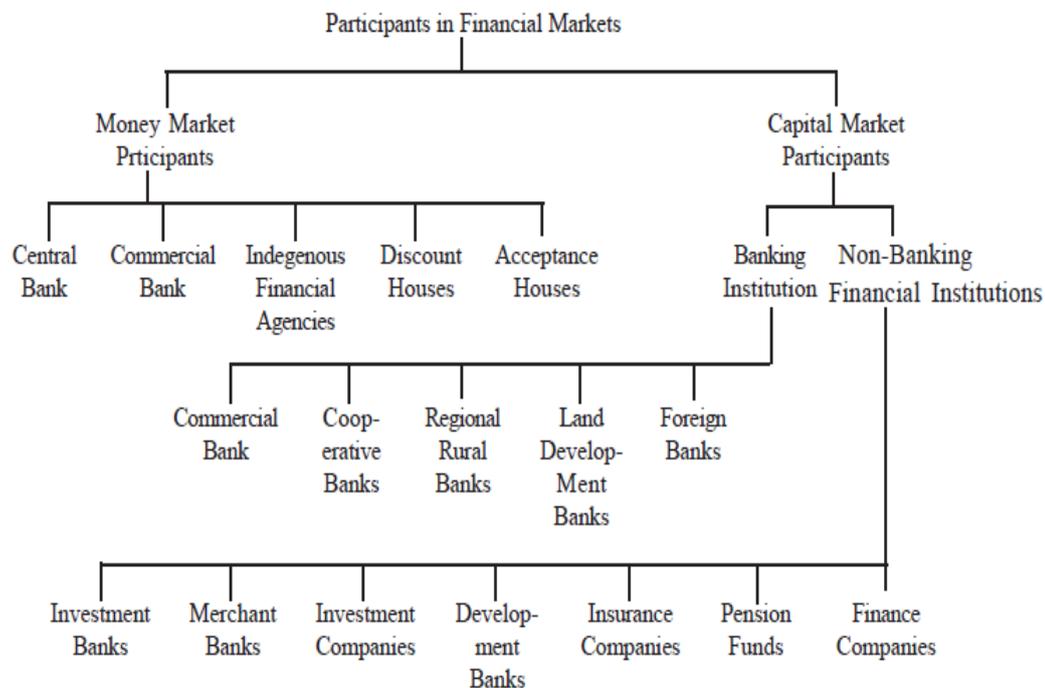


Fig 1.5 Participants in Financial Markets

The present explains that financial markets facilitate trading in financial assets. Financial instruments or securities are assets. Financial assets bought and sold is for their use for a particular period of time and thus financial assets are not consumed. Numbers of agencies participate in the financial market operations and they facilitate the process of transfer of funds from surplus s to deficit s. Financial Market categorized as money markets and capital markets. Participants of these financial markets are discussed in this. The major participants in the money market are; the Central Bank, the Commercial Banks, indigenous Financial Agencies, Discount Houses and Acceptance Houses. The major performers in the Capital Market are; the Banking Institutions and the non-Banking Institutions.

To Do Activity

1. List the participants in the Capital Market?
2. Define Indigenous Financial Agencies, Central Bank and Commercial Banks

1.4 Concept of Time Value of Money and Annuities

The object of this is to understand the time value of money. Understanding of the time value of money in financial management of rural organizations is very important. Decision taken in financial management of rural organization at present will have the implications for a number of years in future. For example, rural organizations have to acquire fixed and for that they have to pay a certain sum of money to the vendors. Benefits received after acquisition of asset will get spread over a number of years in the future throughout the working life of asset. On the other hand to acquire such assets, funds have to be raised by rural organizations through bank borrowings, term loans, new issues and sale of debentures etc. These all involve cash flow both in raising funds, paying interest/dividend and return on the principal in future. Therefore, financial decision of rural organizations is made in comparison between cash out flows (outlays) and cash inflows (benefits). For this comparison, the incorporation of time element in the calculation is required. This is devoted to discuss the techniques for calculation of time value for money.

The Time value of Money

The term time value of money denotes the value of money is different in different time periods. In other words, 'time value of money' explains that the value of sum of money received today is more than its value received after some time. In other words, the value of money received in future is less than the value of money in present. Further, it also explained that the present worth of rupees received after some time will be less than a rupee received today. Therefore, rational investors prefer to receive current receipt to future receipt. The time value of money also called as time preference for money. Time preference for money is more relevant in case of fund received early for reinvestment opportunities. The fund invested will earn rate of interest but in the case of funds received later time the earning of rate of interest is not possible. Time preference for money is generally expressed in terms of rate of return or discount rate. The time preferences of money vary from individual to individual. An illustration of time value of money for a rural organization is illustrated as below

If an organization in rural area provided the choice of receiving Rs.1,00,000 either now or one year later. The choice of the organization would obviously be for the first alternative as it can reinvest the amount in its deposits and earn a nominal rate of interest, say, five per cent. At the end of year, the amount will accumulate to 1,05,000. In other words, the choice before Mr. X is between Rs.1,05,000 and Rs.1,00,000 at the end of the year. As a rational organization, this organization be expected to prefer the larger amount (i.e. Rs.1,05,000). Here It is said that time value of money, that is the rate of interest is five per cent. Here, it may say that future cash flow is less valuable due to the investment opportunities of the present cash flow.

We can also explain the time value of money by another illustration. For one year project in rural organization the project cost is Rs.10,00,000 and the estimated benefit is Rs.10,80,000. Thus, this project can be accepted due to Rs.80,000 as profit. If the rate of interest is 10 per cent, then decision

will differ. After 10 per cent, the return will be Rs.11,00,000.

Techniques

There are two techniques to convert the sums of money to a common point of time to make comparison between cash flows that result in different time periods viz., (i) Compounding, and (ii) Discounting.

(i) Compounding Technique

Compounding technique refers interest earned on initial deposit or principal amount become a part of the principal amount at the end of first compounding period. Here the principal amount is money on which interest is earned. The same may explained by following example. If a person invests in a saving bank account a sum of Rs.2,000 at 5 per cent interest compounded annually, at the end of first year, his invested amount will be 2100. This amount is principal amount for next year earning of interest. At the end of second year this amount will be 2205, again this is the principal amount for third year. For third year the amount of interest earned will be Rs.110.25 and the total amount in his account will be Rs.2315.25. The compounding procedure is given in following table 1.1.

Table 1.1 Compounding Procedure

Year	1	2	3
Beginning amount	2000	2100	2205
Interest rate (%)	5	5	5
Amount of Interest	100	105	110.25
Beginning Principal	2000	2100	2205
Ending Principal	2100	2205	2315.25

The procedure of compounding will continue for infinite number of years. The equation for calculation of compounding interest is given as below

$$A=P(1+i)^n$$

Where,

A= amount at the end of the period

P=Principal amount at the beginning of the period

I= rate of interest

N = number of years

a) Semiannual Compounding

In this method there will be two compounding periods within the year. Interest is calculated after six months at the rate of one half of the annual rate of interest. This can be explained in the following table 1.2. The rate of interest is 6 per cent per year.

Table 1.2. The Rate of Interest is 6 Per Cent Per Year

Year	6 Months	1 year	18Months	2 Years
Beginning amount (Rs.)	2000	2060	2121.80	2185.45
Interest rate (%)	3	3	3	3
Amount of Interest (Rs.)	60	61.80	63.65	65.56
Beginning Principal (Rs.)	2000	2060	2121.80	2185.45

Ending Principal (Rs.)	2060	2121.80	2185.45	2251.01
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b) Quarterly Compounding

In this type of compounding, there will be four compounding periods in a year. In two years, there will be eight compounding periods and the rate of interest will be $\frac{1}{4}$ of 6 per cent. The quarterly compounding is explained in table 1.3.

Table 1.3 The Quarterly Compounding

Period (Months)	Beginning Amount (Rs.)	Interest Factor (%)	Amount of Interest (Rs.)	Beginning of Principal (Rs.)	Ending Principal
3	2000	1.5	30	2000	2030
6	2030	1.5	30.45	2030	2060.45
9	2060.45	1.5	30.90675	2060.45	2091.357
12	2091.357	1.5	31.37036	2091.357	2122.727
15	2122.727	1.5	31.84091	2122.727	2154.568
18	2154.568	1.5	32.31852	2154.568	2186.887
21	2186.887	1.5	32.80331	2186.887	2219.69
24	2219.69	1.5	33.29535	2219.69	2252.985

Table 1.4 Comparison of Annual, Semiannual and Quarterly Compounding

End of Year	Compounding Period		
	Quarterly	Half Yearly	Annual
1	Rs.2030	Rs.2060.45	Rs.2122.727
2	Rs.2154.568	Rs.2186.887	Rs.2252.985

iii) Discounting Technique

The concept of discounting Technique is the contrary to the concept of compound value. Discounting technique is the current value of a future amount. The amount to be invested today at a given interest rate over a specified period to equal the future amount. This can be explained by an illustration. Mr. A has an opportunity to receive Rs.1060 one from now. He knows that he can earn 6 per cent interest on his investments. The question is what amount will he be prepared to invest for this opportunity?

For this we must determine how many rupees must be invested at 6 per cent today to have Rs.1,060 one year afterwards.

Let us assume that P is this unknown amount, and using $A=P(1+i)^n$

We have; $P(1+0.06) = \text{Rs.}1,060$

Solving the equation for P, $P=\text{Rs.}1060/1.06= \text{Rs.}1,000$

Thus, Rs.1,000 would be the required investment to have Rs.1,060 after the expiry of one year. In other words, the present value of Rs.1,060 received one year from now, given the rate of interest of 6 per cent, is Rs.1,000. Mr. A should be indifferent to whether he receives Rs.1,000 today or Rs.1,060 one year from today. If he can either receive more than Rs.1,060 by paying Rs.1,000 or Rs.1,060 by

paying less than Rs.1,000, he would do so.

Meaning of Annuity

It is a stream of equal annual cash flow. In annuity regular periodic contribution or receipt of a fixed sum of money is calculated. This can be explained in the following table 1.5. In this example, 10 years bond with 10 per cent annual annuity and Rs.10,000 payout at the end of 10 years calculated.

Table 1.5 Annual Compounding of Annuity

Year	Annuity (Rs.)	Value at Maturity (Rs.)	Total (Rs.)
1	1000		1000
2	1000		1000
3	1000		1000
4	1000		1000
5	1000		1000
6	1000		1000
7	1000		1000
8	1000		1000
9	1000		1000
10	1000	10,000	11,000
Total	10,000	10,000	20,000

This explains that money has time value. This also explained that a rupee today is more valuable than a rupee a year after. A rupee after a year has less value than today. Therefore, money has future value and a present value. There are also different techniques to calculate value of money viz., compounding method, discounting method. Thus, managers in the area of financial management rely primarily on present value techniques as they are at zero time (t=0) when making decisions.

1.5 Introduction to Risk and Returns

Expected risk and expected return determine the prices of share/securities. The duty of financial managers includes the valuation of the firm and share prices, therefore it is very important to them to understand the concepts of risk and return. This helps to understand the nature of relationship between risk and return.

Risk and Return of a Single Asset

i) Return

The return is the annual income received from an associated asset for a given period along with any change in market price. Usually expressed as per cent of the opening market price. Symbolically, the

$$\text{one period actual (expected) return, } R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$$

Where, D_t = annual income/cash dividend at the end of time period, t

P_t = security price at time period, t (closing/ending security price)

P_{t-1} = security price at time period, t-1 (opening/beginning security price)

Illustration

If the price of a share on April 1 (current year) is Rs.25, the annual dividend received at the end of the year is Rs.1 and the year end price on March 31 is Rs.30, the rate of return = $[\text{Rs.1} + (\text{Rs.30} - \text{Rs.25})] / \text{Rs.25} = 0.24 = 24$ per cent. The rate of return of 24 per cent has two components

- a. **Current yield**, i.e., annual income % beginning price = $\text{Rs.1} / \text{Rs.25} = 0.04$ or 4 per cent and
- b. **Capital Gains/Loss** = $(\text{ending price} - \text{beginning price}) / \text{beginning price} = (\text{Rs.30} - \text{Rs.25}) / 25 = 0.20 = 20$ per cent.

ii) Risk

Risk referred to the variability of actual return from the return expected from given asset. If the variability is greater than the risk associated with securities is also greater. On the other hand, if the variability less, the return from associated asset is better as risk is also less.

a) Measurement of Risk

In the case of single asset risk both behavioral and quantitative/statistical point of view will be assessed. The former type of risk analysis can be obtained from (i) sensitivity analysis and (ii) probability (distribution). On the other side, statistical measures of risk of an asset/security are (i) standard deviation and (ii) coefficient of variation.

Behavioral

(i) Sensitivity Analysis

Sensitivity analysis takes into account a number of possible outcomes/returns estimates while evaluating an asset/assessing risk. In order to have a sense of the variability among return estimates, a possible approach is to estimate the worst (pessimistic), the expected (most likely) and the best (optimistic) return associated with the asset. Alternatively, the level of outcomes may be related to state of the economy, namely, recession, normal and boom conditions. The difference between the optimistic and the pessimistic outcomes is the range which, according to the sensitivity analysis, is the basic measure of risk. The greater the range, the more variability (risk) the asset is said to have. The same are provided in Table 1.6.

Table 1.6 Sensitivity Analysis

Particulars	Asset X	Asset Y
Initial outlay (t = 0)	50	50
Annual return (per cent)		
Pessimistic	14	8
Most likely	16	16
Optimistic	18	24
Range (Optimistic-pessimistic)	4	16

On the basis of the range of annual returns, asset Y is more risky.

The sensitivity analysis provides more than one estimate of return (range) to assess the risk involved, but it is a crude/rough basis of risk assessment.

(ii) Probability Distribution

The risk associated with an asset can be assessed more accurately by the use of probability distribution than sensitivity analysis. The probability of an event represents the likelihood/percentage chance of its occurrence. For instance, if the expectation is that a given outcome (return) will occur seven out of ten times, it can be said to have a seventy per cent (0.70)

chance of happening; if it is certain to happen, the probability of happening is 100 per cent. An outcome which has probability of zero will never occur.

Based on the probabilities assigned (probability distribution of) to the rate of return, the expected value of the return can be computed. The expected rate of return is the weighted average of all possible returns multiplied by their respective probabilities. Thus, probabilities of the various outcomes are used as weights. The expected return, \bar{R}

$$= \sum_{i=1}^n R_i \times P_{ri}$$

Where R_i = return for the i th possible outcome

P_{ri} = probability associated with its return

N = number of outcomes considered

The expected rate of return calculation using the returns for assets X and Y are presented in the below Table.

Table 1.7. Expected Rate of Return Calculation using the Returns for Assets X and Y

Possible outcomes (1)	Probability(2)	Returns(Percent)(3)	ExpectedReturns[(2) X (3)](4)
Asset X			
Pessimistic (recession)	0.20	14	2.8
Most likely (normal)	0.60	16	9.6
Optimistic (boom0)	0.20	18	3.6
	1.00		16.0
Asset Y			
Pessimistic (recession)	0.20	14	2.8
Most likely (normal)	0.60	16	9.6
Optimistic (boom0)	0.20	18	3.6
	1.00		16.0

I. Statistical Measures of Risk of an Asset/Security

(i) Standard Deviation of Return

Risk refers to the dispersion of returns around an expected value. The most common statistical measure of risk of an asset is the standard deviation from the mean/expected value of return. It represents the square root of the average squared deviations of the individual returns from the expected returns. Symbolically, the standard deviation, σ

$$\sqrt{\sum_{i=1}^n (R_i - \bar{R})^2 \times P_{ri}}$$

Table 1.8 Calculation of the Standard Deviation for the Return of Asset X and Asset Y.

Asset X						
i	R _i	\bar{R}	R _i \bar{R}	(R _i \bar{R}) ²	Pr _i	(R _i \bar{R}) ² x Pr _i
1	14%	16%	(2)%	4%	0.20	0.80%
2	16	16	0	0	0.60	0
3	18	16	2	4	0.20	0.80
						1.6

$$\sigma_r = \sqrt{\sum_{i=1}^3 (R_i - \bar{R})^2 \times Pr_i} = \sqrt{1.6} = 1.26 \text{ per cent}$$

Asset Y						
i	R _i	\bar{R}	R _i \bar{R}	(R _i \bar{R}) ²	Pr _i	(R _i \bar{R}) ² x Pr _i
1	8	16	(8)	64	0.20	12.80
2	16	16	0	0	0.60	0
3	24	16	2	64	0.20	12.80
						25.6

$$\sigma_r = \sqrt{25.6} = 5.06 \text{ per cent}$$

The greater the standard deviation of returns, the greater the viability/dispersion of returns and the greater the risk of the asset/investment. However, standard deviation is an absolute measure of dispersion and does not consider variability of return in relation to the expected value. It may be misleading in comparing the risk surrounding alternative assets if they differ in size of expected returns.

(ii) Coefficient of Variation

It is a measure of relative dispersion (risk) or a measure of risk per of expected return. It converts standard deviation of expected values into relative values to enable comparisons of risks associated with assets having different expected values. The coefficient variation (CV) is computed by dividing the standard deviation, σ_r for an asset by its expected value, \bar{R} . Symbolically,

$$CV = \frac{\sigma_r}{\bar{R}}$$

The coefficient of variation for assets X and Y are respectively, 0.079 (1.26% / 16%) and 0.316 (5.06% / 16%).

The larger the CV, the larger the relative risk of the asset. As a rule, the use of the coefficient of variation for comparing asset risk is the best since it considers the relative size (expected value) of assets.

Risk and Return of Portfolio

A portfolio means a combination of two or more securities (Assets). A large number of portfolios can be formed from a given set of assets. Each portfolio has risk return characteristics of its own. Portfolio theory, originally developed by Harry Markowitz, shows that portfolio risk, unlike portfolio return, is more than a simple aggregation of the risks of individual assets. This depends on the interplay between the returns on assets comprising the portfolio. As investors construct a portfolio of investment rather than invest in a single asset.

i) Portfolio Expected Return

The expected rate of return on a portfolio is the weighted average of the expected rates of return on assets comprising the portfolio. The weights, which add up to 1, reflect the fraction of total portfolio invested in each asset. Thus, there are two determinants of portfolio return expected rate of return on each asset and the relative share of each asset in the portfolio. Symbolically, the expected return for an asset portfolio is defined by following equation.

$$E(r_p) = \sum w_i E(r_i)$$

Where $E(r_p)$ = Expected return from portfolio

w_i = Proportion invested in asset i

$E(r_i)$ = Expected return for asset i

n = Number of assets in portfolio

Illustration

Suppose the expected return on two assets, L (low risk/low return) and H (high-risk/high return), are 12 and 16 per cents respectively. If the corresponding weights are 0.65 and 0.35, the expected portfolio return is $= [0.65 \times 0.12 + 0.35 \times 0.16] = 0.134$ or 13.4 per cent.

Summary

Expected variability of returns associated with given security or asset is called as Risk. Expected risk and expected return determine the prices of share/securities. The duty of financial managers includes the valuation of the firm and share prices; therefore, it is very important to them to understand the concepts of risk and return. This helps to understand the nature of relationship between risk and return.

Model Questions

1. What are reasons that headed the Indian Financial Markets into Global Financial Markets?
2. Describe the role of the RBI in Financial market operations.
3. Enumerate the participants of Financial Market with help of Flow Chart?
4. An investor deposits Rs.1000 in a bank account for 6 years at 10 per cent interest. Find out the amount which he will have in his account if interest is compounded (a) annually, (b) semi-annually (6monthly) and (c) quarterly
5. An executive is about to retire at the age of 60. He was offered two postretirement options by his employer (a) Rs.20,00,000 lump sum, (b) Rs.2,50,000 for 10 years. Assuming 10 per cent interest, which is a better option?

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Chapter 2 Investment Decisions

Introduction

This is devoted to discuss the nature, principles of techniques of capital budgeting. Further, this also cover meaning of capital budgeting, importance, difficulties involved in capital budgeting and types of techniques of capital budgeting.

Objectives

This helps the students to know the following issues related to Capital Budgeting

- To make acquainted with the basic nature of Capital Budgeting techniques
- To make acquainted with traditional and discounted techniques
- To be able to apply to working capital, need of working capital management
- To make acquainted with operating cycle, estimation of working capital

2.1 Capital Budgeting Techniques

2.2 Traditional and Discounted Techniques

2.3 Meaning of Working Capital, Need of Working Capital Management

2.4 Management of Working Capital

2.5 Determinants of Working Capital, Operating Cycle, Estimation of WC

2.1 Capital Budgeting Techniques

Nature of Capital Budgeting

Capital budgeting is the procedure of assessing and selecting long term investments that are reliable with the goal of shareholders wealth maximizations. Capital budgeting involve a current outlay or series of outlays of cash resources in return for an anticipated flow of future benefits³ In other words this system is employed to assess expenditure decisions involving current outlays but are likely to produce benefits over a period of time longer than one year. These benefits arise when there is increase in revenue or decrease in costs. Further, the capital expenditure is defined as an outlay of funds that is expected to produce benefits over a period of time exceeding one year. The nature of capital budgeting is depicted as below.

- a. Potentially large anticipated benefits
- b. A relatively high degree of risk

³Quirin, G D, The Capital Expenditure Decision, Richard D. Irwin, Homewood Ill., 1967, p 2.

- c. A relatively long time period between the initial outlay and the anticipated return.

Importance of Capital Budgeting

Capital budgeting decisions are playing a very important role in financial decision making. Decisions taken in capital budgeting affect the profitability of a firm. Fixed assets are earning profit, current assets are important to firm but without fixed assets it is not possible to operate. Importance of capital budgeting are explained as below.

a. Determines the Future Destiny of Company

Decisions of capital budgeting decide the future course of actions of the company. An appropriate investment decision can endanger the very survival even of the large firms. A few incorrect decisions and the firm may be forced into insolvency.

b. Influence Future Cost Structure of the Company

Decision on capital expenditure makes its impact on company's future structure of cost over a long period of time. Selection assets will determine the future cost, breakeven point, sales and profits.

c. Decisions are Not Easily Reversible

Investment decisions taken in capital budgeting are not easily reversible as they involve huge amount of financial loss. This is because normally the assets purchased are not easily sold due to the lack of market for secondhand plant and assets in addition there may not be financially viable.

d. Correct Investment Decisions

Majority of the firms have scarce capital resources and capital investment involves costs. Therefore, there is need for thoughtful, rational, wise and correct investment decisions. Incorrect investment decisions lead to loss to firms.

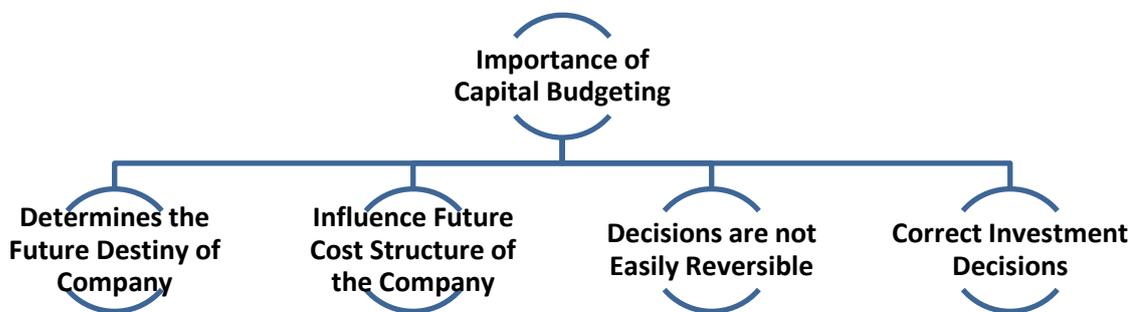


Fig 2.1 Importance of Capital Budgeting

Difficulties in Capital Budgeting

Future success and growth of the firm depends heavily on capital budgeting. Some of the difficulties involved in capital budgeting is given as below.

a. Future is Uncertain

After investment benefits are received in future, but future is uncertain. Therefore, risk is involved in investment.

b. Failure to Forecast Correctly

Forecasting of benefits of investments are required, incorrect forecast leads to serious errors.

c. Estimation of Size of Market

Estimation of size of market for a product and expected share of the firm affect the future

revenue. But estimation depends on various factors viz., price, advertising and promotion etc.

d. Time value of Money

Because of the time value of money, cost incurred and benefits received from the capital budgeting decisions occur in different time periods.

Types of Capital Budgeting Techniques

There are mainly two types of techniques of capital budgeting

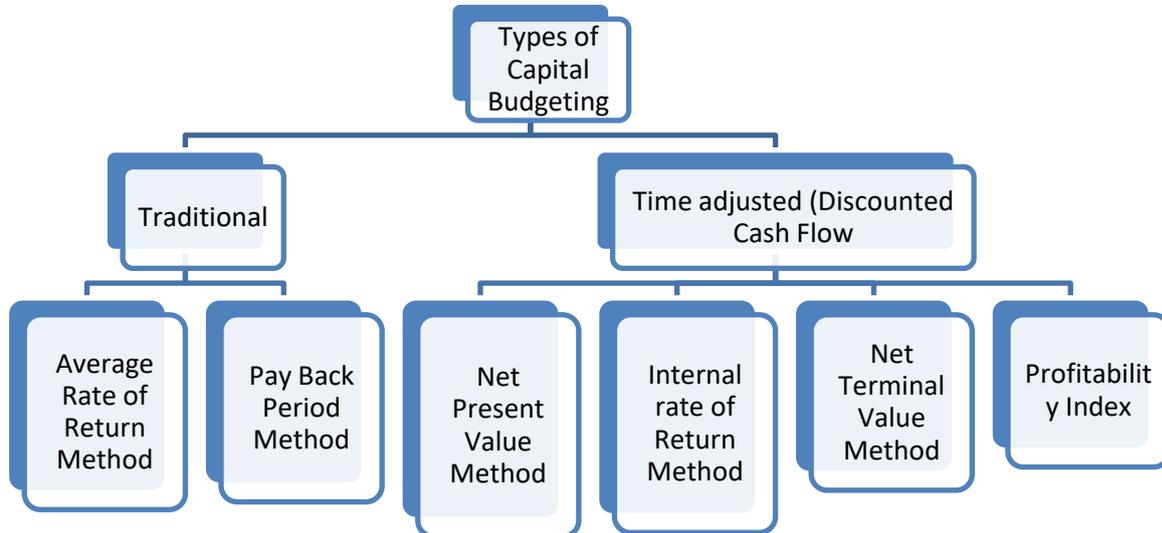


Fig 2.2 Types of Capital Budgeting

After going through this, we understand that usually capital budgeting decisions are related to long term assets. Current outlays are made in anticipation of flow of future benefits. Such decisions are of supreme importance as they affect the cost effectiveness of a firm, and are the major factors of its efficiency and competing power. Though an appropriate investment resolution can harvest remarkable returns, misguided/incorrect decision can jeopardize the very survival of a firm. A few incorrect decisions and the firm may be forced into insolvency. Capital expenditure resolutions are beset with a number of problems. The two major problems are viz., (i) the profits from long term investments are received in some future period which is ambiguous. Therefore, an element of risk is involved in predicting future sales incomes as well as the related costs of production and sales. (ii) It is not often possible to compute in strict quantitative terms all the paybacks or the costs relating to a precise investment decision.

2.2 Traditional and Discounted Techniques

This deals with various techniques used in capital budgeting for evaluation purposes. This is included in the methods of appraising an investment proposal are those which are objective, quantified and based on economic costs and benefits.

Types of Evaluation Techniques

There are broadly two types of methods of appraising of capital expenditure/capital budgeting, Same are depicted in following figure.

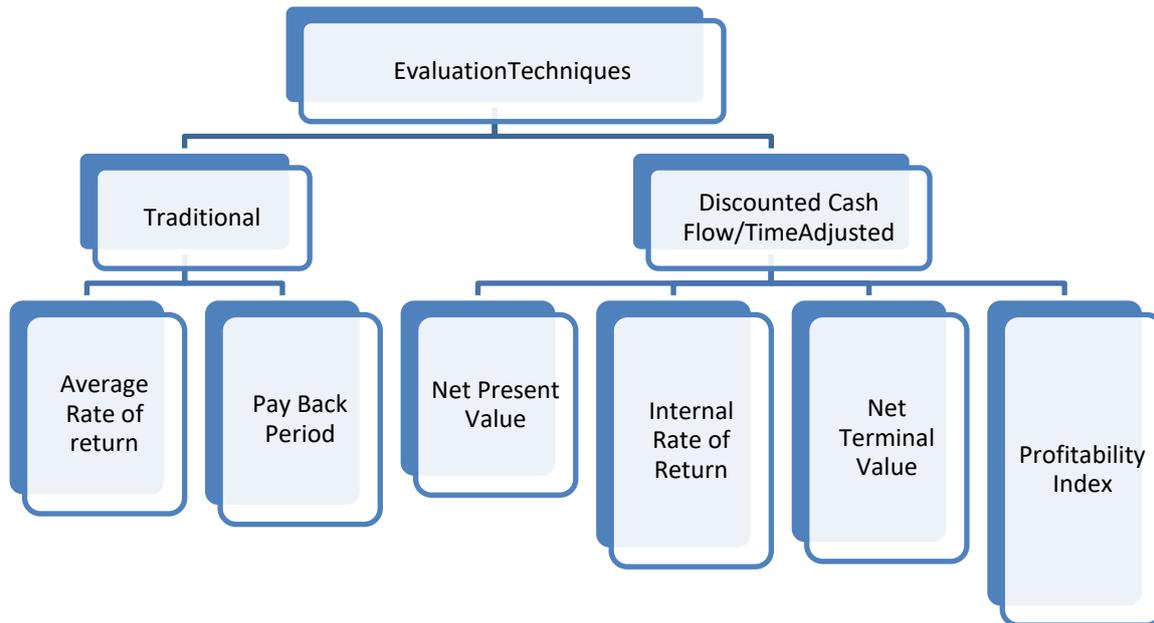


Fig 2.3 Evaluation Techniques

1. Traditional Techniques

i) Average Rate of Return

The average rate of return (ARR) is also known as the accounting rate of return method (ARR). This method is used for calculation of proposed capital expenditure. This method uses accounting information instead of cash flow for evaluation of capital budgeting. The ARR is computed with the help of following formula

$$\text{ARR} = \frac{\text{Average annual profits after taxes}}{\text{Average investment over the life of the project}} \times 100$$

The average profits after taxes are determined by totaling up the after-tax earnings anticipated for each year of the venture's life and dividing the outcome by the number of years. In the case of endowment, the average after tax profits are equal to any year's profits.

The average investment is computed after dividing the net investment by two. This averaging procedure assumes that the firm is using straight line depreciation, in which case the book price of the asset decreases at a constant rate from its buying price to zero at the end of its depreciation. This denotes that, on the average, firms will have one half of their early buying price in the books. Accordingly, if the machine has recover value, then only the depreciable cost (cost salvage value) of the machine should be divided by two in order to determine the average net investment, as the salvage money will be recovered only at the end of the life of the project. Thus, an amount equal to the salvage value rests tied up in the project throughout its life time. Henceforth, no modification is essential to the sum of salvage value to determine the average investment. Likewise, if any supplementary net working capital is required in the initial year which is likely to be released only at the end of the venture's life, the full amount of working capital should be taken in determining

appropriate investment for the purpose of computing ARR. The same can be explained by following formula.

Average investment = Net working capital + Salvage + $\frac{1}{2}$ (Initial cost of machine – Salvage value)

For illustration, initial investment for purchase of machine = Rs.11,000,

Salvage value = Rs.1,000,

Working Capital = Rs.2,000

Service life in years = 5

Straight line method of depreciation is adopted, the average investment is

Average Investment = Rs.1,000+Rs.2,000 = $\frac{1}{2}$ (Rs.11,000 – Rs.1,000) = Rs.8,000.

Illustration

Table 2.1 Calculation of Average Rate of Return

Particulars	Machine A	Machine B
Cost	Rs.56,125	Rs.56,125
Annual estimated income after Depreciation and income tax	3,375	11,375
Year1	5,375	9,375
2	7,375	7,375
3	9,375	5,375
4	11,375	3,375
	36,875	36,875
Estimated life (Years)	5	5
Estimated salvage value	3,000	3,000

Depreciation has been charged on straight line basis

Solution

ARR = (Average income/Average Investment) X 100

Average income of Machines A and B = (Rs.36,875/5) = Rs.7,375

Average investment = Salvage value = $\frac{1}{2}$ (Cost of machine – Salvage value)

Rs.3,000 = $\frac{1}{2}$ (Rs.56,125 – Rs.3,000) = Rs.29,562.50

ARR (for machines A and B) = (Rs.7,375/Rs.29,563.50) = 24.9 per cent

ii) Pay Back Method

Pay back method is second method under traditional method for capital budgeting. This method is simple and widely used quantitative method for appraising capital expenditure decisions. This method is used to find how many years will it take for the cash benefits to pay the original cost of an investment, normally disregarding salvage value? Cash benefits here represent Cash Flow After Tax (CFAT) ignoring interest payment. Thus, the pay back method (PB) measures the number of years required for the CFAT to pay back the original outlay required in an investment proposal.

There are two methods for calculation of PB period. If the nature of cash flow is annuity for each year of the project's life, that is, CFAT are uniform. In this case the following formula is used

$$APB = \frac{\text{Investment}}{\text{Constant annual cash flow}}$$

For Illustration, an investment of Rs.40,000 in a machine is expected to produce CFAT of Rs.8,000 for 10 years.

$$PB = \frac{\text{Rs.40,000}}{\text{Rs.8,000}} = 5 \text{ years}$$

If project's cash flows are not uniform (mixed stream) but vary from year to year, the PB is calculated by the process of cumulating cash flows till the time when cumulative cash flows become equal to the original investment outlay.

Illustration

Table 2.2 Calculation of Payback Period

Year	Annual CFAT		Cumulative CFAT	
	A	B	A	B
1	Rs.14,000	Rs.22,000	Rs.14,000	Rs.22,000
2	16,000	Rs.20,000	30,000	42,000
3	18,000	18,000	48,000	60,000
4	20,000	16,000	68,000	76,000
5	25,000*	17,000*	93,000	93,000

*CFAT in the fifth year includes Rs.3,000 salvage value also

The initial investment of Rs.56,125 on machine A will be recovered between years 3 and 4.

The payback period would be a fraction more than 3 years. The sum of Rs.48,000 is recovered by the end of the third year. The balance Rs.8,125 is needed to be recovered in the fourth year. In the fourth year CFAT is Rs.20,000. The pay back fraction is, therefore, 0.406 (Rs.8,125/Rs.20,000). The payback period for machine A is 3.406 years. Similarly, for machine B the payback period would be 2 years and a fraction of a year. As Rs.42,000 is recovered by the end of the second year, the balance of Rs.14,125 needs to be recovered in the third year. In the third year CFAT is Rs.18,000. The pay back fraction is 0.785 (Rs.14,125/Rs.18,000). Thus, the PB period for machine B is 2.785 years.

Discounted Cash Flow/Time Adjusted

In discounted cash flow (DCF) capital budgeting techniques, the time value of money will be considered while evaluating the costs and benefits of a project. In all these methods cash flows is discounted at a certain rate i.e., cost of capital (K). K is the minimum discount rate earned on a project that leaves the market value unchanged. All benefits and costs arising during entire life of the project are also take into account.

Present Value (PV)/ Discounted Cash Flow

PV or DCF considers that cash flow streams at different time periods differ in value and can be compared only when they are expressed in terms of a common denominator, that is, present values. It, thus, takes into account the time value of money.

The illustration of present value of the cash flows

Illustration

Table 2.3 Calculations of Present Value of CFAT

Year	Machine A			Machine B		
	CFAT	PV factor (0.10)	Present value	CFAT	PV factor (0.10)	Present value
1	2	3	4	5	6	7
1	Rs.14,000	0.909	Rs.12,726	Rs.22,000	0.909	Rs.19,998
2	16,000	0.826	13,216	20,000	0.826	16,520
3	18,000	0.751	13,518	18,000	0.751	13,518
4	20,000	0.683	14,660	16,000	0.683	10,928
5	25,000*	0.621	15,525	17,000*	0.621	10,557
			69,645			71,521

*includes salvages value

The PV thus determined is matched with PV of cash outflows. The present values of cash inflows of both the machines are higher than cash outflows, and, so, both are acceptable.

In Table 2.3, the PV of CFAT in Col. 4 and Col. 7 are used to determine the discounted pay back period. It is determined on the basis of discounted present value of CFAT visàvis unadjusted cash flows in Col. 2 and Col. 5 in Table 2.3 used in the 'simple' pay back method. The relevant values of the 'discounted' pay back period are 4.2 and 3.66 years for Machines A and B respectively.

i) Net Present Value (NPV) Method

It is first DCF/PV technique. NPV may be defined as the summation of the present values of cash proceeds (CFAT) in each year minus the summation of present values of the net cash outflows in each year. Symbolically, the NPV for projects having conventional cash flows would be

$$NPV = \sum_{t=1}^n \frac{CF_t}{(1+K)^t} + \frac{S_n + W_n}{(1+K)^n} - CO_0$$

If cash outflow is also expected to occur at some time other than at initial investment (nonconventional cash flows) the formula would be

$$NPV = \sum_{t=1}^n \frac{CF_t}{(1+K)^t} + \frac{S_n + W_n}{(1+K)^n} - \sum_{t=0}^n \frac{CO_t}{(1+K)^t}$$

The decision rule for a project under NPV is to accept the project if the NPV is positive and reject if it is negative. Symbolically,

(i) NPV > Zero, accept, (ii) NPV < Zero, reject

In Table 2.3, we would accept the proposals of purchasing machines A and B as their net present values are positive. The positive NPV of machine A is Rs.13,520 (Rs.69,645-Rs.56,125) and that of B is Rs.15,396 (Rs.71,521-Rs.56,125).

In Table 2.3, if we incorporate cash out flows of Rs.25,000 at the end of the third year in respect of overhauling of the machine, we shall find the proposals to purchase either of the machines are unacceptable as their net present values are negative. The negative NPV of machine A is Rs.6,255 (Rs.68,645 – Rs.74,900) and of machine B is Rs.3,379 (Rs.71,521-Rs.74,900).

ii) Internal Rate of Return (IRR) Method

IRR is the second DCF or time adjusted technique for appraising capital investment decisions. This is also referred as yield on investment, marginal efficiency of capital, marginal productivity of capital, rate of return, time adjusted rate of return etc. This method also considers time value of money by discounting the cash streams as considered in the technique of present value. IRR entirely depend on initial outlay and cash proceeds of the project which is being evaluated for acceptance or rejection.

IRR is a return earned by a project. It is also defined as the discount rate [®] which equates the aggregate present value of the CFAT with the aggregate present value of cash outflows of a project.

Formula for conventional cash flow

$$CO_0 = \sum_{t=1}^n CF_t / (1+r)^t + S_n + W_n / (1+r)^n$$

$$\text{Zero} = \sum_{t=1}^n CF_t / (1+r)^t + S_n + W_n / (1+r)^n - CO_0$$

Formula for unconventional cash flow

$$= \sum_{t=1}^n CF_t / (1+r)^t + S_n + W_n / (1+r)^n - \sum_{t=1}^n CO_t / (1+r)^t$$

$$= \sum_{t=1}^n CF_t / (1+r)^t + S_n + W_n / (1+r)^n - \sum_{t=1}^n CO_t / (1+r)^t = \text{Zero}$$

Where,

R = The internal rate of return,

CF_t = Cash inflows at different time periods,

S_n = Salvage value,

W_n = Working capital adjustments and

CO_t = Cash outlay at different time periods

For accept or reject there is need to compare the actual IRR with the required rate of return also known as the cutoff rate or hurdle rate. If the IRR [®] is more than cutoff rate (k) – project will be accepted.

If the IRR and cutoff rate are equal – the firm is indifferent to take decision.

iii) Terminal Value Method

The terminal value approach (TV) is used for making the distinction for timing of the cash inflows

and outflows. TV approach makes an assumption that each cash inflow is reinvested in another asset at a certain rate of return from the moment it is received until the termination of the project.

Illustration

Originally outlay, Rs.10,000; Life of the project, 5 years; Cash inflows, Rs.4,000 each for 5 years; and Cost of capital (k), 10 per cent.

Table 2.4 Expected Interest Rates at which cash Inflows will be Reinvested

Yearend	Per cent
1	6
2	6
3	8
4	8
5	8

Solution

We would reinvest Rs.4,000 received at the end of the year 1 for 4 years at the rate of 6 per cent. The cash inflows in year 2 will be reinvested for 3 years at 6 per cent, the cash inflows of year 3 for 2 years and so on. After the end of fifth year, there will be no reinvestment of cash inflows received. Some of compounded cash inflows is discounted back for 5 years at the rate of 10 per cent and compared with the present value of the cash outlays, that is, Rs.10,000.

The present value of terminal sum is given in following Table 2.5.

Table 2.5 Computation of Terminal Value

Year	Cash inflows	Rate of interest	Years for investment	Compounding factor	Total compounded sum
1	2	3	4	5	6
1	Rs.4,000	6	4	1.262	Rs.5,048
2	4,000	6	3	1.191	4,764
3	4,000	8	2	1.166	4,664
4	4,000	8	1	1.080	4,320
5	4,000	8	0	1.000	4,000
					22,796

For computation of present value of Rs.22,796, the discount rate would be the cost of capital, k (0.10). The end of five years, the sum will be Rs.22,796.

The Present value of this amount + Rs.22,796 X 0.621 = Rs.14,156.3.

If the present value of the sum total of the compounded reinvested cash inflows (PVTS) > Present value of outflows (PVO) proposed project is accepted.

PVTS > PVO accept

PVTS < PVO reject

If, PVTS = PVO – the firm would be indifferent

iv) Profitability Index (PI) or Benefit Cost Ratio (B/C Ratio)

Profitability index or benefit cost ratio (B/C) is another time adjusted capital budgeting technique. PI computes the present value of returns per rupee invested, whereas the NPV is based on the difference between the present value of future cash inflows and the present value of cash outlays. It is method of absolute measure; hence it is not reliable method to evaluate projects requiring different initial investments. It is defined as below

PI = Present Value cash inflows/Present value of cash outflows

Accept and Reject Rule

If, PI of Project > 1 = Accept

If, PI of Project = 1 = Indifferent

If, PI of Project < 1 = Reject

Under this the major types of techniques of capital budgeting viz., (i) traditional and (ii) discounted cash flow were discussed. ARR and PB are traditional techniques for computing budgeting. While NPV, IRR and PI are main techniques of discounted cash flow for computation capital budgeting.

2.3 Meaning of Working Capital, Need of Working Capital Management

This explains about the working capital, its delimitation, and its management. Management of working capital deals with the issues arise in the management of current assets, current liabilities and their relationship. Cash, marketable securities, accounts receivable and inventory are current assets. On the other hand, current liabilities are accounts payable, bills payable, bank overdraft and outstanding expenses. Thus, the goal of working capital management is to maintain organisations current assets and liabilities.

Definition of Working Capital

Working capital (WC) represents operating liquidity existing in a firm or other entity, including governmental entities. Along with fixed assets viz., plant and equipment, it is considered a part of functioning capital.

There are two types of Working Capital viz., (i) Gross Working Capital and (ii) Net Working Capital. The formal type of working capital includes total current assets. The latter type of working capital is the difference between current assets and current liabilities. Gross working capital is equal to current assets. On the other hand working capital is difference between current assets and current liabilities.

Need for Working Capital

Working capital is the lifeblood and nerve center of industry. Working capital is very vital to sustain smooth functioning of a business. No business can function successfully without an sufficient amount of working capital. The main need or importance of working capital is depicted as below

a. Strengthen the Solvency

Working capital aids to function the business effortlessly without any financial difficult for remitting the payment of short term liabilities. Acquisition of raw materials and disbursement

of salary, wages and overhead can be made without any deferral. Satisfactory working capital supports in maintaining wealth of the business by providing continuous flow of production.

b. Enhance Goodwill

Adequate working capital allows a trade concern to make prompt payments and hence supports in making and maintaining goodwill. Goodwill is better because all current liabilities and functioning expenses are paid on time.

c. Easy Obtaining Loan

A firm having satisfactory working capital, high wealth and good credit rating can dispose loans from banks and financial institutions in easy and constructive terms.

d. Regular Supply of Raw Material

Swift payment of credit purchase of raw materials guarantees the consistent supply of raw materials from suppliers. Sellers are pleased by the payment on time. It confirms regular supply of raw materials and nonstop production.

e. Smooth Business Operation

Working capital is really a lifeblood of any commercial organization which continues the firm in well condition. Any day to day financial obligation can be met without any scarcity of fund. All expenditures and current liabilities are paid on time.

f. Ability To Face Crisis

Satisfactory working capital allows a firm to face commercial crisis in crises such as depression.

Management of working capital deals with the issues arises in the management of current assets, current liabilities and their relationship. Cash, marketable securities, accounts receivable and inventory are current assets. On the other hand, current liabilities are accounts payable, bills payable, bank overdraft and outstanding expenses. Thus, the goal of working capital management is to maintain organizations current assets and liabilities.

2.4 Management of Working Capital

Working capital management deals with the issues related to management of current assets, current liabilities and relationship between them. The aim of the management of working capital is to manage the current assets, current liabilities in a way to manage working capital efficiently.

Management of Working Capital

Working capital management is nothing but it is attempting to manage the current assets, the current liabilities and the interrelationship that exists between them. Major current assets are cash, marketable securities, accounts receivable and inventory. On the other hand liabilities are accounts payable, bills payable, bank overdraft and outstanding expenses. The goal of working capital is to manage the firm's current assets and liabilities in such a way that a satisfactory level of working capital is maintained.

Quantitative and Qualitative are two concepts of working capital. They are also defined as gross concept and net concept. As per quantitative concept, the amount of working capital states 'total of current assets. Smith called, 'circulating capital'. Current assets are considered to be gross working capital in this concept.

On the other hand, the qualitative concept gives an idea regarding source of financing capital. As per qualitative concept the amount of working capital refers to "excess of current assets over current liabilities. Guttmann defined working capital as "the portion of a firm's current assets which are

financed from long term funds."

The surplus of current assets over current liabilities is called as 'Networking capital'. In this concept "Networking capital" characterizes the amount of current assets which would remain if all current liabilities were paid. Both the concepts of working capital have their own points of prominence. "If the purpose is to measure the size and degree to which current assets are being used, 'Gross concept' is useful; whereas in assessing the liquidity point of an undertaking 'Net concept' becomes relevant and desirable. Factor for working capital management are given in below mentioned Fig 2.4.



Fig 2.4 Determinants of Working Capital Management

Management of working capital is important for financial decision making to maximize wealth of

shareholders in organizations including rural organizations. For efficient working of firm, generation of sufficient profit is necessary. The extent of generation of profit depends on magnitude of the sales. On the other sense, a successful sales Programme is necessary for-profit maximization. For successful sales, the continuous production without any interruption is necessary. Thus, for uninterrupted production sufficient working capital is required. Therefore, management of working capital is very important for efficient functioning of organization.

2.5 Determinants of Working Capital, Operating Cycle, Estimation of Working Capital

The amount of working capital required depends on the level of production of organization. There are two main types of working capital viz., Permanent and Temporary working capital. The former type of working capital is certain minimum level of working capital on continuous and uninterrupted manner. On the other hand latter working capital is needed to meet seasonal as well as unforeseen requirement.

Determinants of Working Capital

The requirement of working capital depends on three main factors viz., (i) changes in the level of sales and/or operating expenses, (ii) policy changes and (iii) changes in technology. Determinants of working capital are explained as below

a. General Nature of Business

The need for working capital generally based on the nature of business of firm. In the case cash nature business, they have to maintain a sufficient amount of cash, inventories and book debts. On the other hand, manufacturing firms have to maintain sufficient working capital in order to help production.

b. Production Cycle

Another factor to determine the working capital is production cycle. It indicates the time involved in the manufacturing goods. It involves time span right from procurement of raw material till final product. During this process working capital is required to look after the expenditure. Therefore, the requirement of working capital is based on time taken for production in firm.

c. Business Cycle

Business cycle also plays a very important role in determining working capital. Business cycle involves cyclical and seasonal changes and lead to changes in level of working capital. Variation in business conditions are viz., 9i) Upward phase, it involves boom in business, 9ii) Downward phase, involves decline in economic activities.

d. Production Policy

Production policy of firm determines the level of working capital. The firm has to take decision about production policy to produce only seasonal product or make productions whole year. Therefore, the level of working capital is based on the type of production policy of the firm.

e. Credit Policy

Another factor determines the working capital is the credit policy related to sales and purchases. The credit terms granted by firm to its customers/clients/buyers of goods and credit terms available to firms from banks influence the working capital of firm.

f. Growth and Expansion

Large amount of working capital is required for the growth and extension of the organization. Thus, growing industries require more working capital than static industry. 'The critical fact,

however, is that the need for increased working capital funds does not follow the growth in business activities but precedes it'.⁴

g. Profit level

The level of profit varies from different organizations. The level of profit determines the efficiency of organization. The higher the net profit the more fund available for working capital.

h. Level of Tax

Requirement of working capital depends on the level of tax; if level of tax is more than more working capital is required.

i. Operating Efficiency

Operating efficiency is one of the determinants of working capital. If management is very efficient it will help to contribute sound working capital. Efficiency of operations speed up the pace of cash cycle and expands the working capital turnover.

Operating Cycle

Operating cycle refers to continue flow from cash to suppliers to inventory to accounts receivable and back to cash. This indicates the time lag between the sale of goods and the receipt of cash. During the time lag between sales and the receipt working capital is required to take care about other expenditure. Thus, technically it is called as Operating Cycle or cash cycle. The operating cycle is depicted in the Fig 2.5.

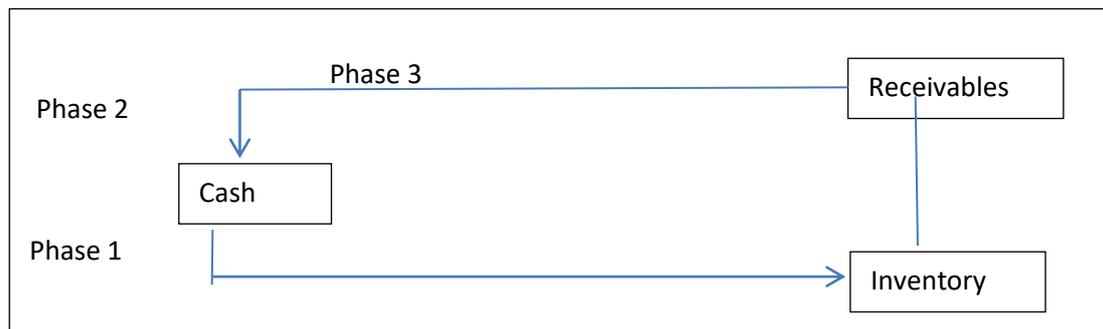


Fig 2.5 Operating Cycle

Estimation of Working Capital

As already explained earlier current assets and current liabilities are two components of working capital. Holding period various types of inventories, the credit collection period and the credit payment period required for estimation of working capital. The assumption of production/sales is carried out evenly throughout the year and all costs accrue similarly is made in estimation of working capital. Working capital estimated with reference to cash cost.

⁴Brigham, E F and J F Houston, Fundamentals of Financial Management, SouthWestern/Cengage Learning India, New Delhi, 2004. P157.

Steps involved in estimation of different items of current assets and current liabilities are given as below

I. Estimation of Current Assets

a. Raw Materials Inventory

Budgeted Production X (in Units)	Cost of raw material(s) X per unit	Average inventory holding period (Months/days)
12 months/365 days		

b. Work-in-Process (W/P) Inventory

Budgeted Production X (in Units)	Estimated work in process cost per unit	X	Average time span of work-in-progress inventory (Months/days)
12 months/365 days			

c. Finished Goods Inventory

Budgeted Production X (in Units)	Cost of goods produced per unit (excluding depreciation)	X	Finished goods holding period (Months/days)
12 months/365 days			

d. Debtors

Budgeted Credit sales X (in Units)	Cost of sales per unit excluding depreciation	X	Average cost collection period (Months/days)
12 months/365 days			

Apart from above factors of current assets, cash and bank balances should also consider while estimating working capital.

II. Estimation of Current Liabilities

Important current liabilities considered in estimation of working capital are trade creditors, wages and overheads.

a. Trade Creditors

Budgeted Yearly Production (in Units)	X	Raw material cost per unit	X	Credit period allowed by creditors (Months/days)
12 months/365 days				

Note Proportional adjustment required to be made to cash purchases of raw materials

b. Direct Wages

Budgeted Yearly Production (in Units)	X	Direct labour cost per unit	X	Average time-lag in payment of wages (Months/days)
12 months/365 days				

c. Overheads (Other than Depreciation and Amortization)

Budgeted Yearly Production (in Units)	X	Overhead Cost per unit	X	Average time-lag in payment of overheads (Months/days)
12 months/365 days				

III. Determination of Working Capital

(I) Estimation of Current Asset

a.	Minimum desired cash and bank balances
b.	Inventories
	Raw material
	Workinprocess
	Finished Goods
(a)	Debtors*
	Total Current Assets
(II)	Estimation of Current Liabilities
a.	Creditors**
b.	Wages
c.	Overheads
	Total Current Liabilities
(III)	Net Working Capital (III)
	Add margin for contingency
(IV)	Net Working Capital Required
	*If payment is received in advance, the item would be listed in Current Liabilities
	**If advance payment is to be made to creditors, the item would appear under Current Assets. The same would be the treatment for advance payment of wages and overheads.

There are two main components of working capital viz., current assets and current liabilities. Each component of current assets and current liabilities need to be estimated separately. The requirement of working capital can be estimated with reference to cash excluding depreciation. Thus, cash cost approach is appropriate to estimate the working capital.

Model Questions

1. Explain difficulties in Capital Budgeting?
2. Describe types of Capital Budgeting techniques?
3. A rural organisation is proposing to invest Rs.50,000 for new machinery in village industry. The life expectancy of this machine is 5 years and no salvage value. The rate of tax is 35 per cent. Firm used the straight line depreciation and the same is allowed for tax purposes. Estimated cash flows before CFBT from the investment proposal are as follows

4. Year	5. CFBT
6. 1	7. Rs.10,000
8. 2	9. Rs.10,692
10. 3	11. Rs.12,769
12. 4	13. Rs.13,462
14. 5	15. Rs.20,385

16. Compute (i) pay back period, (ii) Average rate of return, (iii) Internal rate of return, (iv) Net present value at 10 per cent discount value and (iv) Profitability index at 10 per cent discount rate.
17. A project of Rs.5,60,000 is expected to make benefit of annual cash (CFAT) of Rs.80,000 over a period of 15 years. Estimate the IRR. And also find the pay back period and obtain the IRR from it. How do you compare this IRR with the one directly estimated?

18. Explain factors behind management of working capital?
19. Narrate importance of management of working capital in maximization of profit?
20. X & Y Ltd. is a rural organization desirous to purchase a business and has consulted you, and one point on which you are asked to advise them, is the average amount of working capital which will be required in the first year's working.
21. You are given the following estimates and are instructed to add 10 per cent to your computed figure to allow for contingencies.

Sl.No.	Particulars	Amount for the year (Rs.)
I	Average amount backed up for stocks	
	Stocked of finished product	5,000
	Stocks of stores and materials	8,000
li	Average credit given	
	Inland sales, 6 weeks' credit	3,12,000
	Export sales, 1.5 weeks' credit	78,000
lii	Average time lag in payment of wages and other outgoings	2,60,000
	Wages, 1.5 weeks	48,000
	Stocks and materials, 1.5 months	10,000
	Rent and royalties, 6 months	62,400
	Clerical staff, 0.5 month	4,800
	Manager, 0.5 month	48,000
	Miscellaneous expenses, 1.5 months	
Iv	Payment in advance	
	Sundry expenses (paid quarterly in advance)	8,000
	Undrawn profits on an average throughout the year	11,000

Set up your calculations for the average amount of working capital required.

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Chapter 3 Short Term Financing

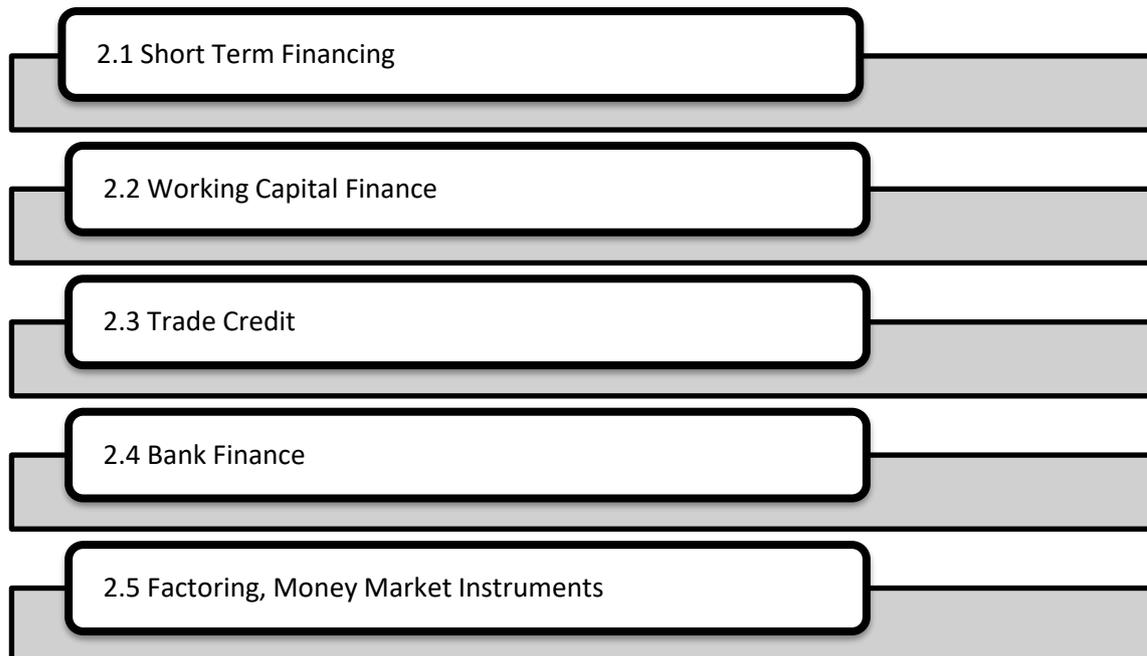
Introduction

After determining the level of working management, the next step is to decide the source of finance for working capital. Finance is required for investment in working capital, current assets and payment for current liabilities. There are two types of finance viz., (i) Long Term and (ii) Short Term financing. The later type of finance i.e., Short term finance deals with financing needs of a small period i.e., less than a year. In trades, it is also well known as working capital financing. This type of financing is normally required because of irregular flow of cash into the corporate, the cyclical pattern of trade, etc. In most cases, it is used to finance all types of inventory, accounts receivables etc. In this we discuss about the types of short-term financing.

Objectives

- To learn the concepts of short term financing
- To be aware of working capital finance
- To be able to apply on the concepts of trade credit, bank finance
- To be aware of factoring, money market instruments.

Structure



3.1 Concept of Short-Term Financing

Short-Term Financing

Short term financing deals with financial needs of organizations for small period i.e., less than a year, in other words it is also referred as working capital financing. Short term financing with a time duration of up to one year is used to help corporations increase inventory orders, payrolls, and daily supplies.

Types of Short-Term Financing

The types of Short-Term financing is depicted in following flow Chart 3.1.

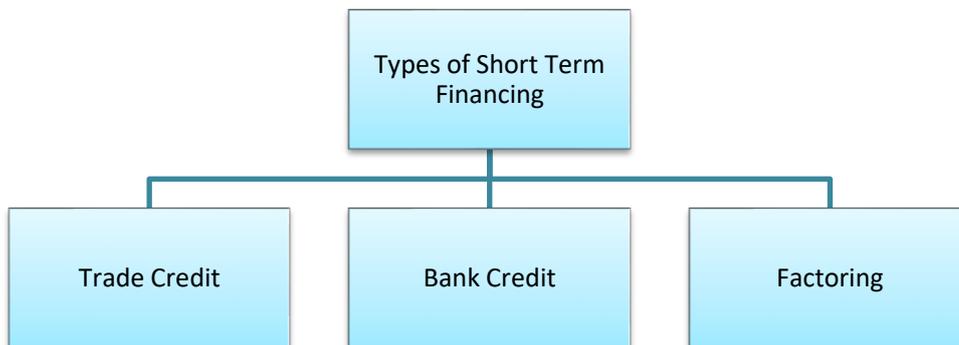


Fig 3.1 Types of Short-Term Financing

Organizations depend on various types of sources for working capital. There are mainly two types of sources for working capital viz., long term and short-term financing. Again, there are three types of short-term financing viz., (i) trade credit, (ii) bank credit and (iii) factoring. The important difference between long term and short-term finance is the time period and requirement. Short term finance is referred to less than a year and on the other hand long term finance referred to more than a year up to 10 to 15 years.

3.2 Working Capital Finance

This deals with financing a firm's working capital needs. In this most common debt instruments, the most common working capital finance sources are presented. Firms face many working capital finance issues, both in the debt instrument used and institutional sources. The working capital finance professional's duty is to first appreciate the organization's financing needs. In this, the underwriting issues involved in structuring working capital finance are also reviewed.

Working Capital Finance Instruments

Working capital financing arises in various forms, each of which has distinctive terms and deals with certain advantages and disadvantages to the borrower. There are five major methods of debt used to finance working capital and discusses the relative advantages of each one. The purpose of this information is to afford vision into the diverse ways in which debt can be arranged and prepare experts to choose and arrangement a debt tool best suited to a firm's financial condition and needs. Table 3.1 condenses the major features of the five working capital finance tools given below

Table 3.1 Working Capital Finance – Instruments

Sl. No.	Finance Instrument	Description	Key Terms
1	Line of Credit	Maximum loan limit established. Firm draws on loan as needed up to limit.	Can be unsecured or secured. Annual repayment. Compensating balance may be required.
2	Accounts Receivable (AR) Loan	Loan secured by accounts receivable.	Loan amount based on a percentage of accounts receivable. Accounts receivable assigned to lender as sales occur. Loan balance paid down with AR collection.
3	Factoring	Sale of accounts receivable to a third party collector (factor). Factor bears collection risk.	Company paid based on average collection period less a collection fee. Collection amount can be advanced with an interest charge.
4	Inventory Loan	Loan secured by inventory.	Loan amount based on a percentage of inventory value. Lender receives security interest in inventory and may take physical control. Release of inventory with loan repayment.
5	Term Loan	Medium term loan. Principal repaid over several years based on a fixed schedule.	Loan amount tied to collateral value. Can be fully amortized or a balloon loan. Typical term is three to seven years.

Issues in Working Capital Finance

Working capital finance involves number of issues. Before getting finance for working capital, borrowers need to provide monthly or quarterly projections of cash flow for the next 1 to 2 years to facilitate the analysis. Finance practitioners will scrutinize these projections in detail. This projection helps financier to assess how carefully the firm plans and monitors cash flow and helps detect weaknesses in this key administration area. This also helps to uncover ways to improve efficiency of cash flow to lessen borrowing requirements and improve the organization's capacity to pay back and be suitable for a loan. For illustration, organization may be capable to reduce its inventory, offer motivations for more rapid payment of bills, or improve provider credit terms. For working capital advances, creditors will pay special care to liquidity ratios and the quality of current assets since these factors are most important to loan repayment. Finally, the endorsing analysis needs to assess the applicant's need for permanent versus cyclical working capital debt. Small trades with limited long term capital are under hefty pressure to meet short term cash flow requirements. Adding short term working capital advances does not take care of this problem and may make matters poorer. Therefore, it is imperative to analyze why the firm is looking for credit, what purpose the loan will

help, and how these relate to short term cyclical needs versus long term permanent working capital requirements. In some cases, consultants need to revise the borrower's loan demand and create credit that better replicates the firm's requirements. This might involve suggesting a term loan in place of a line of credit when the trade needs permanent working capital or joining short term and medium term debt tools to create a good equilibrium between cyclical and permanent working capital debt. These substitutes can increase a firm's cash flow and liquidity to somewhat offset the greater refund risk that results from extending loan repayment. Credit assurances and secondary debt can lessen this supplementary risk and help assure conventional creditors to both supply credit and provide it on terms that fit a borrower's financial requirements.

Naturally, working capital requirements/current assets are funded by a blend of long term and short-term sources. The major traditional short-term sources of current assets financing are trade credit and bank credit. Two newly evolving sources of working capital finance are factoring and commercial papers.

3.3 Trade Credit

The next step after determining the level of working capital is to arrange the finance for the same. Working capital is required investment in current assets, purchase of raw material, production and marketing of finished goods. Long term fund finances partially the needs of current assets and provide margin money for working capital. But short term finances are major source for working capital, among them trade credit is one of the important source for working capital finance. In the present we discuss the trade credit.

Trade credit is extended by the supplier of goods and services in the normal course of transaction including business and sale of the firm. As per the practice of trade, the amount is not paid to seller after the immediate sale of goods, there will be time gap in sale and cash payment. Thus, it is referred as trade credit. On the other word it is called as the credit extended by suppliers of goods and services in the normal course of business. But in the case of trade credit, there will be no any formal or specific negotiation. Therefore, it is an informal arrangement made between seller and purchaser. Thus, there are no legal instruments/documents/agreements to acknowledge the credit granted on an open account basis. This type of credit is mentioned as sundry creditors/accounts payable by buyer of goods. Other types of bills payable are bills/notes. In this type of bills/notes payable represented by documentary evidence of credit purchases and a formal acknowledgement of responsibilities to pay for credit purchases on a maturity date, if failed to meet this maturity date of payment, there will be penalty/legal actions for recovery of the same. Seller can rediscount bills/notes without holding them till maturity for receiving payment. It also has legal binding on part of buyer of goods to pay on maturity of bills/notes. Even though the most of the trade credit is on the basis of open account payable, the suppliers do not hold payment of credit extensively. Earning records, liquidity position and past record of repayment of firm for over a period of time considered by traders for the purpose to decide quantum of credit and credit disbursement.

Cash Discount Period

It refers to the number of days after the commencement of credit period during which the discount available.

Trade Credit Period

It refers to the number of days is required for full payment of an account payable.

Costs involved in Trade Credit

There is no any explicit interest charges involved in Trade Credit. But implicit cost credit is involved. Credit terms offered by the supplier of goods determine the nature of implicit cost. For example, if supplier of goods fixed the terms of credit for 45 days, the amount has to be paid as per the fixed terms i.e., 45 days net, thus there is no cost involved, if it repaid as per the conditions. If the credit terms are , say, 2/15, net 45, that is, there is cash discount for prompt payment, the trade credit period beyond the cash discount period has a

Cost = $\{(Discount/1Discount) \times (360 \text{ days}/Credit \text{ period} - Discount \text{ period})\}$.

The implicit cost rate/cost = $\{(0.02/10.02) \times (360/4515)\} = 24.5$ per cent.

Otherwise, the credit terms, 2/15, net 45, imply that the firm (buyer) is entitled to 2 per cent discount for payment made within 15 days when the entire payment is to be made within 45 days. Since the net amount is due in 45 days, failure to take the discount means paying an extra 2 per cent for using the money for an additional 30 days. If a organization were to pay 2 per cent for every 30 days period over a year, there would be 12 such periods (360 days ÷ 30 days). This represents an annual interest rate/cost of 24 per cent. If the terms of credit are 2/10, net 30, the cost of credit works out to 36.4 per cent. The smaller the difference between the payment day and the end of the discount period, the larger is the annual interest/cost of trade credit.

Therefore, it is advisable to organizations to avail the discount on prompt payment. If organization is not able to avail discount, they should repay within last day of the trade credit to avoid the impairing their credit worthiness. For new organizations it is mandatory to cultivate good relationship with suppliers of goods and obtaining their confidence by honoring commitments.

Advantages of Trade Credit

Trade credit is the one of the sources of short term working capital finance and it has advantages also. Some of advantages are given as below

- It is easily available
- It is flexible
- It is spontaneous
- Availability and amount is based on the size of operations of the organizations
- No formal negotiation
- No agreement
- Free from the restrictions.

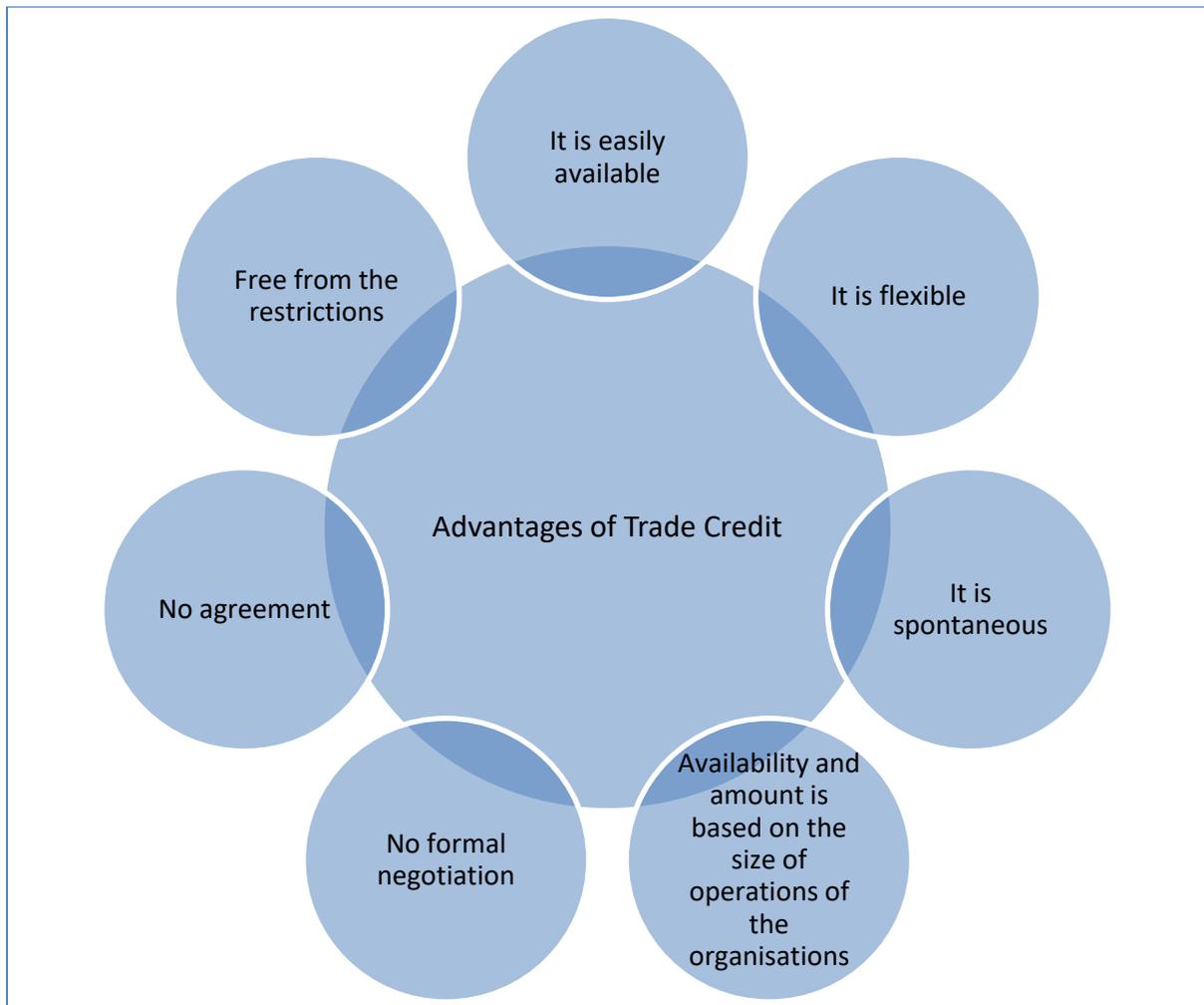


Fig 3.2 Advantages of Trade Credit

Trade credit characterizes credit extended by suppliers of goods and services in the normal course of transactions of the organisation. As cash is not paid instantly for purchase but after an agreed period of time, the delay of payment denotes a source of finance for credit purchases (current assets). It does not contain any explicit interest charge/cost. The implicit cost of trade credit rest on on the terms offered by the supplier of goods. When the terms contain cash discount for quick payment, the cost of trade credit is generally very high beyond the discount period.

3.4 Bank Finance

Bank finance is the key formal source of working capital finance in India. In fact, it denotes the most important source for financing of current assets. Banking refers to that procedure in which a bank offers financial services viz., lending money, collection of deposits, issue of currencies and debit cards, and transaction processing etc. The bulk of banks works as profit seeking enterprises, however, a few government banks work as nonprofit establishments. Central banks function as government organizations and they control the circulation of money in the total economy. Various functions of banks are given as below

- Accepting deposits from the customers and issue of current and savings accounts to trades and individuals
- Providing financial consultation services to individuals and businesses

- Providing loans to trades and individuals
- Encashment of checks
- Facilitation of monetary transactions
- Issue of ATM cards, credit cards, and debit cards
- Offering safe deposit vaults for keeping valuables

Types of Bank Finance

Banks provide finance for working capital to organisations in various forms. The same is depicted in following figure.

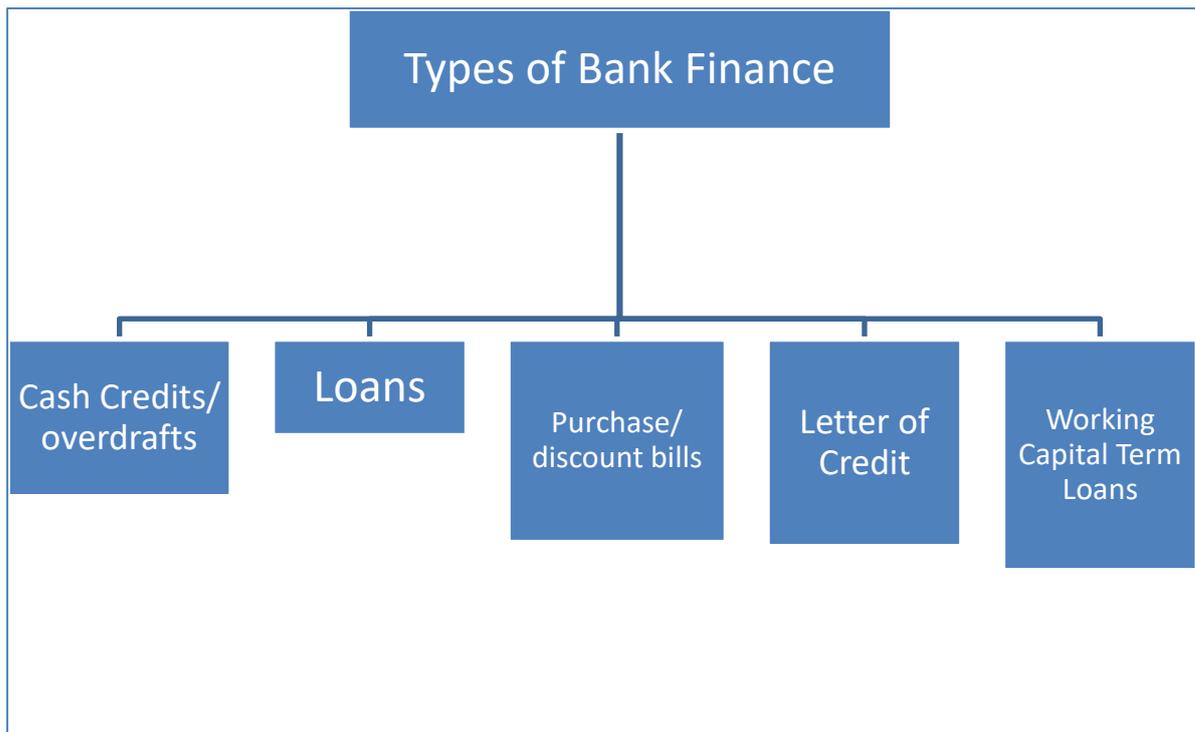


Fig 3.3 Types of Bank Finance

a. Cash Credit/Overdrafts

Cash credit/overdrafts are one of the various types of bank finance, under this tool bank specifies a preset borrowing/credit limit. Under this a borrower can draw or borrow up to the predetermined credit/overdraft limit. Further, within the predetermined limit, a borrower can draw any number of times. In the same way, a borrower can repay whenever he desires during the period. Under this type of bank finance, the interest is charged on the amount actually utilized instead of on sanctioned amount. A nominal amount of interest is charged on the unutilized balance amount. This type of bank finance has advantage of flexibility as on demand the fund is available, the borrower is free to withdraw any amount from sanctioned maximum finance, thus interest is charged only on utilized amount of finance. But on the other hand, this type of bank finance leads inconvenience for banks and obstructs credit planning.

b. Loans

Under this type of bank finance, the entire amount of sanctioned loan is disbursed in cash or credited to the current account of the borrower. Under this type of bank finance, borrower has pay interest on total sanctioned amount. These loans need to repay on demand or may be re-

paid in periodic installments. These types of bank finance also renewed from time to time. On the part of borrow, loans imply financial discipline.

c. Purchase/Discount Bills

New Bill Market Scheme introduced in India by Reserve Bank of India in 1970. Under this category of finance, banks discount usance bills to provide credit to borrowers. This is progressively used instrument against the prevailing practice of using the cash credit arrangement for financing working capital. There are some disadvantage in cash credit as this is unrelated to production needs, borrowers enjoy facilities on excess of their genuine needs and lead to unhealthy practices. As credit was taken from different banks for same activity, it led to double financing. For illustration, buying goods on credit from suppliers and raising cash credit by hypothecating the same goods. Therefore, under bill financing elimination of scope for misuse or diversification credit to i=other purposes is done by linking credit with the sale and purchase of goods. This type of finance is covered with cash credit and overdraft limit. Under this type of finance, bank satisfies itself about creditworthiness of the borrower and genuineness of the bill. The discounting banker requests the seller of goods (i.e. drawer of the bill) to have his bill accepted by the drawee (buyers) bank before discounting it. On the basis of the borrowing values of stocks the drawee grants acceptance against the cash credit limit which is fixed by it earlier.

The bill arises from sale purchase transaction on credit; thus it is source of working capital finance. In this case bill is drawn on the purchaser of goods by seller of goods which payable on demand or after usage period is not exceeding 90 days. The seller offers to the bank for discount/purchase after acceptance of the bill by the purchaser. After discounting the bill the bank releases the funds to seller. On the due date of payment, the bank present bill to the purchaser/acceptor of bill.

d. Letter of Credit

It is a letter written by a bank declaring that the bank pledges payment of billed amount if all the essential contracts are met. Other types of bank credit are directly lending by banks and they bear the risk. But in the case of letter of credit form of finance for working capital banks assume only risk and credit is being provided by the supplier himself. Bank gives Letter of credit is given to purchaser of goods. Under this letter of credit, banks undertake the responsibility of making payment to the supplier of goods if the buyer defaults to make payment. Thus, the supplier/seller of goods sells goods on credit to the buyer; therefore, bank gives a assurance and bears risk only in case of default by the purchaser.

e. Working Capital Term Loan

Under this type of credit, banks disburse loans for the period of 3 to 7 years which will be repayable in yearly or half yearly basis.

Types of Security for Bank Finance

Banks disburse credit to organizations including rural organizations on the basis of various modes of security, which are depicted as below

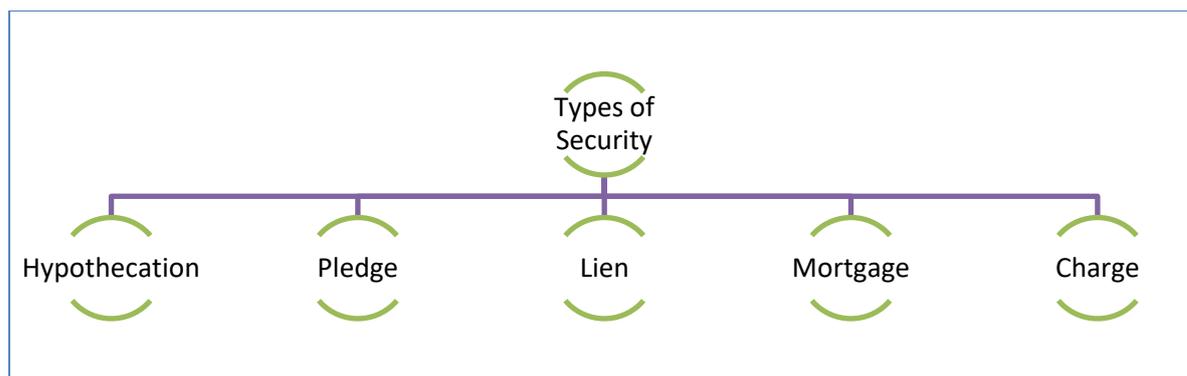


Fig 3.4 Types of Bank Finance Security

Types of security are explained in brief as below

a. Hypothecation

Hypothecation is use of inventory as a security/surety to obtain a short term loan. Under this type of security, borrower gets credit after hypothecating movable property, inventory of goods etc. Hypothecated goods will be continued in the possession of the buyer. The type of contract between borrower and lender determine the rights of lending banks. Bank has legal right to sale the goods in possession of buyer to realize the outstanding loan in case of default. Normally, hypothecation facility is not available to new borrower.

b. Pledge

Pledge is another mode of security, in this mode of security the goods which are kept for security will be in the position of lender. Thus, there is condition under the pledge is that the goods will be in the custody of bank. Under this type of security, borrower who keeps pledge is called as “pawn or’ (pledger), at the same time the lender i.e., bank is called as ‘Pawnee’ (pledgee). Pledging the goods by pledger with pledgee called as bailment and it is liabilities to the bank, because it has to take the care of pledged goods. If borrower fails to repay the loan, bank is free to sell pledged goods.

c. Lien

Lien refers to another mode of security and it explain that retaining goods by lender belonging toborrower until loan repaid. There are two types of lien viz., (i) particular lien and (ii) general lien. The former type of lien refers to right of retaining goods until loan is repaid. On the other hand, later type is refers holding goods of borrower till all dues are paid.

d. Mortgage

It is another mode of security to avail credit from bank. Immovable property will be mortgaged against loan. The borrower who mortgage the immovable property is called as ‘mortgagor’ and the bank which lends credit is called is ‘mortgagee’.The tool of transfer is called as ‘mortgage deed’. After repaying the debt, the mortgage on property will be terminated. Banks take the mortgage in the case working capital finance as additional security.

e. Charge

This type of security refers to making immovable property one person for the payment of money to another by the operation of the law, this transaction does not amount to mortgage. The latter person i.e., lender or seller have charge on the property with all the provisions of simple

mortgage. The provisions are given as below

- A charge is not the handover of interest in the belongings though it is security for payment. But mortgage is a handover of interest in the belongings.
- A charge may be formed by the act of parties or by the action of law. But a mortgage can be formed only by the act of parties.
- A charge need not be made in writing but a mortgage deed must be attested.
- Commonly, a charge cannot be imposed against the transferee for consideration without notice. In a mortgage, the transferee of the mortgaged belongings can obtain the outstanding interest in the property, if any is left.

Risk Rating and Scoring framework

A comprehensive risk rating and scoring framework has been suggested by RBI to help as a single point of indicator of the varied risk factors of the borrowers to help in taking a credit decision in a reliable manner. Scoring and rating model of an Indian Bank is given as below

Table 3.2 Rating of Borrowers Based on Percentage of Score – Frame Work

% Score obtained	Credit rating
80% and above	AAA
79%65%	AA
64%50%	A
49%35%	B
Below 35%	BB

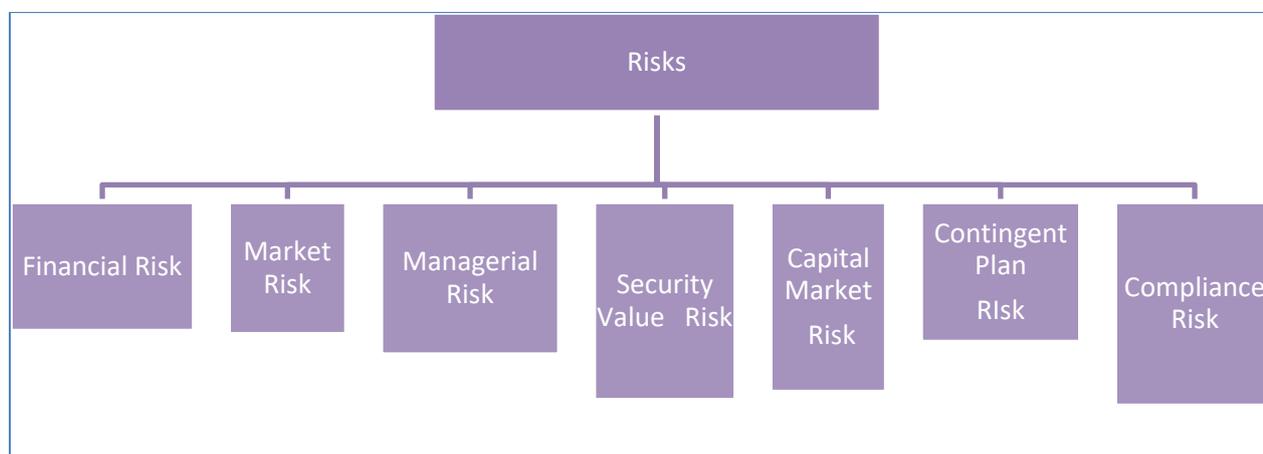


Fig 3.5 Types of Risks

Bank finance is the key formal source of working capital finance in India. In fact, it denotes the most important source for financing of current assets. Banking refers to that procedure in which a bank offers financial services viz., lending money, collection of deposits, issue of currencies and debit cards, and transaction processing etc. The bulk of banks works as profit seeking enterprises, however, a few government banks work as nonprofit establishments. Central banks function as government organizations and they control the circulation of money in the total economy. Types of bank finance are Cash Credits/ overdrafts, Loans, Purchase/ discount bills, Letter of Credit and Working Capital Term Loans. Types of securities were also discussed in this they are viz.,

Hypothecation, Pledge, Lien, Mortgage and Charge. This also dealt with the types of risks involved in bank finance, they are viz., Financial Risk, Market Risk, Managerial Risk, Security Value Risk, Capital Market Risk, Contingent Plan Risk and Compliance Risk.

3.5 Factoring, Money Market Instruments

More customers/organizations are attracted In case of credit sales. The credit sales has both higher profit, cost also. These costs are mainly may be classified as (i) investment cost and (ii) administrative cost. Furthermore, the sellers have to raise funds from various sources in order to finance the receivables. While maintaining receivables, a firm may face problems like raising funds to finance the receivables, and problem relating to collection, delay and defaults of the receivables. It is not possible to organization to concentrate on managing funds and receivables, as it also concentrates on other functions like finance, production, marketing, personal etc. Thus to facilitate, organization can avail the services of a specialist agency engaged in receivables management. These specialist agencies are known as factoring agencies.

Factoring offers resources to finance receivables as well as helps the collection of receivables. Factoring is a part of important segment of the financial services in developed countries. But in India this concept was introduced by RBI in 90s. In India there are two bank sponsored factoring organisations are existed they are viz., (i) SBI Factors and Commercial Services Ltd., and (ii) Can bank Factors Ltd. In 1997, the first private factoring company Foremost Factors Ltd. Started its operations in India.

Definition and Mechanism of Factoring

Definition

Factoring can be generally defined as an contract in which receivables arising out of sale of goods/services are sold by a firm (client) to the 'factor' (a financial intermediary). Thus the title of the goods/services represented by the said receivables passes on to the factor. Hereafter, the factor becomes accountable for all credit control, sales accounting and debt collection from the buyer(s). In a full-service factoring concept (without resource facility), if any of the borrowers fails to pay the outstanding as result of his financial inability/insolvency/bankruptcy, the factor has to engross the losses.

Factoring comprises the outright sale of receivables at a discount to a factor to obtain funds

Mechanism

Credit sales create the factoring business in the normal course of business transactions. Realization of credit sales is the key function of factoring services. Once a sale operation is accomplished, the factor steps in to realise the sales. Therefore, the factor works between the seller and the buyer and sometimes with the seller's banks together.

Functions of a Factor

The functions of factor depend on type of factoring; in general the functions are classified as below

Factor is financial organization that professionals in buying accounts receivables from commercial firms

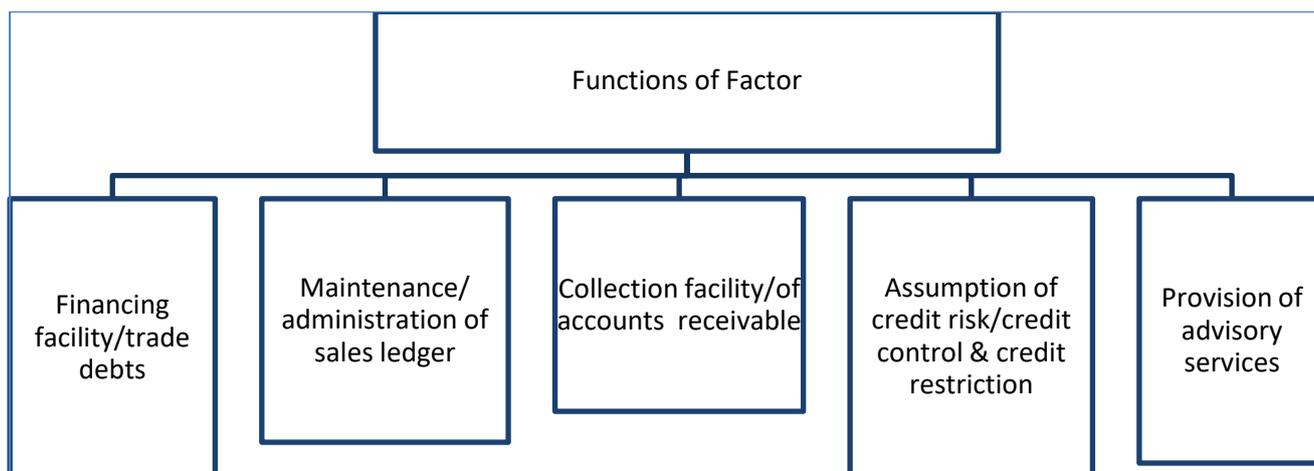


Fig 3.6 Types of Functions of Factor

a. Financing facility/trade debts

Under this function, factor buys his client's book debts of at a price and the debts are allocated in favor of the factor that is usually willing to grant loans to the extent of, say 80 per cent of the allocated debts.

b. Maintenance/ administration of sales ledger

Sales ledger of the client is maintained by the factor. After transacting sales deal, an invoice is sent to the customer by the client and a copy of the same is sent to the factor. In the ledger, each receipt is matched against the respective invoice and it is maintained under the open item method. Apart from this, the factor also maintains record of payments of customer spreading over a period of time hence that any change in the payment arrangement can be easily recognized.

c. Collection facility/of accounts receivable

Factor also helps the client to concentrate on its functional area of business by undertaking the problems of client viz., collection of receivables. This also helps clients to avoid the cost of collection of receivables.

d. Assumption of credit risk/credit control & credit restriction

This is one of the important functions of the factor. This type of service is offered in the case debt factor without recourse. recourse refers to where receivables are traded to the factor with the understanding that all credit risks would be tolerated by the firm.

e. Provision of advisory services

This function indicates the close association between a factor and a client. By virtue of their focused knowledge and involvement in finance and credit dealings and access to extensive credit information, factors can offer a diversity of related advisory services to their clients.

Money Market Instruments

As per the RBI, 'Money Market' is defined as a market which deals with short term financial assets with a maturity up to one year are traded. The close substitute for money is assets and assets support money exchange which carried out in the primary and secondary market. In other words, the money market deals with the lending and borrowing of tools generally for duration of less than a year. The typical feature of money market is High liquidity and short maturity. The main players in

the money market are viz., nonbanking finance corporations (NBFCs), commercial banks, and acceptance houses.

Money market consists of many smaller submarkets viz., bill market, acceptance market, call money market, etc. Further, the money market deals with other instruments like trade bills, government papers, promissory notes, etc. But, the money market transactions to be carried out via mediums like formal documentation, oral or written communication, thus can't be done through brokers.

Features of Money Market Instruments

Liquidity Money market instruments are considered as highly liquid because they are fixed income securities carrying short maturity periods of a year or less.

Safety As the issuers of money market instruments have strong credit ratings, it inevitably indicates that the money instruments issued by them are safe.

Discounted Price One of the main features of money market instruments is that they are issued at a discount on their face value.

Types of Money Market Instruments

Money market tool is an investment mechanism allowing banks, businesses, and the government to meet large, but short term capital needs at a lower cost. They serve the dual purpose of borrowers to meet their short term requirements and providing easy liquidity to lenders.

a. Promissory Note

A promissory note is one of the initial type of bills. It is a financial tool with a written promise by one party, to pay to another party, a definite sum of money by request or at a specified future date, although it falls in due for payment after 90 days within three days of grace.

b. Bills of Exchange or Commercial Bills

The bills of exchange can be matched to the promissory note; besides it is drawn by the creditor and is accepted by the bank of the presenter. The bill of exchange can be discounted by the creditor with a bank or a broker. Furthermore, there is a foreign bill of exchange which turns out to be due for payment from the date of receipt. However, the remaining process is the same for the internal bills of exchange.

c. Treasury Bills (TBills)

These are issued by the Central Government and branded to be one of the safest money market instruments. Moreover, there is zero risk, thus the earnings are not attractive. Similarly, they come with diverse maturity periods viz., 1 year, 6 months or 3 months and are also circulated by primary and secondary markets. The central government offers them at a lesser price than their face value.

d. Call and Notice Money

Call and Notice Money exist in the market. With respect to Call Money, the funds are borrowed and lent for one day, whereas in the Notice Market, they are borrowed and lent up to 14 days, without any collateral security. The commercial banks and cooperative banks borrow and lend funds in this market. However, the all India financial institutions and mutual funds only participate as lenders of funds.

e. Interbank Term Market

Players in this type of market are cooperative and commercial banks in India. Under this type of market, they borrow and lend funds for a period of over 14 days and up to 90 days. There is no

any collateral security at the rates determined by markets.

f. Commercial Papers (CPs)

Commercial papers can be matched to an unsecured short term promissory note issued by highest ranked companies with a purpose of raising capital to meet requirements straight from the market.

g. Certificate of Deposits (CD's)

Certificate of Deposits functions as a deposit acceptance for money which is deposited with a financial institute or bank. The Certificate of Deposit is dissimilar from a Fixed Deposit receipt in two ways. I.e., i. Certificate of deposits is distributed only if the sum of money is huge. ii. Certificate of deposit is easily negotiable. The CD's offered by banks range from 3 months, 6 months and 12 months. CD's can be issued to individuals (except minors), companies, corporations, funds, non-resident Indians, etc.

h. Banker's Acceptance (BA)

A Banker's Acceptance is a paper that promises upcoming payment which is guaranteed by a commercial bank. Also, it is used in money market funds and will stipulate the particulars of repayment like the date of repayment, amount to be paid, and details of the individual to which the repayment is due. A maturity period in BA ranges between 30 days up to 180 days.

i. Repurchase Agreements (Repo)

Repo's are also recognized as Reverse Repo or as Repo. They are short duration loans and are agreed by buyers and sellers for the purpose of selling and repurchasing. But, these transactions can be performed between RBI approved parties.

Under this factoring and types of money market instruments were discussed. More customers/organizations are attracted In case of credit sales. The credit sales has both higher profit, cost also. These costs are mainly may be classified as (i) investment cost and (ii) administrative cost. Furthermore, the sellers have to raise funds from various sources in order to finance the receivables. While maintaining receivables, a firm may face problems like raising funds to finance the receivables, and problem relating to collection, delay and defaults of the receivables. It is not possible to organization to concentrate on managing funds and receivables, as it also it concentrates on other functions like finance, production, marketing, personal etc. Thus, to facilitate, organization can avail the services of a specialist agency engaged in receivables management. These specialist agencies are known as factoring agencies.

Money market consists of many smaller submarkets viz., bill market, acceptance market, call money market, etc. Further, the money market deals with other instruments like trade bills, government papers, promissory notes, etc. But, the money market transactions to be carried out via mediums like formal documentation, oral or written communication, thus can't be done through brokers.

Model Questions

1. Explain functions of banks in India?
2. Explain the types of bank finance for working capital for rural organizations.
3. Discuss difference between Hypothecation and Pledge?
4. Explain the risks involved in bank finance for working capital?
5. What is risk rating and scoring frame work?
6. What is factoring? Explain briefly functions of factor.

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Chapter 4 Financing Decision

Introduction

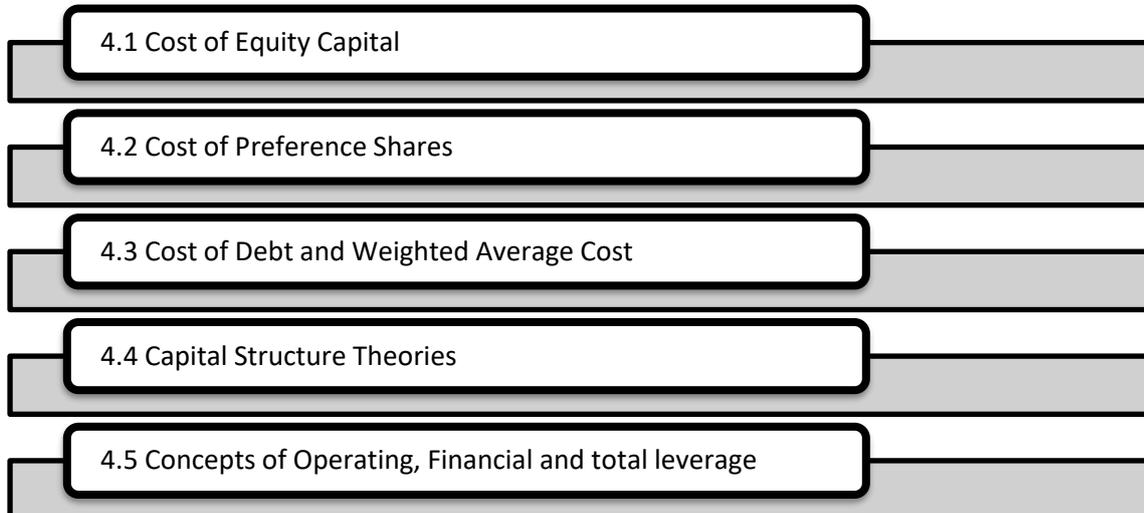
Financing decision is the second major area in Financial Management. Appropriate choice of available sources of finance will be made under financing decision. Financial decision helps to select the appropriate capital structure. The financing decision encompasses two sources of funds can be raised viz., (i) using a company's own fund, such as share capital, retained earnings or (ii) borrowing funds from the outside in the form of debenture, loan, bond, etc. The objective of financial decision is to preserve an optimum capital structure. The optimum capital structure is referred to the proper mix of debt and equity, to make sure the tradeoff between the risk and return to the shareholders. The Debt Equity Ratio plays a decisive role in the efficiency of the financing decision made by the organization.

Objectives

This helps the students to know the following issues related to cost of equity capital

- To learn concept of Equity Capital, Cost of Preference Shares
- To make them aware of concept of debt, weighted average cost
- To make them aware of capital structure theories
- To be able to apply concepts of operating, financial and total leverage costs.

Structure



Capital Structure

Capital structure is the share of debt and preference and equity shares on a firm's balance sheet. Capital structure is the arrangement of the capital employed by the organization from various sources of finance. It includes of both owners capital (i.e. equity capital and preferred capital) and debt capital. The investment and financing strategy of the organization is represented by its capital structure.

Decision of ideal capital structure for the organization leads for maximization of shareholders worth,

thus it is always given priority. The source of fund and the amount of capital is based on organizations financial requirement and the cost of capital.

A best debt equity mix indicates uses leverage to the maximum extent possible and the risk of loss of is at its minimum. The mix should be elastic enough to change according to future financial needs. The management of capital structure should be simple and easy to understand. Further, the organization should use debt to such an extent that it does not harm the firm's solvency. Therefore, debt should be borrowed as per the firm's potential to pay.

At the time of taking the financial decisions, the organization need to consider the following points

- Importance should be given to the Risk involved in raising the funds as risk is higher in the case of debt as compared to the equity.
- The organization need to consider the level of cost involved in raising the funds. The source with minimum cost is recommendable.
- The number of shareholder and their control in organization also determines the composition of capital structure. Most of the organizations prefer borrowed funds as the ownership is not diluted.
- The organization's Cash Flow from its operations also determines the source for capital. High cash flow helps to borrow debt as interest can be easily paid.

Thus, a organization need to make a careful decision regarding source funds as more use of equity leads to dilution of ownership, higher debt results in higher risk as it involves payment of cost in the form of interest on the borrowed funds.

Organization's Capital Structure

There are a number of substitutes available to the organization for arranging funds for capital. The capital structure is depicted in following Flowchart

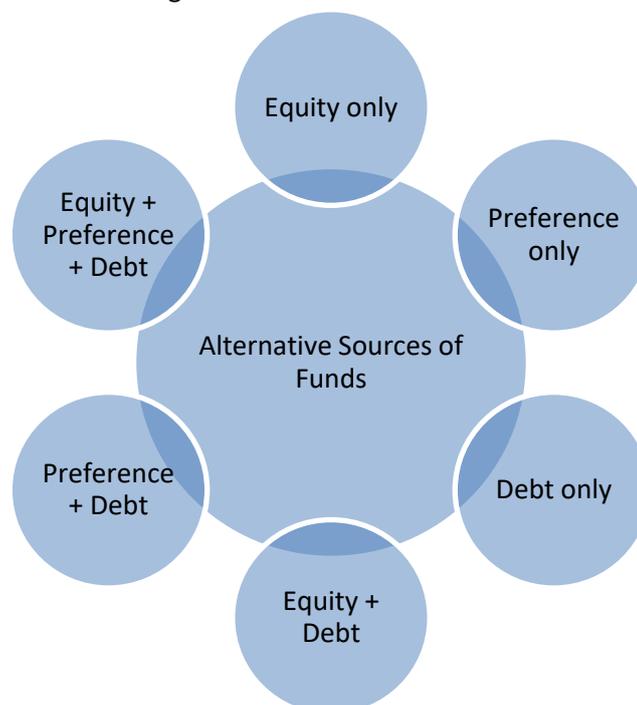


Fig 4.1 Capital Structure of Organization

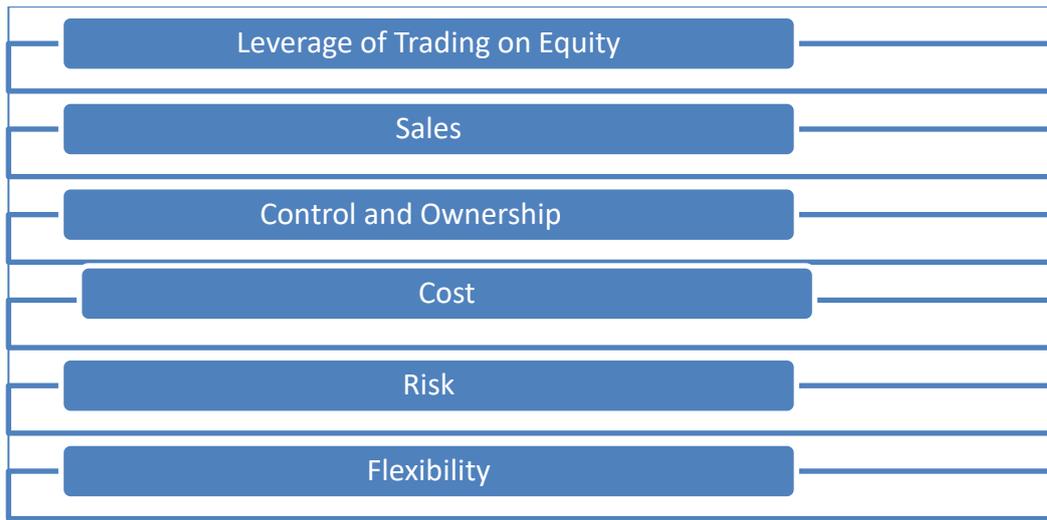


Fig 4.2 Factors influence Capital Structure

4.1 Cost of Equity Capital

Cost of capital denotes the weighted average cost of various capital components, i.e. sources of finance, employed by the firm such as equity, preference or debt. In better terms, it is the rate of return received by the firm on its investment projects, to attract investors for investing capital in the firm and to maintain its market value.

Definition

Cost of Equity is defined as the rate of return a shareholder needs for investing equity into a trade. The risk associated with the investment determines the rate of return an investor. The risk associated with the investment is measured as the historical volatility of returns. An organisation uses cost of equity to evaluate the relative attractiveness of investments, including both internal projects and external acquisition opportunities. Organisations normally use a combination of equity and debt financing, with equity capital being more costly.

Factors Determine Cost of Capital

The factors determine the costs of capital are explained as below;

- Source of funding
- Corresponding payment for using finance.

On arranging funds from various sources in Market, the organization has to pay some extra amount, apart from the principal itself. The extra amount paid is cost of using the capital, i.e. cost of capital which is either paid in lump sum or at periodic intervals.

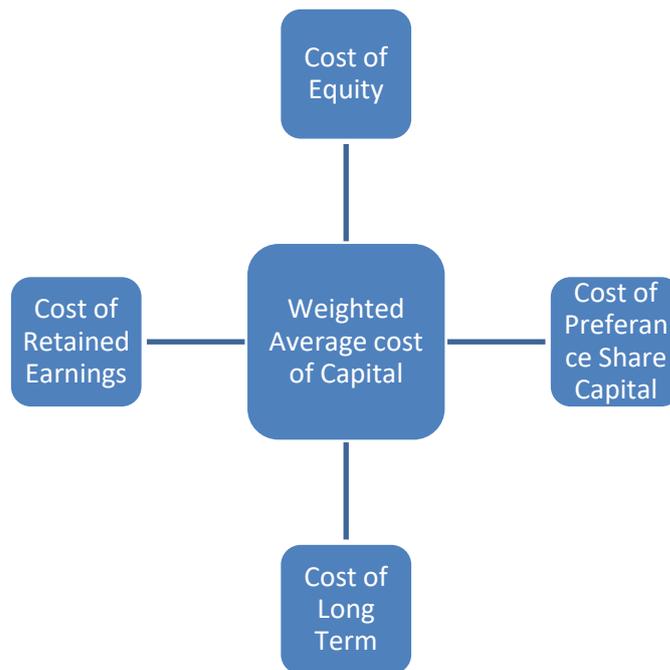


Fig 4.3 Weighted Average Cost of Capital

Classification of Cost of Capital

There are mainly two types of cost of capital viz., (i) Explicit cost of capital and (ii) Implicit cost of capital. The former type of cost of capital refers to the cost of capital in which organization's cash outflow is leaning towards utilization of capital including payment of dividend to the shareholders, interest to the debenture holders, etc. On the other hand, latter type of cost of capital refers to noncash outflow, but it indicates the opportunity foregone while opting for another alternative opportunity.

Importance of Cost of Capital

- a. **Evaluating the Investment Options**, It helps in evaluating investment options by converting the future cash flows of the investment avenues into present value by discounting it.
- b. **Capital Budgeting Decision** it is helpful in taking decisions in capital budgeting including the sources of finance used by the company.
- c. **Designing the Optimal Capital Structure** It is vibrant in designing the best capital structure of the organization which helps maximization of organization's value and the cost of capital is minimum.
- d. **Appraise the Performance of Specific Projects** It is also helpful in appraising the performance of specific projects by comparing the performance against the cost of capital.
- e. **Framing Optimum Credit Policy** Cost of capital also assist in framing optimum credit policy

Calculation of Cost of Equity

The cost of equity can be calculated by using the Capital Asset Pricing Model (CAPM) or Dividend Capitalization Model (for companies that pay out dividends).

CAPM

CAPM takes into account the riskiness of an investment relative to the market. The model is less exact due to the estimates made in the calculation (because it uses historical information).

CAPM Formula

$$E(R_i) = R_f + \beta_i * [E(R_m) - R_f]$$

Where

$E(R_i)$ = Expected return on asset i

R_f = Risk-free rate of return

β_i = Beta of asset i

$E(R_m)$ = Expected market return

- **Risk-Free Rate of Return**

The return expected from a risk-free investment (if computing the expected return for a US company, the 10year Treasury note could be used).

- **Beta**

The measure of systematic risk (the volatility) of the asset relative to the market. Beta can be found online or calculated by using regression dividing the covariance of the asset and market's returns by the variance of the market.

$\beta_i < 1$ Asset i is less volatile (relative to the market)

$\beta_i = 1$ Asset i's volatility is the same rate as the market

$\beta_i > 1$ Asset i is more volatile (relative to the market)

- **Expected Market Return**

This value is typically the average return of the market (which the underlying security is a part of) over a specified period of time (five to ten years is an appropriate range).

Example of CAPM

Chris is looking to invest in XYZ Co. (a US company) and would like to figure out his expected return on the security. The yield of a 10year Treasury note is 2.21%, the beta of XYZ Co. is 1.34 and the average return of the S&P 500 over the past 10 years is 7%. What is the expected return per share?

- $R_f = 2.21\%$
- $\beta_i = 1.34$
- $E(R_m) = 7\%$

$$E(R_i) = 2.21\% + 1.34 * (7\% - 2.21\%)$$

$$E(R_i) = 8.6286\%$$

Chris's expected return on a share of XYZ Co. is 8.6286%.

Dividend Capitalization Model

The Dividend Capitalization Model only applies to companies that pay dividends, and it also assumes that the dividends will grow at a constant rate. The model does not account for investment risk to the extent that CAPM does (since CAPM requires beta).

Dividend Capitalization Formula

$$R_e = (D_1 / P_0) + g$$

Where

R_e = Cost of Equity

D_1 = Dividends/share next year

P_0 = Current share price
 g = Dividend growth rate

- **Dividends/Share Next Year**

Companies usually announce dividends far in advance of the distribution. The information can be found in company filings (annual and quarterly reports, or through press releases). If the information cannot be located, an assumption can be made (using historical information to dictate whether the next year's dividend will be similar).

- **Current Share Price**

The share price of a company can be found by searching the ticker or company name on the exchange that the stock is being traded on, or by simply using a credible search engine.

- **Dividend Growth Rate**

The Dividend Growth Rate can be obtained by calculating the growth (each year) of the company's past dividends and then taking the average of the values.

The growth rate for each year can be found by using the following equation

- **Dividend Growth = $(D_t/D_{t1}) - 1$**

Where

D_t = Dividend payment of year t

D_{t1} = Dividend payment of year t1 (one year before year t)

Example

Below are the dividend amounts paying every year by a company that's been operating for five years.

	Year 1	Year 2	Year 3	Year 4	Year 5
Dividend:	\$1.00	\$1.02	\$1.04	\$1.07	\$1.10
Dividend Growth Rate:	N/A	$=(\$1.02/\$1.00)-1$	$=(\$1.04/\$1.02)-1$	$=(\$1.07/\$1.04)-1$	$=(\$1.10/\$1.07)-1$
Dividend Growth Rate:	N/A	2.00%	1.96%	2.88%	2.80%

Average: $=(2.00\%+1.96\%+2.88\%+2.80\%)/4$ 2.41%

The average of the growth rates is 2.41%.

Dividend Capitalization Model Example

XYZ Co. is currently being traded at \$5 per share and just announced a dividend of \$0.50 per share, which will be paid out next year. Using historical information, an analyst estimated the dividend growth rate of XYZ Co. to be 2%. What is the cost of equity?

$$D_1 = \$0.50$$

$$P_0 = \$5$$

$$g = 2\%$$

$$R_e = (\$0.50/\$5) + 2\%$$

$$R_e = 12\%$$

The cost of equity for XYZ Co. is 12%.

Financing decision is the second major area in Financial Management. Appropriate choice of available sources of finance will be made under financing decision. Financial decision helps to select

the appropriate capital structure. The financing decision encompasses two sources of funds can be raised viz., (i) using a company's own fund, such as share capital, retained earnings or (ii) borrowing funds from the outside in the form of debenture, loan, bond, etc. The objective of financial decision is to preserve an optimum capital structure. The optimum capital structure is referred to the proper mix of debt and equity, to make sure the tradeoff between the risk and return to the shareholders. The Debt Equity Ratio plays a decisive role in the efficiency of the financing decision made by the organization.

4.2 Cost of Preference Shares

The preference shareholders have to be paid their fixed dividends before any distribution of dividends to the equity shareholders. For the purpose of taxation, their dividends are not allowed as expenditure. In fact, the preference dividend is a dispersal of profits of the business. In case of cost of debentures, the question of after tax or before tax cost of preference shares does not arise as dividends are paid out of profits after taxes.

Concept of Cost of Preference Shares

The cost of preference share capital is seemingly the dividend which is dedicated and paid by the organization. This cost is not appropriate for project evaluation since this is not the cost at which further capital can be acquired. To find out the cost of obtaining the marginal cost, there is need to find the yield on the preference share based on the existing market value of the preference share.

The preference share is allotted at a specified rate of dividend on the face value of the share. While the dividend is not obligatory and it does not create legal compulsion like debt, it has the preference of payment over equity for dividend payment and distribution of assets at the time of insolvency. Thus, without paying the dividend to preference shares, they cannot pay anything to equity shares. In that scenario, management usually attempts to pay a regular dividend to the preference shareholders

Calculation of Cost of Preference Shares

Preference shares can be classified into

- a. Irredeemable preference shares
- b. Redeemable preference shares

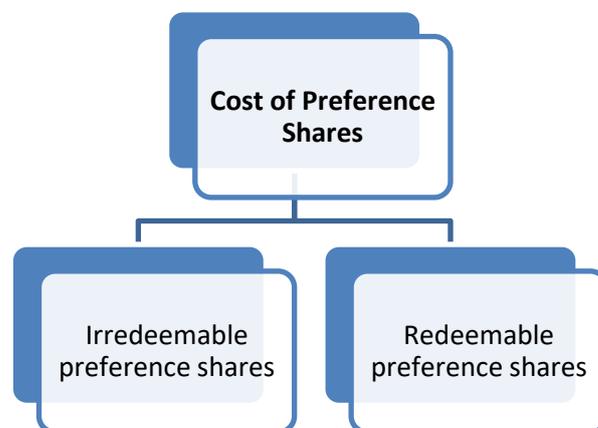


Fig 4.4 Classification of Calculation of Cost of Preference Shares

Cost of Irredeemable Preference Shares

Irredeemable preference shares refer to shares issuing by company that has no compulsion to pay back the principal amount of the shares during its lifetime. The only accountability of the company is to pay the annual dividends. The cost of irredeemable preference shares is calculated as

K_p (cost of pref. share) = Annual dividend of preference shares

Market price of the preference stock

Example Let us calculate the cost of 10% preference capital of 10,000 preference shares having face value of Rs.100. The market price of the share is presently Rs.115.

Annual dividend = 10% of Rs.100 = Rs.10 per share

$K_p = \text{Rs.10}/\text{Rs.115} = 8.7\%$

- **Cumulative preference shares**

The market price of the preference stock will be increased In case of cumulative preference shares by such amount of dividend in amount outstanding. Cumulative preference shares refer to shares whose dividends will get accumulated if they are not paid periodically. The entire amount outstanding of cumulative preference shares must be paid before paying anything to the equity shareholders.

- **Noncumulative preference shares**

These types of shares are preference shares that dividends do not get carried forward to the next year if they are not paid during a year.

The cost of preference capital would be as below, If the company issues new preference shares

$K_p = \text{Annual dividend} / \text{Net proceeds after floatation costs, if any.}$

Example

A limited firm issues 8% irredeemable preference shares. The face value of share is Rs.100 but they are issued at Rs.105. The floatation cost is Rs.3 per share.

$K_p = \text{Rs.8}/(\text{Rs.105}-\text{Rs.3}) = 7.84\%$

If the debut costs are expressed as percentage, the formula is given as below

$K_p = \text{Annual dividend}/\text{Net proceeds}(\text{floatation costs})$

Cost of Redeemable Preference Shares

Redeemable preference shares have a fixed maturity date for redeeming the same.

Cost of Redeemable preference shares = Annual Dividend + (Redeemable Value - Sale value) / Number of years for redemption / (Redeemable Value + Sale value) / 2 Or $K_p = D + (RV - SV) / N (RV + SV) / 2$

Example

A firm issues 10000, 8% preference shares of Rs.100 each and redeemable after 20 years at face value. The floatation costs are Rs.3 per share.

Redeemable value = Rs.100;

Sale value = Rs.100 - Rs.3 = Rs.97

Annual dividend = Rs.8 per share.

$K_p = 8 + (100 - 97) / 20 = 8.27\%$

$$(100 + 97) / 2$$

The cost of preference share capital is apparently the dividend which is devoted and paid by the organisation. This cost is not appropriate for project evaluation since this is not the cost at which further capital can be acquired. To find out the cost of obtaining the marginal cost, there is need to find the yield on the preference share based on the existing market value of the preference share.

The preference share is allotted at a specified rate of dividend on the face value of the share. While the dividend is not obligatory and it does not create legal compulsion like debt, it has the preference of payment over equity for dividend payment and distribution of assets at the time of insolvency. Thus, without paying the dividend to preference shares, they cannot pay anything to equity shares. In that scenario, management usually attempts to pay a regular dividend to the preference shareholders.

4.3 Cost of Debt and Weighted Average Cost Objectives

It is comparatively easy to compute cost of debt; it refers to rate of return or the rate of interest identified at the time of debt issue. When a bond or debenture is allotted at full face value and to be cashed after some period, then the before tax cost of debt is solely the usual rate of interest.

Concept of Cost of Debt

The cost of debt includes (a) Explicit Cost and (b) Implicit Cost. The former type of cost of debt refers to the rate of interest paid on debt. Regardless of the degree of the degree of leverage, the organization is presumed to be able to borrow at a given rate of interest. This indicates that the increasing proportion of debt in the financial structure does not affect the financial risk of the banks and they do not punish the organization by charging higher interest.

The latter type of cost of debt explains the relation between the proportion of debt and increase in the cost of equity capital. In this case K_e refers to cost of equity capital and K_i refers to cost of debt.

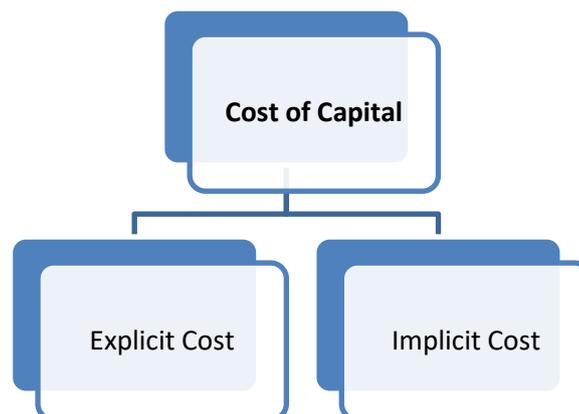


Fig 4.5 Cost of Debt

Calculation of Cost of Debt

The cost of debt is the rate of interest payable on debt. For example, a company issues Rs.1, 00,000 10% debentures at par; the before tax cost of this debt issue will also be 10%. By way of a formula, before tax cost of debt may be calculated as

$$k_{db} = I/P$$

I=Interest P=Principal

In case the debt is raised at premium or discount, we should consider P as the amount of net proceeds received from the issue and not the face value of securities. The formula may be changed to

$$K_{db} = I/NP$$

where, NP= Net Proceeds

Further, when debt is used as a source of finance, the firm saves a considerable amount in payment of tax as interest is allowed as a deductible expense in computation of tax. Hence, the effective cost of debt is reduced. The After tax cost of debt may be calculated with the help of following formula

$$K_{da} = I/NP(1-t)$$

where, K_{da}= After Tax Cost of Debt = Rate of Tax

Concept of Weighted Average Cost Objectives

The weighted average cost of capital (WACC) is a calculation that reflects how much an organization pays in interest when acquiring financing options.

Organizations have a few options available when it comes to finding funding for their operations. From debt options such as taking out loans or offering long term corporate bonds to equity such as preferred and common stock, larger organizations tend to find a balance between these options that is optimized for the best possible weighted average cost of capital (WACC) to operate at the scale that creates the best revenue opportunity.

In short, the WACC is a measure of what all of these capital inputs will cost the organization in terms of an average interest rate. The WACC is normally used as the firm's cost of capital for the following reasons:

If a single component cost is used as a criterion for acceptance, projects with a low rate of return may be accepted while projects with a high rate of return may be rejected. If a firm accepts projects that yield more than its WACC, it can increase the market value of its common stock.

The formula for WACC is $k = \frac{S}{BS} k_e + \frac{B}{BS} k_t$

where k = WACC, k_e = cost of equity, k_t = after tax cost of debt, B = market value of the firm's debt, and S = market value of a firm's equity.

Cost of Equity

There is no measurable element for the cost of common equity because dividend declarations are made at the discretion of a firm's board of directors.

The cost of equity for a firm is the minimum rate of return necessary to attract investors to buy or hold a firm's common stock.

This required rate of return is the discount rate that equates the present value of all expected future dividends per share with the current price per share.

The formula for cost of equity is where D₁ = expected dividends per share to be paid at the end of one year, P = current market price per share, and g = annual dividend growth rate.

An alternative approach is the capital asset pricing model (CAPM). This can be used when a market is in equilibrium and, if this condition is met, the expected rate of return on an individual security (j) is stated as follows where R_j = expected rate of return on security j , R_f = riskless rate of interest, R_m = expected rate of return on the market portfolio, and β_j = systematic risk of security j .

This equation is known as the security market line and it consists of the riskless rate of interest (R_f) and a risk premium $[(R_m - R_f)\beta_j]$, for a particular firm J .

The term $(R_m - R_f)$ is known as the market risk premium.

The CAPM is based on the assumption that intelligent risk-averse investors seek to diversify their risk, and, as a result, the only risk that is rewarded with a risk premium is systematic or undiversified risk.

This suggests that the cost of capital is generally lower for MNCs than for domestic firms. A problem with using CAPM is determining how to compute beta (β). It is common practice to use past data to estimate future betas. Another approach to measuring the cost of equity is the price earnings ratio, which is the price per share divided by the earnings per share. The formula is, thus a high PE ratio suggests a low cost of capital.

The main difference between the three approaches to the cost of equity is that the dividend valuation model and the PE ratio emphasize the total risk of expected returns, while the CAPM emphasizes only the systematic risk of expected returns.

Cost of Debt

The explicit cost of debt for a firm may be defined as the discount rate that equates the net proceeds of the debt issue with the present value of interest and principal payments.

If we want to express all cost of capital rates on an after tax basis, we must adjust this explicit cost of debt for taxes because interest charges are usually tax deductible. The after tax cost of debt is denoted by k_t and is computed using $k_t = k_i(1-t)$ where k_i = before tax cost of debt and t = tax rate.

MNCs must account for a number of complicated factors to measure the cost of debt. They must, in order to measure the before tax cost of debt, estimate interest rates and the proportion of debt to be raised in each market. They must, in order to measure the after tax cost of debt, estimate tax rates in each market in which they intend to borrow and determine the deductibility of interest by each national tax authority.

The nominal cost of principal and interest in foreign currency must be adjusted for foreign exchange gains or losses when MNCs issue debt denominated in a foreign currency. Thus, before tax cost of capital includes the nominal cost of principal and interest in foreign currency terms, adjusted for foreign exchange gains and losses. This can be computed with the formula $k_i = (k_f * k_a) + k_p$ where k_f = before tax interest in foreign currency terms, k_a = additional interest due to exchange rate change, and k_p = additional principal due to exchange rate change.

The appropriate costs of capital MNCs have three choices in deciding their subsidiary cost of capital. Cost of capital to the parent company – this is appropriate if the parent company finances the entire

cost of its foreign project by itself. Cost of capital to the subsidiary – this is appropriate of the foreign subsidiary obtains all of the capital for the project overseas. Some weighted average of the two– this is appropriate if the MNC uses the whole world as a combined source of funds, which is typical.

The cost of debt is an important input in the capital budgeting decision. Conceptually, it refers to the discount rate that would be used in determining the present value of estimated future benefits associated with capital projects. In operational terms, it is defined as the weighted average of the cost of each type of capital. The computation of the cost of debt, therefore, involves two steps (i) calculation of the specific cost of each type of capital, namely, debt, preference shares, ordinary shares and retained earnings, and (ii) calculation of the weighted average cost of capital by combining the specific costs.

4.4 Capital Structure Theories

Given the objective of the firm to maximize the value of the equity shares, the firm should select a financing mix/capital structure/financial leverage which will help in achieving the objective of financial management. As a corollary, the capital structure should be examined from the view point of its impact on the value of the firm. It can be legitimately expected that if the capital structure decision affects the total value of the firm, a firm should select such a financing mix as will maximize the shareholders’ wealth. Such a capital structure is referred to as the optimum capital structure.

Concept of Capital Structure

Capital structure is the proportion of debt and preference and equity shares on a firm’s balance sheet. On the other hand, the optimum capital structure defined as the capital structure or combination of debt and equity that leads to the maximum value of the firm.

Capital Structure Theories

There are mainly four types of capital structure namely (i) Net Income Approach, (ii) Net Operating Income Approach, (iii) Modigliani Miller (MM) Approach, and (iv) Traditional Approach. The same are explained in following flowchart 4.6.

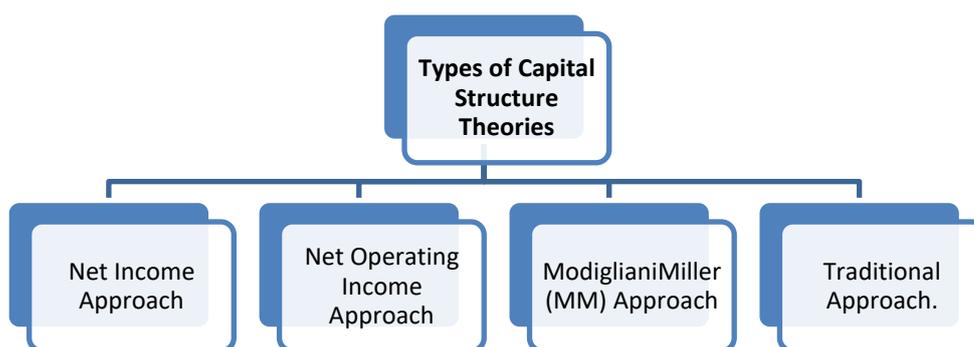


Fig 4.6 Capital Structure Theories

Assumptions

Assumptions of Capital Structure Theories are given as below

1. There are only two sources of funds used by a firm viz., Perpetual riskless debt and Ordinary shares.
2. There are no corporate taxes. This assumption is removed later.

3. The dividend payout ratio is 100. That is, the total earnings are paid out as dividend to the shareholders and there are no retained earnings.
4. The total assets are given and do not change. The investment decisions are, in other words, assumed to be constant.
5. The total financing remains constant. The firm can change its degree of leverage (capital structure) either by selling shares and use the proceeds to retire debentures or by raising more debt and reduce the equity capital.
6. The operating profits (EBIT) are not expected to grow.
7. All investors are assumed to have the same subjective probability distribution of the future expected EBIT for a given firm.
8. Business risk is constant over time and is assumed to be independent of its capital structure and financial risk.
9. Perpetual life of the firm.

Definitions and Symbols

Capital structure theories are also making the use of following symbols

S = total market value of equity

B = total market value of debt

I = total interest payments

V = total market value of the firm ($V = S + B$)

NI = net income available to equity holders.

Net Income Approach

As per Net Income Approach, the capital structure decision is relevant to the valuation of the firm. In other words, a change in the financial leverage will lead to a corresponding change in the overall cost of capital as well as the total value of the firm. The NI Approach to valuation assumes viz., (i) no taxes, (ii) the cost of debt is less than the autocalcapitalization rate or the cost of equity and (iii) the use of debt does not change the risk perception of investors. According to NI Approach, financial leverage is an important variable to the capital structure of a firm. With a judicious mixture of debt and equity, a firm can evolve an optimum capital structure which will be the one at which value of the firm is the highest and the overall cost of capital is the lowest. At that structure, the market price per share would be maximum.

Net Operating Income (NOI) Approach

Net operating income approach is absolutely opposite to the NI Approach. The essence of this approach is that the capital structure decision of a firm is irrelevant. Any change in leverage will not lead to any change in the total value of the firm and the market price of shares as well as the overall cost of capital is dependent of the degree of leverage.

Modigliani Miller (MM) Approach

The MM proposition supports the NOI approach relating to the independence of the cost of capital of the degree of leverage at any level of debt equity ratio.

Traditional Approach

The traditional approach is midway between the NI and NOI Approaches. It partakes some features

of both these approaches. It is also known as the intermediate Approach.

Capital structure refers to the mix or proportion of different sources of finance (debt and equity) to total capitalization. A firm should select such a financing mix which maximizes its value/the shareholders' wealth. Capital structure theories explain the theoretical relationship between capital structure, overall cost of capital and valuation. The four important theories are (i) Net income Approach, (ii) Net Operating Income approach, (iii) Modigliani and Miller approach and (iv) Traditional approach.

4.5 Concepts of Operating, Financial and Total Leverage

The present section discusses the principles and types of leverage. An organization can make use of different sources of financing whose costs are not same. Debt involves the payment of a stated rate of interest; the return of the ordinary shareholders is affected by the extent of debt in the capital structure of firm.

In a levered organization, the creditors are very carefully prepared and they have specified claims against an organization's cash flows during normal operations as well as during insolvency. Equity holders are always last in line, behind all creditors.

The locus of each applicant in the line affects the riskiness of their cash flows. Those first in the line claim the most certain cash flows – and their elimination of the most certain cash flows increases the risk of the cash flows that remain for those behind them

Creditors and equity holders are clever. Claimants further back in the line demand higher returns to compensate themselves for the additional risk they bear. Thus, shareholders require higher returns for the added financial risk of creditors.

However, shareholders know another very important facet about debt; they can make money from its use. In fact, the focal point of capital structure theory hinges on shareholders recognizing that debt use can add to their returns. The use of appropriate amount of debt adds value if the company enjoys a tax deduction for interest payments.

Concept of Operating Leverage

Leverage is the employment of an asset/source of finance for which firm pays fixed cost/fixed item. Fixed costs and low variable costs provide the greater percentage change in profits both upward and downward. If a high percentage of a firm's costs are fixed, and hence do not decline when demand decreases, this increases the company's business risk. This factor is called operating leverage.

If a high percentage of a firm's total costs are fixed, the firm is said to have a high degree of operating leverage. The degree of operating leverage (DOL) is defined as the percentage change in operating income (or EBIT) that results from a given percentage change in sales. In effect, the DOL is an index number which measures the effect of a change in sales on operating income, or EBIT.

When fixed costs are very large and variable costs consume only a small percentage of revenue, even a slight change in revenue will have a large effect on reported profits. Operating leverage, then, refers to the magnified effect on operating earnings (EBIT) of any given change in sales. And the more important, proportionally, are fixed costs in the total cost structure, the more marked is the

effect on EBIT.

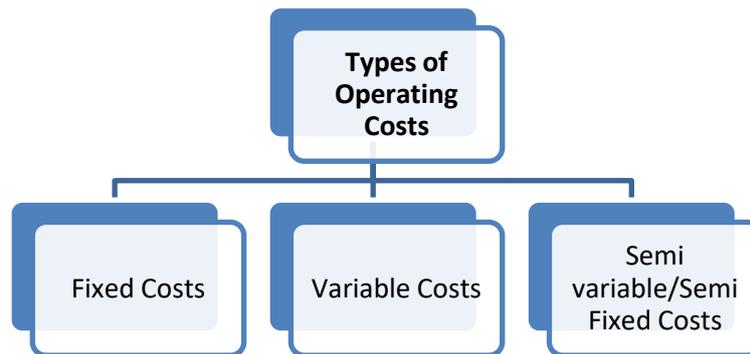


Fig4.7 Operating Costs of Firm

Financial and Total Leverage

On the other hand, the leverage associated with financing activities is called as 'Financial Leverage'. The different financial sources available can be classified into (i) Sources charging fixed financial charge, and (ii) Sources do not involve any fixed charges. Former sources of financial category consist of various types of long-term debt, including bonds, debentures and preference shares. Fixed rate of interests are applicable to long term debt and is contractual obligation to firms. The fixed charge must be paid before payment to ordinary shareholders. The remainder of profit need to be shared with all equity shareholders after meeting all prior obligations.

Financial leverage arises to fixed financial costs/interests. There will be no changes in fixed costs with changes in earnings before operating costs. Financial leverage concerned with the effects of changes in EBIT on the earnings available to equity holders. It is defined as the ability of a firm to use fixed financial charges to magnify the effects of changes in EBIT on the earnings per share. In other words, financial leverage involves the use of funds obtained at a fixed cost in the hope of increasing the return to the shareholders. Favorable or positive leverage occurs when he firm earns more on the assets purchased with the funds, than the fixed cost of their use. Unfavorable or negative leverage occurs when the firm does not earn as much as the funds cost. Thus, financial leverage is based on the assumption that the firm is to earn more on the assets that are acquire by the use of funds on which a fixed rate of interest/dividend is to be paid. The difference between the earnings from the assets and the fixed cost on the use of the funds goes to the equity holders. In a way therefore, use of fixed interest sources of funds from the shareholders. Financial leverage is also, therefore, called as 'trading on equity'. However, in periods of persisting adversity when earnings are not adequate, the presence of fixed charges will imply that the shareholders will have to bear the burden. Thus, the leverage/trading on equity will operate in the opposite direction such that the earnings per share, instead of increasing, will actually fall as a result of the use of funds carrying fixed cost.

Total Leverage

Total leverage is the product of operating leverage and financial leverage. The operating leverage has its effects on operating risk and is measured by the percentage change in EBIT due to percentage change in sales. The financial leverage has its effects on financial risk and is measured by the percentage change in EPS due to percentage change in EBIT. Since both these leverages are closely

concerned with ascertaining the ability to cover fixed charges (fixed operating costs in the case of operating leverage and fixed financial costs in the case of financial leverage), if they are combined, the result is total leverage and the risk associated with combined/total leverage is known as total risk. Symbolically, Degree of combined/total leverage given as below

$$DCL = DOL \times DFL$$

Where, DCL= Degree of Combined Leverage, DOL = Degree of Operating Leverage, DFL = Degree of Financial Leverage.

Substituting the values of DOL and DFL, we have

$DCL = \% \text{ change in EBIT} / \% \text{ change in sales} \times \% \text{ change in EPS} / \% \text{ change in EBT} = \% \text{ change in EPS} / \% \text{ change in sales}$

Or $DCL = \text{Contribution} / \text{EBIT} \times \text{EBIT} / \text{EBIT} - I = \text{Contribution} / \text{EBIT} - I$

Leverage refers to the use of an asset or source of funds which involves fixed costs or fixed returns. As a result, the earnings available to the shareholders/owners are affected as also their risk. There are three types of leverage viz., operating, financial and combined/total. Financial leverage involves the use of funds obtained at a fixed cost in the hope of increasing the return to the equity holders. When a firm earns more on the assets purchased with the funds than the fixed cost of their use, the financial leverage is favorable. Unfavorable leverage occurs when the firm does not earn as much as the funds cost.

Model Questions

1. Explain redeemable and irredeemable Cost of Preference Shares?
2. Define the Calculation of Cost of Debt
3. Explain the calculation of Weighted Average Cost.
4. What is meant by the term leverage? What are its types?
5. Differentiate between Operating Leverage and Total Leverage?

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Chapter 5 Dividend Decision

When an organization makes a profit, it is its duty to decide on what to do with those profits. Firms can continue to retain the profits themselves, or they can distribute profits to the owners or shareholders of the firm in the form of dividends. The dividend policy decision has two questions viz.,(a) How much earnings should be distributed? And (b) What type of dividend policy should the firm follow? The organization can maintain steady dividend policy or increasing dividend a policy with growth rate etc. At the same time, Management has to satisfy various stakeholders from the profit. The distribution of dividend among shareholders depends on the level of profit earned by the organization.

Objectives

This helps the students to know the following issues related to Concept of Dividend

- To be aware of concept of Dividend
- To be aware of types of decisions, dividends
- To learn about factors influencing dividends
- To apply dividend theories

Structure

5.1 Concept of Dividend	
5.2 Types of Decisions	
5.3 Types of Dividends	
5.4 Factors Influencing Dividends	
5.5 Dividend Theories	

5.1 Concept of Dividend

Dividend refers to the corporate net profits distributed among shareholders. Dividends refer to that portion of a firm's net earnings which are paid out to the shareholders. Since dividends are distributed out of the profits, the alternative to the payment of dividends is the retention of earnings/profits. The retained earnings constitute an easily accessible important source of financing the investment requirements of firms. Thus, there is an inverse relationship between retained earnings and cash dividends: larger retentions, lesser dividends; smaller retentions, larger dividends. According to the Institute of Chartered Accountants of India, dividend is "a distribution to

shareholders out of profits or reserves available for this purpose."⁵

"The term dividend refers to that portion of profit (after tax) which is distributed among the owners / shareholders of the firm."⁶

"Dividend may be defined as the return that a shareholder gets from the company, out of its profits, on his shareholdings."⁷

In other words, dividend is that part of the net earnings of a corporation that is distributed to its stockholders. It is a payment made to the equity shareholders for their investment in the company.

Irrelevance and relevance of Dividends

Irrelevance of Dividends

Dividend policy of a firm is a part of its financing decision. As part of the financing decision, the dividend policy of the firm is a residual decision and dividends are a passive residual. If a dividend policy is strictly a financing decision, whether dividends are paid out of profits, or earnings are retained, will depend upon the available investment opportunities. It implies that when a firm has sufficient investment opportunities, it will retain the earnings to finance them. Conversely, if applicable investment opportunities are inadequate, the implication is that the earnings would be distributed to the shareholders. The test of adequate acceptable investment opportunities is the relationship between the return on the investment r and the cost of capital (k). As long as r exceeds k , a firm has acceptable investment opportunities. In other words, if a firm can earn a return r higher than its cost of capital (k), it will retain the earnings to finance investment projects. If the retained earnings fall short of the total funds required it will raise external funds both equity and debt to make up the shortfall. If, however, the retained earnings exceed the requirements of funds to finance acceptable investment opportunities, the excess earnings would be distributed to the shareholders in the form of cash dividends. The amount of dividend will fluctuate from year to year depending upon the availability of acceptable investment opportunities. With abundant opportunities, the dividend payout ratio (D/P ratio, that is, the ratio of dividends to net earnings) would be zero. When there are no profitable opportunities, the D/P ratio will be 100. For situations between these extremes, the D/P ratio will range between zero and 100.

That dividends are irrelevant, or are a passive residual, is based on the assumption that the investors are indifferent between dividends and capital gains. So long as the firm is able to earn more than the auto capitalization rate (k_e), the investors would be content with the firm retaining the earnings. In contrast, if the return is less than the k_e , investors would prefer to receive the earnings (i.e. individuals).

Relevance of Dividends

Dividend relevance implies that shareholders prefer current dividends and there is no direct relationship between dividend policy and market value of a firm.

As we know in corporation, owners are shareholders but management is done through Board of

⁵ Guidance Note on Terms used in Financial Statements, ICAI

⁶ R.P. Rustagi, Financial Management, Galgotia Publishing Company, 2001, p. 806

⁷Dr. S.N. Maheshwari, Elements of Financial Management, Sultan Chand and Sons, 1999, p. C 71

directors. It is the Board of Directors to decide whether to pay dividend or retain earnings for future projects. It is a matter of conflict between shareholders and directors. Shareholders expect a quick return on their capital. On the other hand, directors have to consider a number of factors in determining dividend policy.

Investors must keep an eye on the company's dividend policy for most companies regular boosts in the face of irregular earnings can be a warning signal. So can the refusal of Management to lower dividends when earnings fall or capital requirement rise. Companies with high dividend and rising debt may be borrowing money to pay shareholders. For investors who are seeking stock that will advance on their performance and earnings and earnings per share, lower dividend may mean high returns.

5.2 Types of Decisions

Dividend decision of a company involves the question of how much of the net earnings should be distributed to shareholders as dividends and how much should be retained in the business. Retained earnings constitute internally available funds for financing the growth of companies. At the same time, dividends are considered desirable from shareholders' point of view as they are perceived by many to increase their current wealth. In fact, the return to shareholders consists of two components; dividends and capital gains. However, this relationship is quite complex in practice. It is so because the share prices are generally affected by a large number of factors and not just alone by dividend policy of the company. This is further complicated by the fact that capital gains are perceived to be more uncertain than dividends and also, capital gains are taxed at a lesser rate than dividends.

Dividend Decision

Dividend decisions, as the very name suggests, refers to the decision-making mechanism of the management to declare dividends. It is crucial for the top management to determine the portion of earnings distributable as the dividend at the end of every reporting period. A company's ultimate objective is the maximization of shareholders wealth. It must, therefore, be very vigilant about its profit sharing policies to retain the faith of the shareholders. Dividend payout policies derive enormous importance by virtue of being a bridge between the company and shareholders for profit sharing. Without an organized dividend policy, it would be difficult for the investors to judge the intentions of the management.

Moreover, the dividend policies of an organization have a significant bearing on the market value of stocks. Dividends must be distributed in line with the industry standards. The shareholders will otherwise perceive this variability negatively. It casts a suspicion on the financial health and motives of the management (signaling effect). In aggregate, an inefficient dividend decision mechanism would adversely impact the valuation of the company.

Types of Dividend Decision

A major decision of financial management is the dividend decision in the sense that the firm has to choose between distributing the profits to the shareholders and ploughing them back into the business. The choice would obviously hinge on the effect of the decision on the maximization of shareholders' wealth. Given the objective of financial management of maximizing present values,

the firm should be guided by the consideration as to which alternative use is consistent with the goal of wealth maximization. That is, the firm would be well advised to use the net profits for paying dividends to the shareholders if the payment will lead to the maximization of wealth of the owners.

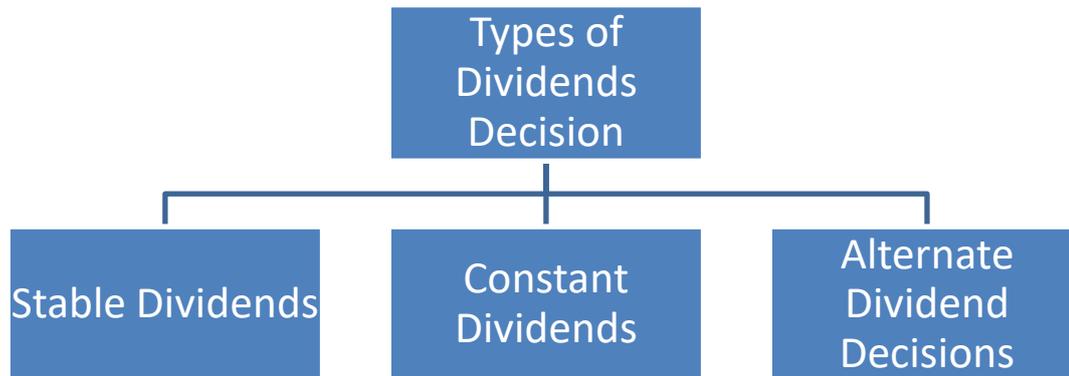


Fig 5.1 Types of Dividend Decision

There are various types of dividend decisions.

Stable Dividends

- Same amounts of dividends are paid out every year irrespective of the profitability.
- Shareholders remain immune to fluctuations and volatility faced by the company.
- Only longstanding and established companies with steady cash flows can afford to follow this policy
- Investors that buy into these companies have a low risk appetite. They also do not get to participate in the profits of the company

Constant Dividends

- Dividends are paid at a fixed percentage of the profits.
- The brunt of recession is as much borne them as much they reap benefits of the boom.
- This policy is suitable for companies in their infancy stage as well as those prone to volatility.
- Investors of these companies are risk taking. They prefer to swing with the company in its earnings

Alternate Dividend Decisions

A company may not always issue the dividend in cash. A stock dividend is a significant option with the management for recourse to noncash options. It is a handy tool to which management may resort to when it wants to balance both, shortage of cash and shareholder expectations. Such decisions are only made in exceptional circumstances.

Objects of Dividend Decisions

Cash Requirement

The financial manager must take into account the capital fund requirements while framing a dividend policy. Generous distribution of dividends in capital intensive periods may put the company in financial distress.

Evaluation of Price Sensitivity

Companies chosen by investors for its regularity of dividend must have a more stringent dividend policy than others. It becomes essential for such companies to take effective dividend decisions for maintaining stock prices.

Stage of Growth

Dividend decision must be in line with the stage of the company infancy, growth, maturity & decline. Each stage undergoes different conditions and therefore calls for different dividend decisions.

Factors Influencing Dividend Decision

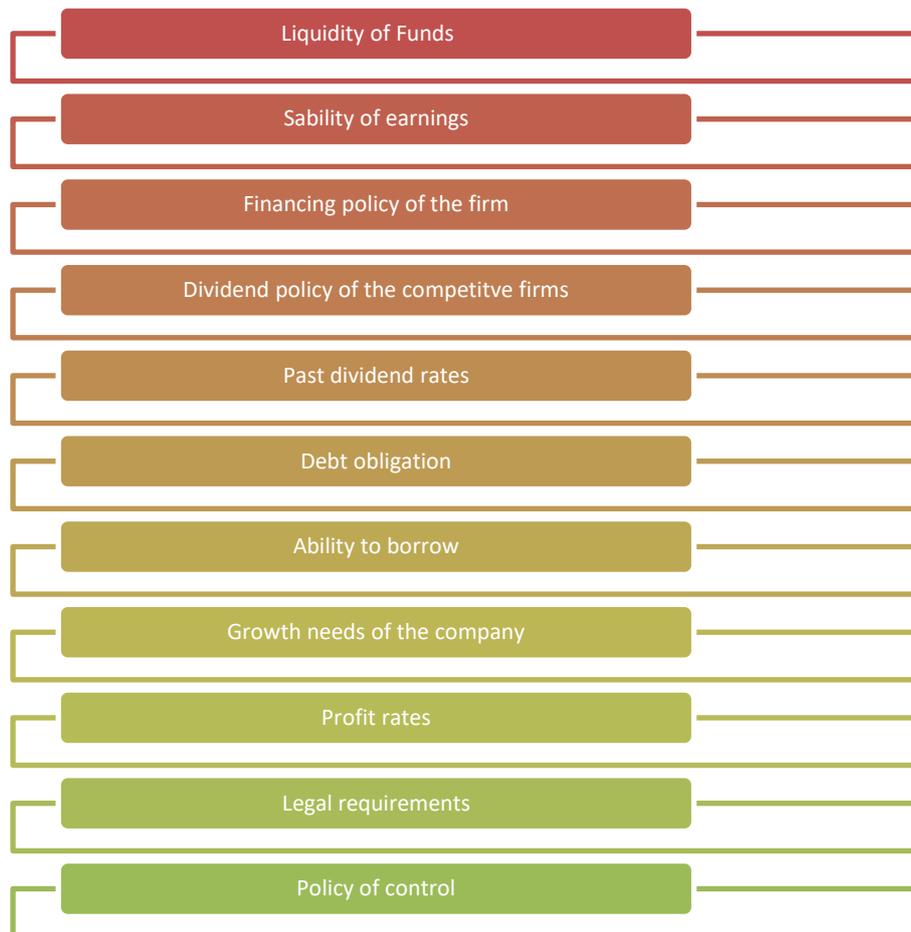


Fig 5.2 Factors Influencing Dividend Decision

The companies can pay either dividend to the shareholders or retain the earnings within the firm. The amount to be disbursed depends on the preference of the shareholders and the investment opportunities prevailing within the firm. The optimal dividend decision is when the wealth of shareholders increases with the increase in the value of shares of the company. Therefore, the finance department must consider all the decisions viz. Investment, Financing and Dividend while computing the payouts. If attractive investment opportunities exist within the firm, then the shareholders must be convinced to forego their share of dividend and reinvest in the firm for better future returns. At the same time, the management must ensure that the value of the stock does not get adversely affected due to less or no dividends paid out to the shareholders.

5.3 Types of Dividends

Dividend policy and decision are critical and crucial areas of management. Dividends are earnings which are distributed to the shareholders. The percentage of earnings paid or dividends declared is called payout ratio. A high pay out means more dividends and this will lead to less funds internally generated and available for expansion and growth. A low pay out therefore should result in higher growth as retained earnings are significant internal sources of financing the growth of the firm. Such dividend policies affect the market value of the firm. Whether such dividend will result in increased value or not will be directly dependent on the profitable investment opportunities available and exploited by the firm. On the other hand, there is a predominant view that dividends are bad as they lead to the payment of higher taxes and they reduce the shareholders' wealth. Dividends when declared are taxed by the governments. Despite this there is a strong investor expectation that dividends are a form of rewards to them. Given these different perceptions, what is the ideal position in the dividend declarations? How do companies construct their dividend policies? What are the factors reckoned in constructing such policies?

Types of Dividend

Classifications of dividends are based on the form in which they are paid. Different types of dividends are given as below

Cash Dividends

Cash dividends are, by far, the most popular form of dividend. In cash dividends, stockholders receive checks for the amounts due to them. Cash generated by business earnings is used to pay cash dividends. Sometimes, the firm may issue additional stock to use proceeds so derived to pay cash dividends or bank may be approached for the purpose. Generally, stockholders have strong preference for cash dividends.



Fig 5.3 Types of Dividends

Stock Dividends

Stock dividends rank next to cash dividends in respect of their popularity. In this form of dividends, the firm issues additional shares of its own stock to the stockholders in proportion to the number of shares held in lieu of cash dividends. The payment of stock dividends does not affect cash and earning position of the firm nor is ownership of stockholders changed.

Indeed, there will be transfer of the amount of dividend from the surplus account to the capital stock account which tantamount to capitalization of retained earnings. The net effect of this would be an increase in number of shares of the current stockholders but there will be no change in their total equity.

With payment of stock dividends, the stockholders have simply more shares of stock to represent the same interest as it was before issuing stock dividends. Thus, there will be merely an adjustment in the firm's capital structure in terms of both the book value and the market price of the common stock.

The Following Example will illustrate the Effect of Stock Dividends.

Illustration 1

The Style Construction Company had the Following Capital Structure Before Issuing a Stock Dividend

Common Stock (Rs. 5 per, 2,00,000 shares)	Rs. 10,00,000
Capital Surplus	5,00,000
Retained earnings	5,00,000
Net Worth	20,00,000

The management issues additional stock of 10,000 shares to pay dividends @ 5 percent. Market price of the stock is Rs. 20 a share. For each 20 shares of stock owned, the stockholder receives one additional share.

The capital structure after the issue of stock dividends will stand as under

Common Stock (Rs. 5 per, 2,00,000 shares)	Rs. 10,50,000
Capital Surplus	6,50,000
Retained earnings	<u>3,00,000</u>
Total	<u>20,00,000</u>

With issue of additional stock of 10,000 shares amount worth Rs. 2,00,000 Rs. 20 x 10,000 shares) is transferred from retained earnings account to Common Stock and Capital Surplus accounts. Since the par value of additional shares remains the same, Common Stock Capital would increase by Rs. 50,000 to Rs. 10,50,000.

The residual of Rs. 1,50,000 goes into Capital Surplus account. Thus, net worth of the Company remains what it was before the issue of stock dividends. As a result of the adjustment in capital structure of the Company due to issue of stock dividends, earnings per share will tend to decline exactly in the proportions by which total number of shares increased. Assume, for example, the company had earnings of Rs. 50,00,000.

The earnings per share before issue of stock dividends would be then Rs. 250. Issue of stock dividends will result in drop in earnings per share. Thus, with issue of additional stocks of 10,000 shares earnings per share will fall to Rs. 2.38 (Rs. 5,00,000/2,10,000). However, total earnings available to a stockholder would remain unaffected because earnings per share decreased exactly in proportion to increase in number of shares of the stockholder.

Guidelines on Stock Dividends

While announcing stock dividends, the management must keep in mind legal provisions regarding the distribution of such dividends and also guidelines prescribed by the controller of capital issues in respect thereof Section 205 (i) of the Companies Act, 1956, as amended from time to time, lays down certain guidelines which must be complied with while distributing stock dividends.

- a. Articles of association must permit issue of bonus shares.
- b. Sufficient undistributed profits must be present.
- c. A resolution capitalizing profits must have been passed by the Board of Directors.
- d. The resolution of the Board of Directors must be approved by the stockholders in a general meeting.
- e. The bonus issue is permitted to be made out of free reserves built out of genuine profits or share premium collected in cash only.
- f. Reserves created by revaluation of fixed assets are not permitted to be capitalized.
- g. Development rebate reserve is considered as free reserve for the purpose of calculation of residual reserves and is also allowed to be capitalized.
- h. The residual reserves after the proposed capitalisation should be at least 40% of the increased paid-up capital.
- i. Thirty percent of the average profits before tax of the company for the previous three years should yield a rate of dividend on the expanded capital base of the company at 10%.
- j. Declaration of bonus issues in lieu of dividend is not allowed.
- k. The company should make a further application for an issue of bonus shares only after 24 months have elapsed from the date of sanction by the Government of an earlier bonus issue by the Company.
- l. Bonus issues are not permitted unless the partly paid shares, if any, are made fully paid-up.
- m. Companies defaulting in payment to any public financial institution will have to produce a no objection letter from it before issuing bonus shares.
- n. The amount of reserves to be capitalized by issuing bonus shares should not exceed the total amount of the paid-up capital of the company

SEBI Guidelines

1. Issue of bonus shares after any public/rights issue is subject to the conditions that no bonus issue shall be made which will dilute the value or rights of the holders of debenture, convertible fully or partly.
2. In other words, no company shall, pending conversion of FCDs/PCDs, issue any shares by way of bonus unless similar benefit is extended to the holders of such FCDs/PCDs, through reservation of shares in proportion to such convertible part of FCDs or PCDs. The shares so reserved may be issued at the time of conversion of such debentures on the same terms on which the bonus shares were made.

3. Bonus share is made out of free reserves built out of the genuine profits or share premium collected in cash only.
4. Reserves created by revolution are not capitalized.
5. The declaration of bonus issue in lieu of dividend is not made.
6. The bonus issue is not made unless the partly paid up shares, if any, are made fully paid up.
7. The Company
 - a. Has not defaulted in payment of interest or principal in respect of fixed deposits and interest on existing debentures or principal on redemption thereof, and
 - b. Has sufficient reason to believe that it has not defaulted in respect of the payment of statutory dues of the employees such as contribution to provident fund, gratuity, bonus, etc.
8. A company which announces its bonus issue after the approval of the Board of Directors must implement the proposals within a period of six months from the date of such approval and shall not have the option of changing the decision.
9. There should be a provision in the Articles of Association of the company for capitalisation of reserves, etc and if not, the company shall pass a resolution at its General Body Meeting making provisions in the Articles of Association for capitalisation.
10. Consequent to the issue of bonus shares if the subscribed and paid-up capital exceeds the authorized share capital, a resolution shall be passed by the company at its General Body Meeting for increasing the authorised capital.

Scrip Dividend

Scrip dividend means payment of dividend in scrip or promissory notes. Sometimes companies need cash generated by business earnings to meet business requirements or withhold the payment of cash dividend because of temporary shortage of cash.

In such cases the company may issue scrip or notes promising to pay dividend at a future date. The scrip usually bears a definite date of maturity. Sometimes maturity date is not stipulated and its payment is left to the discretion of Board of Directors. Scrip may be interest bearing or noninterest bearing. Such dividends are relatively scarce.

Issue of Scrip Dividends is Justified in the Following Circumstances

- a. When a company has sufficiently large earnings to distribute dividends but cash position is temporarily tight because bulk of the sale proceeds tied in receivables for time being will be released very shortly, the management may issue certificates to stockholders promising them to pay dividend in near future.
- b. When a company wants to maintain an established dividend record without paying out cash immediately, the management may take recourse to scrip dividend.
- c. When the management believes that stock dividend will not be useful because future earnings of the company will not increase sufficiently to maintain dividend rate on increased shareholding, issue of promissory notes to pay dividends in future would be a wise step.
- d. When the company does not wish to borrow to cover its dividend. The danger lies in their use as a sop to stockholders when business earnings are inadequate to cover dividend payments. Such kind of dividend is not in existence in India.

Bond Dividend

As in scrip dividends, dividends are not paid immediately in bond dividends; instead company promises to pay dividends at future date and to that effect issues bonds to stockholders in place of cash. The purpose of both bond and scrip dividends is alike, i.e. postponement of dividend payment.

Difference between the two is in respect of date of payment and their effect is the same. Both result in lessening of surplus and in addition to the liability of the firm. The only difference between bond and scrip dividends is that the former carries longer maturity date than the latter.

Thus, while issue of bond dividend increases long term obligation of the Company, current liability increases as consequence of issue of scrip dividends. In bond dividends stockholders have stronger claim against the company as compared to scrip dividends. Bonds used to pay dividends always carry interest. This means that company assumes fixed obligation of interest payments annually on principal amount of bond at the maturity date. It should be remembered that the company is assuming this obligation in return of nothing except credit for declaring the dividend.

How far the company will be able to meet this obligation in future is also difficult to predict at the time of issue of bonds. Management should, therefore, balance cost of issuing bond dividends against benefits resulting from them (benefit of the bond dividend lies in postponement of dividend for a distant date) before deciding about distribution of dividends in the form of bonds. Bond dividends are not vogue in India.

Property Dividends

In property dividends, Company pays dividends in the form of assets other than cash. Generally, assets that are superfluous for the Company are distributed as dividends to stockholders. Sometime, a Company may use its products to pay dividends. Securities of subsidiaries owned by the Company may also take the form of property dividends. This form of dividend is not vogue in India.

The third major financial decision relates to the disbursement of profits back to investors who supplied capital to the firm. The term dividend refers to that part of profits of a company which is distributed by it among its shareholders. It is the reward of shareholders for investments made by them in the share capital of the company. The dividend decision is concerned with the quantum of profits to be distributed among shareholders. A decision has to be taken whether all the profits are to be distributed, to retain all the profits in business or to keep a part of profits in the business and distribute others among shareholders. The higher rate of dividend may raise the market price of shares and thus, maximise the wealth of shareholders. The firm should also consider the question of dividend stability, stock dividend (bonus shares) and cash dividend.

5.4 Factor Influencing Dividends

Dividend decision, one of the important aspects of company's financial policy, is not an independent decision. Rather, it is a decision that is taken after considering the various related aspects and factors. There are various factors influencing a firm's dividend policy. For example, some studies suggest that dividend policy plays an important role in determining firm capital structure and agency costs. Many studies have provided arguments that link agency costs with the other financial activities of a firm. Dividend payout keeps firms in the capital market, where monitoring of managers

is available at lower cost. If a firm has free cash flows, it is better to share them with shareholders in the form of dividend in order to reduce the possibility of these funds being wasted on unprofitable (negative net present value) projects. More recently, researchers have attempted to establish the link between firm dividend policy and investment decisions.

Factors Influencing Dividend

Theoretically, over the past number of years, it has been believed by the academicians that the dividend decision is influenced by number of factors. Some of the factors that affect the dividend decision of a firm are listed as follows

Legal Provisions

Indian Companies Act, 1956 has given the guidelines regarding legal provisions as to dividends. Such guidelines are required to be followed by the companies whenever the dividend policy is to be formulated. As per the guidelines, a company is required to transfer a certain percentage of profits to reserves in case the dividend to be paid is more than 10 percent. Further, a company is also required to pay dividend only in cash but only with the exception of bonus shares.

Magnitude of Earnings

Another important aspect of dividend policy is the extent of company's earnings. It serves as the introductory point for framing the dividend policy. This is so because a company can pay dividends either from the current year's profit or the past year's profit. So, if the profits of a company increase, it will directly influence the dividend declaration as the latter may also increase. Thus, the dividend is directly linked with the availability of the earnings with the company.

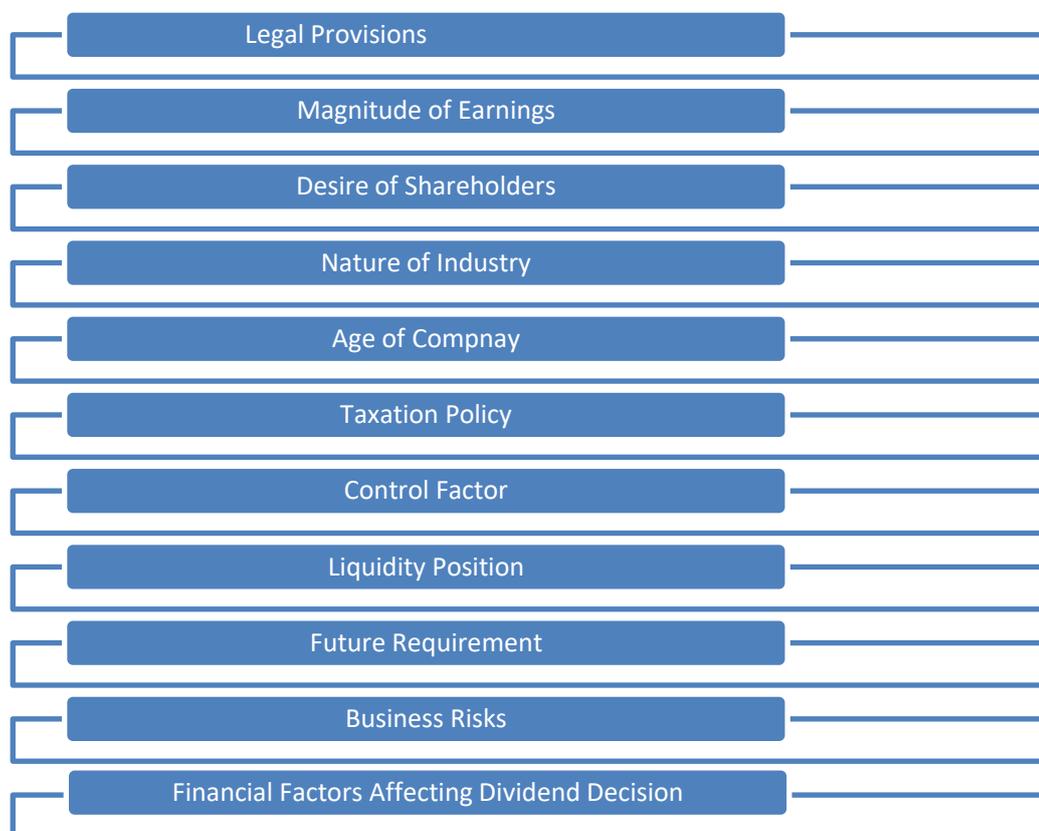


Fig 5.4 Factors Influencing Dividend

1. Desire of Shareholders

The decision to declare the dividends is taken by Board of Directors but they are also required to consider the desire of the shareholders, which depend on the latter's economic condition. The shareholders, who are economically weak, prefer regular dividend policy while the rich shareholders may prefer capital gains as compared to dividends. However, it is very difficult for the board to reconcile the conflicting interests of different shareholders yet the dividend policy has to be framed keeping in view the interest of all the interested parties.

2. Nature of Industry

The nature of industry in which a company is operating, influences the dividend throughout the year are in a position to have stable earnings, thus, should have the stable dividend policy and vice versa.

3. Age of the Company

A company's age also determine the quantum of profits to be declared as dividends. A new company should restrict itself to lower dividend payment due to saving funds for the expansion and growth as compared to the already existing companies who can pay more dividends. In contrast, younger firms need to build up reserves to finance the future growth opportunities, thus, making them to retain the earnings.

4. Taxation Policy

The tax policy of a country also influences the dividend policy of a company. The rate of tax directly influences the amount of profits available to the company for declaring dividends.

5. Control Factor

Yet another factor determining dividend policy is the threat to loose control. If a company declares high rate of dividend, then there is the possibility that a company may face liquidity crunch for which it has to issue new shares, resulting in dilution of control. Keeping this threat in view, a company may go for lower level of dividend payments and more ploughing back of profits in order to avoid any such threat.

6. Liquidity Position

A company's liquidity position also determines the level of dividend. If a company does not have sufficient cash resources to make dividend payment, then it may go for issue of bonus shares.

7. Future Requirements

A company while framing dividend policy should also consider its future plans. If it foresees some profitable investment opportunities in near future then it may go for lower dividend and vice versa.

8. Agency Costs

The separation of ownership and control results in agency problems. Agency costs can be reduced by distributing dividends. In this stratum, dividends are paid out to stockholders in order to prevent managers from building unnecessary empires to be used in their own interest. In addition, dividends reduce the size of internally generated funds available to managers, forcing them to go to the capital market to obtain external funds. Firms with a larger percentage of outside equity holdings are subject to higher agency costs. The more widely spread is the ownership structure, the more acute the free rider problem and the greater the need for outside monitoring. Hence, these firms should pay more dividends to control the impact of widespread ownership.

9. Business Risk

Business risk is a potential factor that may affect dividend policy. High levels of business risk make the relationship between current and expected future profitability less certain. Consequently, it is expected that firms with higher levels of business risk will have lower dividend payments. Many researchers argued that the uncertainty of a firm's earnings may lead it to pay lower dividends because volatile earnings materially increase the risk of default. In addition, field studies using survey data reported compelling evidence that risk can affect dividend policy. In these surveys, managers explicitly cited risk as a factor that influences their dividend choice.

10. Financial Factors Affecting Dividend Decision

The above-mentioned factors are not limited and many more can be there that affect the determination of dividend. Keeping in view the abovementioned factors and the review of literature, some variable has been identified within the arena of the theoretical factors. Those variables include both the dependent and independent variables. However, their interpretation depends upon their measurement.

a) **DPS to Face Value**

This ratio evaluates the relationship between dividend per share and face value of the share. It is calculated as $\text{Dividend Yield ratio} = \text{Dividend per share} / \text{Face value per share}$

a. DPS to Market Value (Yield ratio)

This ratio evaluates the relationship between dividend per share and market value of the share. It is calculated as $\text{Dividend Yield ratio} = \text{Dividend per share} / \text{Market value per share}$

b. Dividend Payout Ratio

It indicates the extent to which the earnings per share have been retained by a company. It enables the company to plough back the profits which will result in more profits in future and hence, more dividends. It is calculated as $\text{Dividend Pay Out Ratio} = \text{Dividend per equity share} / \text{Earnings per share}$. The higher the ratio, lower is the dividend payment and vice versa.

c. Current Ratio

It is a measure of firm's liquidity and is basically used for measuring the short-term financial position or liquidity of the firm. It indicates the ability of the firm to meet its current liabilities. It is calculated as $\text{Current Ratio} = \text{Current assets} / \text{Current liabilities}$. A high ratio indicates that firm's liquidity position is good and it has the ability to honor its obligations while a low ratio implies that firm's liquidity position is not so good so as to honor all its obligations. However, a ratio of 2:1 is considered satisfactory. The expected relation between current ratio and dividend payment is positive.

d. Net Profit Ratio

This ratio establishes the relation between net profits and sales and indicates the management's efficiency. It is calculated as $\text{Net Profit ratio} = (\text{Net Profit} / \text{Net sales}) * 100$. As dividends are declared from the net profits of a firm, so higher the net profit ratio, higher will be the expected dividend payment.

e. Net Profit to Net Worth

This ratio indicates the relation between net profits earned by a company and the net worth which is represented by shareholder's capital. It is composed of equity share capital, preference share capital, free reserves and surpluses, if any. It is also referred to as return on investment and is calculated as $\text{Return on shareholder's investment} = \text{Net Profit} / \text{Net Worth}$. This ratio is an indication of company's ability to earn profits. If the earning capacity of the company is more, more dividend payment can be expected and vice versa.

f. Debt Equity Ratio

This ratio measures the claims of outsiders and owners against the firm's assets. It indicates the relation between outsider funds and shareholders' funds. It is calculated as $\text{Debt equity ratio} = \frac{\text{Outsiders funds}}{\text{Shareholders funds}}$. This ratio tells the solvency position of the firm. Higher the ratio, better will be the solvency as well as the ability of firm to pay dividends. The vice versa will hold true in case of low ratio.

g. Lagged Profits

The dividend is not only influenced by the past year's dividend but also by the past year's profits. This is so because a company can follow the stable dividend policy if it has sufficient current year's profit or the past year's profit.

h. Behaviour of Share Prices

The prevailing share prices also influence the dividend payment by a company. If the share prices of a company are unfavorable, then it may increase the dividend in order to boost up the share prices. It can be calculated as $\text{Behavior of share prices} = \frac{\text{Higher share price}}{\text{Lower share price}}$ or $\text{Higher share price} + \text{Lower share price}$.

i. Growth in Earnings

If the earnings of a company increase, then the chances of increase in dividend payment are also there. Growth is must for the survival of a company. This ratio can be calculated as $\text{Growth in Earnings} = \frac{\text{EPSt} - \text{EPSt1}}{\text{EPSt1}}$ Where, EPSt= Current earnings per share EPSt1= Previous earnings per share

j. Growth in Working Capital

This ratio indicates increase in the working capital of a company. $\text{Growth in Working Capital} = \frac{\text{WCt} - \text{WCt1}}{\text{WCt1}}$ Where, WCt= Current working capital WCt1= Previous working capital Higher ratio indicates the increase in the capacity of a company to pay dividends but this is interrelated with other factors also. Like, if a company has increase the working capital to match the increased level of operations, then this ratio will not be useful in studying the impact on the dividend payments.

k. Lagged Dividends

A company may consider the past year's dividend as a benchmark. If a company prefers stability of dividend payments, it may consider the past year's dividend rate and can act accordingly.

l. Tobin's Q

This variable represents the investment opportunities for a company. It is measured as $\frac{\text{MV of equity}}{\text{BV of equity} + \text{Total Assets}}$ / Total Assets

m. Investment Opportunity Set (Market to Book Value)

It represents the availability of investment opportunities to the company and generally is believed to have negative relationship with dividend payout.

n. Free Cash Flow

This variable is used to measure the availability of cash with the company. It is calculated as $\frac{\text{Cash flow from Operations} - \text{Cash flow from investment activities}}{\text{Total assets}}$

o. Cash Holdings

It is another financial variable to analyse the liquidity position of the firm. It is calculated as $\frac{\text{Cash} + \text{Short term investment}}{\text{Total assets}}$

p. Uncertainty in Earnings

It refers to the variation in the earnings from one year to another. Some companies might witness irregular earnings and thus, may not have stable dividend policy. Uncertainty in earnings

can be measured as $\sigma = \sqrt{(\sum x^2 / N)}$ A small value of standard deviation means high degree of uniformity in the earnings and vice versa.

q. Solvency Ratio

This ratio is a small variant of equity ratio. It indicates the relationship between total liabilities to outsiders to total assets of a firm. It can be calculated as Solvency ratio= Total Liabilities to Outsiders/Total Assets

r. Return on Net worth

This ratio is also termed as return on investment. This ratio indicates the relationship between net profits (after interest and tax) and the shareholders' funds. It can be calculated as Net profit (after interest and taxes)/Shareholders funds

s. Return on Capital Employed This ratio establishes the relationship between profits and capital employed. It can be calculated as $181 \text{ (Adjusted Net Profits/Gross Capital Employed)*100}$ or $(\text{Adjusted Net Profits/Net Capital employed})*100$

Most of the corporate have a policy of long run dividend payout ratio. Dividend changes follow shift in the long term sustainable earnings. Dividend policy as a residual decision after meeting the desired investment needs is endorsed by about 50 per cent of the sample corporates. The corporates which are creating shareholders value (EVA) significantly rescind dividend increase in the event of growth opportunities available to them. Large firms are significantly less willing to rescind dividend increases.

To Do Activity

To Calculate the DPS from the Income Statement

1. Figure out the net income of the company. ...
2. Determine the number of shares outstanding. ...
3. Divide net income by the number of shares outstanding. ...
4. Determine the company's typical payout ratio. ...
5. Multiply the payout ratio by the net income per share to get the dividend per share.

5.5 Dividend Theories

The dividend decision refers to all techniques used to determine the level of dividends that can be distributed to shareholders. In the latter, there is a question of choosing between the distribution of dividends and the capitalization of a greater part of the net profit for the company. We must first state that the particular interest for the dividend issue has been the subject of numerous theoretical achievements and empirical studies of testing these theories and sentences without, however reaching a common point of view, and therefore we cannot speak of a uniform dividend decision but rather of the methods and practices underlying the decision distribution of dividends.

Dividend Theories

We have different theories based on differing opinions of the analysts; some consider dividend decision to be irrelevant and some believe dividend decision to be an active variable influencing the value of the firm. Over time various theories of dividend policy have emerged; some of the main theories of dividend are explained in the following chart 5.5.

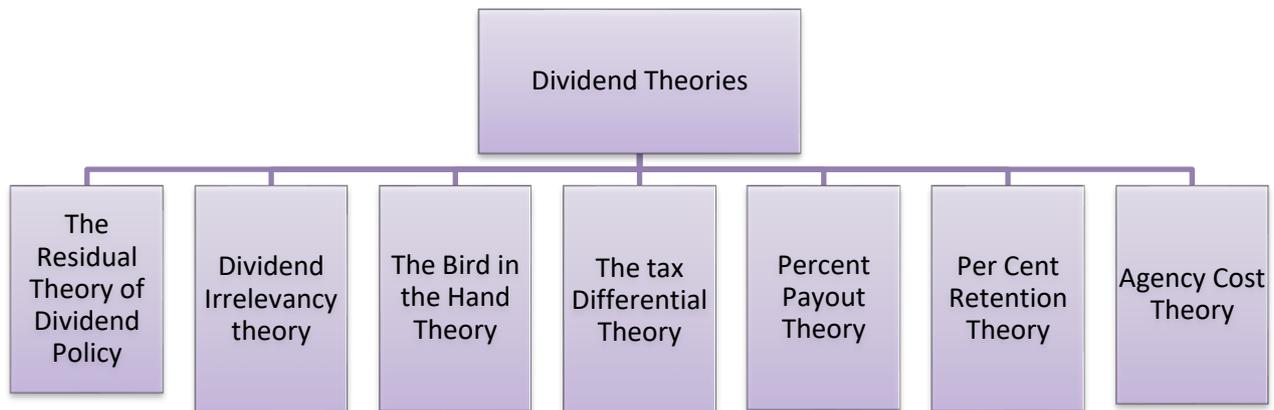


Fig 5.5 Types of Dividend Theories

i. The Residual Theory of Dividend Policy

The residual theory of dividend policy holds that the firm will only pay dividend from residual earnings, that is dividends should be paid only if funds remain after the optimum level of capital expenditures is incurred i.e. all suitable investment opportunities have been financed. With a residual dividend policy, the primary focus of the firm is on investments and hence dividend policy is a passive decision variable. The value of a firm is a direct function of its investment decisions thus making dividend policy irrelevant.

ii. Dividend Irrelevancy Theory, (Miller & Modigliani, 1961)

The dividend irrelevancy theory asserts that dividend policy has no effect on either the price of the firm or its cost of capital.

Dividend Irrelevance Arguments

Dividend policy does not affect share price because the value of the firm is a function of its earning power and the risk of its assets. If dividends do affect value, it is only due to

- 1. Information Effect** The informational content of dividends relative to management's earnings expectations
- 2. Clientele Effect** A clientele effect exists which allows firms to attract shareholders whose dividend preferences match the firm's historical dividend payout patterns.

Firms with older investors pay higher dividends and firms with wealthier investors pay lower dividends.

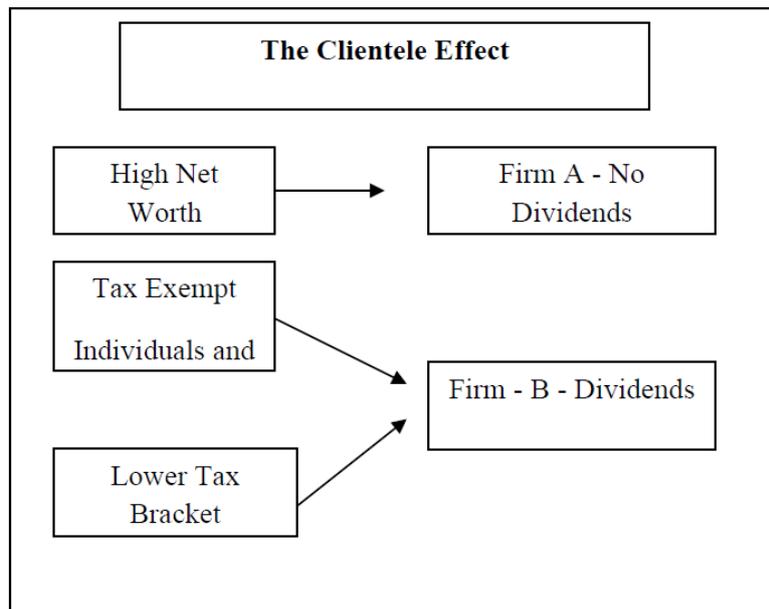


Fig 5.6 The Clientele Effect

Signaling effect

Rise in dividend payment is viewed as a positive signal whereas a reduction in dividend payment is viewed as a negative signal about the future earnings prospects of the company, thus leading to an increase or decreases in share prices of the firm. Managers use dividends as signals to transmit information to the capital market that dividend increases convey good news and dividend decreases convey bad news.

However, this theory is based on the following assumptions

1. There is an existence of perfect capital markets i.e. No personal or corporate taxes and no transaction costs.
2. The firm's investment policy is independent of its dividend policy.
3. Investors behave rationally and information is freely available to them
4. Risk or uncertainty does not exist.

The abovementioned assumptions exclude personal and corporate taxes as well as any linkage to capital investment policy as well as other factors that limit its application to real world situations.

iii. The Bird in the Hand Theory, (John Lintner 1962 and Myron Gordon, 1963)

The essence of this theory is not stockholders are risk averse and prefer current dividends due to their lower level of risk as compared to future dividends. Dividend payments reduce investor uncertainty and thereby increase stock value. This theory is based on the logic that ' what is available at present is preferable to what may be available in the future'. Investors would prefer to have a sure dividend now rather than a promised dividend in the future (even if the promised dividend is larger). Hence dividend policy is relevant and does affect the share price of a firm.

iv. The Tax Differential Theory, (B. Graham and D.L. Dodd)

This theory simply concludes that since dividends are taxed at higher rates than capital gains, investors require higher rates of return as dividend yields increase. This theory suggests that a low dividend payout ratio will maximize firm value.

Models of Dividend

The various models that support the abovementioned theories of dividend relevance and irrelevance are as follows

iii. Modigliani Miller approach

According to them the price of a share of a firm is determined by its earning potentiality and investment policy and not by the pattern of income distribution. The model given by them is as follows

$$P_0 = D_1 + P_1 / (1/K_e)$$

Where, P_0 = Prevailing market price of a share

K_e = Cost of equity capital

D_1 = Dividend to be received at the end of period one

P_1 = Market price of a share at the end of period one

According to the MM hypothesis, market value of a share before dividend is declared is equal to the present value of dividends paid plus the market value of the share after dividend is declared.

iv. Walter's Approach

According to Prof. James E. Walter, in the long run, share prices reflect the present value of future+ dividends. According to him investment policy and dividend policy are inter related and the choice of a appropriate dividend policy affects the value of an enterprise. His formula for determination of expected market price of a share is as follows

$$P = D + r/k(ED) K$$

Where, P = Market price of equity share

D = Dividend per share

E = Earnings per share

(ED) = Retained earnings per share

r = Internal rate of return on investment

k = cost of capital

v. Gordon's approach

Dividend Yield Basis

The value of a share, like any other financial asset, is the present value of the future cash flows associated with ownership. On this view, the value of the share is calculated as the present value of an infinite stream of dividends.

Myron Gordon's Dividend Growth Model explains how dividend policy of a firm is a basis of establishing share value. Gordon's model uses the dividend capitalization approach for stock valuation. The formula used is as follows

$$P_0 = E_1 (1b) / K_b$$

Where, P_0 = price per share at the end of year 0

E_1 = earnings per share at the end of year 1

$(1b)$ = fraction of earnings the firm distributes by way of dividends

b = fraction of earnings the firm ploughs back

k = rate of return required by shareholders

r = rate of return earned on investments made by the firm

g = growth rate of dividend and earnings

The models, provided by Walter and Gordon lead to the following implications

If $r > k$ Price per share increases as dividend payout ratio decreases

If $r = k$ Price per share remains unchanged with changes in dividend payout ratio

If $r < k$ Price per share increases as dividend payout ratio increases.

To Do Activity

Explain Modigliani Miller approach with an illustration

Summary

Dividend policies affect the market value of the firm in the short run. However, whether such dividend increase value or not will depend on the profitable investment avenues available to the company. Walter considers that it depends on the profitability of the investment avenues available to company and the cost of capital. If the company has profitable avenues, its value will be very high and maximum when entire earnings are retained. Another view is that due to uncertainty of capital gains, investors will prefer dividends and more dividends. This implies that the value of shares in the market of a very high pay out and low retention company will command premium. Miller and Modigliani do not subscribe to the view that dividends affect the market value of the shares. According to them, a trade off takes place between cash dividends and issue of ordinary shares, if the investment policy of the company is firm and given. They opine, the share price in the market will be adjusted by the amount of earnings distributed (or dividends distributed); and therefore the existing shareholder is in the same platform when compared with the new investor – neither better off nor worse off. Miller and Modigliani assume perfect capital markets, no transaction costs and no taxes.

Model Questions

1. Explain difference between Irrelevance of Dividend and relevance of dividend?.
2. Explain factors influencing dividend decision?
3. Explain difference between Scrip Dividend and Cash dividend?
4. Explain types of factors influencing dividend?
5. Compare and explain financial and Nonfinancial factors influencing dividend?
6. What are the implications of Gordon's basic model?

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