10

Farm Management

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Technical and Vocational Stream
Learning Resource Material

Farm Management

(Grade 10)

Secondary Level

Animal/Plant Science

Government of Nepal
Ministry of Education, Science and Technology
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Preface

The curriculum and curricular materials have been developed and revised on a regular basis with the aim of making education objective-oriented, practical, relevant and job oriented. It is necessary to instill the feelings of nationalism, national integrity and democratic spirit in students and equip them with morality, discipline and self-reliance, creativity and thoughtfulness. It is essential to develop in them the linguistic and mathematical skills, knowledge of science, information and communication technology, environment, health and population and life skills. it is also necessary to bring in them the feeling of preserving and promoting arts and aesthetics, humanistic norms, values and ideals. It has become the need of the present time to make them aware of respect for ethnicity, gender, disabilities, languages, religions, cultures, regional diversity, human rights and social values so as to make them capable of playing the role of responsible citizens with applied technical and vocational knowledge and skills. This Learning Resource Material for Animal/Plant Science has been developed in line with the Secondary Level Animal/Plant Science Curriculum with an aim to facilitate the students in their study and learning on the subject by incorporating the recommendations and feedback obtained from various schools, workshops and seminars, interaction programs attended by teachers, students and parents.

In bringing out the learning resource material in this form, the contribution of the Director General of CDC Dr. Lekhnath Poudel, Dr. Tanknath Sharma, Jayakrishna Poudel, Rustam Thapa, Dr. Suraj Gurung, Dr. Milan Kumar Sharma, Dr. Labakumar Jha, Rabin Rai, Santoah Koirala is highly acknowledged. The book is written by Dr. Naresha Prasad Joshi and the subject matter of the book was edited by Badrinath Timsina and Khilanath Dhamala. CDC extends sincere thanks to all those who have contributed in developing this book in this form.

This book is a supplimentary learning resource material for students and teachrs. In addition they have to make use of other relevnt materials to ensure all the learning outcomes set in the curriculum. The teachers, students and all other stakeholders are expected to make constructive comments and suggestions to make it a more useful learning resource material.

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Ministry of Education, Science and Technology

Curriculum Development Centre

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UNIT - 1

Basic Concepts on Economics

Learning outcomes:

After completion of this chapter, the student will be able to know:

1. Explain meaning and concept of Economics
2. Define economics given by different economists
3. Describe meaning and concept of *value*, wealth, cost, good, utility
4. Explain law of demand and supply

1. Basic economics

1.1 Concept on Economics

The word 'Economics' originates from the Greek work '*Oikonomikos*' which is composed of two words:

(*a*) ***Oikos*****,** means 'Home', and

(*b*) ***Nomos****,* means 'Management'.

Thus, Economics means 'Home Management'. The head of a family faces the problem of managing the unlimited wants of the family members within the limited income or resources of the family which is true for a society and country also.

Economics is a social science which deals with human wants and their satisfaction. It is mainly concerned with the way in which a society chooses to employ its scarce resources which have alternative uses, for the production of goods for present and future consumption. If we consider the whole society as a 'family', then the society also faces the problem of tackling unlimited wants of the members of the society with the limited resources available in that society. Thus, Economics means the study of the way in which mankind organizes itself to tackle the basic problems of scarcity. All societies have unlimited wants than means.

1.1.1 Adam Smith's Definition of Economics

(Sources: Chopra, P.N., Principal of Economics)

This is the oldest definition of economics. This definition is related with classical school of economics. Adam Smith is regarded as a leader of classical economists. He is regarded as a leader of classical economists. He is well known as the father of

economic science because he made economics as an independent science. In 1776 AD, Adam Smith wrote a famous book "Wealth of Nations". In that book he defined economics as Economics is an enquiry into the nature and causes of wealth of Nations. In other words, according to Adam Smith, economics is a science of wealth.

Adam Smith considered being the founding father of modern Economics, defined Economics as the study of the nature and causes of nations' wealth or simply as the study of wealth. The central point in Smith's definition is wealth creation. Implicitly, Smith identified wealth with welfare. He assumed that, the wealthier a nation becomes the happier are its citizens. Thus, it is important to find out, how a nation can be wealthy. Economics is the subject that tells us how to make a nation wealthy. Adam Smith's definition is a wealth centered definition of Economics.

Characteristics of Adam's Definition of Economics

***(Sources:** Chopra, P.N., Principal of Economics)*

i. Exaggerated focused on Wealth

According to Adam Smith's economics is the study of wealth only. It deals with consumption, production, exchange and distribution. Adam Smith and other classical economists believed that economic prosperity of any nation depends only on the accumulation of wealth.

ii. A study of scared useful material goods only

Only scarce and useful material commodities constitute wealth. It don't include non material good like services of doctors, advocate, teacher, engineers etc.

iii. Study of the causes of economic development

This definition show that economics also deals with causes of economic development. To increase the wealth there should be increase in the production of material goods and which further depends upon domestic and foreign markets.

Criticism of Adam's Definition of Economics

***(Sources:** Chopra, P.N., Principal of Economics)*

The Adam Smith's definition of economics has been criticized on the following heads:

i. Narrow definition

Adam smith's definition of economics has narrowed the scope of economics.

According to Adam Smith's definition, economic studies only those human beings who are engaged in production and consumption of wealth. According to this concept those people who are not engaged in such activities such as retired man, small children, sick people cannot fall within the scope of economics. In fact, it is not true.

ii. Emphasis on Wealth

Adam Smith's definition of economics gave more important to wealth than man. Wealth has been given the primary and man in secondary place. In real, economics must emphasize the study of man more than the study of wealth. Wealth is only a mean of satisfying human needs.

iii. Narrowing meaning of wealth:

Adam Smith's definition of economics considered materials goods as wealth. This definition doesn't considered services of doctor, engineer, nurses, advocate, farmer as wealth. In reality wealth is used for both material goods and services. Adam Smith's definition narrowed the scope of economics by giving the limited meaning of wealth to material goods only.

iv. Silent about man's welfare:

Adam Smith's economics definition only emphasizes on wealth. It doesn't gives importance to the economic welfare of society.

v. No study of means:

Adam Smith's definition of economics makes the earning of wealth and end in itself. It doesn't tell the propriety of means for earning wealth.

Restricted meaning of subject matter:
Adam Smith's definition only studies the material goods. In modern economics, economics studies both material and non-material resources.

1.1.2 Alfred Marshall's Definition of economics:

***(Sources:** Chopra, P.N., Principal of Economics)*

Marshall's definition is also regard as welfare definition of economics. This welfare definition of economics is also considered as neo-classical school of economics. Dr Alfred Marshall is regarded as a leader of neo-classical economists. He was professor

of economics at Cambridge University. In1890 A.D., Marshall published a book "Principle of economics". In that book he defined economics as "Economics is study of mankind the in ordinary business of life." In enquires how a man earns income and how it uses it. Marshall gave more emphasis to human welfare than to wealth. He said that wealth is means of satisfy human wants and not just an end in itself. Marshall emphasized that wealth is for man and not man for wealth. He has given primary place to man and secondary to wealth.

Characteristics of Marshall's definition:

***(Sources:** Chopra, P.N., Principal of Economics)*

The main features of material welfare definitions are as follows:

i. Study of material requisites of well-being:

Marshall's definition indicates that economics studies only the materials aspects of wellbeing. It emphasizes the materialistic aspects of economic welfare.

ii. Concentrates on the ordinary business of life:

Economics deals with the study of man in the ordinary business of life. Economics enquires how an individual gets his income and how he uses it. Economics studies ordinary men, not extra-ordinary people.

iii. A stress on the role of man:

Economics studies the economic activities of man. Man performs many types of activities like social, economic, political and religious.

iv. Study of material welfare:

Marshall's definition of economics emphasis on material welfare which is major differences between Adam's Smith definitions of economics.

v. A normative Sciences:

According to Marshall's definition, economics is the study of the causes affecting material welfare. So it is a social science.

Merits of Marshall's definition

(Sources: Chopra, P.N., Principal of Economics)

The major merits of Marshall's definition are:

i. A Classificatory Definition:

Economist Marshall classifies the economic activities of man into two types:

1. Material welfare
2. Non material welfare

Similarly men are classified as ordinary and extra ordinary.

ii. Overcome the criticism made against Adam Smith:

Marshall's definition emphasizes man and his welfare. Marshall gave more emphasis to human welfare than to wealth. Marshall mention that wealth is a means of satisfy human wants. He emphasized that wealth is for man and not man for wealth.

iii. Nature of economics:

Marshall definition tells that economics is social sciences. It is neither pure science not an art .Thus, economics is no more a dismal science.

iv. Clear on the scope of economics:

This definition has clearly defined the scope of economics. It studies only the material activities of man. It also concerned with ordinary men.

Criticism of Material welfare Definition

***(Sources:** Chopra, P.N., Principal of Economics)*

a) Restricts the study of all types of economic activity and men:

Marshall's definition restricted economics to the study of man in ordinary business of life. According to Robbin, problem of scarcity is faced by all men whether rich or poor. Therefore, economics studies all men, whether ordinary or extra ordinary.

b) Narrowed the scope of economics:

According to Robbin's definition, Marshall limited the scope of economics to the study of material good only which promote material welfare. There are non-material service of doctor, engineer, teacher, advocate which have economic value, so the scope of economics must extend to all goods which are economic in nature.

c) Lack of clear concept of welfare:

Marshall's definition of economics has been criticized by Lord Robbins. According to Lord Robbins, Economic is simply a study of problem of scarcity of means. It doesnot in any way concern itself with the propriety or otherwise of the means

d) Economics as pure science:

According to Marshall's view, Economics is a social science. But Robbins argued for economics as human science as it studies human beings.

e) Impractical:

According to Marshall, man's activities divided into material and non-material, economic and non-economic. But in practice, there is not such clear demarcation between economic and non-economic activities. Hence, Marshall definition is not practical.

f) Marshall definition is not analytical:

Marshall definition is only classificatory in nature. It doesn't explain the central problem of economics. According to Robbins, the definition must be related to a scientific analysis of economic activities.

g) Economic as a positive science:

Marshall definition of economics was also criticized by Robbins for its normative character. According to Robbins, economics is a entirely neutral between ends.

h) Restricted view of economics activities:

According to Marshall's definition, economic activities are mainly concerned with material goods and increasing the welfare of man. But Robbins stressed that economic activities are all those activities which are concerned with the problem of limited means and choice among ends. These activities may be the material or immaterial type.

1.1.3 Robbins Scarcity of resources definition:

(Sources: Chopra, P.N., Principal of Economics)

Prof. Lionel Robbins published the book entitled " Essays on the Nature and

Significance of the economic science" in 1932 in which Robbins gave a modern definition of economics. According to Robbins, "Economics is a science which studies human behavior as relationship between ends and scarce means which have alternative uses." It is a scarcity based definition of economics. This definition of economics based on the following facts:

- Human wants are unlimited
- Means to satisfy the human wants are limited
- Resources can be put to different uses.
- Choice of limited means to satisfy want.

Main features of Robbin's Definition:

***(Sources:** Chopra, P.N., Principal of Economics)*

a) Human wants are limited:

The scarcity definition given by Robbins states that human wants are unlimited. If one want is satisfied, another want crops up. It is not possible to satisfy all of the man's wants. Thus different wants appear one after another.

b) Limited or scarce means to satisfy human wants:

Human wants are unlimited, but the means for satisfying these wants are limited. The resources needed to satisfy their wants are limited. In general, if a supply of a resource is less than its demand than we call such a resources as a limited.

c) Alternative uses of means:

One of the important reason for the existence of the economic problem is the alternative uses of the resources. Same means can be used for the satisfaction of different types of human wants. For example, a land can be used for crop cultivation or pond construction or play ground or building a poultry shed, etc.

d) Efficient use of means:

Since wants are unlimited, so there wants are to be ranked in order of priorities. Then those prioritized unlimited wants are fulfilled on the basis of available means. This cause the efficient use of means.

e) Need for choice and satisfaction:

Human wants are unlimited, so one has to choose between the most important and less important wants. That is why economics is also called a science of

choice. So, scare means are to be used for the maximum satisfaction of the most important human needs.

Merits of Robbins Definition

***(Sources:** Chopra, P.N., Principal of Economics)*

Modern definition of economics has been given by Robbins which is equally accepted till date are as fillows:

1) **An Analytical definition of economics:**
   Robbins has started the study of the economics analytically. He considered the reasons for the study of the economic problem which is the problem of scarcity.

2) **Considered as a positive Science:**
   Robbins wanted the economics to be a positive science as it has nothing to do with the goodness or bad nature of the ends.

3) **Clear conception of human behavior for economics:**
   Robbins explained a clearer view of what human behavior economists are interested in . It is human behavior for choice between ends and means.

4) **Clear on the scope of economics:**
   Robbins definition of economics delimited the scope of economics very well. Human have unlimited wants but there are limited resources, so economics study for choice among wants.

5) **Globally acceptable definition:**
   Robbins definition concerned with unlimited want and limited resources and which is common problem for all nation. This definition is globally accepted.

6) **Explain the central problem of economics:**
   Human wants are unlimited, but the means for satisfying them are limited. so human wants should be prioritized and addressed accordingly.

Criticism of Robbin's Definition *(Sources: Chopra, P.N., Principal of Economics)*

1) **Self contradictory definition:**

   Robbins has two views regarding choice between ends. Firstly he considers economics is neutral as regards ends. Secondly, he considers economics as the science of choice. These two views are contradictory with each other.

2) **Concealed concept of welfare:**

Robbins rejects Marshall's definition for its welfare content. In Robbin's definition, economics is concerned with the choice between ends and allocation of resources. It is understood that there is something to guide the solution of this problem. It is nothing else than maximization of satisfaction.

3) **Hazy View of the scope of economics:**

Robbins has generalized the scope of economics saying that whenever scarcity problem arises, economic study is required. It is self understood that each subject has it limitation and is applicable to economics as well.

Economics problems originating from factors other than scarcity:

According to Robbins, economic problem are because of scarcity but in reality it is not always. Depression of the thirties and unemployment with inflation in the sixties has proved that economics problem may arise out of faulty organization also.

1) **Not Applicable to very rich countries:**
Economic problems of some of the very rich countries may be due to plentiful income rather than scarcity.
2) **Inapplicable to socialist economies:**
Socialist economy is a planned economy where collective choice is more important than individual choice. In a socialist economy the state takes over the responsibility of providing for the basic necessities of the people.
3) **Confusion between means and ends in practical life:**
Prof. Robbins believes that means and ends are easily separable. But practical life does not make any such separation always.

Similarities between Marshall's and Robbins definition

***(Sources:** Chopra, P.N., Principal of Economics)*

1) **Wealth and scarce means:**

Marshall brought the term wealth and Robbins used the term scarce resources in their definition. In economics only scarce resources are considered as wealth.

2) **Primary place to man:**

Marshall Studies wealth for man's welfare and Robbins defined economics as study of human behavior as a relationship between ends and scarce means which have alternative uses. Thus, both of them gave primary place to man.

3) Rational man:

Marshall considered that the main aim of human being is to maximize welfare and Robbins stated that human being tries to maximize satisfaction. Maximizing welfare or satisfaction is on activity of rational man.

1.2 Subject matter of economics and nature of economics

1.2.1 Subject matter of economics

***(Sources:** Chopra, P.N., Principal of Economics; Fundamental of economics and Management, Institute of Cost Accountant of India; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government of Tamilnadu)*

Economics is concerned with wants, efforts and satisfaction. In other words, it deals with decisions regarding the commodities and services to be produced in the economy, how to produce them most economically and how to provide for the growth of the economy. Economics tell us how a man utilizes his limited resources for the satisfaction of his unlimited wants. A man has a limited amount of money and time, but his wants are unlimited. He must so spend the money and time he has that he derives maximum satisfaction. This is the subject matter of economics.

When a man is engaged in an economic activity, main purpose of all activity is the desire to purchase goods to satisfy human wants. Neither good nor money is an end in itself. They are needed for the satisfaction of man wants and to promote human welfare. A man has many needs. To get these needs he must have earn money. For getting money, lie must work or make effort. Effort leads to satisfaction. Thus, wants-efforts-satisfaction sums up the subject matter of economics.

According to traditional approach, Subject matters of economics are as follows:

(Sources: Chopra, P.N., Principal of Economics; Fundamental of economics and Management, Institute of Cost Accountant of India; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government of Tamilnadu)

1. Consumption: Consumption means the use of wealth to satisfy human wants. It also means the destruction of utility or use of commodities and services to satisfy human wants. It also means the destruction of utility or use of commodities and services to satisfy human wants.

2. Production: Production means the use of wealth to satisfy human wants. It also means the destruction of utility or use of commodities and services to satisfy human wants. It is defined as the creation of utility.

3. Exchange: Exchange means the use of wealth to satisfy human wants. It also means the destruction of utility or use of commodities and services to satisfy human wants. The exchange of goods leads to an increase in the welfare of the individuals through creation of higher utilities for goods and services.

4. Distribution: Distribution refers to sharing of wealth that is produced among the different factors of production .It refers to personal distribution and functional distribution of income.

Modern approach divides economics into Micro Economics and Macro Economics

Micro Economics

Micro economics studies the economic behavior of individual economic units. The study of economic behavior of the households, firms and industries form the subject-matter of micro economics. It examines whether resources are efficiently allocated and spells out the conditions for the optimal allocation of resources so as to maximize the output and social welfare. For example, micro economics is concerned with how the individual consumer distributes his income among various products and services so as to maximize utility. Thus, micro-economics is concerned with the theories of product pricing, factor pricing and economic welfare.

Macro Economics

Macro economics deals with the functioning of the economy as a whole. It deals with the broad economic issues, such as full employment or unemployment, capacity or under capacity production, a low or high rate of growth, inflation or deflation. It is the theory of national income, employment, aggregate consumption, savings and investment, general price level and economic growth. For example, macro economics seeks to explain how the economy's total output of goods and services and total employment of resources are determined and what explains the fluctuation in the level of output and employment.

1.2.2 Nature of Economics

(Sources: Chopra, P.N., Principal of Economics; Fundamental of economics and Management, Institute of Cost Accountant of India; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government of Tamilnadu)

Nature of economics refers to whether economics is a science or art or both, and if it is a science, whether it is positive science or normative science or both.

Economics as a Science:

Science is a systematized body of knowledge in which the facts are so arranged that they speak for themselves. Judged by this standard, economics is certainly a science. Economics as a social science studies economic activities of the people. Economics is a systematic body of knowledge as it explains cause and effect relationship between various variables such as price, demand, supply, money supply, production, national income, employment, etc. In economics we collect data, classify and analyze these facts and formulate theories or economic laws. The laws of physical and natural sciences have universal applicability, but economic laws are not of universally applicable. The laws of physical and natural sciences are exact, but economic laws are not that exact and definite.

Economics as an Art:

Economics is also an art because it lays down precepts or formulas to guide people to reach their goals. Various branches of economics, like consumption, production, distribution, money and banking, public finance, etc., provide us basic rules and guidelines which can be used to solve various economic problems of the society. The theory of demand guides the consumer to obtain maximum satisfaction with given income. Theory of production guides the producer to equate marginal cost with marginal revenue while using resources for production. The knowledge of economic laws helps us in solving practical economic problems in everyday life.

Economics as a Positive Science:

Positive economics is concerned with the facts about the economy. A positive science is that science in which analysis is confined to cause and effect relationship. It studies the economic phenomena as they exist. It finds out the common characteristics of economic events.

Economics as a Normative Science:

The objective of Economics is to examine real economic events from moral and

ethical angles and to judge whether certain economic events are desirable or undesirable. Normative economics involves value judgment. It deals primarily with economic goals of a society and policies to achieve these goals.

1.3 Basic Concepts of Goods, Utility, Value and Wealth, Equilibrium, Cost

1.3.1 Goods:

Anything that can satisfy a human wants or needs is called a good. Goods may be commodity or services that satisfy human wants which are the starting point of all economic activity.

Characteristic features of goods:

1. Goods are tangible in nature
2. Goods are the material outcome of production

For Example: Biscuits, Milk, Ice cream, Seeds, Fertilizers etc.,

Classification of Goods:

(Sources: *Chopra, P.N., Principal of Economics; Fundamental of economics and Management, Institute of Cost Accountant of India; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government of Tamilnadu; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region)*

The goods are classified on following basis:

1. Based on Supply
2. Based on durability
3. Based on consumption and
4. Based on transferability.

1. Based on Supply:

On the basis of supply, goods are classified as economic goods and free goods.

a) Free Goods
b) Economic Goods

Free goods are exist plenty and can be used as wishes. Generally free goods are nature gifts and available without payment

For Example: Air, Rain, sunshine etc.

The economic goods are limited and scarce and payment is mandatory. These goods are mostly man-made and can be available only on payment. In Economics, we are mostly concerned with economic goods.

For Example: Rice, Milk, computer

2. Based on Consumption:

On the basis of consumption, goods are classified as Consumer goods and Producer Goods.

Consumer goods and

Producer Goods

Consumer goods give satisfaction directly to the human. These goods are also considered as the goods of first order. Consumer goods are used by consumer directly to satisfy their needs.

For Example: Cloth, food, etc.

Producer goods help to produce other goods. Producer good give satisfaction indirectly by producing other goods which will give final satisfaction. These producer goods are also considered as the goods of the second order.

For Example: Tools, equipment, machine etc.

3. Based on Durability:

This classification emphasized on the nature of the goods and their usage. On the basis of durability, goods are classified into mono period goods and poly periods.

a) Mono Period goods

b) Poly period goods

Mono Period Goods are those goods which can be used only once in the production and consumption process.

For Example: Food, Seed etc.,

Poly Period Goods are those goods which can be used repeatedly during the production and consumption process over several periods.

For Example: Motor cycle, refrigerator etc

4. Based on Transferability:

On the basis of transferability, goods are classified into

a) External Material Transferable good
b) External material non-Transferable good

c) External non material transferable good
d) External non material Non-transferable good.
e) Internal non material Non-Transferable good.

Example are

External Material Transferable good. For Example: Land, etc.,

External material non-Transferable good. For Example:, PAN Card etc.,

External non material transferable good. For Example: Goodwill

External non material Non-transferable good. For Example: light

Internal non material Non-Transferable good. For Example: Cruelty

1.3.2 Utility:

***(Sources:** Chopra, P.N., Principal of Economics; Fundamental of economics and Management, Institute of Cost Accountant of India; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government of Tamilnadu; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region)*

Utility is the ability of something to satisfy needs or wants. It may be defined as the process of commodity or service to satisfy human wants. Any commodity or goods or service which can satisfy a human want is said to have utility. Utility is an important concept in economics because it represents satisfaction experienced by the consumer of a good. Utility is a representation of preferences over some set of commodity and services. One cannot directly measure benefit, satisfaction or happiness from a commodity or service, so instead economists have devised ways of representing and measuring utility in terms of economic choices that can be measured. Economists consider utility to be revealed in people's interest to pay different amounts for different goods.

Characteristics features of utility:

(Sources: Chopra, P.N., Principal of Economics; Fundamental of economics and Management, Institute of Cost Accountant of India; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government of Tamilnadu; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region)

1) Utility is subjective: Utility varies from individual to individual,

Example: - A pen gives more utility to writer while zero utility for illiterate labour.

Utility varies with time: The Intensity of a person's desire for a good is different

at different time periods.

Example: - An intense care of cow is needed during parturition than dry stage.

2) **Utility with purpose:**

Good have different purpose that depends on people interest.

Example: - Water is used as drinking purpose or cleaning purpose or irrigation purpose.

3) **Utility varies with ownership: Ownership creates greater utility from a good than when it is hired.**

Example: - Owning a car gives more utility than hiring it.

4) **Utility need not be synonymous with pleasure:**

The term utility and pleasure have different meaning.

Example: - A sick man has to consume medicines for getting cured but he does not get pleasure during the process.

5) **Utility does not mean satisfaction:**

Utility is different from satisfaction. Utility implies potentiality of satisfaction in a given goods. Consumption's end result is satisfaction. Satisfaction is what we get and the utility is the quality in a commodity which gives satisfaction.

TYPES OF UTILITY

***(Sources:** Chopra, P.N., Principal of Economics; Fundamental of economics and Management, Institute of Cost Accountant of India; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government of Tamilnadu; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region)*

Different types of utility are

1) Form utility
2) Place utility
3) Time utility and
4) Possession utility.

1. **Form Utility:**

The Change in the form of goods offers greater utility to the good than in its original form.

For example: Processing of paddy into rice. Beaten rice has higher utility than rice.

2. **Place Utility:**

Place utility obtained by spatial movement of the commodity. Transportation aids in place utility i.e., through the transfer of goods from surplus production area to deficit areas.

For Example: Teas from Ilam got transported to all parts of the country that increasing the utility of Teas.

3. Time utility:

The surplus goods can be stored for deficient period creates time utility. Storage aids in creation of time utility by the supply of seasonal products during off season as per the consumers requirements.

a) Possession Utility:

The Utility obtained due to transfer of ownership of the goods is called possession utility. Buying and selling creates possession utility.

For Example: - Land used for Agriculture farming sold to real estate by plotting would increase the utility of Land.

Utility may be 1) Cardinal or 2) Ordinal

Cardinal Utility: - Cardinal utility means that utility can be measured with the utils. But it converted to the price. This is based on the premise that utility could be measured It *quantitatively* measures the preference of an individual towards a certain commodity. Numbers assigned to different goods or services can be compared.

Ordinal Utility:- It means that utility can be ranked according to the preferences of the individuals.

Further two concepts of utility

(i) Total utility and

(ii) Marginal Utility

Total Utility:

(Sources: *Chopra, P.N., Principal of Economics; Fundamental of economics and Management, Institute of Cost Accountant of India; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government of Tamilnadu; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region)*

Total amount of satisfaction obtained from consuming various units of commodity. Total utility is the aggregate sum of satisfaction or benefit that an individual gains from consuming a given amount of goods or services in an economy. The amount of

a person's total utility corresponds to the person's level of consumption. Total utility usually increases as more of a good is consumed.

$$TU = \Sigma MU$$

Marginal Utility:

(Sources: Chopra, P.N., Principal of Economics; Fundamental of economics and Management, Institute of Cost Accountant of India; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government of Tamilnadu; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region)

Marginal utility is the additional satisfaction, or amount of utility, gained from each extra unit of consumption. Marginal utility usually decreases with each additional increase in the consumption of a commodity. Simply it can be defined as Change in total utility from the consumption of one additional unit of commodity.

$MU = TUn - TU\ n\text{-}1$

OR

$MU = \frac{\Delta TU}{\Delta Q}$

TUn = Total Utility of n units

TU n-1= Total Utility of n-1 units

ΔQ = Change in Quantity

ΔTU = Change in Total Utility

Two concepts of utility

Total utility

Marginal Utility

Relationship between M.U. & T.U

***(Sources:** Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region)*

1. When T.U. Increases with diminishing rate, M.U. declines.
2. When T.U. is maximum, M.U. is zero
3. When T.U. declines, M.U. is negative.

1.3.3 Value and Wealth

1.3.3.1 Value

"Value" is an important term used in Economics. But in economics it is not used in a same way used in ordinary speech. When we say, fresh air has great value, and it indicates value in use. The word "Value" in economics conveys value-in-exchange. It does not include free goods which have only value-in-use. In other words, value of goods refers to those goods that can be obtained in exchange for itself or purchasing power of a commodity in terms of other commodities and services. Value can be referred to as the capacity of a commodity to command other things in exchange.

Characteristics of Value:

1. It must possess utility
2. It must be scarce and
3. It must be transferable and marketable.

Price

In Pre historic times, people did not know money and they had a barter system in which goods are exchanged with goods. Therefore, in those days value and price were used synonymously. But now days, goods are exchanged for money. Therefore, Value expressed in monetary terms is Price

Units of commodity ice-cream	Marginal Utility	Total Utility
1	6	6
2	4	10
3	2	12
4	0	12
5	-2	10

1.3.3.2 Wealth

In ordinary language, "Wealth" conveys an idea of prosperity and abundance. A man of wealth understood as a rich person. But in Economics Wealth is synonymous with

economic goods. In short, Wealth means anything which has value. It consists of all potentially exchangeable means of satisfying human wants.

Characteristics of wealth:

1. It should possess utility
2. It must be scarce
3. It must be transferable
4. It must be external to person

Relation between Money and Wealth: Money is a form of wealth .All money is wealth but all wealth is not money

Relation between Income and Wealth: Income is different from wealth. Wealth yields income.

Types of Wealth:

1. **Individual Wealth:** It consists of all tangible and intangible possessions of the individual person besides loans due to them. Example: Land, buildings, bonds, deposits are tangible possessions while, intangible possessions are copyrights, patents etc.
2. **Social Wealth:** The wealth, which is collectively used by all the people of society.

   For Example: Public Parks, Public Bus Parks, Road, Public Parks, Government colleges etc.
3. **Representative Wealth:** It is that form of wealth in the form of title deeds
4. **National Wealth:** It is an aggregate of all individuals wealth and social wealth of the country inclusive of loans due to people and to the nation debts have to be deducted.

   Example: Rivers, mountains, Forest, Lake etc.
5. **Cosmopolitan Wealth:** It is wealth of the whole world. It is a sum total wealth of all nationals.
6. **Negative Wealth:** It refers to the exclusive debts owed by the individuals and the nation.

1.3.4 Equilibrium

The price at which the quantity demanded of goods equals the quantity supply is known as equilibrium price.

The following figure helps to understand the equilibrium price:

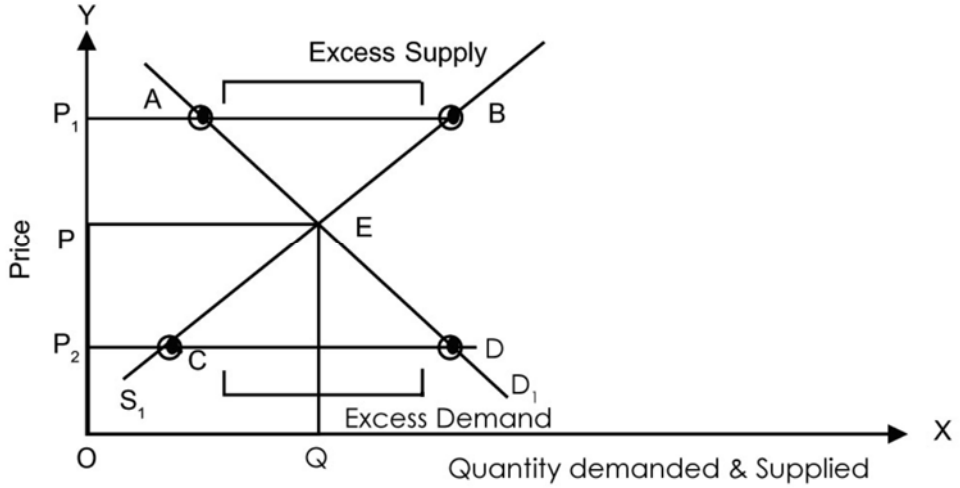
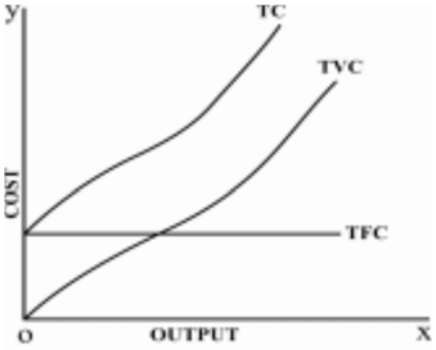


Figure: Equilibrium of Demand and Supply

(Source: Fundamental of economics and Management, 2014)



In the above figure, along the X-axis we measure quantity of goods demanded and supplied and along the Y-axis price per unit. D1 is the demand curve, S1 is the supply curve, and point E is intersecting point where both D1 and S1 intersect each other. At the equilibrium point E, quantity demanded equal to the quantity supplied of the good and therefore OQ is the equilibrium quantity and OP is the equilibrium price.

1.3.6 Cost

Cost is defined as the money expenditure incurred by the producer to purchase (or hire) factors of production and raw materials to produce goods and services. The total expenses incurred by a firm in producing a commodity are generally termed as its economic costs. Economic costs are generally referred to as production costs as well.

TYPES OF COST

The types of cost are as follows:

(a) Fixed cost

(b) Variable cost

(c) Total Cost

(d) Explicit cost

(e) Implicit cost

(f) Marginal Cost

(g) Opportunity Cost

a) **Fixed Cost** - It is the cost of fixed factors of production. Fixed Cost remains the same in the short run. Fixed cost is also defined as the expenditure, on hiring or purchasing of fixed factors or inputs, which are compulsory and has nothing to do with the amount of production of the good or service. Fixed costs are the costs that do not vary with the output.

   Examples: Rental value of Land**,** Machine, interest, insurance premium, salaries of permanent employees, Depreciation etc.

b) Variable Cost – Variable cost is the cost of variable factors of production. Variable Cost increases with the increase in the quantity of production. These are the expenses incurred on the variable factors of production. Variable cost also can be define as the expenditure on variable factors or inputs, such as labour, which can be changed.

Examples: Expenses on raw materials, power and fuel; wages of daily labourers, etc.

c) Total cost: Total cost is the sum of total fixed cost and total variable cost.

TC = TFC + TVC

where,

TC = Total cost

TFC = Total Fixed cost

TVC = Total variable cost

It should be noted that total fixed cost is the same irrespective of the level of output. Therefore a change in total cost is influenced by the change in variable cost only.

Briefly we can say that,

- Fixed cost remains the same at all levels of output.
- As the output increases, TC and Variable Cost increases.

The relationship between total fixed cost, total variable cost and total cost will be clear from the following figure:

Difference between Fixed Costs and Variable Costs

Fixed Costs	Variable Costs
a. Fixed costs remain constant with quantity of output. b. They are related with the fixed inputs. c. They do not become zero. They remain same even when production is stopped. d. A firm can continue production costs are not recovered even fixed costs.	a. Variable costs vary with the quantity of output. b. They are related with the variable inputs. c. They can become zero when production is stopped. d. Production should at least recover the variable cost.

d) Explicit cost

The rent and wages paid by the farmer and the expenditure on raw materials or inputs incurred by him are also called explicit cost. Explicit cost is defined as the money expenditure incurred by the producer on both fixed and variable factors of production and raw materials etc. These are direct payments and are properly calculated and recorded separately. These are actual money expenses directly incurred for purchasing the resources.

For examples - Cost for inputs or raw materials and power, wages to the hired workers, rent for the factory-building, interest on borrowed loan, expenses on transport, advertisement, publicity, etc.

e) Implicit cost

Implicit cost is the cost of self supplied factors. Besides purchasing factors of production and raw materials, the producer also has his own factors and materials for producing goods and services. For this he does not pay any money to himself. Besides purchasing resources from other firms, a producer uses his own factor-services also in the process of production. He generally does not take into account the costs of his own factors while calculating the expenses of the firm.

For example, rent of own land, interest on his own Investment and salary for his own services as manager, wages for his and his family member contribution etc.

(f) Marginal Cost (MC)

Marginal cost is the increase in total cost resulting from one unit increase in output. If the producer wants to increase output, extra units of labour along different inputs is needed. Extra units of labour will lead to extra expenditure on wage paid to the labour. As a resulting wit the total cost of production will increase. In short, increase in total output will lead to increase in total cost of production. Marginal cost is defined as increase in the total cost due to increase in one extra unit of output.

The marginal cost curve is given below:

The marginal cost curve is 'U' shaped and is determined by the law of variable proportions. If increasing returns is in operation, the marginal cost curve will be declining, as the cost will be decreasing with the increase in output. When the diminishing returns are in operation, the MC curve will be increasing as it is the situation of increasing cost.

g) Opportunity Cost

The concept of opportunity cost occupies a very important place in modern economic analysis. Factors of production are scarce in relation to wants. Opportunity cost is the cost of the next-best alternative that has been forgone. The opportunity cost is the cost of something in terms of an opportunity forgone (and the benefits that could be received from that next opportunity). In other words, the opportunity cost of an action is the value of next best alternative forgone. Choices are mostly made on the basis of opportunity cost of alternatives.

About opportunity cost we can conclude following points:

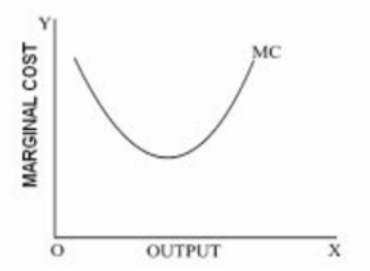
(i) Opportunity cost is the cost of the next-best alternative that has been forgone.

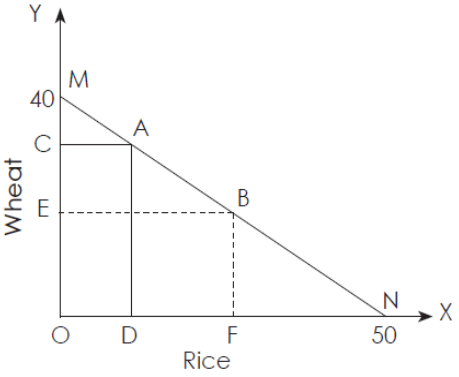
(ii) The opportunity cost of a good should be viewed as the next-best alternative good that could be produced with the same value of the factors which are almost same.

Let us consider an example to understand the concept of opportunity cost. Suppose a piece of land can be used for growing wheat or rice. If the land is used for growing rice, it could not available for growing wheat. Therefore the opportunity cost for rice

is the wheat crop foregone. Here next best alternative for rice is wheat cultivation.

(Source: Fundamental of economics and Management, 2014)





Suppose the farmer, using a plot of land that can either produce 50 quintals (ON) of rice or 40 quintals (OM) of wheat. If the farmer produces 50 quintals of rice (ON), he cannot produce wheat. So the opportunity cost of 50 quintals (ON) of rice is 40 quintals (OM) of wheat. Any combination of the two crops could be produced by farmer that is production possibility curve MN. Let us consider that the farmer is operating at point A on the production possibility curve where he produces OD amount of rice and OC amount of wheat. Now farmer decides to operate at point B on the production possibility curve. Here farmer has to reduce the production of wheat from OC to OE in order to increase the production of rice from OD to OF. It means the opportunity cost of DF amount of rice is the CE amount of wheat.

Revenue

Revenue is defined as the amount a person receives by selling a certain quantity of the commodity. As we know that a good can be purchased in the market by paying a certain price. So, revenue is calculated by multiplying price and quantity of the commodity.

Revenue = Price of the Commodity (P) × Quantity of the Commodity (Q)

The total amount of money received by the seller by selling certain quantity of good during given period is called total revenue.

Where, TR stands for total revenue. Let us consider TR is total revenue, 'P' is price and 'Q' is quantity then,

Total Revenue = Price × Quantity

or

TR = P × Q

1.2 Price effect and Income effect

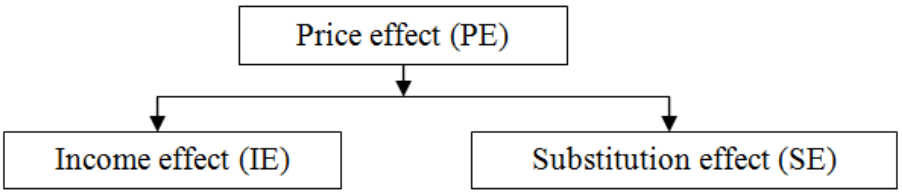
(Sources: Chopra, P.N., Principal of Economics; Dwivedi, D. N., Microeconomics)

v.

Suppose there are two goods, say A and B with the price P_1 and P_2 respectively. When the price of good A, i.e., P_1 changes, there are two effects on the consumer. First, the price of A relative to the other products i.e., B has changed. Secondly, due to the change in P_1, the consumer's real income changes. This is the overall price effect.

Price effect shows the reaction of the consumer to the changes in the prices of the commodity with other factors remaining constant. It measures the change in amount demanded of a commodity with change in its price when the price of the other commodity with which it is being combined remains the same. It was first introduced by pioneer economist J.R. Hicks to denote fell effect of the price to the quantity demanded due to change in its price, no adjustments being made to keep real income constant.

Price effect shows the extension and contraction of the demand of a commodity whose price changes, while price of the other commodities remaining constant. Thus, price effect is the result of income effect and substitution effect.



Income effect measures the change in quantity demanded due to change in real income of the consumer resulting from the changes in the price of the commodity. When the price of a commodity falls, it means that the real income of the consumer is increased. The purchasing power is increased. Thus, he can demand more commodity than before. This is called the income effect. Likewise, with the fall in price of the

commodity, purchasing power of the consumer falls and hence the quantity demanded also decreases. There is shifting of the indifference curve. Income effect may be positive or negative, depending upon the nature of good (normal, inferior or Giffen good).

Substitution effect measures the change in quantity demanded due to commodity becoming cheaper or dearer in relation to their commodities in consumer demand. When the price of a commodity falls, it becomes cheaper as compared to the other commodities from the consumer's basket. As a result, this cheaper commodity is substituted for the other, now dearer (expensive) commodities. Demand of the cheaper commodity rises as a result of substitution, which is known as a substitution effect. Likewise, as the price of a commodity rises compared to the other commodities, then such a commodity is substituted by others. Such a reduction I demand as a result of the price rise is because of the induced substitution. Substitution effect is shown by the movement along indifference curve and is always positive.

Thus, the overall price effect may be positive or negative, depending upon the income and substitution effect.

Price effect, income effect and substitution effect for a rise in price

***(Sources:** Chopra, P.N., Principal of Economics; Dwivedi, D. N., Microeconomics)*

Let us assume two commodities A and B with their respective prices P_1 and P_2 in the consumer's basket, with the budget constraint. Indifference curve, IC1 is the locus of all those points representing various combinations of commodity A and B, giving same level of satisfaction to the consumer. AB is the budget line. Thus, the initial equilibrium point e_1 is given by the tangency between IC_1 and AB. As the price of A rises to P_2, the real income or purchasing power of the consumer falls. The initial budget line shifts from AB to AB'. The demand of A falls from N_1 to N_2 at the lower IC_o at new equilibrium point e_2. Such a movement of equilibrium point from e_1 to e_2 is called price effect (total effect). Now let us separate this price effect into income effect and substitution effect. Rise in price of commodity A reduces the real income of the consumer as a result of which he purchases less amount of commodity A. The fall in demand due to this is obtained through the parallel rightward shift of the price line A'B" till it just touches the indifference curve IC_1 at e_3. From the point e_3, we draw a perpendicular to the X-axis and get the substitution effect N_1N_3. The remaining part i.e., N_3N_2 is the income effect. As the price of commodity A rises, it decreases

the real income of the consumer and the consumption of commodity A falls to point N_2. Thus, the substitution effect helps to decrease the consumer demand form point N_1 to N_3 and the income effect carries it over to N_2. The overall movement of demand of commodity A fro point N_1 to N_2 is called total price effect.

Price effect = Income effect + Substitution effect

$N_1N_2 = N_3N_2 + N_1N_3$

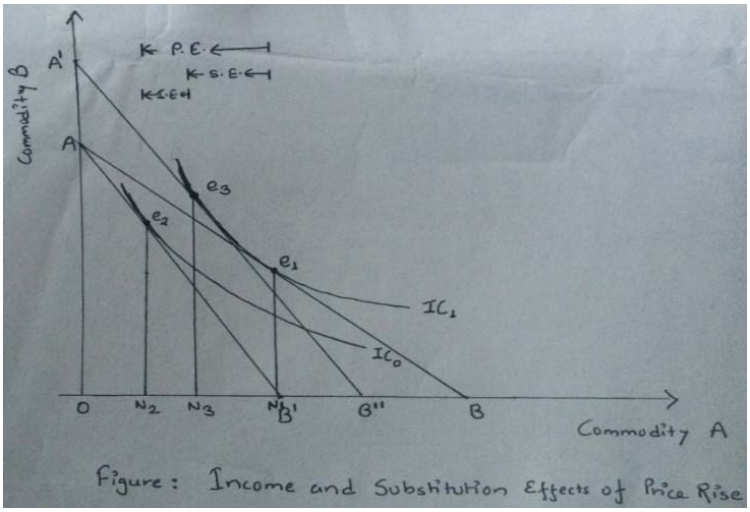


Figure : Income and Substitution Effects of Price Rise

1.5 Law of Demand and Law of Supply

1.5.1 Law of Demand

(Sources: *Chopra, P.N., Principal of Economics; Fundamental of economics and Management, Institute of Cost Accountant of India; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government of Tamilnadu; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region)*

The process through which a consumer obtains the goods and services he wants to consume is known as demand. Demand means the various quantities of goods that would be purchased per time period at different prices in a given market.

Also demand can be defined as the desire to buy a good for which the demander has ability and willingness to pay. Demand is a desire for a good, backed by ability and willingness to pay. A desire without ability to pay is merely a wish. If you have a desire to buy a certain commodity, say, a car, but do not have the adequate money to pay for it, it will simply be a wish, a desire or a want and not demand. Demand is an effective desire which is backed by willingness and ability to pay for a commodity in order to obtain it. Also demand means the various quantities of a good that would be purchased per unit of time at different prices in a given market.

The demand for any commodity mainly depends on the price of that good. The other determinants include price of related good, the income of consumers, tastes and preferences of consumers, and the wealth of consumers.

Hence the demand function can be written as

Dx = F (Px, Ps, Y, T, W)
Where, Dx represents demand for good x
Px is price of good X
Ps is price of related goods
Y is income
T refers to tastes and preferences of the consumers
W refers to wealth of the consumer.

There are three main characteristics of demand that can be considered are:

a. Willingness and ability to pay. Demand is the amount of a good for which a consumer has the willingness and also the ability to buy.
b. Demand is always at a price. The consumer must know both the price and the commodity then only he can demand for certain quantity.
c. Demand is always per unit of time. The time may be a day, a week, a month, or a year.

Individual Demand:

Individual demand can be defined as the quantity of a commodity that a person is willing to buy at a given price over a specified period of time, say per day, per week, per month, etc.

Market Demand:

Market demand refers to total quantity that all the users of a commodity are willing to buy at a given price over a specific period of time. Market demand is the sum of individual demands for a product.

Law of Demand

If the price of a commodity falls, the amount demanded goes up and vice-versa. There is a negative or inverse relationship between the price and quantity demanded of a commodity over a period of time. This relationship is known as Law of Demand.

Thus the law of demand states that people will buy more at lower prices and buy less at higher prices, other things remaining the same.

Assumptions of the Law

1. No change in the consumer's income

2. No change in consumer's tastes
3. No changes in the prices of other related goods
4. No new substitutes for the commodity have been discovered
5. People do not feel that the present fall in price is a prelude to a further decline in price.

Demand Schedule

Demand schedule is a tabular representation of the quantity demanded of a commodity at various prices. It is a numerical tabulation, showing the quantity that is demanded at selected prices. A demand schedule can be of 2 types;

1. Individual Demand Schedule,
2. Market Demand Schedule

1) Individual Demand Schedule: It shows the quantity of a commodity that one consumer or a particular household will buy at selected prices, at a given time period.

Price of x (Rs)	Quantity demanded of x (Units)
100	4
50	2
20	10
10	15
5	20

***(Sources:** Fundamental of economics and Management, Institute of Cost Accountant of India)*

2) Market Demand Schedule: When we add the individual demand schedule of various household, we get the market demand schedule. For example, there are four households in the market and their demand schedule at different prices is given below:

Price	Quantity Demanded				Market Demand
	A	B	C	D	
100	1	1	1	2	5
40	2	5	2	3	12
20	10	10	5	10	35
10	15	15	10	15	55
5	20	20	15	18	73

***Sources:** Fundamental of economics and Management, Institute of Cost Accountant of India)*

Demand Curve: Demand curve is a diagrammatic representation of the demand schedule when we plot individual demand schedule on a graph, we get individual demand curve and when we plot market schedule, we get market curve. Both individual and market demand curves slope downward from left to right indicating an inverse relationship between price and quantity demanded of goods.

The demand schedule can be converted into a demand curve by measuring price on vertical axis and quantity on horizontal axis as shown in figure. The curve slopes downwards from left to right showing that, when price rises, less is demanded and vice versa. Thus the demand curve represents the inverse relationship between the price and quantity demanded, other things remaining constant.

The demand curve slopes downwards mainly due to the law of diminishing marginal utility. The law of diminishing marginal utility states that an additional unit of a commodity gives a lesser satisfaction. Therefore, the consumer will buy more only at a lower price. The demand curve slopes downwards because the marginal utility curve also slopes downwards.

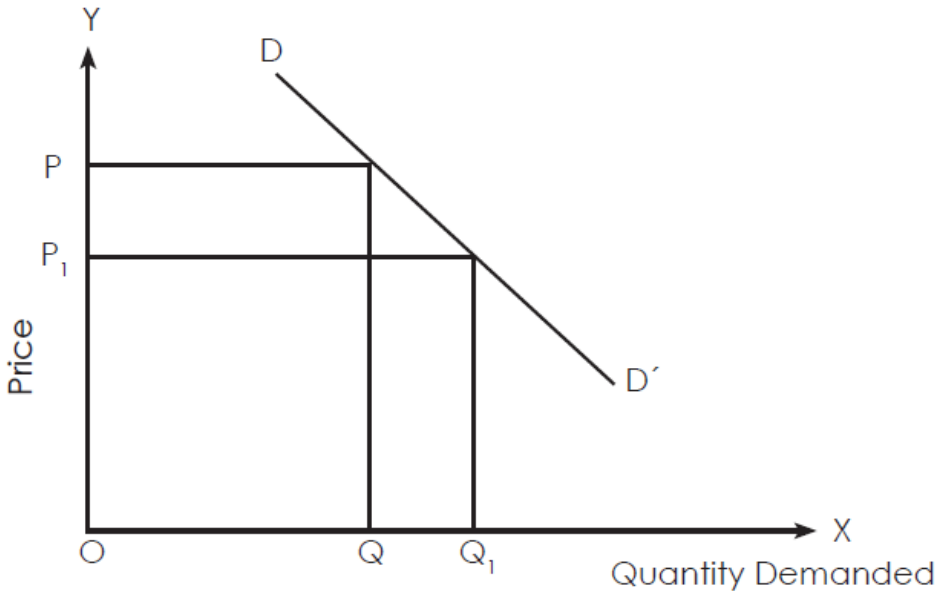


Fig: Demand Curve

***(Sources:** Fundamental of economics and Management, Institute of Cost Accountant of India)*

The demand curve is downward sloping because of the following reasons.

1) All Buyer may not be able to afford the high price.
2) When consume more units of a product, the utility of that product becomes less. This is called the principle of diminishing Marginal Utility.

The quantity demanded rises with a fall in price because of the substitution effect. A low price of x encourages buyer to substitute x for other product.

Determinants of demand - There are many factors that can affect the level of quantity demanded. Important factors are as follows:

Price of the Commodity: There is an inverse relationship between the price of the goods and the quantity demanded. The relation between price and demand is called the Law of Demand. This implies that lower the price of goods, larger is the quantity demanded and vice-versa.

Income of the consumers: After price of commodity, Income is important factor influencing demand. When the income of the consumer increases, more will be demanded. Comforts and luxuries commodity belong to this category. Commonly there is a direct relationship between the income of the consumer and consumer demand. i.e. as income rises his demand rises and vice-a-versa. The income demand relationship varies with the following three types of Goods :

(a) Normal Goods: This means an increase in income causes an increase in demand. Thus income effect is positive.
For eg. demands for television , refrigerators etc.

(b) Inferior Goods: An inferior good means an increase in income causes a fall in demand.
For e.g. food grains like Maize etc.

(c) Giffen Goods: In case of Giffen goods the demand increases with an increase in price but it decreases with the rise in income. Thus income effect is negative.
For e.g. food grains like Finger Millet etc.

Price of related Goods

The demand for a commodity is also affected by the changes in prices of the related goods. The Some goods can be substituted for other goods. For example, tea and coffee are substitutes. If the price of coffee increases while the price of tea remains the same, there will be increase in the demand for tea and decrease in the demand for

coffee. The demand for substitutes moves in the opposite direction.

Related Goods can be classified as substitute and complementary goods.

a) **Substitute Goods:** Substitute goods are those which can replace each other in use. For example, tea and coffee are substitute. In case of such goods, if the price of any substitute good rises, then the good concern will become relatively cheaper and its demand will rise. The demand for the good will fall if the price of the substitute falls. eg. If the price of coffee rises, the demand for tea will rise.
b) **Complementary Goods:** Complementary goods are those which are jointly demanded, such as pen and ink. In case of such goods with a fall in the price of one there will be a rise in demand for another and therefore the price of one good and demand for its complementary are inversely related.

Tastes of consumer: The amount demanded also depends on consumer's tastes. Taste depend on social customs, habit of the people, fashion, etc. largely influence the demand of a commodity. For example, the demand for Daura Suruwal has come down and demand for trouser and jeans has gone up due to change in fashion.

(a) Consumer's Expectation: If a consumer expects a rise in the price of a commodity in a near future, they will demand it more at present in anticipation of a further rise in price.

(b) **Size and Composition of Population:** Increase in Population increases demand for necessaries of life. Larger the population, larger is likely to be the number of consumers. The composition of population which refers to the children, adults, males, females, etc. in the population also influences the demand. The demographic profile will also influence the consumer demand. Size of population of a country is an important determinant of demand. For instance, larger the population more will be the demand, for certain goods like food rice, vegetable and pulses etc. When the number of consumers increases, there will be greater demand for goods.

Government Policy: Government policy affects on demand of good by taxation. Taxing a good increase its price and demand goes down.

Climate and weather conditions: Demand for a commodity may change due to a change in weather conditions. For example, during summer, demand for cool drinks,

cotton clothes and air conditioners will increase. In winter, demand for woolen clothes increases.

Consumer Innovativeness

When the price of wheat flour or price of electricity falls, the consumer identifies new uses for the product. It creates new demand for the product.

1.5.2 Law of Supply

(Sources: Fundamental of economics and Management, Institute of Cost Accountant of India)

Supply means the commodity offered for sale at a price during a specific period of time. It is a quantity of a commodity offered by the producers to be supplied at a particular price and at a certain time. It is the capacity and intention of the producers to produce goods and services for sale at a specific price. Supply means the quantity of a commodity which a firm or an industry is willing to produce at a particular price, during a given time period.

It is the amount of a commodity that sellers are able and willing to offer for sale at different prices per unit of time. Supply is a schedule of the amount of a good that would be offered for sale at all possible prices at any period of time.

Difference between Supply and Stock:

(Sources: Chopra, P.N., Principal of Economics; Fundamental of economics and Management, Institute of Cost Accountant of India; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government of Tamilnadu; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region)

The terms Supply and demand are quite confusing and need to be distinguished. The amount of a good that a seller is willing to supply at a given price is known as supply while stock is meant the total quantity of goods this exists in a market and can be offered for sale at a short notice. The supply and stock of commodity in the market may or may not be equal if the commodity is perishable, like milk, vegetables, fruits, then the supply and stock are generally the same. But in case if a producer finds that the price of his product is low as compared to its cost of production, he tries to withhold the entire or a part of a stock. In case of a favorable price, the producer may dispose off large quantities or the entire stock of his good; it will all depend upon his own valuation of the commodity at that particular time.

Individual Supply and Market Supply

Individual Supply

Individual Supply refers to the quantity of a commodity which a firm is willing to produce and offer for sale. An individual supply schedule shows the different qualities of goods that a producer of a firm would offer for sale at different prices.

Market Supply

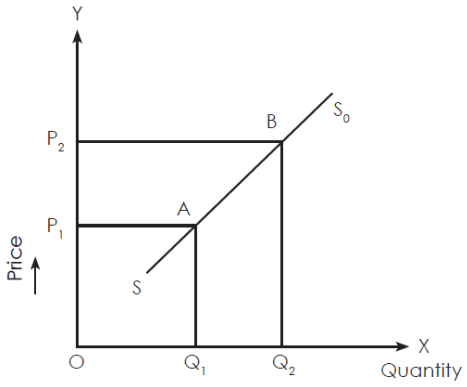
Market supply refers to the quantity which all producers are willing to produce and sell is known as market supply. A market supply schedule shows the various quantities of a commodity that all the firms are willing to supply at each market price during a specified time period.

Law of Supply

According to law of supply, the quantity of a good offered or willing to offer by the producer for sale increase with the increase in the market price of the good and falls if the market price decreases, all other things remaining constant . An increase in price will increase the incentive to supply which means that supply curves will slope upwards from left to right.

Supply schedule and supply curve

A supply schedule is a statement of the various quantities of a given commodity offered for sale at various prices per unit of time. With the help of the supply schedule, a supply curve can be drawn.



*(**Sources:** Chopra, P.N., Principal of Economics; Fundamental of economics and Management, Institute of Cost Accountant of India; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government of Tamilnadu; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region)*

Supply Curve is the graphical representation of supply schedule when factors

affecting supply remain constant.

- • Movement from A to B: Extension in Supply
- • Movement from B to A: Contraction in Supply

Factor Determining Supply:

Quantity supplied of a commodity is affected by various factors. Major factors responsible for supply are as follows:

1. **Change in the cost of Production:** A change in the cost of production may affect the position of supply curve. An increase in costs will shift the supply curve upwards indicating a decrease in supply.
2. **Raw material and input Prices:** The supply of a good can be influenced by the raw materials, labour and other inputs. If the price of such inputs rises leading to a lower profit margin becomes less and which ultimately lead to a lower supply.
3. **Advancement of Technology:** If improved and high technology is used for the production of a good, it reduces its cost of production and increases the supply. Similarly, the supply of those goods will be less whose production depends on outdated technology.
4. **Government policies:** Government policy of taxation also affects the supply of good. The imposition of sales tax reduces supply and subsidy on the other hand increases the supply.
5. **Future price expectations:** If producers expect that there will be a rise in the prices of products in future, they will not supply their products at present.
6. **Number of producers:** If the number of producers producing the product increases, the supply of the product will increase in the market.
7. **Prices of the other commodities:** An increase in the prices of other good makes the production of that good whose price has not risen relatively less attractive. For example: suppose a farmer produces paddy and maize in his firm. If the price of maize increases he grows less paddy. Hence the supply of paddy decreases.
8. **Means of Transport:** Changes in the cost of transport also bring about changes in supply.

9. **Natural factor:** Natural factor is important for supply in agriculture commodity. In case of natural disorders flood, drought, etc. the supply of agricultural commodity is adversely affected.
10. **Non-economic factors:** Non-economic factors like, war, political climate and natural calamities create scarcity in supply.

1.6 Law of Diminishing Marginal Utility

Law of Diminishing Marginal Utility is a fundamental law of Economics. It relates to a human's behavior as a consumer. German economist Gossen was the first to describe it. So it is also called Gossen's First Law.

Marshall explained Law of Diminishing Marginal Utility as "The additional benefit which a person derives from a given increase of a stock of a thing diminishes, other things being equal, with every increase in the stock that he already has".

The law of diminishing marginal utility explains an ordinary experience of a consumer. If a consumer takes more and more units of goods, the additional utility he derives from an extra unit of the good goes on falling. So, according to this law, the marginal utility decreases with the increase in the consumption of a commodity. When marginal utility decreases, the total utility increases at a diminishing rate.

Explanation of Law of Diminishing Marginal Utility:

(Source:http://economicsmicro.blogspot.com/2008/11/law-of-diminishing-marginal-utility.html)

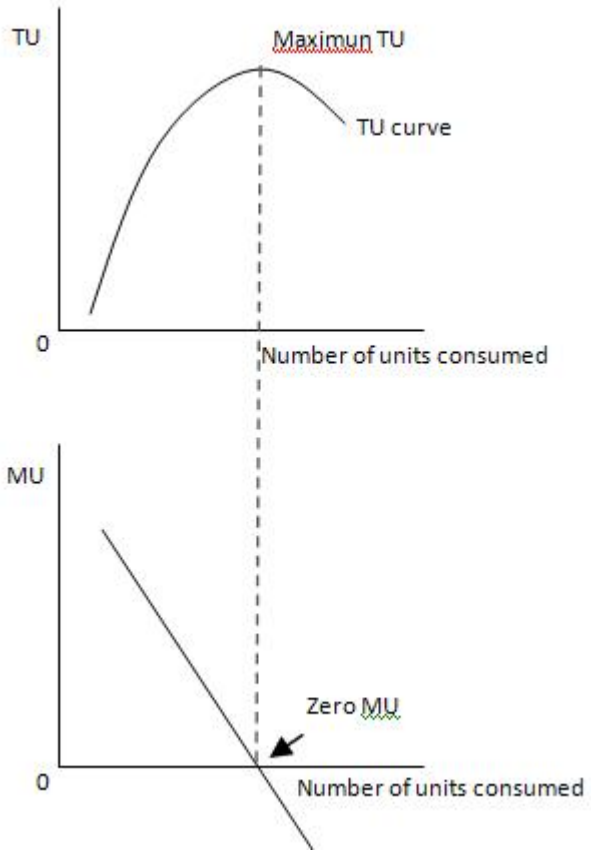
As more and more quantity of a commodity is consumed, the intensity if desire decreases and also the utility derived from the additional unit.

Suppose a person eats Bread. 1st unit of bread gives him maximum satisfaction. When he will eat 2nd bread his total satisfaction would increase. But the utility added by 2nd bread (MU) is less than the 1st bread. His Total utility and marginal utility can be put in the form of a following schedule.

Slices of Bread	Total Utility	Marginal Utility
0	0	-
1	70	70
2	110	40

3	130	20
4	140	10
5	145	5
6	140	-5

Plotting the above data on a graph gives following graph:



- Here, from the MU curve we can see that MU is declining as consumer consumes more of the commodity.
- When TU is maximum, MU is Zero.
- Then, TU starts declining and MU becomes negative.

Assumptions:

1. Standard Unit: The units of consumption must be in standard units e.g., a cup of tea, a bottle of cool drink etc.

2. No Change in taste or fashion: There should not be any change in the taste, habit, custom, fashion and income of the consumer.
3. Continuity in the consumption: There should be continuity in the consumption of the commodity. Consumption must be in one continuous sitting.
4. Uniform quality and size of the goods: The successive units of the commodity should not differ in any way either in size or quality.
5. Consumer Income should remain constant: The income of the consumer remains constant.
6. Mental condition of the consumer should be same: The consumer should not feel any change in his mental condition due to the particular good.
7. Price of the commodity or its substitutes is same: The law of diminishing marginal utility based on the assumption that prices of the commodity and of the substitutes of the commodity should remain the same
8. The commodity should be divisible
9. The consumer should be an economic man who acts rationally
10. Goods should be normal goods.

Importance of the Law Diminishing Marginal Utility:

1. Law of Diminishing Marginal Utility is a fundamental law of Economics. It is also the basic law of consumption. The law of demand, the law of equi-mariginal utility and the concept of consumer's surplus are based on it.
2. The law helps in bringing variety in consumption and production.
3. The law helps to explain the phenomenon in the value theory that the price of a commodity falls when its supply increases.
4. The famous diamond –water paradox of Smith can be explained with the help of this law. Diamonds are scarce and hence possess high marginal utility and hence higher price. On the other hand, water is relatively abundant because of which it possess low marginal utility and low price even though its total utility is high
5. The principle of progressive taxation is based on this law.

Exceptions to law of Diminishing Marginal Utility :

1. Certain hobbies like collection of stamp or old coins, every additional unit gives

more pleasure. So, MU goes on increasing with the acquisition of every unit.

2. It is also not applicable to drunkard. It is believed that every dose of liquor increases the utility of a drunkard.

3. In the case of miser, greed increases with the acquisition of every additional unit of money. So this law may not applicable to article like gold, money etc.
4. The habit of reading of more books gives more knowledge and in turn greater satisfactions. So it is also not applicable for reading habit.
5. Marginal utility of a commodity may be affected by the presence or absence of articles which are substitutes or complements.

1.7 Market Structures

(Sources: Chopra, P.N., Principal of Economics; Dwivedi,D.N., Microeconomics; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government oF Tamilnadu ; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region; Fundamental of economics and Management, 2014, Institute of Cost Accountant of India)

Market forms

Market

In economics, market means a social system through which the sellers and purchasers of a commodity or a service (or a group of commodities and services) can interact with each other.

They can participate in sale and purchase. Market does not refer to a particular place or location, but to an institutional relationship between purchasers and sellers.

A market can be of different types, differing from one another due to differences in the number of buyers, number of sellers, nature of the product, influence over price, availability of information, conditions of supply, etc.

Market structure refers to the organizational characteristics of an industry that influence the firm's behavior regarding the choice of output and price. In another word, it is the whole set of conditions under which a commodity is marketed: no and nature of sellers and buyers, nature of commodity offered by different sellers, etc.

Thus, simply, market structure – identifies how a market is made up in terms of:

1. the number of firms in the industry,
2. the nature of the product produced,
3. the degree of monopoly power each firm has,
4. the degree to which the firm can influence price,

5. profit levels,
6. firms' behavior – pricing strategies, non-price competition, output levels,
7. the extent of barriers to entry, and
8. the impact on efficiency.

Based on the nature of competition, there are two broad categories of market structures:

1. Perfect Competition
2. Imperfect competition
   1.1 Monopoly
   1.2 Oligopoly
3. Monopolistic competition

1. Perfect Competition

A perfectly competitive market is a market structure where competition is at its greatest possible level. Neo classical economists have argued that perfect competition would produce the best possible outcomes for consumers, and society. However, there is no existence of such market in reality.

Characteristics of perfectly competitive market:

*(**Sources:** Chopra, P.N., Principal of Economics; Dwivedi,D.N., Microeconomics; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government oF Tamilnadu ; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region; Fundamental of economics and Management, 2014, Institute of Cost Accountant of India)*

1. **Large number of buyers and sellers:** Under perfect competition, there exist a large number of sellers and the share of an individual seller is too small in the total market output. As a result a single firm cannot influence the market price so that a firm under perfect competition is a price taker and not a price maker. Similarly, there are a large number of buyers and an individual buyer buys only a small portion of the total output available.
2. **Homogenous goods:** Under perfect competition all firms sell homogenous goods which are identical in quantity, shape, size, color, packaging etc. So the products are perfect substitutes of each other.
3. **Free entry and free exit:** Any firm can enter or leave the industry whenever it wishes. The condition of free entry and free exit ensures that all the firms under

perfect competition will earn normal profits in the long run. If the existing firms are earning supernormal profits, new firms would be attracted to enter the industry and increases the total supply. This will reduce the market price and the supernormal profit will not sustain. On the other hand if the existing firms incur supernormal loss then firms would leave the industry, thus reducing the supply. As a result, price will again rise and the loss will be wiped out.

4. **Profit maximization:** The goal of all firms is maximization of profit.
5. **No Government regulation:** There is no government intervention in the market.
6. **Perfect mobility of factors:** Resources can move freely from one firm to another without any restriction. The labors are not unionized and they can move between jobs and skills.
7. **Perfect knowledge:** Individual buyer and seller have perfect knowledge about market and information is given free of cost. Each firm knows the price prevailing in the market and would not sell the commodity which is higher or lower than the market price. Similarly, each buyer knows the prevailing market price and he is not allowed to pay a higher price than that. The firm also has a perfect knowledge about the techniques of productions. Each firm is able to make use of the best techniques of production.

Determination of equilibrium price and output in Perfect competitive market:

(Sources: *Chopra, P.N., Principal of Economics; Dwivedi,D.N., Microeconomics; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government oF Tamilnadu ; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region; Fundamental of economics and Management, 2014, Institute of Cost Accountant of India)*

Perfect Competition (market is such market structure in which there are many sellers selling homogenous goods at uniform prices. Under such a market a single firm cannot makes its price, where as the price is decided by the industry consisting of all such firms. Therefore a single firm under PC is a price taker and not a price maker. The equilibrium price is determination of a firm under PC is shown below:

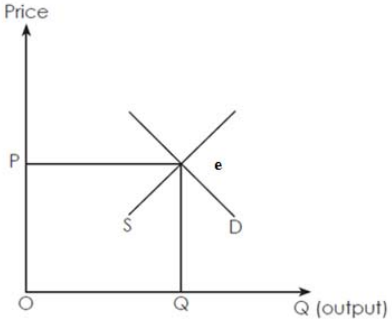


Figure: 1.a

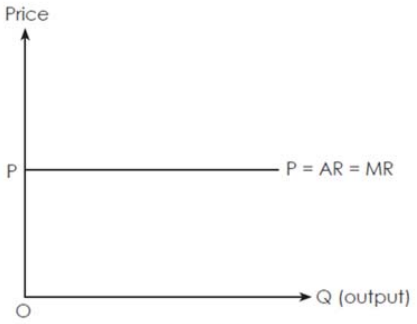


Figure: 1.b

In figure (1.a) point e is the equilibrium point of the industry where aggregate demand (D) = aggregate supply(S). The equilibrium price is OP which is decided by the industry has to be accepted by all firms in that industry as shown in figure (1.b).

Under PC since several firms sell the same goods and there is a provision for free entry and free exit of the firm. Therefore per unit price (P) = AR = MR.

In order to find out equilibrium price and output of a firm under PC in the short run, following two conditions need to be satisfied.

- below. MC = MR.
- MC curve cuts the MR Curve from

In short run under perfect competition, firms can make super normal profits or losses.

a) Super Normal Profit — When the AR of the firm exceeds the AC of the firm (i.e. when AC lies below the AR curve), there would be the super normal profit. This is explained with the following diagram:

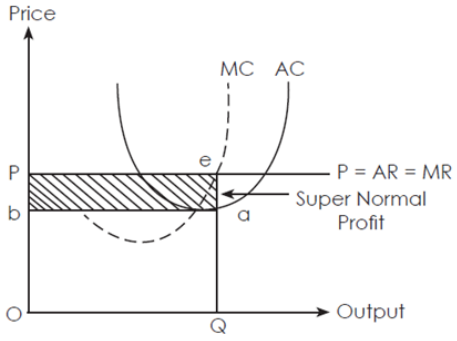


Figure: 2

b) Loss: In case of loss the AC of the firm has to be greater than AR. It is explained in the following diagram:

In the long run a firm is said to be in equilibrium when P = AR = MR = MC = AC. Therefore under PC in the long run there exists normal profit and no super normal profits or losses exist. Existence of super normal profits in the short run attract more firm to the industry and thus

aggregate supply will rise which will reduce the price and hence the sustained super normal profit will disappear. On the other hand if there is an event of loss then the existing firms will gradually leave the industry and as a result the supply will fall, price will rise and the super normal loss will be wiped out.

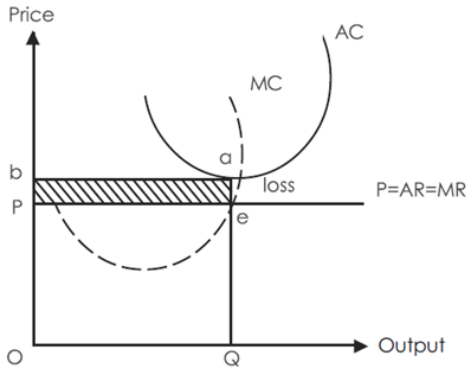


Figure: 3

2. Imperfect Competition

*(**Sources:** Chopra, P.N., Principal of Economics; Dwivedi,D.N., Microeconomics; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government oF Tamilnadu ; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region; Fundamental of economics and Management, 2014, Institute of Cost Accountant of India)*

Imperfectly competitive markets may be classified as: monopoly, oligopoly, and monopolistic markets.

2.1 Monopoly

Monopoly refers to the market situation in which there is a single seller of a commodity of 'lasting distinction' with no close substitute to the commodities sold by the seller. The seller has full control over the production and supply of that commodity.

Characteristics of monopoly market:

*(**Sources:** Chopra, P.N., Principal of Economics; Dwivedi,D.N., Microeconomics; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government oF Tamilnadu ; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region; Fundamental of economics and Management, 2014, Institute of Cost Accountant of India)*

1. **Single seller and large number of buyers**: Under monopoly there is one seller and therefore a firm faces no competition from other firms. There are large numbers of buyers and no single buyer can influence the monopoly price by his action.
2. **No close substitute:** Under monopoly there is no close substitute for the product sold by the monopolist. .
3. **Barrier to the entry of new firms:** Under monopoly new firms cannot enter the industry.

4. **Price maker:**A monopoly firm has full control over the supply of its products and hence it has full control over its price also. A monopoly firm can influence the market price by varying the supply.
5. **Possibility of Price Discrimination :** Price discrimination is the process of charging different prices of same quality commodity to different consumers of the same or/and different consumer of different locality. Consumers are discriminated in respects of price on the basis of:
   a) income or purchasing power,
   b) geographical location,
   c) age, sex,
   d) quantity they purchase,
   e) their association with the seller
   f) frequency of purchase
   g) purpose of the use of the commodity or service.

Product or service may be identical (public utilities, physicians charge, etc) or slightly modified (entertainment shows, railway services, etc).

Causes of Monopoly

(Sources: *Chopra, P.N., Principal of Economics; Dwivedi,D.N., Microeconomics; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government oF Tamilnadu ; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region; Fundamental of economics and Management, 2014, Institute of Cost Accountant of India)*

There are few causes of monopoly which act as barrier to the entry:

1. **Legal restrictions:** Some monopolies are created by the law in public interest. For example: most of the state monopolies in the public utility sector such as telecommunication, electricity distribution, water supply, etc. Such restrictions also occur in private sector through license or patent, which is known as franchise monopolies.
2. **Control over key raw materials:** Due to differential natural resource endowment, monopoly over certain specific technical knowledge or techniques of production, there is control over key resource materials, resulting to the monopoly. For example: Petroleum products, mines, etc.

3. **Efficiency:** Due to the economies of scale, there arises monopoly. This is also known as natural monopoly.
4. **Patent rights:** In some cases, patent rights are granted by the government to the firm to produce a commodity of specified quality and character, or to use a specified technique of production.

Determination of equilibrium price and output in Monopoly market:

In case of a monopoly firm or industry, there is a downward sloping demand curve or average revenue curve which suggests that a monopolist can reduce his unit price to encourage more sales. In case of monopoly the AR & MR curves are downward sloping and the MR curve lies below the AR curve, as shown below:

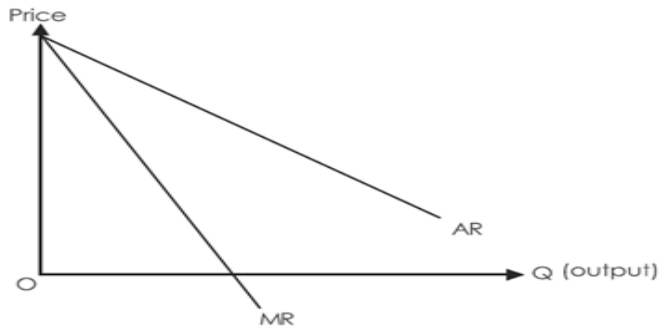


Figure: 4

In a monopoly market the conditions of equilibrium are:

(a) MC = MR, &

(b) MC curve cuts MR curve from below:

There are possibilities of super normal profit, normal profit & losses under monopoly.

(a) Super normal profit:

(Sources: Chopra, P.N., Principal of Economics; Dwivedi,D.N., Microeconomics; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government oF Tamilnadu ; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region; Fundamental of economics and Management, 2014, Institute of Cost Accountant of India)

In this situation, the AC curve will lie below the AR curve.

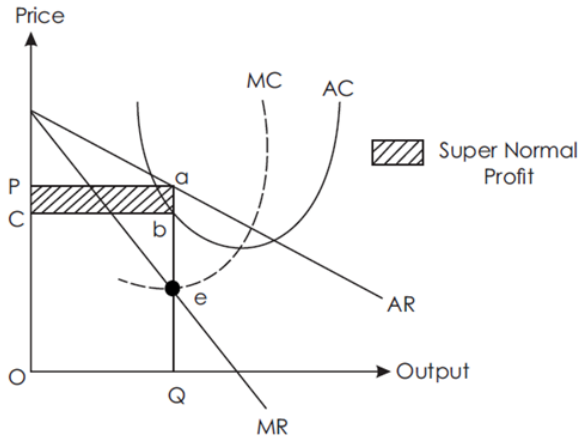


Figure: 5

In the above figure, e is the equilibrium point where MC = MR and MC cuts MR from below. OP is the equilibrium price and OQ is the equilibrium quantity. We calculate the total profit as:

Total Profit = TR – TC
= (AR x Q) – (AC x Q)
= (OQ x OP) - (bQ x OQ)
= PaQO – CbQO
= PabC (shaded area)

Loss: In case of loss the AC curve lies above the AR.

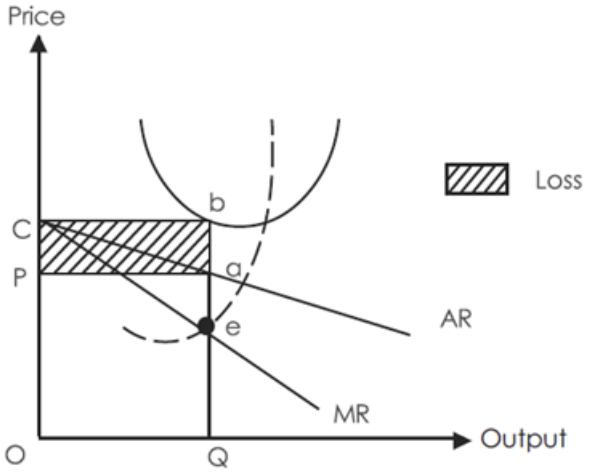


Figure: 6

In the figure above, e is the point of equilibrium. OP is the equilibrium price and OQ is the equilibrium quantity. The amount of super normal loss is calculated as follows:

Total loss = TC – TR
= (AC x Q) – (AR x Q)
= (bQ x OQ) - (aQ x OQ)
= CbQO - PaQO
= PabC (shaded region)

b) **Normal profit:** In this situation the AR = AC and therefore the AR curve is tangent to the AC curve as shown below.

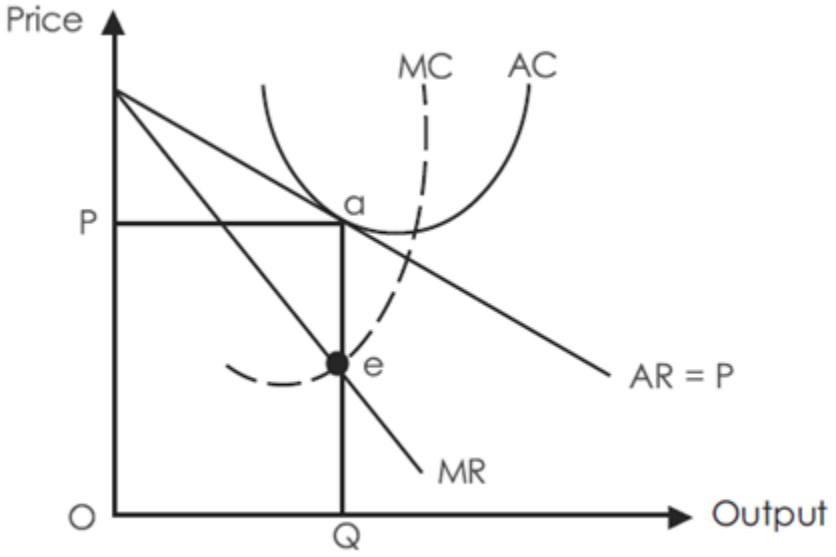


Figure: 7

In the diagram above, e is the point of equilibrium, OP is the equilibrium price and OQ is the equilibrium output.

The AR curve is tangent to the AC curve at point a and therefore AR = AC or

TR = TC
(AR x Q) = (AC x Q)
(OQ x OQ) = (aQ x OQ)
Or, PaQO = PaQO

1.2 Oligopoly

*(**Sources:** Chopra, P.N., Principal of Economics; Dwivedi,D.N., Microeconomics; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government oF Tamilnadu ; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region; Fundamental of economics and Management, 2014, Institute of Cost Accountant of India)*

Oligopoly is the market structure in which there are a few sellers selling homogeneous or differentiated products. Number of sellers depends on the market size. Two sellers is the limiting case of oligopoly, which is known as duopoly.

In case of pure or homogeneous oligopoly, oligopoly firms sell a homogeneous product. For example: industries producing breads, cement, steel, petrol, etc. Likewise, in differentiated or heterogeneous oligopoly, oligopoly firms sell differentiated products. For example: soft drinks, computers, automobiles, mobile phones, soaps and detergents, etc.

Characteristics of Oligopoly market:

*(**Sources:** Chopra, P.N., Principal of Economics; Dwivedi,D.N., Microeconomics; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government oF Tamilnadu ; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region; Fundamental of economics and Management, 2014, Institute of Cost Accountant of India)*

1. **Small number of sellers:**

   There are small numbers of sellers in oligopoly market. Their number is so small that the market share of each firm is so large that a single firm can influence the market price and the business strategy of it's competitor firm.

2. **Interdependence of decision making:**

   This is the most striking feature of oligopoly market. Competition among the firms takes the form of action, reaction and counteraction in the absence of collusion between firms. Thus the business decision and strategy of each firm in respect of pricing, advertising, product modification, etc is closely observed by the rival firms and it results retaliatory actions. Firms initiating any new business strategy anticipate and consider the counteractions by the rival firms. This is called interdependence of oligopoly firms.

3. **Barriers to entry:**

   Requirement of huge capital investment, economies of scale, strong loyality of the consumers to the products of the established firms, resistance by the established firms by price cutting acts as barrier to the entry by the new firms.

4. **Indeterminate price and output:**

   The characteristic fewness and interdependence of oligopoly firms makes derivation of the demand cure a different proposition. Therefore, price and output are said to be indeterminate. However, they are said to be determinate under collusive oligopoly. In other word, price under oligopoly is sticky, i.e., if price is once determined, it tends to stabilize. It further leads to the choaked throat competition.

Factors causing Oligopoly:

(Sources: *Chopra, P.N., Principal of Economics; Dwivedi,D.N., Microeconomics; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government oF Tamilnadu ; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region; Fundamental of economics and Management, 2014, Institute of Cost Accountant of India)*

1. **Huge capital investment:**

Some industries like firms manufacturing aircrafts, automobiles, etc. require huge investment. Thus, only few firms can enter such kind of industries, which acts as a natural barrier to entry to the oligopolistic industries.

2. **Economies of scale:**

   Huge investment and large scale of production firms can enjoy the absolute cost advantage. Their cost of production is thus low. This gives comparative advantage in price competition to the existing firms. Thus, it acts as a barrier to the entry of new firm as well as exit of the high cost firms.

3. **Patent rights:**

   In case of differentiated oligopoly, differentiated gods hold patent right which gives them the monopoly power. For example: Coke.

4. **Control over certain raw materials:**

   When a few firms acquire control over almost the entire supply of important inputs required to produce certain good, new firm find it difficult to enter the market.

5. **Merger or acquisition:**

   Merger of rivalry firm or take over off the rival firms by the bigger ones with a view to protecting their joint market share or to put an end to waste of competition creates oligopoly.

1.3 Monopolistic Competition

***(Sources:** Chopra, P.N., Principal of Economics; Dwivedi,D.N., Microeconomics; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government oF Tamilnadu ; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region; Fundamental of economics and Management, 2014, Institute of Cost Accountant of India)*

It is that form of market in which there are large numbers of sellers selling differentiated products which are similar in nature but not homogenous, for example, the different brands of soap. This are closely related goods with a little difference in odor, size and shape. We separate them from each other. It is a combination of perfect competition and monopoly.

Features of Monopolistic market:

***(Sources:** Chopra, P.N., Principal of Economics; Dwivedi,D.N., Microeconomics; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government oF Tamilnadu ; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region; Fundamental of economics and Management, 2014, Institute of Cost Accountant of India)*

1. **Large Number of firms:**

   Under monopolistic competition, the number of firms producing a commodity will be very large. The term 'very large' denotes that contribution of each firm towards the total demand of the product is small. Each firm will act independently on the basis of product differentiation and each firm determines its price-output policies. Any action of the individual firm in increasing or decreasing the output will have little or no effect on other firms.

2. **Product differentiation:**

   Product differentiation is the characteristic feature of monopolistic competition. It is the process of altering goods that serve the same purpose so that they differ in minor ways. One of the most important features of the monopolistic competition is differentiation. Product differentiation implies that products are different in some ways from each other. Products in monopolistic market are heterogeneous rather than homogeneous so that each firm has an absolute monopoly in the production and sale of a differentiated product. There is,

however, slight difference between one product and other in the same category. Products are close substitutes with a high cross-elasticity and not perfect substitutes. Product differentiation may be based upon certain characteristics of the products itself, such as exclusive patented features; trade-marks; trade names; peculiarities of package or container, if any; or singularity in quality, design, color, or style. It may also exist with respect to the conditions surrounding its sales."

3. **Selling Costs:**
   Expenditure incurred on advertisements and sales promotion by a firm to promote the sale of its product is called selling cost. They are made to persuade a particular product in preference to other products. Some advertisements have become so popular that people use a brand name to describe the product, for example, brand name is used to describe all types of washing powders, soaps.
4. Free entry and exit of firms:
   There are no restrictions on the entry of new firms and the firms decide to leave the industry. Every firm under monopolistic competition earns only normal profits in the long run and there arises nor supernormal profit nor loss.

Determination of equilibrium price and output under monopolistic competition

(Sources: Chopra, P.N., Principal of Economics; Dwivedi,D.N., Microeconomics; Economic Theory - Higher Secondary-Second Year, Directorate of School Education, Government oF Tamilnadu ; Module Economics class: xii ,Kendriya Vidyalaya Sangathan Jaipur Region; Fundamental of economics and Management, 2014, Institute of Cost Accountant of India)

The monopolistic competitive firm will come to equilibrium at a point where MR is equals to MC. Each firm will choose that price and output where it will be maximizing its profit.

In short run, there are chances of supernormal profits or losses, depending on their costs and revenue curves.

In the figure below, MC and AC are the short period marginal cost and average cost curves. The sloping down average revenue and marginal revenue curves are shown as AR and MR. The equilibrium point is E where MR = MC. The equilibrium output is OM and the price of the product is fixed at OP. The difference between average cost and average revenue is SQ. The output is OM. So, the supernormal profit for the firm is shown by the rectangle PQSR. The firm by producing OM units of its commodity

and selling it at a price of OP per unit realizes the maximum profit in the short run.

However, in long run, if the existing firms earn super normal profit, the entry of new firms will reduce its share in the market. The average revenue of the product will come down. The demand for factors of production will increase the cost of production. Hence, the size of the profit will be reduced. If the existing firms incur losses in the long-run, some of the firms will leave the industry increasing the share of the existing firms in the market. As the demand for factors becomes less, the price of factors will come down. This will reduce the cost of production, which will increase the profit earned by the existing firm. Thus under monopolistic competition, all the existing firms will earn normal profit in the long run.

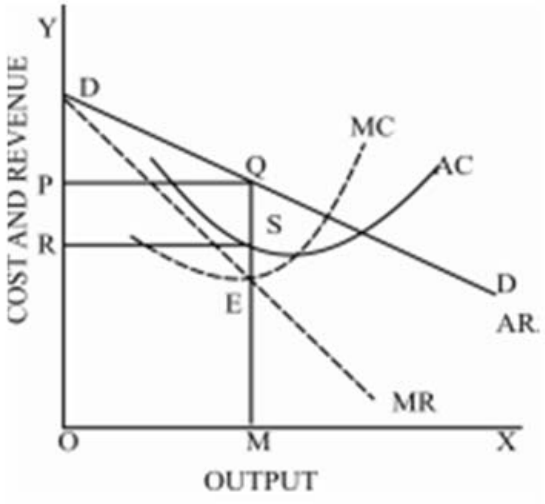


Figure: 8

Summary of the market structures

Type of market	Number of firms	Freedom of entry	Nature of product	Examples	Implications for demand curve faced by firm	Profit maximization condition	Firm's control over price
Perfect competition	Very many	Unrestricted	Homogeneous (undifferentiated)	Cereals, vegetables, fruits	Horizontal: firm is a price taker	P=MR=MC	Price taker
Monopolistic	Many / several	Unrestricted	Differentiated	Builders, restauran	Downward sloping,	MR=MC	Price setter

competition				ts	but relatively elastic		
Oligopoly	Few	Restricted	Undifferentiated or differentiated	Cement cars, electrical appliances	Downward sloping. Relatively inelastic (shape depends on reactions of rivals)	MR=MC	Price setter
Monopoly	One	Restricted or completely blocked	Unique	Local water company, train operators (over particular routes)	Downward sloping: more inelastic than Oligopoly. Firm has considerable control over price	MR=MC	Price setter

2. Production Factors

2.1 Land

Land is the most important resource in agricultural production. According to Dr. Alfred Marshall "land is meant no merely land in the strict sense of the word, but whole of the materials and forces which nature gives freely for man's aid in land, water, in air and light and heat." Land refers to all nature, living and lifeless. Land includes all those materials and powers of the earth on the surface or within it which are being got free from air, water and land for human. Land refers all that nature has created on the earth, above the earth and below the earth's surface.

Importance of Land:

Land a factor of production is of immense importance. Land is the original sources of all material wealth. The economic prosperity of a country is closely linked with the richness of her natural resources. The quality and quantity of agricultural wealth a country depends on nature of soil, climate, rainfall. The agri- products are the form the basis of trade and industry. Industry also depends upon availability of coal-mines or waterfall for electricity production. Thus all aspects of economic life i.e. agriculture, trade and industry are generally influenced by natural resources which is called as "Land" in economics. The importance of land is therefore too much as it is

influencing finally the standard of living of the people.

Peculiarities of Land:

The peculiarities of Land are as follows:

i. **A free gift of nature:** Land is not man-made resource. Land is a gift of nature given to man free of cost.

ii. **Land is limited in supply:** The peculiar feature of land is its fixed supply while other factor of production can be altered. Land surface of the world is constant. It is impossible to increase the area of land. Man can only improve the fertility of land.

iii. **Land is not perishable:** Land cannot be easily destroyed. The other factors of productions are destructible but land cannot be completely destroyed.

iv. **Land is immobile:** Land cannot move from one place to another while other factors of production are mobile.

v. **Land is of infinite variety:** Land differs in fertility. For example, soil may be of different types. It is fertile somewhere and sandy or marshy at another place.

Factors affecting productivity of land:

Land from different places is different in quality or productivity. The productivity of lands depends upon following factors.

1. **Natural factors:** The factors like soil, climate, weather, rainfall, topography influence the productivity. The sandy soil with low rainfall always yields less while black fertile land with rainfall yield high.
2. **Human factor:** Man use different chemical fertilizer for increasing fertility of soil. Man use Nitrogen, Phosphorus and potash to overcome their deficiencies. So human effort is most important to increase the productivity of land.
3. **Importance of location:** The location of the land may determine the productivity of land. The fertile land in remote areas perhaps may not be cultivated but the land having less fertility but located nearby marked can have high productivity.
4. **Irrigation:** Irrigation is a very important factor affecting the productivity of land.

2.2 Labour

Labour is the effort of human being that is used in making things happen in the production process. It is the second most important resource next to land in agricultural production. Labour availability is a function of the economically active proportion of the population released for agricultural activities. Alferd Marshall defines labour as 'the use or exertion of body or mind, partly or wholly, with a view to secure an income apart from the pleasure derived from the work'. According to A.H. Smith "labour includes all the efforts made by man to earn a living." Also, labour can be defined as any exertion of mind or body undergone partly or wholly with a view to earning some good other than the pleasure derived directly from the work. In short labour in economic means that any type of work performed by a labourer with an intention to earn income.

Peculiarities of Labour:

The important peculiarities of labour are as followings:

1. **A human factor:** The main characteristic of labour is that it is a human factor. Labour cannot be separated from the labourer: labour means a quantum of work performed while labourer means who perform the work.
2. **A Labourer sells his labour, not himself:** A labourer is a citizen of the country. He is free to sell labour anywhere. Thus labourer is only selling his services not himself.
3. **An active factor:** Other factors of production depend upon labour for productivity.
4. **A perishable factor:** Labour is more perishable than other factors of production. If time passes, it lapses forever.
5. **Weak bargaining power:** Labourers are generally poor people. Labourer has not the same power of bargaining as their employers. This is because of their poverty and weak bargaining power, that workers are exploited.
6. **Man, not a machine:** A labourer differs from machine. He cannot perform services like machine. After all labourer is man and he has emotional feelings. If favorable environment is around the surrounding, labourer can work efficiently otherwise he will not work efficiently.
7. **A mobile factor:** Labour is mobile. It can go from one country to another for

occupation. Man moves from one place to another from a low paid occupation to a high paid occupation.

8. **Supply Independent of its demand:** The supply of labour is always independent of its demand and cannot be easily and quickly increased or decreased.
9. **Differences in efficiency:** All workers are not equally efficient. Like machinery every worker cannot perform their task in the same way. Some workers have better training and higher efficiency.

Types of Labor

1. **Skilled labor**

   Specialized and trained labor for specific jobs is known as skilled labor, viz, carpenters blacksmiths, mechanics, drivers, well – borers, etc. Wages of the skilled workers whether engaged permanent of casually, are always higher than those of the other categories of labor.
2. **Semi-skilled labor**

   Semi-skilled labor does the job which cannot be taken up by ordinary labor, but at the same time does not require any elaborate training. Such jobs can be performed after some experience of working with the experienced workers. The wages of such workers are a little higher than those of the ordinary unskilled laborers.
3. **Unskilled labor**

   It is ordinary labor employed for manual work, which does not need any training of specialized nature. It does not mean, however, that with experience the efficiency does not increase. Unskilled labor is generally engaged in field work as cattle attendants, cotton pickers, etc.

2.2 Capital

Capital is the man made physical goods used to produce other commodity and services. In the ordinary language, capital means money. In Economics, capital refers to that part of man-made wealth which is used for the further production of wealth. According to Marshall, “Capital consists of those kinds of wealth other than free gifts of nature, which yield income”.

Money is regarded as capital because it can be used to buy raw materials, tools, implements and machinery for production. The terms capital and wealth are not synonymous. Capital is that part of wealth which is used for the further production of wealth. Thus, all wealth is not capital but all capital is wealth. Capital has been as that part of person's wealth, other than land, which yields an income or which aids in the production of further wealth.

Capital and Wealth:

The capital is required in production. In modern economy the production depends not only on land and labour but capital is also equally important factor of production. If wealth is not used in production process it is not said to be a capital, it is only a wealth. For example, basically tractor is capital asset as it can be used in production of farm, but if tractor is kept idle without use it cannot termed as capital for that particular period of time. In such condition, it is only wealth. Thus, the unused wealth cannot be considered as capital. Hence all capital is wealth but all wealth is not capital.

Capital and Money: In the ordinary language, capital is used synonyms with money. Money is also wealth and part of wealth used in production is called capital. In production process money is not used as such and hence it cannot be termed as capital. We can use money for purchasing capital assets and hence money itself is not capital.

Characteristics of capital

1. **A Capital is a passive factor of production:**
   Capital is unable to produce without land and labour. Thus it is a passive factor.
2. **A man made factor:**
   Capital is a man-made factor whose supply is increased or decreased by the efforts of man. Capital is also called stored up labour.
3. **A Mobile factor:**
   Capital is the most mobile factor of production. It can be transferred from one place to another.
4. **Depreciation:**
   If capital is once used for production it depreciates which depending on the durability of the capital asset.
5. **A secondary factor of production:**
   Capital is a man-made factor whose supply is increased or decreased by efforts

of man. So it can be considered as secondary factor. Capital is not an indispensable factor of production, i.e. Production is possible even without capital

6. **Elastic supply:**
   The supply of capital assets can be increased through higher saving.
7. **Capital lasts over time:**
   A plant may be in operation for a number of years then it should be replaced with advanced technology.

Function of Capital:

1) Increasing the productivity of land and labour:
   Capital increased the productivity of land and labour, Which ultimately enhance the production.
2) Provision of subsistence:
   If capital is available to the marginal people, they can utilize it and run their family very well. Suppose 3 or 4 pigs were reared by a poor people it will give him sufficient income to survive his family.
3) Increased employment:
   A increased employment opportunity is another important function of capital. If sufficient supply of capital is made, it will enhance production which will in turn give employment.
4) A means of adapting technical progress: \
   Capital is important to adopt the new and high technology in production.

2.4 Entrepreneur (Organization /Enterprise/Management):

An entrepreneur is a person who combines the different factors of production i.e. land, labour and capital in the right proportion and initiates the process of production and also bears the risk involved in it. Entrepreneurship is risk taking, managerial, and organizational skills needed to produce commodity and services in order to gain a profit. Entrepreneur is not only responsible for producing the socially desirable output but also to increase the social welfare.

Functions of an Entrepreneur

1. **Choice of profitable investible opportunities:**

Searching for a new and most promising and profitable idea available in the market is the foremost function of an entrepreneur. This is known as identifying profitable investible opportunities.

2. **Risk taking:**
   Risk means uncertainty. It may be physical or market risk. The business cannot be always in profit. Sometimes losses may happen that need to accept. Risk taking is therefore becomes an important function of an entrepreneur.
3. **Deciding the size of unit of production:**
   An entrepreneur has to decide the size of the unit -whether big or small depending upon the nature of investment and demand for the commodity.
4. **Making innovative production:**
   An entrepreneur is an innovator of new markets, new products and new techniques of production.
5. **Deciding the location of the production unit:**
   A rational entrepreneur will always locate his unit of production nearer to both factor market and the end-use market so as reduce the transportation and storage cost.
6. **Selecting the optimum combination of factors of production:**
   The entrepreneur is responsible for optimum combination of factors of production. Appropriate combinations he should combine so that maximum output is produced at minimum cost.
7. **Deciding the reward payment:**
   The factors used in production have to be rewarded on the basis of their contribution. Measuring the productivity of the factors involved in production and the payment of reward is the crucial function of an entrepreneur.

Teaching Tips:

- Group discussion about the different concept on economics given by different economist.
- Prepare list of different types of goods

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UNIT-2

Farm Budgeting

Learning outcomes:

After completion of this chapter, the student will be able to know:

1. Explain meaning and concept of Farm Budgeting
2. Describe steps in Farm planning and budgeting
3. Prepare farm Record, Account and Farm Inventory
4. Keep farm accounting

1. Farm Budgeting

1.1 Partial and Complete Budgeting

Farm budgeting refers to the planning of the judicial use of agricultural resources or the attainment of set objective. Well planned farm plan shows the crops and livestock to be grown and reared, practices to be followed for their production, combination of different enterprises, use of farm resources and the investment to be made in the fixed and current assets, volume and place of marketing and other similar details. The process of expressing such farm plan into a monetary terms by estimation of costs, investments, returns and net income is called farm budgeting. Thus, it is the method of estimating expected income, expenses and profit for a particular enterprise or a whole farm business. Farm budgeting is used to select the most profitable plan among the number of alternatives and to test the profitability of any proposed change in plan. It involves testing of a new plan before implementation so as to be sure that it will improve profit. Farm planning and farm budgeting goes side by side as farm budgeting refers to converting farm planning into monetary terms.

Types of farm budgeting

Basically, there are two types of farm budgeting:

a) Partial budgeting, and

b) Complete budgeting

a) Partial budgeting:

Partial budgeting refers to the process of estimating the returns from a part of business.

It takes into account one to a few activities or a enterprise rather than a whole farm. For example: to estimate the costs and returns from growing a *ropani* of cauliflower in place of wheat. Partial budgeting is commonly used to calculate the expected change in profit for a proposed change in the farm business. It is best adopted to analyze relatively small change in the whole farm.

Merits:
It is simple, easy and quick as it can measure the changes in business without complete reworking of the whole plan.

Demerits:

1. Fails to consider all the relevant factors for maximizing net return of the whole farm.
2. Overlooks the complementarity and competition between different enterprises
3. Doesn't allow substitution between farm resources
4. Can't explain the allocation of joint costs between different enterprises.
5. Changes in the farm plan or farm business which could be analyzed using the partial budgeting techniques are of following three types:

Enterprise substitution: This includes a complete or partial substitution of one enterprise for other. For example: substitution of maize for tomato.

Input substitution: This includes a substitution of one input for other,. For example: machinery for labor (human and animal), hybrid seed for local, changing the breeds of livestock and poultry, changing the proportion of chemical and organic fertilizer, etc.

Size or scale of production: Partial budgeting can also analyze the change in size of single business or the total size of the farm business as a whole. For example: buying or renting of the additional land, leasing in or out of the additional land, expansion or contraction of enterprise, etc.

For example: Partial budget for selection of soil versus foliar application of nitrogen on paddy

Debit		Credit	
Increase in costs per *ropani* Costs of spraying 0.5 hour with foot sprayer Thrashing and winnowing cost for 0.3 quintal @Rs. 300 per quintal Marketing costs @Rs. 1/Quintal	Rs. 150 90	Decrese in costs per *ropani* Fertilizer cost= 8 kgs of Urea @Rs. 30/kg	Rs. 240
Decrease in returns per *ropani*	0	(b) Increase in returns per *ropani* 1. Paddy yield 0.3 quintal @ Rs.1200 per quintal 2. Paddy straw o.3 quintal @ Rs. 8 /quintal	360 30
Total of (a) and (b)	240	Total of (a) and (b)	630

Net gain (change in income B-A) = Rs. 390

Decision: This partial budget analysis shows that the foliar application of nitrogen increase net returns per *ropani* by Rs. 390 over soil application in paddy.

b) Complete budgeting: Complete budgeting refers to the estimation of budget for the farm as a whole. It involves the complete re-organization of the overall farm business. Complete budgeting is the statement of expected income, expenses and net profit of the farm as a whole. It considers all the farm resources and estimates the cost and return from all the enterprises in the farm. Complete budgeting is adopted while beginning a new farm business or when drastic changes are contemplated in the existing organization. For example: establishment of new poultry farm, switching out totally from the cereal farming to the commercial vegetable farming, etc.

Merits:

1. Takes an account of the farm as a whole rather than few resources or enterprises.
2. Considers supplementarity, complementarity and competition among different enterprises.
3. Allows space for the substitution among farm resources.

Demerits:

1. It is tedious, complex and time consuming

2. Requires more data in accurate form

Complete budgeting versus Partial budgeting

Complete Budgeting	Partial Budgeting
Accounts for drastic changes in the organization and operation of the farm.	Accounts for minor changes only.
All the available alternatives are considered. Used for estimating the results of entire organization and operation of a farm	Only few, generally two alternatives are considered. Used for studying only net effect, in terms of costs and returns of relatively minor changes.

Steps in Farm planning and budgeting

Following steps are followed in preparing farm plan with budgeting technique:

1) Preparation of resource inventory:

Development of a good and realistic farm plan rests upon the accurate inventory of the available farm resources. Resources are the means of production and profit. The type, amount and quality of the resources available in the farm determine the size and enterprise of the whole farm. Complete list of resources, such as land, labor, livestock, buildings, machineries, capital, management, etc should be prepared. Such inventory helps in the assessment of resource limitations and production capabilities of the farm. Based on these informations, farm plan can be prepared realistically.

2) Preparation of farm map:

Prepare a arm map showing all the physical features such as buildings, soil types, topographical features, roads and pathways, fences, sources of irrigation and irrigation canals, drainage, etc.

3) Identification of enterprise:

Based on the resource inventory, certain crop and livestock enterprise will be feasible alternative. All the possible enterprises should be considered carefully so as to avoid the chances of missing the potential one. While selecting the enterprise, complementarity, supplementarity and competitive nature of different enterprises should be taken into consideration for the optimum use of arm resources.

4) Specification of the technical coefficients of production:

All the relevant information regarding improved farming practices and various input-output factors applicable in the local conditions should be collected from the reliable sources. Such information could be obtained from District Agriculture Development Offices (DADO), District Livestock Service Offices (DLSO), Nepal Agriculture Research Council (NARC), Different agriculture research stations, crop cutting surveys and farmer's own knowledge and experiences. Any crop can be produced by any of the various different processes. For example: tomato can be cultivated on open land as well as under plastic tunnels, using improves as well as local varieties, using organic as well as chemical fertilizers. Farmer can select the most efficient one based on cost and return involved. Each enterprise should be defined on small unit such as one *ropani* or hectare for crop and one head for livestock. The resource requirements per unit of each enterprise or the technical coefficient must be estimated. The technical coefficient becomes very important in determining the optimum size of enterprise and the final enterprise combinations.

5) Specification of appropriate prices:

As the planning is done prior to the implementation of the plan, prices of the inputs and outputs may differ at the time of implementation. So, prices should be specified during planning and budgeting. One can use simple prediction model such that the prices next year will be the same as they are this year. Alternatively, we can also take the average of the last three years prices. In some developed countries like USA, there is provision of price forecasting and development of out-look information. While specification of the prices, previous year's average price, expected future price, nature of technology change, etc. should be considered.

6) Estimation of gross margins:

After identification of the probable enterprises and specification of technical coefficient of production and appropriate prices, gross margin is estimated for a single unit of each enterprise. Gross margin is the difference between total income and the total variable cost. Calculation of gross margin requires the farmer's best estimate on yields from each enterprise and expected prices for the output. The estimation of total variable cost requires a list and amount of each variable input needed, their respective prices. Then after, the gross margin for each enterprise can be compared.

7) Analysis of the existing farm plan:

Current farm plan is examined based on the variable costs (labor, seed, fertilizer, plant protection measure, irrigation, etc) involved and gross income from various enterprises and the returns to fixed farm resources with respect to each farm enterprise by deducting variable costs from the gross income. Different cultivars of crops and breed of livestock and poultry and resource use pattern is also analyzed. Such an analysis will give an idea regarding the weakness of the current plan. Such drawbacks will provide guidelines for making improvements in the alternative plan. For example, less area under more profitable crop, use of local varieties instead of high yielding varieties.

8) Assessment of the risk on the farm:

List of the probable risks associated with the farm business should be made. As far as possible, risk mitigation or minimization strategies should also be planned. For example, provision of storage of crop during strikes, irrigation plan during dry periods, plant protection measures, etc.

Selection of the farm plan based on the profitability and predictability of available alternative farm plans:

Based on the profitability and practicability of all the available alternative farm plans, the optimal one is selected. Costs and returns from each plan is worked out to select the potential one which gives the highest returns under given resource restrictions. Alternative farm plans are evaluated based on various things like resource requirement, probable income, level of risk associated, etc. Farmer can select the plan which meets the set objective and gives him the highest level of satisfaction.

9) Development of the whole farm plan:

When all the information required are gathered and the best farm plan is selected, the whole farm planning is done. While planning, the most limiting resources are identified and the combination of enterprises which yields highest gross margin per unit resources are selected. Farm budgeting is also done simultaneously for the calculation of estimated costs, returns and profits.

10) Implementation of the plan:

Once the optimal feasible plan is prepared, the next step is its proper implementation.

The better and more realistic is the plan, the more likely that it can be carried out and the expected benefit be achieved. Activities should be carried out in the correct way and in the direction of achieving objectives set earlier. Plan implementation must be flexible. It should be able to respond intelligently to the changed circumstances. Certain technological change, price variation, changes in economic and political environment are inevitable, so adjustments should be made accordingly. For example, if there is change in prices of inputs and produce, farmer could select alternative feasible cropping pattern or make adjustments in the input combinations.

2. Farm Record, Account and Farm Inventory

Introduction

The success of any business lies on record keeping. In the present era of industrialization and globalization, farming industries have become more and more commercialized. Management of such farm business for the purpose of optimizing profit requires wide range of information on physical and financial performance. Moreover, reliable and accurate data on input-output relationships, quality and quantity of resources available, returns from each enterprise of the farm, etc are needed for proper farm planning. Human beings are forgetful by nature. In addition, in case of commercialized farms operating in large scale, all the information on inputs and outputs can't be memorized. Planning based on accurate and reliable farm records is more realistic and successful than those based on the guesses and hunches. Thus, for the purpose of efficient operation of the farm business and profit maximization, record keeping and accounting is very much essential.

Farm record

Farm record is an account of various activities carried out in the farm on the regular and systematic basis. It includes land size, number of livestock and equipments in the farm, procurement and utilization of arm inputs, sales of the farm outputs, etc. Farm record keeping is both the art and science of recording business transactions regularly and systematically in a book, so that their nature, extent and financial effects can be readily ascertained at any time of the year (Johl and Kapur, 2001).

Advantages of farm record keeping:

a) Basis for proper farm planning and diagnosis:

Information regarding physical and financial assets, costs involved and returns from each enterprise of the farm, etc are required for the proper farm planning. Farm record provides all these information required for the diagnosis of management problems and sound planning.

b) Means to improve managerial ability of the farmer:
Farm record helps the entrepreneur farmer to organize and manage his farm in better way. He can make decision regarding changes in the economic environment. He can drop out or scale up some enterprise from the farm plan over time, depending upon whether he is making loss or profit from such enterprise.

c) Information regarding the existing resource use pattern:
Farm record provides information regarding the existing resource use pattern in the farm which is very useful in making adjustments for the minimization of costs and maximization of profit.

d) Means to increase income:
With the information about present and potential operation cost and return from the farm, farmer can better utilize his farm resources. He can examine and compare the profitability and costs involved for different enterprises and drop out the less profitable ones. He can also locate the weak points in the farm organization and correct them on time. This will help farmer to cut off the cost and increase income.

e) Basis for farm credit and financing:
Well recorded farm records and accounts depict the production and income potentialities and credit worthiness of the farm. Public financing institutions like banks and cooperatives require net worth statement before providing credit to the farmer.

f) Basis for government policies:
Farm records and accounts provide information required for examining and development of government policies such as land policies, price policies, subsidies, tax policies, crop insurance, etc.

g) Basis for conducting research in farm management:
Properly maintained farm records are the basis for conducting research in farm management.

Problems in farm record keeping in Nepal

a) Farming at the subsistence level:
Majority of the farms in Nepal are operating in subsistence level. Farming is considered as means of livelihood rather than the business. Thus, there is not any incentive for keeping records in subsistence nature of farming. Marginal farmers can't hire trained accountants for helping them in farm accounting.

b) Laborious nature of farming:
Farming is a laborious job requiring both physical and mental work. Farmer spends most of his time in farm from dusk to dawn and gets exhausted enough in the evening to keep records of the farm transactions on daily basis.

c) Illiteracy and lack of business orientation:
Literacy level of the Nepalese farmers is still very low. Thus, he is unaware of the importance of record keeping. Moreover, farming is considered as basis of livelihood rather than a business.

d) Complex nature of agribusiness:
Agribusiness is a biological industry, affected by weather and other natural risks and uncertainties like pest and disease epidemics, drought, flood, landslide, earthquake, etc. Situation is further exaggerated by political and economic factors such as political instability, strikes, price change, etc. thus, it requires sophisticated accounting system which can handle all those complexities associated in agribusiness.

e) Insufficient extension service:
Adequate numbers of trained specialist in farm management are not available in Nepal who can help farmers in record keeping and accounting.

f) Unavailability of handy/suitable farm record book:
Standard, simple to understand and maintain record books are not available, which distracts farmers from record keeping. Majority of the farmers are illiterate and innumerate who lacks knowledge on the techniques of accounting.

g) Taxation fear:
There is no tax on agricultural income as such in Nepal till date. Farmers are afraid of taxation if their income shoes high in their farm records and accounts.

Types of record keeping system

There are different types of record keeping system which are discussed briefly hereunder:

a) Single and double entry system:

Single entry system is the method of recording every transaction of the business in single fold, without separate allocation of income and expenses.

In double entry system, every transaction is recorded in two fold aspect, i.e., both the debit and credit entry. Double entry record keeping system permits the entry of both receipts and expenses to each transaction of the business. However, this system requires more skills and detailed information. Thus, this system is considered more complex than single entry record keeping system.

b) Cash or accrual system:

In the cash system of record keeping, income is recorded in the year it is actually received, either in the form of cash or kind. Likewise, expenses are also deducted in the year it is actually paid. In contrary to this, in accrual system, irrespective of the time of payment receipt, income is included for the year in which it is earned. Expenses are deducted during the year when they are incurred, irrespective of their payment.

c) Hand or computer summarization:

Simple records can be summarized by hand while the complex ones involving various details require computers. The second one is the most preferred these days as it saves time, labor, encourages precision and facilitates analysis as and when necessary.

Types of farm records

Farm record can be broadly classified into following three types:

1. Farm inventory
2. Farm physical records, and
3. Farm financial records.

1. Farm inventory:

Farm inventory is the initial step in farm accounting. Farm inventory is the complete list of all the physical assets that a farm owns, along with their values at a specific

date, generally at the beginning and the end of each agricultural year.

Taking an inventory of farm involves following two steps:

a) Examination of physical assets: It involves complete listing of all the physical assets of the farm such as land, buildings, fences, machineries and equipments, livestock, etc. Physical counting is done to verify numbers, weights and measurements. Losses, gains, wastages and shrinkages should also be considered.

b) Valuation of physical assets: Once the physical assets are counted and listed, the next step is to place value on each item, using an appropriate valuation method. However, the nature and purpose of an asset generally determine the best method.

Some of the commonly used methods of valuation are as follows:

Valuation at cost or market price (whichever is lower):
In this method, value of the asset is estimated at the cost or market price, whichever is lower. This method is used for the valuation of purchased farm inputs or supplies. However, this method can't be used for the valuation of farm products/outputs. Also, effect of inflation and deflation are not considered in this method. Initial investment value is of limited use when considered somewhere in the middle of the business.

- Valuation by net selling price:
  This method is usually applied for those assets which are primarily held on the farm for sale. It represents the market price less the marketing costs. This method is suitable for the farm produces, i.e., crops and the livestock produced for the market. It has limitation for use in valuation of building and machineries for which no actual market may exist.
- Valuation at cost minus depreciation:
  This method is commonly used for the valuation of working farm assets such as machinery and breeding livestock. This method assumes that the purchase price of an asset is an aproximisation of the value of the asset and thus its value in the following years can be determined by deducting depreciation from its cost.
- Valuation by replacement cost less depreciation:
  In this method, assts are valued at what it would cost to reproduce them at present prices and under present methods of production. This method is suitable for valuation of durable assets such as buildings, particularly where wider price

changes may occur. This method should be used properly as it can often lead to overvaluation.

- Valuation by income capitalization:
  This method is used for the valuation of the farm assets whose contribution towards the income can be measured for each production period and which have a long life. For example, land. Following capitalization formula can be used for this purpose:

$$\text{Present Value (PV)} = \frac{\text{Constant return over infinite number of years in future (R)}}{\text{Interest rate per annum (r)}}$$

However, in practice, neither the annual income nor the interest rate in future can be estimated accurately. Thus, this method is generally used in combination with other methods.

Summarization of the method of valuation:

S.N.	Valuation method	Used for
1	Cost or market price (whichever is less)	Farm supplies
2	Net selling price	All the assets that will be sold within the year
3	Cost less depreciation	Working capital assets (machineries and equipments), buildings constructed shortly
4	Replacement cost less depreciation	Farm building (constructed long time ago)
5	Income capitalization	Farm land

Depreciation

Depreciation is the word used to describe the reducing value of an asset like farm building, tractor or implements, as a result of the use, wear and tear, accidental damage and time obsolescence. Each year, the value of a piece of equipment goes on decreasing. Although it doesn't cost actual cash, each year a little bit of the value of the equipment is used up. And such used up value is a cost to the farm. It is usually a fixed cost as the equipment is used for more than one enterprise for more than a year.

Depreciation involve spreading of the original cost of long lived assets over it's entire

useful life. Based on the nature of assets and the extent of use, depreciation cost may be spread uniformly over the entire useful life of an asset or can be charged relatively higher during the early life of an asset.

Methods of calculating depreciation:

a) Straight line method:

In this method, the annual depreciation of an assest is calculated by dividing the original cost of the asset less salvage value by the expected years of life. Mathematically,

$$\text{Annual depreciation (AD)} = \frac{\text{Original cost (OC)} - \text{Salvage value (SV)}}{\text{Expected life (EL)}}$$

Here, annual depreciation is constant throughout the useful life of the asset.

For example: For a plough with useful life of 10 years, whose cost is Rs. 2,000 and salvage value is Rs. 200, what would be the annual depreciation?

Solution:

$$\text{Annual depreciation (AD)} = \frac{\text{Rs.2000} - \text{Rs.200}}{10}$$

= Rs. 180/year

This method is easy, simple and applicable for most of the purposes. It is thus useful for durable assets like building and fences which may require uniform maintenance during the life time. This method is unrealistic as it assumes equal loss in value every year during the entire expected useful life of an asset. For example: tractor depreciate much more during the first year than in the later years.

b) Annual revaluation:

In this method, the market value of the asset is estimated in the beginning and at the end of year inventory and then the difference is taken as depreciation.

For example:

Value of a water pump at the beginning =Rs. 5,000
Value of a water pump at the end = Rs. 4,500
Depreciation = Rs. 5000- Rs. 4,500
= Rs. 500

This method is useful for livestock in the early years of life, i.e., in the appreciation

phase. However, annual revaluation of farm assets like building and machineries which are not brought and sold frequently becomes difficult. So, this method is of limited use in such cases.

c) Declining balance method:

In this method, a fixed rate of depreciation is used for every year and applied to the remaining value of the assets at the beginning of each year. The fixed rate is reduced from the balance each year unless the salvage value is reached and no further depreciation is possible. There occurs higher depreciation change during the earlier life of the assets and lower charges in the later years. The assumed constant rate of depreciation should be nearly twice that used under the straight line method.

For example:

Water pump of Rs. 2400 has an expected life of 20 years and a salvage value of Rs. 400. The rate of depreciation would obviously be 100 percent under the straight line method. Hence, a rate of 200 percent depreciation will be used in this method. The calculation of depreciation would be as follows:

Table 8.1: Calculation of depreciation using declining balance method

Year	Value at the beginning of the year (Rs.)	Annual depreciation	Remaining balance (Rs.)
1	2400	2400 X 0.2 = 480	2000 - 480 = 1920
2	1920	1920 X 0.2 = 384	1920 - 384 = 1536
3	1536	1536 X 0.2 = 307.2	1536 - 307.2 = 1228.8
4	1228.8	1228.8 X 0.2 = 245.76	1228.8 - 245.76 = 983.04

After the 4th year, the same procedure is continued until the remaining balance reduces to an amount equal to the salvage value, Rs. 400 in this case.

This method is useful in a situation where an asset depreciates at a faster rate in early period of life, for example, machineries and auto-mobiles.

However, the limitation is that it is more complicated than straight line method.

d) The Sum-of-the-year digits method:

When it is desirable to distribute depreciation expenditure more heavily in the first years of the use and more lightly in the later year, the sum-of-the years digit method is highly recommended. Following formula is used for the calculation of annual depreciation in this method:

Annual Depreciation (AD) = F x Amount to be depreciated

where, F = fraction for any year, such that,

$$F = \frac{\text{Years of life remaining at the beginning of accounting period}}{\text{Sum of the years of life of the asset}}$$

Amount to be depreciated = Cost – Salvage value

Example: Any assets with the original cost of Rs. 5000 and expected life of 10 years have the salvage value of Rs. 500. Calculate the annual depreciation of the asset using sum-of-years digit method.

Solution:

Year	Value at the beginning of the year (Rs.)	F	Annual depreciation	Remaining balance (Rs.)
1	5000	10/55	10/55 (5000-500)= 818.20	5000-818.2 = 4181.8
2	4181.8	9/55	9/55 (5000-500) = 736.36	4181.8 - 736.36 = 3445.44
3	3445.44	8/55	8/55 (5000-500) = 654.55	3445.44 - 654.55 = 2790.89

Same procedure is continued until the remaining balance reduces to an amount equal to the salvage value, Rs. 500 in this case.

Limitation of this method is that it is more complicated than straight line method.

2. Farm physical records

Farm physical records give an idea regarding the physical aspects of the farm business operation. It simply records the physical efficiency of the farm, but does not indicate the financial position. Physical record consists of following records:

i) Farm maps

ii) Farm production records

iii) labor records

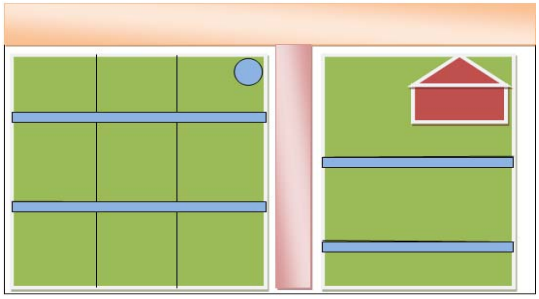
iv) Livestock feed records

i) Farm maps:

Farm map indicates the relief features of the farm at a glance. It shows the layout and area of the farm, soil type, topography, source of irrigation, farm buildings, fences, roads and passages, etc.

Example:

Farm layout map of Hariyali Farm



Farm boundary	
Main road	
Approach road	
Irrigation canal	
Well	
Farm house	
Field	

ii. Farm production records:

Farm production records provide regarding inputs and outputs related to various enterprises on the farm. Production efficiency of each enterprise of the farm can be measured with the help of farm production records which will eventually help farmer to improve his management and take rational decisions by comparing production efficiency of different enterprises.

Example:

Name of Enterprise	Land size or (Herd or folk size)	Expected yield/hectare	Total yield (tons/quintals/Kgs)

iii. Labor record:

Labor record traces out the activity wise labor requirement for each enterprise in the farm. Labor figures may be used to select a particular enterprise based on the labor requirement and profit yield.

Example:

Name of Enterprise:

Area or Herd size:

Date	Activity	Number of people working	Number of days taken	Total number of days taken	Wage rate (Rs./Person)	Total wage paid (Rs.)

iv. Livestock feed record:

In specialized commercial livestock farms like dairying, poultry business, this type of record is maintained. Purpose of the feed record is to determine the feed efficiency.

Example:

Feed Record Month :Ashad

Date	Jersey cow: 10Numbers		
	Straw bhusa (Kg)	Green fodder (Kg)	Concentrates (Kg)
1	50	300	40
2	50	300	40
3	50	300	40
4			

3) Farm financial records:

Farm financial records are related to the financial aspect of the farm business. There are various types of financial records like,

i. Farm cash analysis account,
ii. Classified farm cash account and annual farm business analysis,
iii. Supplementary financial records: a) capital assets sale register, b) cash sale register, c) credit sale/purchase register, d) wage register, e) fund borrow/repayment register, f) farm expense (Paid in kind) register.

Example of Cash Analysis Account Book

Sales and receipts						Purchases and expenditures						
Date	Details	Total received	Cereal	Livestock	Other	Date	Details	Total p	Wages	Feed	Seeds	Others
60/61						60/61	Wage	3400	3400			
	Opening	11000					Feed	1400		1400		
	Cereal	4400	4400				Seed	460			460	
	Livestock	k 1500		1500			Other	500				500
	Others	700			700			5760	3400	1400	460	500
		17500	4400	1500	700							

Year 2072/73

Opening balance cash in the bank: Rs. 11740

Closing balance being cash in bank: Rs. 11740

Farm accounting:

Farm accounting is simply an application of the accounting principles to the farming business. When different types of important information are recorded in the farm record book, accounting principles are applied on it for knowing the income status, profit and loss situation, financial condition and stability of the farm business at a particular point of time, cash inflow and outflow, etc.

Farm accounting maintenance of financial statement is needed to:

- analyze the financial performance and strength of the business
- analyze the efficiency of production
- justify the need for loan,
- document the loan repayment ability, and

- provide records for evaluation of investment alternative.

No single financial statement provides sufficient information on farm financial status. Coordinated financial accounting system comprising of balance sheet, income statement and cash flow statement may furnish such requirement.

a) Balance sheet:

Balance sheet is also known as net worth statement. It lists the assets and liabilities of a business together with the statement of equity or net worth. Here, the term balance is used as the sum total of the assets column is equal to the liabilities and net worth column. It shoes the financial condition and stability of the farm business at a particular point of time. In other words, it shows the value of assets that would remain if the farm business were liquidated and all the liabilities in the business are paid off. Balance sheet reflects three essential components, viz., assets, liabilities and net worth or owner's equity.

Mathematically,

Net worth = Assets – Liabilities

Assets refer to anything of value in the possessed by the farm business or a claim of the farm for anything of value in other's possession. Assets constitutes of farm inventory, farm cash and accounts receivable.

Farm assets are broadly classified as:

- Fixed assets: Such assets are difficult to convert into cash to meet any current obligations. For example: land, building.
- Working assets: Such assets are more liquid than the fixed assets. For example: Farm machineries and equipments, producing livestock.
- Current assets: Such assets are most liquid assets and are consumable within a year. For example: cash on hand or in the bank, seed, fertilizers, etc.

Liabilities can be defined as other's claim against the farm business, like mortgages, loans and accounts payable. It can be classified into three groups:

- Long-term liabilities: Those liabilities which can be deferred from 5 years to 20 years are classified as long term liabilities.
- Intermediate liabilities: Such liabilities can be deferred for the present. They have to be paid between 1 to 5 years period. For example: promissory notes and

medium term loans.

- Current liabilities: Those liabilities which have to be paid immediately, generally within one year. They can't be deferred. For example:

Example:

Closing Net Worth Statement/Balance Sheet of Hariyali farm, Ashad 31/2073

Liabilities (Rs)		Assets (Rs)	
Farm mortgage	1,00,000	Land – 1 hectares	75,000
Transport company	20,000	Farm building	20,000
Bishal Agrovet	2,000	Machinery	10,000
		Supplies	25,000
Total farm liabilities	1,22,000	Cattle dairy herd	30,000
Net worth	51,000	Accounts receivable	10,000
		Cash in hand	3,000
Total liabilities	1,73,000	Total Assets	1,73,000

b) Income statement

Income statement is also called 'Profit and Loss Statement', which shows the measure of revenue and expenses during a given accounting period. It can be prepared either for a single enterprise or for all enterprise of a farm business as a single unit. Income statement shows the performance of the farm business during the given agricultural period and thus provides guidelines for improving the farm efficiency in future. Measure of income provided by this statement is useful in tax payment determination, analysis of the business expansion potentiality, evaluation of the outcome of the business activity and justification of loan repayment ability. However, it fails to guide for family spending.

Example:

Income statement of Hariyali farm, Shrawan, 2072 to Ashad, 2073

Credits (Receipts)	Debits (Expenses)

Particulars Amounts (Rs.)	Particulars Amounts (Rs.)
Agro product (Crop sales) 1.1 1.2 1.3	1. Operating expenses 1.1 1.2 1.3
Sub-total	Sub-total
Animal (livestock sales) 2.1 2.2	2. Fixed expenses 2.1 2.2
Sub-total	Sub-total
Gross cash receipt from farm produce (1+2)	Gross cash expenses of farm (1+2)
Other receipts 3.1 3.2 3.3	3. Other expenses 3.1 3.2 3.3
C. Total receipts	D. Total expenses
Net cash income = (A-B) Net farm income = (C-D)	

c) Cash flow statement

Cash flow statement summarizes the cash inflows and outflow over a given accounting period. It provides an information regarding the timing and magnitude of cash flows. Thus, it guides in estimating following items:

- surplus and deficit cash period during an agricultural year, so that farmer could plan investment of income and loan,
- timing and magnitude of borrowing and repayment of loan, and
- the potential affects that the marketing patterns have on the need for borrowed funds.

The basic principle in the construction of a cash flow statement is that cash inflows equals the cash outflows. Cash inflow represents the amount of cash received during the accounting period. It consists of crop and livestock sales receipts, custom work

and government payments and such entries are made in the cash inflow records in the month in which they are received. The annual total cash infloe consists of:

- total cash available including borrowing
- new operating loans
- new intermediate and long term loans.

Cash outflow represents the cash expenditures for the farm business during the given agricultural year, including principal repayment, non-farm investment and home consumption. The annual total cash outflow consists of:

- total cash required excluding principal repayment
- principal repayment
- ending cash balance.

The cash flow statement helps in making rational decision regarding production, marketing and financial aspects.

For example: Cash outflow statement for tomato

Activity	Shrawan	Bhadra	Aswin	Kartik	Mangsir	Posh	Magh	Falgun	Chaitra	Baishak	Jestha	Ashad	Total
Cash Inflow Rs.													
Tomato fruit sold							141750	75000	66750				**283500**
Total Cash Inflow							141750	75000	66750				**283500**
Cash Outflow NRs.													
Buy Seed				2730									2730
Buy Fertilizer				6405			100						6505
Buy Pesticide						500	500						1000
Tractor hired				4500									4500
Labor hired (weeding, manuring, staking, irrigating, harvesting)				3000	3100	3000	3000	2900	2500				17500
Irrigation (electricity)					250	250	250	250					1000
Bamboo sticks/rope						5250	5250						10500
Total Cash Out flow				16635	3350	9000	9100	3150	2500				**43735**
Net Cash Flow				-16635	-3350	-9000	132650	71850	64250				**239765**

(Example of Cash outflow of Hariyali Farm, 2072/73

Table: Form format Farm (Example of Cash outflow of Hariyali Farm, 2072-73)

Item	Shrawan	Bhadra	Aswin	Kartik	Mangsir	Poush	Magh	Falgun	Chaitra	Baishak	Jestha	Ashad	Total
Cash Inflows													
1. Beginning cash balances	5,000												
Farm operating receipts:													
2. Crop sales					35,000				55,000				90000
3. Livestock and livestock product sales	800	800	800	800	600	500							4300
4. Custom work and other income													0
5. Government payments received				10,000									10000
Capital receipts:													0
6. Breeding livestock sales					40,000								40000
7. Machinery and equipment sales													0
8. Real state sales													0
Non farm income:													0
9. Wages and salaries												2,000	2000
10. Dividends and interest													
11. Sales of stocks and bonds													
12. Total cash available excluding borrowing													
Cash Outflows													
Variable cash expenses:													
13. Rents and leases													
14. Seed and feed	3000										5,000		8000
15. Fertilizer											8,000		8000
16. Supplies													0
17. Interest on operating loans	200	200	200	200	200	200	200	200	200	200	200	200	2400
18. Veterinary fees				200					150				350

19. Fuel				500								500	1000
20. Load, unload and transportation charges													0
Fixes cash expenses:													0
21. Taxes													0
22. Repair and maintenance					100					200			300
23. Interest on intermediate and long term loans													0
24. Insurance													0
Capital expenditures:													0
25. Purchase of breeding livestock					55,000								55000
26. Machinery and equipments													0
27. Real estate													0
Non farm investments:													0
28. Purchase of stocks and bonds													0
29. Other non farm investments													0
Personal expenses:													0
30. Income and social security taxes													0
31. Family expenses													0
32. Total cash required, excluding principal repayment													0
33. Cash available less cash required													0
Principal repayment:													0
34. Principal on operating loans													0
35. Principal on intermediate and long term loans													0

(Note: This table is separate page)

3. Farm Economics

3.1 Farm resources:

Farm resources are those inputs or resources that are used in the production process for the production of the farm produce. For example, farm yard manure (FYM), livestock, chemical fertilizers, water, seed, labor, etc. Farm resources can be broadly be categorized into two types, natural and artificial resources. Natural farm resources are those resources which occur naturally. For example, air, water, soil, solar energy, ecosystem, plants and livestock, human labor, etc. Artificial farm resources are those resources which are created by the human being for operating their farm business. For example, tractor and other machineries, farm implements, etc. Some of the farm resources such as seeds, fertilizers, feeds, etc can be stocked for the future use, which are known as the stock resources. However, some resources like labor (human and animal), flowing water in river can not be stocked for the future use, which are known as flow resources. Likewise, based on the level of enterprises and resource use, resources are classified as fixed and variable resources. Use of some resources such as fertilizers, seeds, water, feeds, etc. vary depending upon the level of enterprises, and are known as the variable resources. However, use of some resources such as buildings, machineries, farm implements are fixed irrespective of the level of enterprises and are known as fixed resources.

Farm power

There are different agricultural operations in any agriculture enterprise which needs power. Operations like seed bed preparation, cultivation, irrigation, manuring, harvesting, fodder and forage cutting, feed grinding, threshing, winnowing, transportation, etc need power to be accomplished. Different sources of power, namely human, animal and machinery are used for conducting those agricultural activities.

Human power

Human power is one of the readily available and mostly used farm power in agricultural operations. Small tools and implements are mainly operated by the human power. Human beings are also employed for accomplishing tasks like planting, hoeing and harrowing, manuring, crop harvesting, threshing, winnowing, grass cutting, etc. In developed countries, there is scarcity of human power but in least developed and

developing countries, there is surplus human power.

Human power is easily available and used for all types of work. However, it is the costliest power compared to all other farms of power. Efficiency of human power is also very low. In addition, human power requires full maintenance in while not in use and affected by weather condition and seasons.

Animal power

Animal power is one of the most important sources of power on the farm all over the world, especially the developing and least developed countries. It is estimated that nearly 80 per cent of the total draft power used in agriculture throughout the world is still provided by animals. Bullocks, donkeys and mules are the major source of animal power in the Nepalese context while buffaloes, camels, horses and elephants are also used for the farm work in other parts of the world. Agricultural activities like ploughing, transportation, etc are performed using animal power .Animals can be a very cheap source of farm power if raised by the farmer himself but it could be the most costly source if the animals are hired from outside. Animal power is easily available and can be used for all types of work. It requires less initial investment compared to other machinery power. In addition, they live on the farm produce and supplies manure to the field and fuels to farmers.

However, they are not very efficient and are affected by seasons and weather. They require full maintenance when there is no farm work, and creates unhealthy and dirty atmosphere near the residence.

Machinery power

It is one of the important sources of farm power. Tractors, oil engines, electrical machines, water pumps, etc are the machines used for performing various agricultural activities like ploughing, irrigation, harvesting, threshing, transportation, etc. Mechanical power is obtained through tractors and oil engines. The oil engine is a highly efficient device for converting fuel into useful work. Nowadays, electricity has become a very important source of power on farms all over the world. Hydro power and thermal power are the sources of electrical power which is largely used for irrigation and domestic water supply. Besides this, it is also used in dairy industry, cold storage, fruit processing, cattle feed grinding, etc. In addition to this, wind power

is also used in the operation of wind mill which is largely used for the winnowing of the cereal crops and seeds.

The efficiency of the machinery power is very high and is not affected by weather. They require less space and are the cheaper form of farm power. However, the major drawback is that they require higher initial capital investment. Good amount of technical knowledge is required for their operation and may cause great danger, if handled without care.

Resources are scare, thus the rational farmer has to give focus on the judicious utilization of resources.

Teaching Tips:

- Prepare farm budgeting
- Prepare a farm inventory
- Prepare a livestock farm record

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UNIT-3

Farm Planning

Learning outcomes:

After completion of this chapter, the student will be able to :

- Explain meaning and concept of Farm Management
- Describe nature of farm management and Relationship of farm management with other sciences
- Explain scope of Farm Management:
- Explain market linkage

1. Introduction to Farm Management

1.1 Definition, Nature and Scope of Farm management

1.1.1 Definition of Farm management:

(Sources: Johl,S.S. & Kapur, T.R., Farm Business Management; Shankhyan,P.L., Introduction to Farm Management)

The study of farm management is crucial and central to the whole discipline of agricultural economics. Agricultural economics involves the application of economic principles in agriculture. One of the important branches of agricultural economics is farm management.

Farm management comprises of two words; farm and management. Farm can be defined as a piece or pieces of land operated as single unit of agriculture enterprise under one management". 'Management means the act or art of managing. According to Gray, the art of managing a farm successfully, as measured by the test of profitableness, is called farm management. Farm Management is the decision making process whereby limited resources are allocated to a number or production alternatives to organise and operate the business in such a way as to attain some objectives.

Farm management is a branch of agricultural economics, which help to coordinate the limited scarce resources such as land, labor, capital and management with their alternative uses on farm in order to achieve the specific goals of continuous maximum profit of satisfaction as regular basis.

Farm management is a rational resource allocation proposition more particularly from the point of view of an individual farmer. On one hand, a farmer has a certain set of

farm resources such as land, labor, farm buildings, working capital, farm equipments etc; that are relatively scarce. On the other side, the same farmer has a set of goals or objectives to achieve, may be maximum family satisfaction through increasing net farm income.

Farm Management is a science, which deals with proper combination and operation of production factors including land, labour and capital. In this age of science and technology, success in business requires ability to harness scientific and technical knowledge. It involves having a personal command and clear hold on the technological, commercial and human aspects of business, which become interwoven into successful progress in business.

Some of the definitions of farm management given by expert and authorities are: -

"Farm Management as the sub-division of economics which considers the allocation of limited resources within the individual farm is a science of choice and decision making, and thus is a field requiring studied judgement" - Heady and Jenson.

"Farm Management" is the study of the business principle in farming. It may be defined as the science of organisation and the management for continuous profit" – Warren

Farm Management is that branch of agricultural economics, which deals with the business principles, and practices of farming with an object of obtaining the maximum possible return from the farm as a unit under a sound-farming programme.

"Farm Management is the science which considers the organization and operation of the farm from the point of view of efficiency and continuous profit"- Effersen

Farm management may be defined as a science which deals with judicious decision on the use of scarce farm resources, having alternative uses to obtain the maximum profit and family satisfaction on a continuous basis from the farm as a whole and under sound farming programmes. It deals with allocation of resources at the level of an individual farm

Farm management is a branch of agricultural economics, which deals with wealth earning and wealth spending activities of farmer in relation to the organization and operation of the individual farm unit for securing maximum possible net income

(Bradford and Jhonson)

Successful farm management requires not only to make decisions, but to make the correct decision that is right decisions at right time.

1.1.1 Nature of farm management

(Sources: Fundamentals of farm business management: S.S.Johl & T.R.Kapur)

A nature of farm management can be understood by following heads:

i. Practical Science:

Farm management is the practical use of different sciences. For instance, threshing of wheat by tractor treading, use of thresher, beating by stick, treading by oxen etc is practical application facts for selection of appropriate one for particular area. All these methods have their own pros and cons. A farm manager has to select a method which is more economical and practicable to this situation taking into consideration

ii. Profitability oriented:

An agronomist is always concerned with maximum yield per unit area irrespective of profitability of input use. Whereas, an economist is dealing with costs of production and decides output level of production to optimum level by taking financial implication and storage and transportation facilities. In the decision making process, profitability is thus the major criterion of selection of an enterprise.

iii. Broader field:

Farm management is a broader field for taking decisions by collecting information of different subjects for appropriate decision to the farmers for adoption or rejection of any technology. It is thus a much broader field, because it has to gather knowledge from many other sciences for making its own decisions. For right decision knowledge of all related subject is important.

iv. Integrating science:

Farm management is an integrating science in a sense that the facts and findings of other sciences are coordinated for the solution of various problems of individual farmers with a view to achieving certain desired goals.

v. Micro approach:

Farm management is also known as application of microeconomics and dealing with individual farm as unit of testing and recommendation. It studies the resource availability and suitable farm conditions.

vi. Farm unit as a whole:

In farm management all farming system components such as crops, cash crops, livestock, fruits and forest are taken as a whole for economic analysis. In farm management analysis, whole is considered to be the unit for making decisions because the objective is to maximize the returns from the whole farm instead of only improving the returns from particular enterprise or a practice.

1.1.2 Scope of Farm Management:

Farm Management is a branch of Agricultural Economics, Agricultural Marketing, Agricultural Policy and Development and Agricultural Financing. However, Farm Management is broader than any of the other areas of Agricultural Economics since knowledge of production economics, marketing, financing and government policy is useful in order to solve a farm management problem.

Farm management is generally considered to fall in the field of micro economics. Farm management deals with the business principles of farming from the point of view of an individual farm. It deals with the allocation of resources at the level of an individual farm. The primary concern of the farm management is the farm as a unit. Farm Management deals with decisions that affect the profitability of farm business. Farm Management seeks to help the farmer in deciding the problems like what to produce, buy or sell, how to produce, buy or sell and how much to produce etc. It

covers all aspects of farming which have bearing on the economic efficiency of farm.

It covers aspects of farm business which have a bearing on the economic efficiency of the farm. Thus, the types of enterprises to be combined, the kind of crops and varieties to be grown, the doses of fertilizer to be applied, the implements to be used, the way the farm functions are to be performed, all these fall within the scope of farm management.

1.2 Objective of Farm Management

Eight functions of farm manager have been proposed by Nielson:

1. Formulation of the goals or objectives of the farm
2. Recognition and definition of a problem of opportunity
3. Obtaining information and observation of relevant facts
4. Specification and analysis of alternatives
5. Decision making, choosing an alternatives
6. Taking action
7. Bearing responsibility for the decision or taking action
8. Evaluating the outcomes

Objectives

1. To examine pattern of production and resource use on the farm to achieve goal.
2. To identify the factors for the production and resource use on the farm.
3. To determine optimum in the resource use and the production pattern on the farm.
4. Increase Employment opportunities
5. Farm management as an education tool
6. Increase level of satisfaction and living standard of farmers
7. To suggest ways and means in getting the present use of resources to optimality on the farm.
8. Reduce level of poverty
9. Increase national income
10. Brings agricultural revolution

1.3 Relationship of farm management with different sciences

(Sources: Johl,S.S. & Kapur, T.R., Farm Business Management)

1. Economic Theory: Farm Management is that branch of agricultural economics, which deals with the business principles, and practices of farming with an object

of obtaining the maximum possible return. Farm management is the application of business principles in farming. It is only a specialized wider branch of the wider field of economics. The tools and techniques for farm management are supplied by the general economic theory such as the law of variable proportions, the principle of substitution and marginal analysis. Whereas the agricultural production economics is the general economics which deals with the efficiency of resource allocation in production economics.

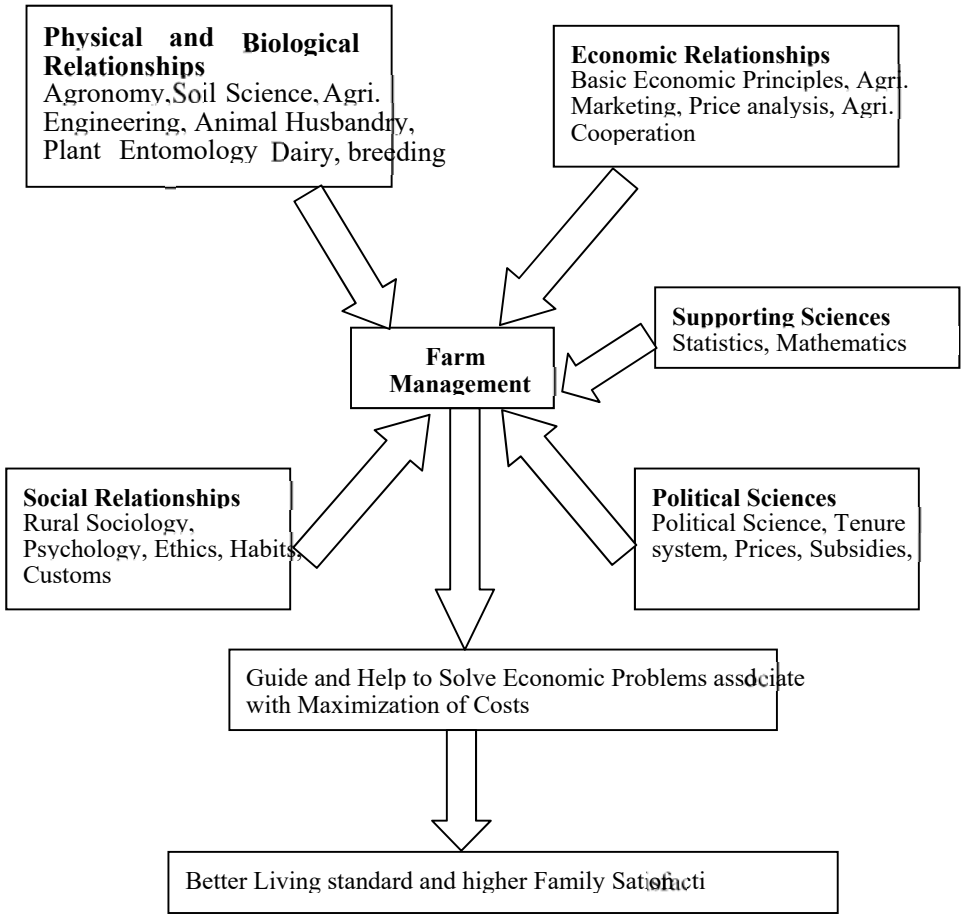

Fig: Relationship of farm management with other scien

(Sources: Johl,S.S. & Kapur, T.R., Farm Business Management)

2. Other social sciences: Psychology play important role on decision making. In decision making, many psychological aspects and mental reservations of decision maker come in, such as attitude towards taking risk and work under conditions of uncertainty. It helps selecting among different alternative.
3. Political Science: Different legislation, policy, plan and political actions of the

government affect the production decision of the farmer such as scale of production, restrictions or encouragement on growing of certain crops, livestock.

4. Support Sciences: Statistics is another science that has been used effectively and extensively by the agricultural economists and farm management specialists for analyzing different data.
5. Physical and Biological Sciences: Farm management has to depend on other physical and biological sciences. It relies closely on other branches of agricultural science such as soil science, animal health, veterinary science, agronomy, animal husbandry, agricultural engineering, forestry etc. they provide input output relationships in their respective areas in physical terms. Veterinary science tells about the different economic diseases.

2. Some Common Terminology used in Farm Management and Marketing

(Sources: Johl,S.S. & Kapur, T.R., Farm Business Management; Shankhyan,P.L., Introduction to Farm Management)

2.1. Productivity/Yield

Productivity is an average measure of the efficiency of production. It is the ratio of output to inputs used in the production process, i.e. output per unit of input. . In other words, it measures how efficiently production inputs, such as labor and capital, are being used in an economy to produce a given level of output. When all outputs and inputs are used for measuring the productivity, it is called total productivity. Outputs and inputs are defined in the total productivity measure as their economic values.

Mathematically, productivity is commonly defined as a ratio between the output volume and the volume of inputs.

$$\text{Productivity} = \frac{\text{Output produced}}{\text{Inputs used.}} = \frac{Y}{X}$$

where, Y = Volume of output

X = volume of inputs

For example, productivity of land refers to the amount of crops produced per unit of land. Productivity of rice is 7 tons/ha implies that 7 tons of rice is produced from one hectare of land.

Productivity is a crucial factor in production performance of firms and nations. Increasing national productivity can raise living standards of the people.

2.2. Cost Principle

(Sources: Agriculture finance and management; Johl,S.S. & Kapur, T.R., Farm Business Management; Shankhyan,P.L., Introduction to Farm Management)

Cost plays major role in taking production decisions. Also, costs are of due importance in price determination. In any farm production business, cost refers to the expenses incurred in producing a unit of a product in a particular period of time. Total cost of the farm consists of two types of costs: total fixed cost and total variable cost. Fixed costs are those cost which are incurred even if the output is not produced. They are irrespective of the level of production in short run, but are subject to the level of production in long run. For example: rent of the building and land, taxes, insurance, depreciation of machineries, etc. Variable costs are hose costs which are incurred only when the output is produced. Such costs vary with the level of production. For example: seed, fertilizers, etc. The more grain we produce, the more we incur cost on seed and fertilizers.

For profit maximization in short run, marginal costs are considered in decision making. Gross return must cover all the variable cost in short run. When marginal cost is equal to the price of the product or the marginal revenue, net revenue is maximized. Marginal revenue (MR) is the additional revenue from selling one more unit of output or change in total revenue per change in total output.

$$MR = \frac{d(TR)}{dQ} = \frac{P(dQ)}{dQ} = P$$

We also know, marginal cost (MC) refers to the additional cost of producing one more unit of the output or change in total cost per change in total output.

$$MC = \frac{\Delta TC}{\Delta Q} = \frac{\Delta(TFC + TVC)}{\Delta Q} = \frac{\Delta TFC}{\Delta Q} + \frac{\Delta TVC}{\Delta Q} = 0 + \frac{\Delta TVC}{\Delta Q}$$

Profit is maximized at the output level (Q) where MR and MC are equal.

i.e. π_{max}: MR=MC

At MR=MC level of input use, there may also be loss instead of profit in short run. But, at this point, loss will be minimized. So, the objective in this situation is to minimize loss.

In long run, gross return should be greater than the total cost (fixed cost + variable

cost). In such situation, farm operator should go on using resources as long as the marginal revenue remain greater than the marginal cost. The objective in long run is to maximize profit rather than minimization of loss.

2.3 Principle of substitution

(Sources: Agriculture finance and management; Johl, S.S. & Kapur, T.R., Farm Business Management; Shankhyan,P.L., Introduction to Farm Management; Fundamental of economics and Management, 2014, Institute of Cost Accountant of India)

This is one of the important economic principles applied in farm financial management. There are two types of principle of substitution:

i. Principle of factor substitution/ Least cost combination principle
ii. Principle of product substitution/ Principle of combining enterprises

Principle of factor substitution:

In agriculture, most of the products can be produced with two or more crucial inputs and various inputs can be substituted in varying degrees for producing a given output. Thus a rational producer has to choose a particular combination of inputs which would be most profitable. For example: a) fertilization of field crops either by chemical fertilizer or by organic fertilizer, b) grain ration or forage ration for feeding dairy cattle, c) hand weeding or application of herbicide, etc. Problem here is to find out the least cost combination of inputs for producing a given output. One can use either graphical or tabular method for solving this problem.

Graphical method

Steps:

1) Computation of substitution ratio (marginal rate of substitution): It is the rate of exchange between two productive resources which are equally preferred. Or, the quantity of one input to be sacrificed or given up in order to gain another input by one unit in process of substitution. At first, the substitution ratio of two inputs in the question must be calculated. It is to be noted that, the cost minimization will not depend only upon the cost of inputs and price of the products, but also on the rate of substitution. Mathematically,

Substitution Rate (Marginal rate of Substitution) MRTS of X_1 for X_2

$$\text{i.e., MRTS } X_1.X_2 = \frac{\Delta X2}{\Delta X1} = \frac{\text{Quantity of input replaced}}{\text{Quantity of input added}}$$

Depending upon the rate of substitution between the inputs, different types of isoquant are obtained.

Substitutes :

If two resources X1 and X2 are said to be substitute (perfect substitutes), for example – family labor and hired labor, owned bullock labor and hired labor, farm produced and purchased input etc. , their iso-quants are linear and negatively sloped.

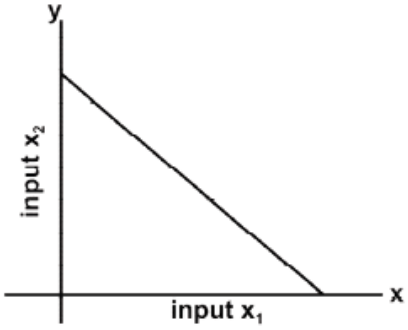

Figure: Iso-quant of perfect substitute resources

1. Complements :

Resources which are used together in fixed proportions are called perfect complements when inputs (X1, X2) are perfect complements, iso-quants are L shaped. For example: tractor and driver, a pair of bullocks and human labor etc.

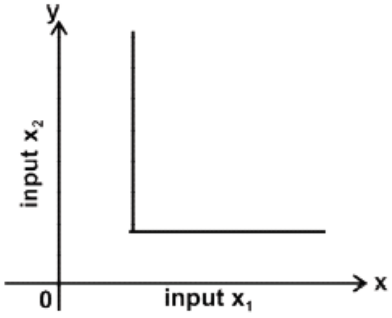

Figure: Iso-quant of complementary resources

2. Computation of price ratio:

Mathematically,

$$\text{Price ratio} = \frac{\text{Prices of input being added}}{\text{Price of input being replaced}} = \frac{Px1}{Px2}$$

1. **Finding out the optimal level of input combination**, by equating Marginal rate of substitution and price ratio, i.e.,

MRS = PR

i.e., $\frac{\Delta X2}{\Delta X1} = \frac{Px1}{Px2}$

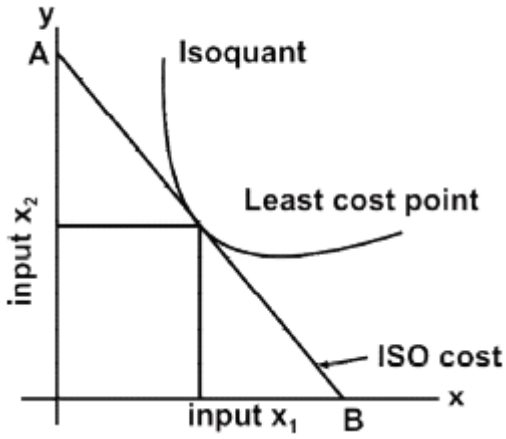

Figure : Optimal level of input combination

Tabular Method:

Given the input, combinations the prices of inputs, the total cost of each input combination can be computed. The combination which cost the least is selected.

X_1 Units	X_2 Units	X_1 @ Rs.4/-	X_2@ Rs.2/-	Total amount
50	219	200	438	638
55	206	220	412	632
60	194	240	388	628
65	182	260	364	624
70	171	280	342	622

In the table combination of 70 units of *x*1 and 171 units of *x*2 is the least cost combination. *(Sources: Fundamental of economics and Management, 2014, Institute of Cost Accountant of India)*

Decision rules for reducing cost

Condition	Decision
SR>PR	Use more of 'added' resources

SR<PR	Use more of 'replaced' resources
SR=PR	It is the point of least cost

2) Principle of product substitution:

(Sources: Fundamental of economics and Management, 2014, Institute of Cost Accountant of India; Johl,S.S. & Kapur, T.R., Farm Business Management)

Farm operator often faces the problem of which farm enterprise to select and the level at which each enterprise should be combined for achieving greatest net income. For selecting the optimal combination of enterprise, we should know the inter-relationship between enterprises, i.e., whether they are independent, joint, complementary, supplementary or competitive.

Types of enterprise

(Sources: Johl,S.S. & Kapur, T.R., Farm Business Management; Shankhyan,P.L., Introduction to Farm Management)

i. **Independent enterprise:** Independent enterprises are those enterprises which have no direct effect on each other. Increase in the level of one enterprise neither help nor hamper the level of the other. Such type of relationship is rare and possible only where there are unlimited input supplies.

ii. **Joint enterprises:** Joint enterprises are those which are produced together. For example: Cattle milk and manure, paddy and straw, mutton and wool, etc. Here the quantity of one product is decided by the quantity of the other product.

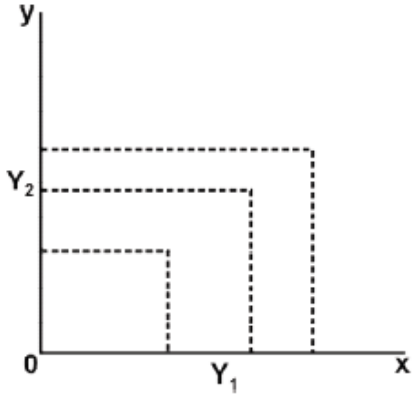

Figure: Joint enterprises

iii. **Competitive enterprises:** Those enterprises which compete with each other for the use of the farmer's limited resources. Use of a resource for producing

more of one product will certainly decrease the quantity of the other. For example: fixed land size for growing two crops in same season like cauliflower and cabbage.

While determining the optimal combination of the products from competitive enterprise, following things should be considered:

a. the rate at which one enterprise substitutes the other,
b. the cost of producing those products, and
c. the prices of the products.

The rate of substitution of one product for another is known as the marginal rate of substitution. Rate of substitution of the two products could either be:

a. **Constant rates of substitution:** Two products substitute at constant rate when a unit increase in the production of one replaces the same amount of another product throughout the process of substitution. The production possibility curve is linear when products substitute at constant rate. When we find two products substituting at constant rate, the production of only one product is economical based on the relative prices of the two products. This is case of specialization. The example here is two varieties of the same farm commodity.

b.

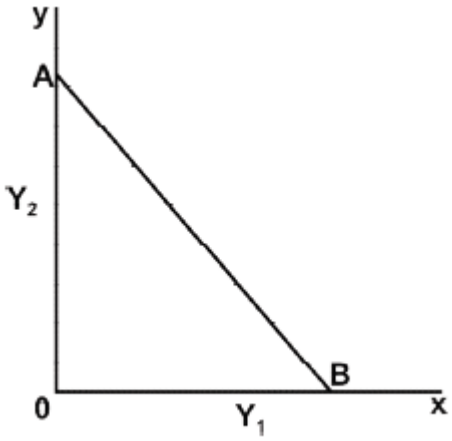

Figure: Constant rate of substitution

$$\frac{\Delta_1 Y_2}{\Delta_1 Y_1} = \frac{\Delta_2 Y_2}{\Delta_2 Y_1} = \ldots\ldots \frac{\Delta_n Y_2}{\Delta_n Y_1}$$

c. **Decreasing rates of substitution:** Two products substitute at decreasing rate

when increasing in one product requires lesser and lesser reduction in another product. This type of substitution is observed when the production functions of both the products exhibit increasing returns. This type of substitution is very rare in production process, because increasing returns are seen in I stage of production which is irrational. It is economical to produce only one of the products is specialization. The production possibility curve is convex to the origin.

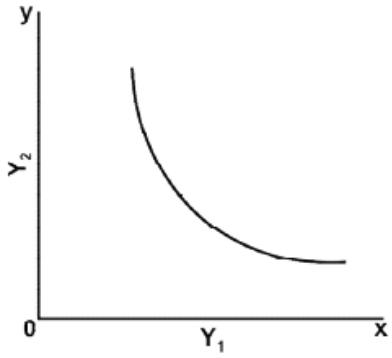

Figure: Decreasing rate of substitution

$$\frac{\Delta_1 Y_2}{\Delta_1 Y_1} > \frac{\Delta_2 Y_2}{\Delta_2 Y_1} > \ldots\ldots > \frac{\Delta_n Y_2}{\Delta_n Y_1}$$

d. **Increasing rate of substitution:** Two products substitute at increasing rate when increase in one product requires larger and larger sacrifice in terms of another product. This type of substitution occurs when the production function of each independent product exhibits decreasing returns. Substitution of this nature is more common in agricultural production as the diminishing marginal resource productivity is a general situation in agriculture. Production possibility curve is concave to the origin when products substitute at increasing rate. The examples here are, all the crops grown in the same season viz., paddy and sugarcane, groundnut and sunflower, paddy and groundnut etc. When products substitute at increasing rate it is economical to produce a combination of products. The general pattern of production is diversification.

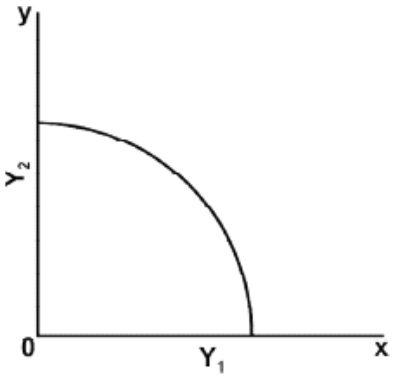

Figure: Increasing rate of substitution

$$\frac{\Delta_1 Y_2}{\Delta_1 Y_1} < \frac{\Delta_2 Y_2}{\Delta_2 Y_1} < \ldots\ldots < \frac{\Delta_n Y_2}{\Delta_n Y_1}$$

In agriculture, increasing rate of substitution is most common because of the diminishing marginal productivity of enterprises. However, constant rate of substitution is also possible when constant amount of one enterprise replaces the other enterprise.

Determination of optimal enterprise combination

For any enterprise combination to maximize profit, there should be trade-off between the enterprise and price ratio. Such a trade-off line is called production possibility curve (PPC). PPC is the curve which represents all possible combination of two products that could be produced with a given input constraint. It is also called iso-revenue curve as each output combination on this curve has the same resource requirement.

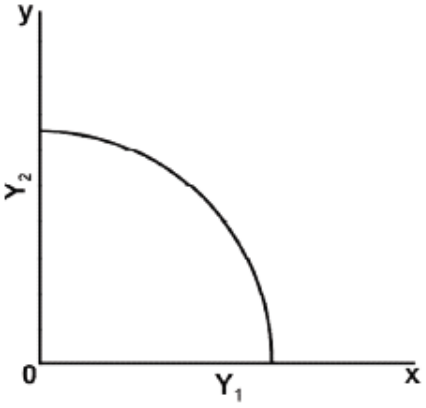

Figure: Production possibility curve

Price ratio is obtained from the slope of the iso-revenue line. Iso-revenue line or price line is that line which defines all the possible combination of two commodities which would yield an equal revenue or income. It indicates the ratio of prices for the two competing products.

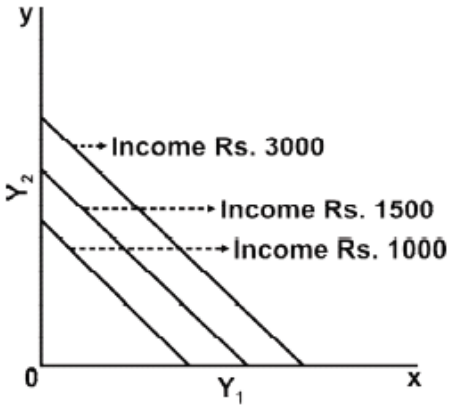

Figure: Iso-revenue line or Price line

For knowing the optimal enterprise combination, marginal rate of substitution and price ratio are calculated.

We know,

$$\text{Substitution rate (MRS)} = \frac{\text{Quantity of output lost}}{\text{Quantity of output gained}} = \frac{\Delta Y2}{\Delta Y1}$$

$$\text{Price ratio} = \frac{\text{Unit price of output gained}}{\text{Unit price of output lost}} = \frac{PY2}{PY1}$$

Profit is maximized at the point where MRS is equal to the inverse price ratio, i.e.,

$$\frac{\text{Quantity of output lost}}{\text{Quantity of output gained}} = \frac{\text{Unit price of output gained}}{\text{Unit price of output lost}}$$

$$\frac{\Delta Y2}{\Delta Y1} = \frac{PY2}{PY1}$$

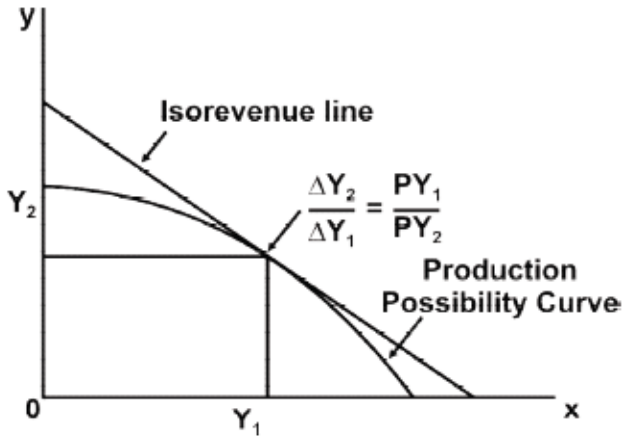

Figure: Optimal enterprise combination

i) **Supplementary enterprises:** Those enterprises which do not compete with each other but add to the total income are called supplementary enterprises. Here, the production of one enterprise can be increased without affecting the production of other enterprise. for example: on a typical integrated Nepalese farm, a small dairy enterprise or a small bee-keeping enterprise may be supplementary to the main crop enterprise say vegetable, as there is utilization of surplus family labor and the space available. But beyond certain level of expansion, they become competitive for the inputs and turn out to be competitive.

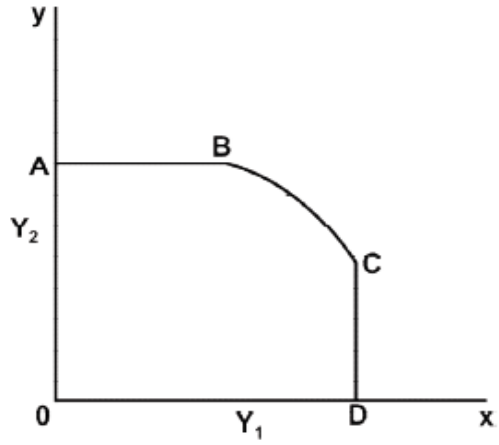

Figure: Supplementary enterprises

ii) Decision rule: When two products are supplementary, both the products should be

produced upon the end of the supplementary stage. Here, as long as the return added by each enterprise is greater than their costs, relative prices of two products are of no importance.

iii) Complementary enterprises: Two enterprises are said to be complementary if the increased production of one enterprise also leads to the increase in production of other enterprise. For example: Maize and soybean. In complementary enterprises, the use of resources for the two enterprises results in the increased production of both the enterprises. However, beyond certain level of combination, they become competitive.

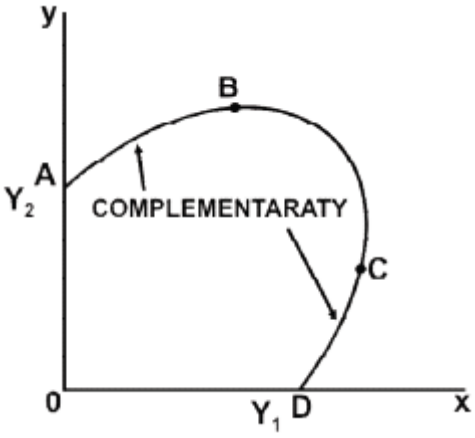

Figure: Complementary enterprises

Decision rule: When two enterprises are of complementary nature, both the enterprises should be produced up to the end of complementary stage, without considering the prices of two products.

2.4 Intensification and Diversification

2.4.1 Diversification:

(Sources: Johl, S.S. & Kapur, T.R., Farm Business Management; Shankhyan,P.L., Introduction to Farm Management; Sandu & Singh, Fundamentals of Agricultural Economics)

Diversification is the process of producing more than one crop or plotting farm resources to more than one enterprise. It is of immense importance and use in safeguarding risk and uncertainty in agribusiness. It is intended to reduce income variability. Farmers under specialized farming may be ruined financially by even a

single lean year. Thus, diversification is adopted for ensuring more and fuller utilization of resources. When the farm is organized to produce several products, each of which is itself a direct source of income, the farm is said to be diversified.

Diversification can be accomplished by following two ways:

i. Allocation of additional resources to an enterprise in which he is nor engaged before. For example: A farm producer produces output Y_1 may also start producing Y_2 output.
ii. By diverting a part of existing resources to produce different products. For example: 20 units of land is currently used for producing maize crop only. If we decide to produce soybean by diverting 10 units of land from maize, then it is diversification.

Diversification handles two aspects of income variability:

i. variability of income over the full span of production, and
ii. variability of income in a single year.

In diversified farm business, enterprises are combined in such a way that they generate income flows at different times of the year, reducing the income variability. For example: combination of dairy and crop enterprise, combination of different crops having different harvesting periods.

Diversification assures:

1. **Better resource utilization:** By diversification, farmer can use his resources optimally and reduce the under utilization of his resources such as land, labor, equipments, etc. For example: crop rotation reduces the necessity for leaving land fallow. Farm labor is utilized throughout the year.
2. **Better product utilization:** As different enterprises can be run on the same holding in diversified farming, there is better product utilization. For example: a famer may raise crops as well as keep dairy farm at the same time. Crop by products like paddy straw is used for feeding cattle and the cow-dung from dairy farm can be used as manure in raising crops.

2.4.2 Intensification:

Intensification refers to the production of the commodity and management of the farm enterprise at a time in an intensive way. Commodities are produced in systematic, scientific way by adoption of modern advanced technologies. Intensive farming is characterized by a intensive land use and higher use of inputs such as capital and labor per unit land area. For example: Agro-forestry, vertical farming, crop intensification, etc. Intensive crop agriculture is characterized by innovations designed to increase yield. Techniques like planting multiple crops per year, reducing the frequency of fallow years and improving cultivars, increased use of fertilizers, plant growth regulators, pesticides and mechanization, etc are used for the intensification of farming. Intensification is supported by ongoing innovation in agricultural machinery and farming methods, genetic technologies, techniques for achieving economies of scale, logistics and data collection and analysis technology.

2.5 Marketing strategy and Linkage

2.5.1 Marketing strategy:

(Sources: Poudel, Krishna Lal, Agribusiness Management)

Marketing strategy is the way by which the business operators seek to achieve its objectives according to the marketing perspective. According to James Quinn, a strategy is a pattern or plan that integrates an organization's major goals, policies and action sequences into a cohesive whole. Thus, it consists of finding profit opportunities, creating competitive advantage, challenging competitive advantage and creating corporate advantage. Overall marketing strategy looks at the business competitive position in two dimensions- product and market. Strategies to be followed will then be market penetration, product development, market extension and diversification. It includes specific strategies concerning the four P's of market (product, price, promotion and place), which may be used in combination to achieves the desired mix. For example:

Strategies regarding product:

a) expand range,
b) improve quality or features,
c) consolidate range,

d) standardize design,
e) branding,
f) reposition the product,
g) change the mix.

Strategies regarding price:

a) change price,
b) penetration policy,
c) change terms and conditions,
d) skimming.

Strategies regarding promotion:

a) change advertising,
b) change selling,
c) change promotion (offers, discounts),
d) change communication mix.

Strategies regarding place:

a) change channels,
b) change delivery or distribution,
c) change service level,
d) forward or backward integration.

2.5.2 Market linkage:

(Sources: Poudel, Krishna Lal, Agribusiness Management)

Market linkage is the manner in which all the actors involved in marketing are linked with each other in the context of farm production and marketing. It shows the way in which actors in marketing are linked with each other. Linkage is established by advertisement, marketing channel, middlemen, etc. Buyers and sellers are dependent on each other. Buyers welcome both new and potentially better sources of supply, while sellers will want to explore possible new outlets for their produce. Linkage of buyer with seller could be established by organizing meetings with farmers and their group with the traders, helping traders, exporters and farmers to research and identify marketing opportunities. Establishment of collection centers, local markets, village markets and assembly markets would help creating local markets to consolidate

products in one place and at one time attracts buyers and sellers. Establishing linkage of the farmers group, associations and cooperatives which would help farmers group to negotiate supply contracts with traders. Likewise, linkage of farmers with the agribusiness sectors like processing industries would help in expansion of both the farming and agribusiness sector. Contracts, negotiating and selling, use of market information, building up new trade activities and value added enterprise would also enhance market linkage which will benefit both the farmers and other respective actors involved in marketing.

Market linkage map show which are the primary and distance market, who are the contract party, what is the trading relationship, etc.

3. FARM PLANNING

Principles

Basic concepts of plan and planning

(Sources: Johl,S.S. & Kapur, T.R., Farm Business Management; Shankhyan,P.L., Introduction to Farm Management)

Plan:

Plan is actually an image, map, vision or thought to represent the form and or features of the desired condition(s). For example, community development plan, district development, sectoral development plan (agriculture, health, education, transportation, etc), national development plan. Broad decisions are only set in a plan document, indicating what and how much is to be achieved with the given level of resource (financial, human, time, technology, etc). Plan is itself static and has no meaning and use unless it is put into operation for achieving its set objectives.

Planning:

Planning refers to the process of formulating a plan and an action drive to put the plan into operation for the purpose of achieving targeted outcomes. It involves the pre-considerations of the resource availability for the implementation of plan. Planning is functionally dynamic and translates the static plan into the real worth.

Farm planning

Any business activity conducted with the aim of making profit plan their production,

marketing and management operations consciously with respect to the resource availability and set target. The success of any business rests on the proper planning and execution. It is generally said that well planning is a half work done. Thus, planning is very important.

In the least developed countries like Nepal, farming is at subsistence level and farmers do not consider it as a business. As a result, expected return from agriculture is not achieved. Farmers do have some plan in their mind regarding type, quantity, quantity of produce and their marketing plan, but it may not be written and systematic. Thus, scientific and systematic planning is required for the attainment of maximum satisfaction for the famer and his family out their available resource. However, with the current situation of technological advancement, globalization and trade liberalization, farming has become more complex. Farmers have also started considering farming as a business and started planning for the successful farm operation.

A farm business plan is a document that consists of the most important decisions and actions affecting the operation of the farm business. It is a way to make sure that all the things are conducted in a right manner at the required time for making farm profitable. Farm planning is the scientific planning which is systematic, written and based on the best available information and targeted to achieve the maximum satisfaction for the farm family, judiciously utilize their available resource. It is the process of making farm programs in advance and adjusting them according to changes in the physical and economic situations, technological advancement, price variation, etc.

Objectives of farm planning:

The specific objective of farm planning is the improvement in the living standard of the farm family with the immediate goal of maximizing the farm income through optimal utilization of the available resources. Farm planning also aims to minimize cost, maximize security and minimize risk.

Advantages of farm planning:

(Sources: Johl,S.S. & Kapur, T.R., Farm Business Management; Shankhyan,P.L., Introduction to Farm Management)

a) It helps farmer to gather information regarding alternative methods and

practices of farming and marketing which might be useful for him in the farm business.

b) It helps him to carefully assess his existing resources situation and past farming experiences for choosing suitable alternative farm enterprise.
c) With the inventory of his existing resources and available business alternatives, he can make rational decision on what to do.
d) It helps him to access his farm input needs for the proposed alternative plan, i.e. estimation on the requirement seed, fertilizer, farm implements, plant protection measures, etc.
e) It helps him to find out the credit requirement of the new improved plan.
f) It gives an idea regarding expected cost (including loan payments) and return. With the increased income from the new plan, he could make subsequent planning in future.

Characteristics of a good farm plan

(Sources: Johl,S.S. & Kapur, T.R., Farm Business Management; Shankhyan,P.L., Introduction to Farm Management)

1. It should be written.
2. It should be flexible.
3. It should provide for efficient use of available farm resources such as land, labor, farm equipment, capital, etc.
4. It should avoid excessive risks.
5. It should utilize the farmer's indigenous knowledge and experiences, skills and take account of his likes and dislikes.
6. There should be provision for efficient marketing (both farm inputs and outputs).
7. There should be provision of borrowing, using and repayment of credit.
8. There should be provision for the adoption of latest agricultural technologies.
9. Cropping plan should be balanced with different combination of enterprises. It should focus on:
    a. Provision for optimal production of different types of cereals, vegetables, fruits, cash and fodder crops.
    b. Maintenance and improvement of soil fertility.
    c. Increased and stable farm incomes.

d. Focus on rational utilization of farm resources (land, labor, water, etc), throughout the year.

Types of farm planning

(Sources: Johl,S.S. & Kapur, T.R., Farm Business Management; Shankhyan,P.L., Introduction to Farm Management)

1. Simple farm planning:

Simple farm planning is adopted either for a part of land or for a single enterprise or for the substitution of one resource with the other. This is very simple and easy to implement. The process of change generally begins with such simple farm plans. For example, plan for tomato

2. Complete or whole farm planning:

This is the planning for the whole farm. This type of planning is adopted when overall changes are made in the existing organization of the farm business. It involves complete re-organization of the farm business. For example, integrated farm planning (including all the crops, livestock).

3.2 Techniques of Farm Planning

(Sources: Johl,S.S. & Kapur, T.R., Farm Business Management; Shankhyan, P.L., Introduction to Farm Management)

Before making any business plan, we should know about the components of the business plan. A detailed farm business plan usually starts with the description of available farm resources, farm environment and current production status. The following section presents a strategic plan describing the vision of the future farm, analyzing strength, weakness, opportunities and threats in the environment. Separate marketing, production and financial plans are to be included in a good business plan.

According to Olson (2004), a typical business plan should consist of following components:

I. Executive summary

II. General description of the farm

Includes type of business, products and services, market description, location(s), legal description, history of the farm and operators and detail of owners, partners, operators.

III. Strategic plan

Includes vision, mission, goals and objectives, external and internal analysis, chosen business strategy and strategy evaluation and control.

IV. Marketing plan

Includes target market, pricing strategy, product quality management, inventory and delivery time tables, market risk and control management.

V. Production and operation plans

Includes production process, product choice, product and process design, technology choice, environmental considerations, raw materials, facilities and equipment, location of production, management of process quality, production risk and control management, production and operations schedule.

VI. Financial plan

Includes financial statements, capital needed, investment analysis and financial risk and control management.

VII. Organisation and staffing plan

Includes personnel need, sources of personnel, structure and responsibilities, basic personnel policies and workforce risk and control management.

The techniques which can be employed for planning each component of the farm plan in the Nepalese condition are as follows:

1. **Production planning:** Production planning simply states about the type of crop to grow and livestock to rear. Their area of cultivation and number of rearing is planned based on the market demand study, technical feasibility, materials and inputs availability and labor availability. Planning tools like production function models, linear and non-linear and modified programming models, farm budgeting techniques, operational research techniques, recursive programming, dynamic programming, diversification models, probabilistic models, etc can be used for the planning of productions of the farm. Based on the level and capability of knowledge and availability of information, ny one tool can be used.
2. **Administrative planning**: Human resource development, training and management analysis, job identification, staffing, procurement and arrangement of physical resources, motivation, transfer and promotions of staffs, distribution

og benefits/bonus, etc come under administrative planning. Tools and aids used in administrative planning consists of farm technological coefficients, electronic accounting and data processing facilities, meteorological forecasting services, interdisciplinary research facilities, commercial servicing, contractual farming or operation, etc.

3. **Organizational planning:** Setting of the institutional/organizational structure, coordination, relationships, delegation of authority, job description, transparency, etc come under organizational planning.
4. **Financial planning:** Acquisition of the fixed (buildings, plants , machineries) and current assets (seed, fertilizer, cash, etc), allocation of budget, estimation of costs and profitability of the product, expenditure planning and monitoring, loan repayment schedule, accounting and auditing , risk assessment , etc come under financial planning.
5. **Marketing planning:** Marketing planning refers to the planning of the purchase of farm inputs and sale of the farm produce. When and how to market, in which market and at what price are considered in marketing planning. Tools like demand and supply projection analysis, market exploration(internal and external), marketing research, marketing system, seasonal and temporal price variation(national and international level), government policies regarding marketing (export-import system, tax and tariff, etc) are use in marketing planning.

Teaching Tips:

- Prepare a plan for dairy farm

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UNIT – 4

Agriculture marketing and management

Learning outcomes:
After completion of this chapter, the student will be able to know:

- Explain meaning and concept of Agriculture marketing
- List the importance of agricultural marketing
- Explain nature of agricultural commodities
- Classify the market
- Describe marketing channel
- Explain importance of market information

1. Agriculture Marketing and Management

1.1 Meaning and concept of Agriculture marketing

Agriculture marketing is the key to develop commercial agriculture that promotes the agriculture sector by creating opportunities to expand the production of agro-commodities for the farmers. Thus, it is the step towards diversification of agricultural products. Unless due attention is not given for the efficient marketing of the agro-commodities, expected agricultural development could not be achieved.

The term 'agricultural marketing ' consists of two words, agriculture and marketing. Agriculture is defined as the science, art and occupation concerned with cultivating land, raising crops and rearing of livestock for food, other human needs or economic gain. Marketing refers to the activities performed by the business organizations to promote and move their products and services from the point of production to the point of consumption. Thus, simply, agriculture marketing means moving the agro-commodities *'from the farm to the fork'*.

According to *Acharya and Agrawal (2011)*, agricultural marketing is the study of all the activities, agencies and policies involved in the procurement of farm inputs by the farmers and the movement of agricultural products from the farms to the consumers.

Richard Kohls define marketing as the performance of all business activities involved in the flow of goods and services from the point of initial agricultural production until

they are in the hands of the ultimate consumers.

Marketing is simply defined as the process of finding out what the customers want and supplying it to them at a profit. It involves identifying buyers, understanding terms and conditions regarding products and their supplies, operating a production-marketing chain that delivers the right products at the right times and making enough profit to continue the operation.

According to the American Marketing Association, marketing is the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchanges that satisfy individual and organizational objectives. In other words, marketing is the managerial process of satisfying the needs and wants trough creation and exchange of products and value with others.

Thus, agricultural marketing comprises of a series interrelated activities involving planning of production, cultivation and harvesting, grading, packaging, storage, transportation, value addition through agro-processing, distribution and sale. It also involves marketing cost, organizational structure, rules and regulation and market competition.

Importance of agricultural marketing:

Agricultural marketing plays an important role in stimulating production and consumption, as well as accelerating the pace of economic development. Some of the importance of agricultural marketing are as follows:

1. **Optimization of Resource use and Output Management:**
   An efficient agricultural marketing system leads to the optimization of resource use and output management. It can also contribute to an increase in the marketable surplus by minimizing the losses arising out of inefficient marketing functions such as processing, storage and transportation.

2. **Increase in Farm Income**
   An efficient marketing system can ensures higher levels of the farm income by reducing the number of middlemen or by restricting the commission on marketing services and the malpractices adopted by them in the marketing of farm products. An efficient system guarantees the farmers better prices for farm products and induces them to invest their surpluses in the purchase of modern inputs so that

productivity and production may increase.

3. **Widening of Markets:**
   A well operated marketing system widens the market for the farm products by taking them moving the farm products to different areas far away from the production points. The widening of the market helps in increasing the demand on a regular basis, and thereby ensuring higher income to the producer.

4. **Growth of Agro-based Industries:**
   An improved and efficient system of agricultural marketing helps in the growth of agro-based industries and stimulates the overall economic development process of the nation.

5. **Price Signals:**
   An efficient marketing system signals the prices of the goods and services thus, helping farmers in decision making regarding planning.

6. **Adoption and Spread of New Technology**
   The marketing system helps the farmers in the adoption of new scientific and technical knowledge. New technology requires higher investment and farmers would invest only if they are assured of market clearance.

7. **Employment opportunities:**
   The marketing system provides employment to number of people engaged in various marketing activities like packaging, transportation, storage and processing, etc.

8. **Addition to National Income:**
   Marketing activities add value to the product thereby increasing the gross national product (GNP) and net national product (NNP) of the country.

9. **Improved Living standard:**
   The marketing system ultimately increases the income of the farmer on one hand and the satisfaction of consumers on the other hand, which will eventually improve the living standard of the people.

10. **Creation of Utility:**
    Marketing adds utilities to the product. The following four types of utilities of the product are created by marketing:

(a) Form Utility: The processing function adds form utility to the product by changing the raw material into a finished form. With this change, the product becomes more useful than it is in the form in which it is produced by the farmer.

(b) Place Utility: The transportation function adds place utility to products by moving them from the place of excess supply to a place of demand. Products fetch higher prices at the place of need than at the place of production because of the increased utility of the product.

(c) Time Utility: The storage function adds time utility to the products by making them available at the time when they are needed.

(d) Possession Utility: The marketing function of buying and selling results in the transfer of ownership from one person to another. Products are transferred through marketing to persons having a higher utility from persons having a low utility.

1.2 Nature of agricultural commodities

Agricultural commodities have some specific characteristics which have differentiated agricultural marketing from the marketing of manufactured commodities. The specific characteristics of the agricultural commodities are:

i) **Perishability of the product:** Agricultural products are perishable in nature. For example, milk , fruits and vegetables, flowers, etc. However, the period of perishability varies from a few hours to a few months. Cereals like rice, maize, wheat etc can be stored upto year, but milk could be stored for few hours only. However, the extent of perishability of agro-products may be reduced to some extent by the processing function. Producers are unable to fix the reserve price of their ari-products due to the perishable nature of agro-commodities.

ii) **Seasonality in production and supply:** Farm products are produced during particular season of the year in particular agro-ecological regions. For example, cole crops like cauliflower and cabbage are produced during winter and cucurbits like pumpkins, bitter-gourd are produced in rainy seasons. This

results to the seasonality in production and supply and thus variation in price during season and off-seasons. However, due to adoption of modern advances agricultural technologies like cultivation in controlled conditions and use of thermo resistant, photo insensitive varieties, few crops are available throughout the year. But, due to limited supply, their prices are high during off seasons.

iii) **Small size holding and widely dispersed producers:** Average land holding size in Neal is ha. Most of the producers have very small sized land holding. As a result of land fragmentation, farmers are widely dispersed. Thus, there is scattered production resulting to difficulty in marketing of the agro-commodities.

iv) **Bulkiness of products:** Most of the agro-commodities are bulky in nature resulting to both difficulty and higher expense in transportation and storage. Thus, consumers need to pay higher for those agro products on one hand while farmers fetch lower price for their their produce in other hand.

v) **Variation in quality of products:** In comparison with other manufactured goods, agro-commodities are of different qualities. This nature of agro-commodities makes difficult grading and standardization.

vi) **Product pricing:** Most of the agro-commodities have inelastic demand. Moreover, the share of individual farmer in the total supply is almost negligible. Thus, he can't influence the market supply. As a result, market prices of the agro-commodities are independent of the independent farmers supply.

vii) **Inelastic demand cure for most agro-products:** Most of the agro-commodities have relatively inelastic demand, thus their prices rise steeply during the period of short supply and fall sharply during the period of excess supply. Thus, there is instability in the price of agro-goods.

viii) **Processing need:** Most of the agro-commodities go through processing before consumption. Processing function adds to the market price of those commodities. Farmers would fetch very low price for their commodities

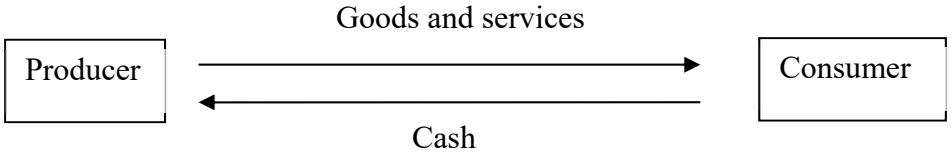
compared to the price the consumer pays. This might distract farmers for expanding their business/ production.

1.3 Classification of market

The word market is derived from the latin word 'marcatus', which means merchandise or trade or a place business is conducted.

Encyclopaedia of Social Sciences (1933) define market as 'the area within which the force of demand and supply converge to establish a single price'.

Market is a place where sellers and buyers interact with each other for buying and selling of any goods and services. It is not necessary to have any geographical location to be market.



Thus, simply, the process of flow of goods and services from producers to consumer is marketing.

There are four P's of marketing: product, price, place and promotion. For a marketing to occur, there must be a product which fetch an equilibrium price and exchanged at particular place via some promotional activities like advertising.

Markets are of different types based on different dimensions. Some of them are as follows:

1. Based on location

On the basis of location, markets can be classified as:

a. **Village market:** Such markets are located in a small village. Transactions occur among buyers and sellers residing in that village.
b. **Primary market:** Such markets are located in towns and transaction occurs between producer farmers and primary traders.
c. **Secondary wholesale market:** Those markets are located at district headquarters or important trade centers. Here, transaction occurs between village traders and wholesalers (bulk).

d. **Terminal market:** Such markets are located either in metropolitan or port. Produce is either finally disposed of to the consumers or processors or assembled for export.

2. Based on area coverage

a. **Local market:** This market is same as village market. Here, perishable commodities are supplied and traded at local level.

b. **Regional market:** In such market, buyers and sellers come from a larger area. For example: Fruits and vegetable markets of Butwal, Biratnagar, Pokhara, etc.

c. National market: In such markets, buyers and sellers spread at the national level. For example: Kalimati fruits and vegetable market.

d. International market: In international market, buyers and sellers are drawn from more than one country.

3. Based on time span

a. Short term market: Those markets are held only for a day or few hours (e.g. perishable fish, fresh vegetables, milk etc.)

b. Periodic market: Such markets operate either in village/semi-urban areas on specific days and time (weekly, biweekly, fortnightly or monthly etc.).These are also called haat bazar in Nepal.

c. Secular market: These are the markets of a permanent type (e.g. machinery and manufactured items).

4. Based on volume of transaction

a. **Wholesale market:** Such markets are mostly located in towns/ cities and are characterized by bulk trading. Transaction occurs between primary wholesalers and terminal traders.

b. Retail market: Such markets are located in both urban and rural areas. Retailers buy goods from wholesalers and sell to retailers.

5. Based on nature of commodities

a. **Commodity Markets:** These markets deal in goods and raw materials (e.g. Rice, cotton, fertilizer, seed, etc.).

b. **Capital Markets:** These markets deal in bonds, shares and securities (bought and sold); for example: money markets, share markets.

c. **Bullion Markets:** These markets deal in transaction of gold and jewelry, etc.

6. Based on the extent of public intervention

a. **Regulated Markets:** In these markets, business is conducted in accordance with the rules and regulations stipulated by the statutory market authority.

b. **Unregulated Markets:** In these markets, business is conducted without any set rules and regulations. Traders frame the rules for the conduct of the market business.

7. Based on degree of competition:

On the basis of competition, markets may be classified into the following categories:

a. **Perfect Markets:** A perfect market is one in which the following conditions hold good:
   i. There is a large number of buyers and sellers;
   ii. All the buyers and sellers in the market have perfect knowledge regarding demand, supply and prices;
   iii. Free entry and exit;
   iv. Perfect mobility of factors of production;

b. **Imperfect Markets:** The markets in which the conditions of perfect competition are lacking are characterized as imperfect markets. The following situations, each based on the degree of imperfection, may be identified:

c. **Monopoly Market:** Monopoly is a market situation in which there is only one seller of a commodity. He exercises sole control over the quantity or price of the commodity. In this market, the price of commodity is generally higher than in other markets.

   When there is only one buyer of a product the market is termed as a monopsony market.

d. **Duopoly Market:** A duopoly market is one which has only two sellers of a commodity. They may mutually agree to charge a common price which is higher than the hypothetical price in a common market.

   The market situation in which there are only two buyers of a commodity is known as the duopsony market.

e. **Oligopoly Market:** A market in which there are more than two but still a few sellers of a commodity is termed as an oligopoly market.

A market having a few (more than two) buyers is known as oligopsony market.

f. **Monopolistic market:** When a large number of sellers deal in heterogeneous and differentiated form of a commodity, the situation is called monopolistic competition. The difference is made conspicuous by different trade marks on the product. Different prices prevail for the same basic product. Examples of monopolistic competition faced by farmers may be drawn from the input markets. For example: insecticides, pump-sets, fertilizers and equipments.

8. On the basis of stage of marketing:

On the basis of the stage of marketing, markets may be classified into two categories:

a) **Producing Markets:** Those markets which mainly assemble the commodity for further distribution to other markets are termed as producing markets. Such markets are located in producing areas.

b) **Consuming Markets:** Markets which collect the produce for final disposal to the consuming population are called consumer markets. Such markets are generally located in areas where production is inadequate, or in thickly populated urban centers.

9. On the basis of type of population served:

On the basis of population served by a market, it can be classified as either urban or rural market:

a) **Urban Market:** A market which serves mainly the population residing in an urban area is called an urban market.

b) **Rural Market:** The word rural market usually refers to the demand originating from the rural population.

10. On the basis of number of commodities in which transaction takes place:

A market may be general or specialized on the basis of the number of commodities in which transactions are completed:

a) General Markets: A market in which all types of commodities, such as food grains, oilseeds, fiber crops, etc., are bought and sold is known as general market. These markets deal in a large number of commodities.

b) Specialized Markets: A market in which transactions take place only in one or two commodities is known as a specialized market. For every group of

commodities, separate markets exist. For example: food grain markets, vegetable markets, fruit markets, meat market, fish market.

11. On the basis of nature of transactions:

Markets which are based on the types of transactions in which people are engaged are of two types:

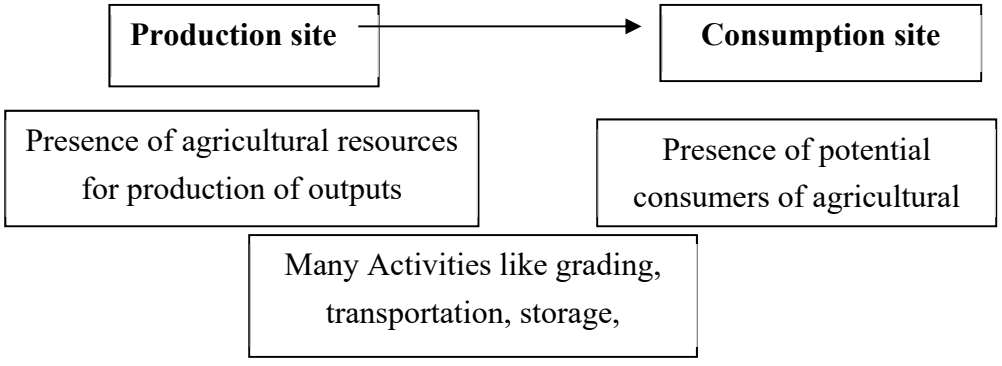
a) Spot or Cash Markets: A market in which goods are exchanged for money immediately after the sale is called the spot or cash market.

b) Forward Markets: A market in which the purchase and sale of a commodity takes place at time 't' but the exchange of the commodity takes place on some specified date in future i.e., time 't + 1'. Sometimes even on the specified date in the future (t+1), there may not be any exchange of the commodity. Instead, the differences in the purchase and sale prices are paid or taken.

2. Marketing fuctions and marketing channels

2.1 Physical, Exchange and Facilitative functions

In the entire process of moving the agro commodities from the field of farmers to the hand of the consumers, different functions and activities are performed. Thus, the marketing of agro-products is a complex process. Apple produce in Jumla or Mustang are consumed by the people of Kathmandu, Chitwan and so on. Likewise Cheese produced in Rasuwa are consumed by the people of different place, i.e., production takes place in one region and consumption happens in the other region. Moreover, paddy harvested during May and November is consumed throughout the year. Wheat goes through different processing activities to transform into a consumable form like bread, cake, biscuits, etc. Thus, farm products move in different ways and forms at different places and times.



Any activity performed in moving a product from the point of its production to the point of its consumption may be defined as a marketing function. There are four dimensions in marketing functions: place, time, form and ownership/possession. Thus, marketing function adds time, space, form and exchange utility to any agro-produce. When goods are marketed from maximum production site to the deficit areas, the place utility is created. For example, rice transport from terai to hilly regions. Likewise conservation or storage of goods during peak production period and then release during the off season increases time utility. For example: storage of rice after harvesting. Processing of the raw agro-produce to produce finished consumable products will add form utility. For example, tomato ketchup, apple juice or brandy, cheese, etc. Any good could be of more utility to one person than the other. As a result, there occurs the exchange of goods and services which will result to the possession utility. Thus in another way, marketing function can be defined as the creation of place, time, form and possession utility.

As classified by Khols and Uhl (1980), marketing functions are of following types:

i. Physical functions
ii. Exchange function
iii. Facilitative functions

i. **Physical functions:** Physical functions are those functions where the physical activities are involved and can be observed by our eye. It includes:
   a) Storage and warehousing
   b) Grading
   c) Processing
   d) Transportation

ii. **Exchange functions:** Exchange functions are those functions which results in the exchange of ownership. It includes:
   a) Buying
   b) Selling

iii. Facilitative functions: Facilitative functions are those functions which facilitate the physical and exchange function. However, those functions ca also occur without the facilitative function. It includes:

a) Standardization of grades
b) Financing
c) Risk taking
d) Dissemination of market information
e) Promotion

Now, let us individually discuss some major functions important in the marketing of farm products.

i. **Packaging:** Packaging is the fore most function performed in the marketing of agro-commodities. It means the wrapping and crating of goods before they are transported. Packaging serves to protect the products from damage, prolong their life, increases product storability and facilitate handling. Based on the nature of agro-commodities, different types of materials and containers are used for the packaging. For example, plastic crates or bamboo baskets are used for tomatoes and fruits, jute bags for cereals, plastic bag, containers or tin cans for milk, etc.

ii. **Transportation:** Transportation is simply the movement of farm products from one place to the other. Majority of the production sites of agro-commodities are located away from the consumption sites. Farm inputs like seeds, fertilizers, farm equipments are transported from factories to the farmers while farm goods are transported from the farm to the consumers through different series. Transportation adds place utility to the goods. Transportation have following advantages:
   a) Widens the market
   b) Narrow down the price differences over space
   c) Creates employment
   d) Facilitates specialized farming
   e) Transform the economy
   f) Mobilizes the factors of production

Transportation is done via different means like head loads, bullock carts, tractors, buses, trucks, railways, ships, aircrafts, etc.

iii. Standardization and grading: Due to the variability in the nature of agro-commodities, standardization and grading is necessary to facilitate buying, selling, transportation, storage and price fixation. Standardization is done generally before grading. Standardization is defined as fixing standards to be established for different commodities based on certain characteristics. For example, Staple length in cotton (Class A, B and C), Fat and SNF percentage in milk, etc. Grading refers to the sorting of the produce into different lots based on certain quality specifications. Produces within a lot have homogeneous characteristics while those between the lots are heterogeneous. Grading is done based on certain characteristics like weight, shape, size, color, purity, pesticide residue, fat %, staple length, nutrient content, etc.

Advantages of grading:

i. Grading before sale enables farmers to fetch higher price for their produce.
ii. Facilitates marketing.
iii. Widens the market for the product.
iv. Reduces the cost of marketing.
v. Helps consumer to get standard quality products at reasonable prices.
vi. Contributes to the market competition and pricing efficiency.

iv. Storage: Storage is one of the major marketing function done to make goods available when it is necessary. Storage involves holding and preserving goods from the time they are produced until they are needed for consumption or for processing. Storage protects the farm produce from deterioration as well as helps to meet the demand during the season of scarcity. Thus, it increases time utility of the produce. As we, farm produces are seasonal in production and supply, while their demand is relatively stable. This contradictory nature of demand and supply of the agro-produces calls for the storage needs.

Advantages of storage:

a) Ensures continuous flow of goods in the market.
b) Preserves the quality of perishable and semi-perishable produces for certain duration.
c) Helps to meet the seasonal demand of certain goods. For example, wollen

garments during winter.

d) Helps in price stabilization by adjusting demand and supply.
e) Facilitates other marketing functions like transportation, processing.
f) Storage is necessary for some agro-commodities for ripening (eg., banana, mango) or for improvement in the quality (eg., cheese, tobacco, pickles)
g) Generates employment and income through price advantage.

v. Processing and value addition: Processing is the activity which converts the raw materials into the consumable form. It adds form utility to the farm produce. Value is added to the product by processing. Examples of processing are meat processing, oil extraction, fiber stripping, pasteurization of milk, juice extraction from fruits, cheese making, etc.

Value addition is the process of changing the original state of product to a more valuable state. For example, wheat wheat flour Cake

Milk Cheese

Advantages of processing:

i. Changes the raw farm produce into edible, usable form.
ii. Helps in storage of perishable and semi-perishable agro-commodities.
iii. Generates employment and income.
iv. Satisfies consumer need at the lower cost.
v. Diversifies the food products.
vi. Facilitates other marketing functions such as transportation, storage.
vii. Widens the market.

i) **Buying and selling:** All the goods produced by the farmer may not be consumed by himself. Also, he doesn't produce all the commodities he needs. Thus, buying and selling activities occurs. It is the process in which buyers and sellers come in contact with each other (either real or virtual) and goods are transferred from seller to the buyer, thus adding possession utility to the commodities. It is very important activity in the marketing process. Based on the length of marketing channel, the number of times the selling and buying activity is performed varies.

ii) **Financing:** Financing is needed to perform various marketing functions such as

processing, storage, transportation, grading, packaging, etc. Financing function in marketing involve the use of capital so as to meet the financial need of the agents or middlemen involved in various marketing activities. In agricultural marketing, financing is done from banks, credit institutions, micro-finances, cooperatives, etc.

iii) **Risk taking or risk bearing:** Risk is generally an uncertainty about the cost, loss or damage. Risk is associated with every type of business activity. In the marketing process, risks are of three types:-

a) Physical risk: Loss in the quantity and quality of the produce during marketing is called physical risk. Physical damage may be due to nature like fire, flood, earthquake, insect, pest, disease epidemic, unfavorable climate, carelessness, improper storage and packaging, strikes, looting, etc.
b) Price risk: There is fluctuation in price of the agro-produce as there is seasonality in production and variation in production from year to year. Prices may change upward or downward depending on the demand for and supply of agro-commodities. Price fall may cause loss to the farmer or trader who holds the produce. On the other hand, price rise may distract consumer from consumption.
c) Institutional risk: Risks resulting from the change in government policy, tax and tariff, imposition of levies, restrictions in the movement and statutory price controls come under institutional risks.

Some measures for risk minimization:

a) Use of improved storage structures to prevent losses due to fire, insect, pest, adverse climate, etc.
b) Use of better and faster transportation methods.
c) Use of proper packaging materials.
d) Use of cold chain for perishable commodities like milk, fresh fruits, vegetables, cut flower, meat.
e) Insurance of the business.
f) Promotion of the product through advertisement.
g) Fixation of minimum and maximum price of the commodities by the

government.

h) Efficient market information system.

iv) **Market information:** Market information is one of the facilitative marketing functions which ensure smooth and efficient operation of the marketing system. Accurate, adequate and timely availability of marketing information helps farmer to make decisions regarding when, where and how to market the produce. Marketing information may be defined broadly as a communication or reception of knowledge or intelligence. It consists of all the facts, estimates, opinions and other information which directly or indirectly affects the marketing of the goods and services. Marketing information helps in measuring the pulse, weight, temperature and pressure of the market. Market pulse measure whether the market is active or sluggish. Market weight measures the average purchasing capacity of consumers and providing capacity of the producers. Likewise, market temperature refers to the rise or fall in price level and market pressure refers to the number of producers and consumers involved in marketing (i.e., whether the supply is adequate, scarce or abundant).

Requirements for ideal marketing information:

a) Market information should be sufficient , i.e., must cover all the crops and their cultivars, livestock and poultry breeds available at different places, their demand and supply, prices, etc.
b) Timeliness: Market information should be available at the right time and must be updated.
c) Confidential: Market information should be trustworthy and from the authentic source.

Importance of market information:

Market information is useful for all the actors involved in the entire process of marketing, i.e., from producer/farmer to the end consumer as well as regulatory body i.e., government.

a) Producer/farmer: Market information helps in decision making regarding the production as well as selling. Price information helps farmer to make decisions on when and how to produce as well as where and through whom to sell the produce and buy the arm inputs.

b) Market middlemen: Market information helps the middleman to plan the purchaser, storage and sale of goods. Based on the market information, they can make decisions regarding storage, place of buying and selling (local or regional or international market), volume of purchase and selling, need of processing, etc. Processor could plan the purchase of raw materials based on the market information. With the non-availability of market information or it's inadequate and misinterpretation, the overall failure of the business may result.

c) Government: Government can make policies regarding market regulation, import-export, price regulation (tax, tariff, subsidy, minimum support price, etc) based on the market information.

v) Promotion: Promotion is continuous marketing function. Promotion of goods and services is done to inform the potential buyer regarding the availability of product as well as to increase sales. As fresh agricultural products are of homogeneous nature and are not branded, they are rarely promoted. For example, fruits, vegetable, etc. It may add to the cost of marketing. However, promotion of processed agro-products is essential as those goods are differentiated and branded. For example, Hulas Maida, Dhara mustard oil, etc.

2.2 Marketing channel

Marketing channels are the routes along which the farm produces move from producers to the ultimate consumers. According to Khols and Uhl (1980), marketing channel is defined as the alternative routes of product flows from producers to consumers. Moore et al (1973) defined marketing channel such that it consists of the chain of intermediaries through whom the various food grains pass from producer to consumer. Here, the term route refers to the inter-organizational system involved in marketing, i.e., producer, collector, wholesaler, processor, retailer. At every stage of the marketing channel, value (also known as utility) is added to the produce in one or other form. The, marketing channels are also called value chains.

Marketing channel for agricultural commodities vary from product to product, place to place, lot to lot and time to time. For example, the marketing channel or milk are different from those for fruits and vegetables. Thus, the length of the marketing channel depends upon:

a) Volume of the product: Larger the volume of the product, shorter is the marketing channel. Small farms usually sell the produce to the village trader which lengthen

the channel while the large producers sell in the main market.

b) Newness of the product: For the new product, promotion is needed. Thus, newer the product, lengthier is the marketing channel.

c) Value per unit volume of product: Higher the value per unit volume of product, lengthier is the marketing channel and vice-versa. For example: both wheat and cardamom is produced in Illam. Wheat processing is done within the district while cardamom is sent to Siliguri.

d) Perishability of product: Higher the perishability of produce, longer is the marketing channel. For early flow of perishable commodities, large no; of middleman/actors are involved so as to reduce losses (losses during transportation, handling, shrinkage, etc.).

Typical example of vegetable marketing channel

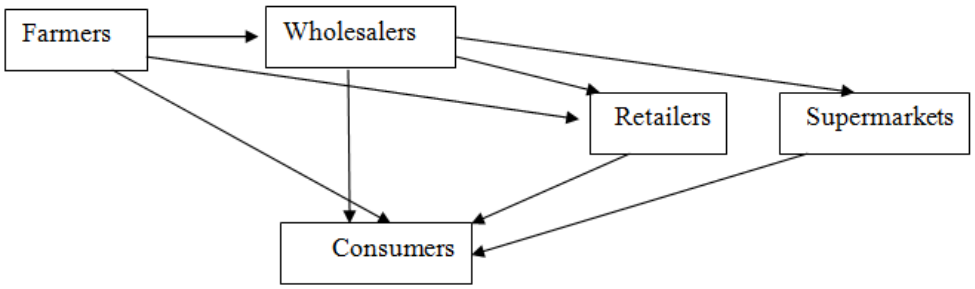


Figure: Vegetable marketing channel

Length and quality of the marketing channel depends on the level of market infrastructure. Improved condition of transportation and communication network increase the quality and shortens the length of marketing channel.

As we know, agricultural commodities are of different nature. Milk, fruits and vegetables are more perishable while cereals can be stored for some more months. Thus, different marketing channels are used for marketing of different agro-commodities. Also, based on the need of processing for the production of final consumable good, marketing channel varies.

Some of the common marketing channels of agro-commodities are as follows:

a) Producer– Retailer – Consumer.

b) Producer– Consumer.
c) Producer– Wholesaler – Retailer – Consumer.
d) Producer – Commission agent – Wholesaler– Retailer – Consumer.
e) Producer– Wholesaler – Processor– Retailer – Consumer.
f) Producer–Processor– Retailer – Consumer.

1.3 Cost and selection of best channel for distribution of commodities

Marketing Costs:

While moving the products from the producers to the ultimate consumers, different types of costs and taxes are involved, which are called marketing costs. In other word, marketing costs (all transaction costs including taxes) are the actual expenses required in bringing goods and services from the producer to the consumer.

These costs vary with the channels through which a particular commodity passes through. Examples of marketing costs are: cost of packing, transport, weighing, storage cost, loading, unloading, losses and spoilages, etc.

Marketing costs normally includes:

a) Handling charges at local point
b) Assembling charges
c) Transport and storage costs
d) Handling by wholesale and retailer charges to customers
e) Expenses on secondary service like financing, risk taking and market intelligence
f) Profit margins taken out by different agencies.

Total marketing cost of commodity is given by the following formula:

$C = C_f + C_{m1} + C_{m2} + \ldots + C_{mn}$

Where,

C= Total cost of marketing of the commodity

C_f = Cost paid by the producer from the time the produce leaves till he sells it

C_{mi}= Cost incurred by the ith middlemen in the process of buying and selling the products.

Study of the marketing costs will help to:

a) Ascertain the intermediaries involved between producer and consumer.
b) Ascertain the total cost of marketing process of commodity.
c) Compare the price paid by the consumer with the price received by the producer (i.e., price spread).
d) Know whether there is any alternative to reduce the cost of marketing.

Reasons for high marketing cost of agricultural commodities are as follows:

a) Perishable nature of the produce
b) Seasonal production and supply
c) High transportation costs
d) Lack of storage facilities
e) Bulkiness of the produce (low value high volum).
f) Volume of the products handled
g) Absence of facilities for grading
h) Costly and inadequate finance
i) Unfair trade practices.
j) Business losses.
k) Production in anticipation of demand and high prices.
l) Cost of risk
m) Sales service

Means to reduce marketing costs of farm products

Increased efficiency in a wide range of activities between produces and consumers such as increasing the volume of business, improved handling methods in pre-packing, storage and transportation, adopting new managerial techniques and changes in marketing practices such as value addition, retailing etc.

a) Reducing profits in marketing at various stages.
b) Reducing the risks adopting hedging.
c) Improvements in marketing intelligence.
d) Increasing the competition in marketing of farm products.

Marketing margins

Marketing margin is the difference between price received by producers and paid by consumers. This difference in fact is marketing costs. In other words, marketing margin is simply difference between retail price and producer price.

Margin for each marketing agency can be calculated, such as a single retailer, or by any type of marketing agency such as retailers or assemblers or by any combination of marketing agencies.

Price Spread

Price spread is the producer's share in consumer's price. Simply, it is the difference between the price paid by the consumer and price received by the producer. It involves various costs incurred by various intermediaries and their margins.

Where, $$PS(\%) = \frac{Pp}{Pc} * 100$$

PS = Price spread (%)

Pp = Price received by producer (Rs/kg)

Pc = Price paid by consumer (Rs/kg)

Marketing efficiency

Marketing efficiency is the ratio of market output (satisfaction) to marketing input (cost of resources). Mathematically,

$$ME = \frac{V}{I} - 1$$

Where:

ME = Marketing Efficiency Index (Shepherd's index, 1965)

V = Value of the sold item or buyer's price (Rs/kg)

I = Marketing costs including margins (Rs/kg)

Higher the ratio implies higher the marketing efficiency or the channel said to be more efficient and vice versa.

Factors to be considered while choosing a marketing channel:

While choosing the marketing channel, following factors should be considered:

a) Nature of the product,
b) Price of the product,
c) No. of units or volume of sale,
d) Characteristics of the user,
e) Buyers and their buying units

Generally, low priced articles with small units of sale are distributed through retailers (vegetables, fruits, etc). High price special items like farm equipments, machineries, etc are sold by manufactures and then agents.

3. Concept of cooperative

3.1 Definition:

The word cooperation is made up of two Latin words, 'co' meaning to work and 'opus' meaning together. Thus, simply, cooperation means working together. In other words, cooperation can be defined as a form of group of people working together to achieve a particular objective.

According to Huber Calvert, Co-operation is a form of organization, where in persons voluntarily associate together on the basis of equality for the promotion of common economic interest of themselves.

According to Sir. Horace Plunkett, Co-operation is self - help made effective by organization.

Thus, co-operation helps in protecting the weak, provides equal justice to all and promotes welfare of the society. The motto of co-operation is ***"****Each for all and all for each"*.

Cooperation stands for voluntary association of members for achieving some common economic and or social objective. Cooperation has following three elements:

1. voluntary organization of the individuals,
2. equality among the members irrespective of capital contribution (single vote per head),
3. common, honest economic and social objective.

A cooperative is defined as "an autonomous association of people united voluntarily to meet their common economic, social and cultural needs and aspirations through jointly-owned and democratically-controlled enterprises (ILO, 2002). Cooperative organization/associations are similar to the private business corporation in its method of operation. Cooperative organization must conduct business according to sound

business principles. Basically, the cooperatives are the economic organizations where members are owners, operators as well as contributors of the commodities handled and the direct beneficiaries of the savings that may accrue in the entire business activity.

Cooperatives contribute to food security by helping small farmers, forest users and other producers to solve numerous challenges faced by them. According to International Cooperative Alliance documents (2013), farming and agriculture is where the cooperative business model is most widely utilized. Small agricultural producers often face challenges like remoteness and lack of access to information about food prices on national and international markets; access to high-quality inputs and variable costs of buying seeds and fertilizer; access to loans to buy these inputs; and lack of transport and other infrastructure in rural areas. Thus, agricultural cooperatives help farmers overcome these hindrances by offering their members a variety of services such as group purchasing and marketing, input shops for collective purchases, warehouse receipt systems for collective access to credit and market outlet. Cooperatives build small producers' skills, provide them with knowledge and information, and help them to innovate and adapt to changing markets. They also facilitate farmers' participation in decision-making processes and help small producers' voice their concerns and interests, and increase their negotiating power to influence policy making processes.

Principles of cooperation

Basic principles of cooperative are as follows:

i. **Voluntary organization:** It is voluntary to the individual whether to join or nt the organization.
ii. **Democratic principles in the management of the organization:** Each member is given the equal right based on the democratic principles (i.e., xone vote for each member , irrespective of the financial contribution by the individual).
iii. **Principle of mutual self help and reliance:** The motto of cooperative is 'each for all and all for each', i.e., working of the cooperative is based on the principle of mutual self help and reliance.

iv. **Common societal objective:** The aim of the cooperative is to work for achieving common social needs, but not the personal economic interest of the members.

v. **Honesty is capitalized:** Loan is provided to the member of the cooperative (from their group savings) on the personal security.

vi. **Member's economic participation:** Loan is provided to the members especially for the productive uses.

vii. **Service oriented:** Main motto of the cooperative is service rather than profit earning.

Advantages of Cooperative

Based on the nature of cooperative organization, their advantages are also of different nature. However, they can be grouped in following four broad categories:

i. **Economic benefits:** These benefits could be availability of loan at lower interest rate (without collateral), lower marketing cost per unit of output (especially in cooperative marketing), etc.

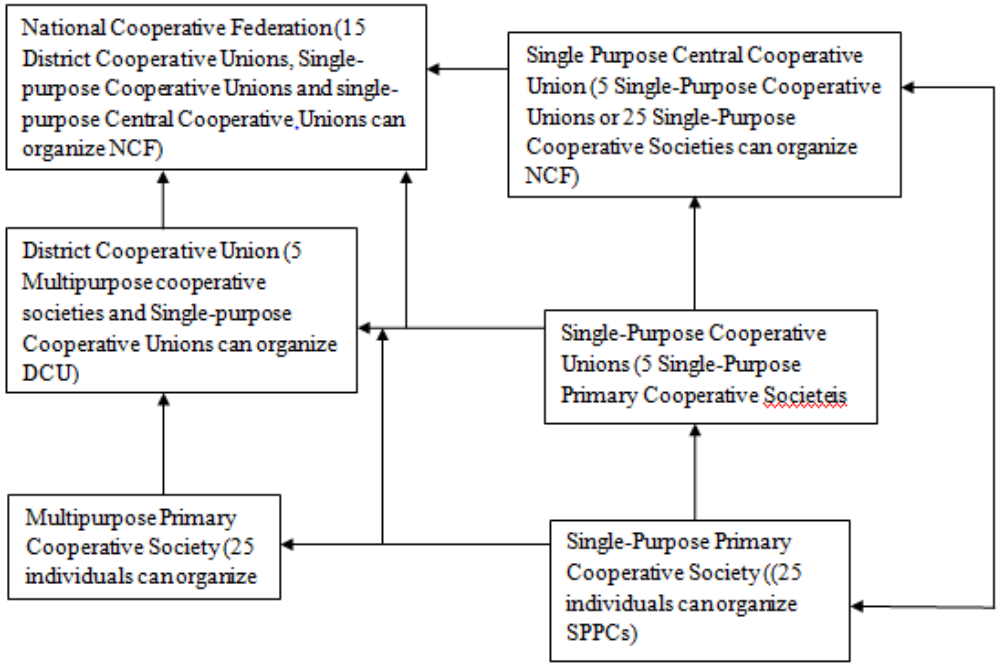
ii. **Social benefits:** Members of the cooperative are especially organized for meeting common social objectives. They plan and carry activities which is beneficial to the overall society like, irrigation canal management, collective farming ang marketing.

iii. **Moral benefits:** As it promotes the habit of savings and thrift among the members, it boosts up the moral of the members.

iv. **Educational benefits:** Members of cooperatives can improve their knowledge through adult learning/literacy classes, children learning campaigns, etc in the community.

3.2 Organization/Structure of Cooperative in Nepal

The cooperative movement of Nepal has a three-tier system, i. e, primary, secondary and national level in terms of multi-purpose cooperatives and a four-tier system in terms of single purpose cooperatives. Multi-purpose cooperatives and single-purpose cooperatives at all levels have vertical and horizontal linkages. Cooperatives at all levels are integrated with National Cooperative Federation/N, Central Cooperative Unions (CCUs) and District Cooperative Unions (DCUs). The organization of the Nepalese Cooperative Movement is as follows:



Organizational structure of National Cooperative Federation/Nepal

NCF/N aimss to promote and establish Nepalese society where the democracy, equality, solidarity, social justice, caring for other and gender-balanced sustainable development prevails under the ideals of the cooperative movement.

Mission

NCF/N mission is to uniting, leading, representing and serving members for their economic, social and cultural empowerment through their cooperatives at all levels.

Functions

In order to attain the objectives, NCF/N undertakes the following functions:

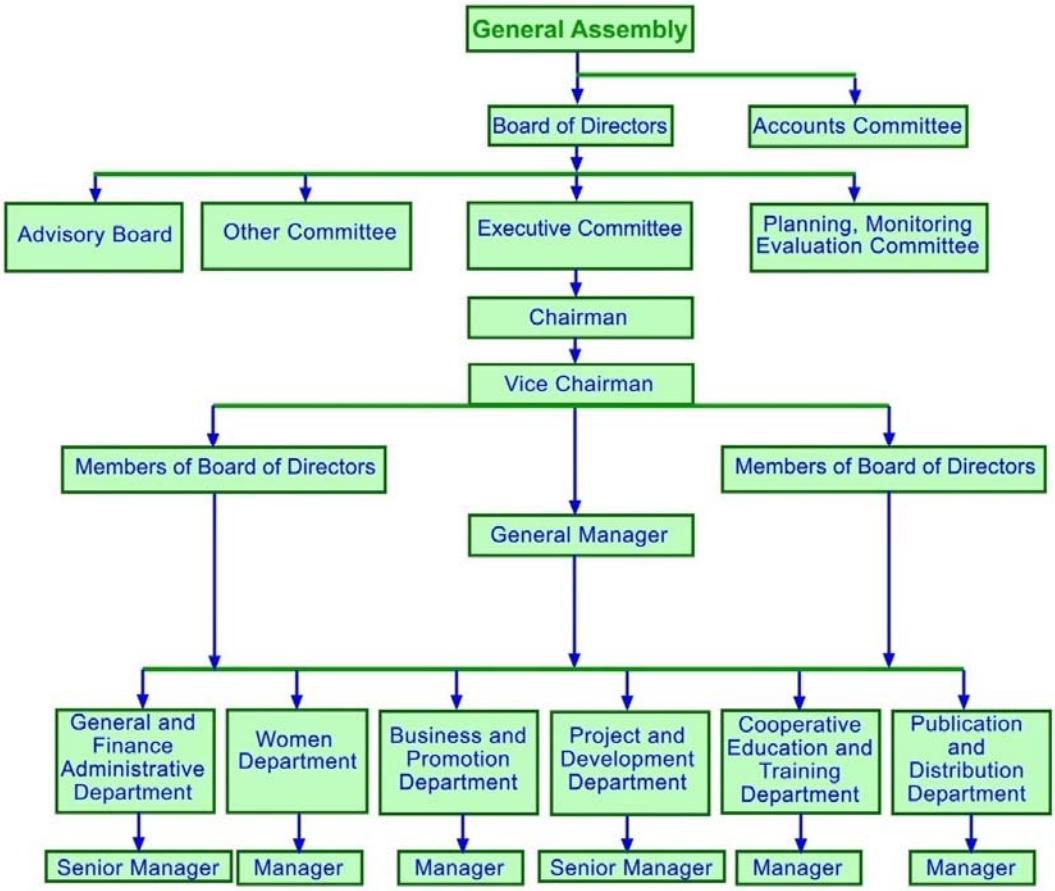
a. Cooperative Promotion and Development
b. Leadership and Representation
c. Business Promotion, Planning, Management and Consultancy Services
d. Cooperative Training and Education
e. Inter-Cooperative Relation
f. Environmental Conservation

Objectives:

1. Promote, strengthen and develop the cooperative movement in Nepal on the basis of the cooperative
2. Principles and the people's needs with their own initiative and participation.
3. Provide and support programs and business promotion of cooperatives and their unions in order to improve the socio-economic condition of the people.
4. Assist cooperatives and unions to strengthen their management capacity, and develop their leadership.
5. Provide leadership to the cooperative movement and representing the Nepalese cooperative movement at national and international forums.

For achieving the stipulated objectives of NCF/N, there are two segments integrated in it for the effective and efficient operation of its total management. One segment includes General Assembly, Board of Directors (BODs), Account Committee, Sub-Committees and other segment is that of the paid employees. Executive chairman, including General Manager and departmental heads are liable for executing the General Assembly's and BOD's decision making, supervising staff and assessing their performance, and coordination with government and international organizations. Department heads are also internally responsive for executing the approved plans, policies and other directed functions. A planning and monitoring committee has also been formed to evaluate the implemented programs along with the faced constraints during the respective period.

Organogram of NCF/N



3.3 Roles

The role of agricultural cooperatives is to facilitate small producers' access to:

1. Natural resources such as land and water,
2. Information, knowledge and extension services,
3. food, and productive assets such as seeds and tools, and
4. Policy and decision making

Cooperative development in many countries has proved that farmers who are effectively organized can benefit from market linkage and services, from accessing centralized services that can help them achieve higher yields and higher incomes, and from speaking with a collective voice to advocate for their needs. For increasing the competitiveness of the small-holder farmers, farmer's cooperatives are essential. Agricultural cooperatives help farmers solve a collective action problem, i.e. for the

efficient procurement of the inputs and market their outputs on more favorable terms than they could achieve by themselves. They play crucial role in increasing the productivity and household income of smallholder farmers. Government and NGOs can extend training and other capacity building initiatives of the farmers through the cooperatives. Many stakeholders use co-operative structures can also be mobilized for capacity building of the farmers in post harvest handling techniques as well as increasing the commodity quality. As market access is one of the most difficult challenges for the small-holder farmers, the role of co-operatives in helping them to exercise economies of scale is increasingly important. Through co-operatives, farmers can attract traders and institutional buyers, and increase their negotiating power. Co-operatives have also started apart from agriculture to emerge in other sectors such as transport or commodity transformation, with people buying trucks and milling machines and starting their own enterprises. These new activities benefit the communities through employment creation as well as service provision. This creates more income within the community and enhances food security.

3.4 Cooperative marketing

Cooperative marketing is based on the principle of cooperation in the field of marketing. It refers to the marketing done by the members of the cooperative association. Cooperative associations are formed voluntarily by the member farmers to perform one or more marketing functions in respect of their produce. It is done by the member farmers to sell their farm produce collectively. Cooperative marketing aims to overcome the difficulties arising out of smallness of volume and operations and to undertake one or more functions performed by the middlemen and thus securing the maximum price for the farmer's produce.

Necessity of cooperative marketing

1. In the context of the least developed countries like Nepal where majority of the farmers have scattered and very small (0.5 ha) land holding, marketable surplus is of very small quantity. Thus the marketing by individual farmer is more costly and difficult. So, cooperative marketing helps farmers to fetch better price of the produce through collective marketing by cooperative.
2. Cooperative marketing can help to reduce the malpractices in the marketing structures such as arbitrary deduction from the produce, manipulation of weights

and collusion between the broker and the buyers. This further ruin the farmers as majority of them are indebted. Thus, cooperative marketing can help to reduce such malpractices in the marketing of farm produce.

3. Cooperative marketing acts as catalyst to increase income of the farmers as it provide loan to its members in nominal interest rate to its members for conduction of the smooth marketing functions.
4. There are large number of middleman involved in performance of the entire marketing functions such as collection, storage, financing, insuring, grading, processing, transportation and selling of the farm produce. This will certainly increase the marketing cost. Thus, there is huge difference in the price received by farmers and the price paid by consumers. However, efficiently organized cooperative marketing can reduce those marketing costs, thus giving fair return to the producer as well as providing goods to the consumers at a reasonable price.
5. It helps in stabilizing prices of the agro-commodities.

Objectives of cooperative marketing

Some of the major objective of cooperative marketing as defined in FAO publications are as follows:

1. to help member farmers for producing quality goods according to their demand,
2. to help member farmers to ensure better prices of their produce,
3. to give fair weights,
4. to facilitate produce handling without damage or waste,
5. to provide fair trading practices and to use its influence against rings and manipulation of prices, and
6. to give a better understanding to the farmers in marketing process.

Functions of marketing cooperatives

Some of the important functions performed by cooperative marketing society are as follows:

1. They arrange for selling members produce to the best possible alternative so as to obtain better price. Better price for their produce is obtained as a result of collective marketing (reduces marketing cost).
2. They provide transportation and storage facilities to their members by renting

or owning vehicles and store house/godowns.

3. They perform some marketing activities themselves like grading, pooling and procuring of produce of the members.
4. They help in reducing damage and waste.
5. They eliminate the long chain of middlemen and establish the fair connection of producer with the consumer. Thus, cooperative marketing societies protect the members from several malpractices in the entire marketing process.
6. Cooperative marketing associations contribute to stabilize prices over long period by adjusting the supply as per market demand. As a result, seasonal fluctuation of price can be eliminated to some extent.
7. They teach farmers regarding the planning and management of the farm business and also serve as agency for providing market information.
8. They can also encourage their members to participate in export of the farm goods. For example: tea and coffee production cooperative of Nepal. This will help in widening market from local level to the international level.

Advantages of cooperative marketing

1. The major advantages of cooperative marketing are listed below:
2. **Storage facilities:** The marketing cooperatives have their own godowns/storage houses. Thus, it can reduce damage to the agricultural produce from different factors like climate, insect, pests, theft, etc. Agro produces also fetch higher prices during sale in the off season.
3. **Cheap transport facilities:** Marketing cooperatives have their own vehicle or can arrange for the quick and cheap means of transportation. In addition, collective transportation also reduces the transportation cost.
4. **Grading and standardization:** They encourage farmers to produce quality goods and grade them based on some standard. Such activity will help them fetch better prices.
5. **Provision of credit:** They provide loan to the member farmers and thus ensure them to fetch better price.
6. **Provision of inputs:** Marketing cooperative provide essential farm inputs like seeds, fertilizers, farm equipments/machineries etc. to their members at cheaper rates.

7. **Influencing market price:** They increase the bargaining power of the farmer, thus, can influence market price to some extent.
8. **Market information:** They provide information related to market like demand, supply price, etc on regular basis which is of utmost importance in assessment of demand situation, market trends and thus plan their farm business accordingly.

3.5 Cooperative farming

Cooperative farming refers to the system of farming in which all the agricultural operations are carried out jointly by farmers on voluntary basis. In cooperative farming, lands of the member farmers are pooled and treated as a single unit. Farmers will carry out the cultivation practices jointly. After deducting the total cost, a part of profit earned is distributed among the member farmers based on their share. The rest of the profit is distributed in proportion to the wages earned by them.

Based on the nature of ownership and operation, there are four basic types of cooperative farming:

i) cooperative joint farming,

ii) cooperative collective farming,

iii) cooperative better farming, and

iv) cooperative tenant farming

Let us discus these types of cooperative farming individually.

i. **Cooperative joint farming:** A cooperative joint arming is such type of farming in which there is pooling of land of the small owners into a single unit. However, the proprietary rights are retained with the respective individual farmers. Cultivation practices are conducted jointly. Committee of the members is formed which acts as the executive body and manages the farm and help to prevent sub division and fragmentation of holding. Activities like purchase of land, taking land on lease or rent, financing, procurement of farm inputs, selling of the produce, etc are conducted by the committee. Members work jointly on the farm and thus get wages at stipulated rates from time to time, based on their contribution. Incentives are provided to the members for quality work. A part of

net profit is distributed as bonus to the members. Skilled worker will get remuneration. In cooperative joint farming, benefits and advantages of large scale farming are achieved. This farming system is very suitable for addressing the problems of land fragmentation and harness increased benefits from small sized holdings.

ii. **Cooperative collective farming:** A cooperative collective farming refers to that type of farming in which land (from both members and non-members) is supplied by the society on free hold or lease hold basis. Members of the society jointly carry on the cultivation processes, however the members do not possess the ownership rights. Members work as worker for the society and get wages in return. Out of earned profit, members get bonus in proportion to their wages. Such type of farming is generally practiced on government lands. However, there is no government interference and the cooperative society is free to take decisions regarding production, planning and framing policies. As the agriculture production is carried on large scale, advantages and benefits of large scale farming can be obtained on cooperative collective farming.

iii. **Cooperative better farming:** Cooperative better farming is that type of farming in which members of the cooperative are organized to improve their farming practices without any pooling of land. In this case, each member farmer has individual ownership of their land and carry on the farming operation personally. However, there is collective supply of farm equipments, seeds, fertilizers, storage facilities, joint swing, harvesting and marketing of the produce. Each farmer cultivates their land independently, though they work according to a common plan drawn by the cooperative society. In this case also, the cooperative society enjoys the benefits of large scale farming though the farms are still small and fragmented. This type of farming can be practiced in the communities where farmers are reluctant to transfer their lands to a cooperative society for common cultivation.

iv. **Cooperative tenant farming:** In cooperative tenant farming, ownership is collective while operation is individual. At first, the cooperative society obtain land on free hold or lease hold basis and then divides it into blocks equal to the

number of total member in a society. Each block is given to a member on rent. Certain schemes of farming are planned by the society which are to be followed by all the members of the cooperative society. Society also provides seed, fertilizer, farm equipments, finance, etc. Each member cultivates his land independently and obtain the produce. Certain portion of the profit earned by the society is kept on the reserve fund and the rest is distributed as dividend to the members in proportion to the rent paid by the individual. This type of farming is more suitable in the areas where virgin land is to be brought under cultivation.

Advantages of cooperative farming

Some of the advantages of cooperative farming are discussed hereunder:

1. **Better utilization of land:** In cooperative farming, land is pooled and managed as a single unit. As a result, cooperative society can determine the appropriate farming system based on the quality of soil and availability of other resources. Thus there is every possibility of best utilization of land.
2. **Benefits of large scale farming:** As there is pooling of land and collective farming operation, all the benefits of large scale farming can be achieved. There is both minimization of cost as well as maximization of profit.
3. **Optimum use of labor resource:** There is specialization of labor, i.e., every farmer or labor is given work according to his ability and aptitude. Thus there is better utilization of labor force.
4. **Increased employment:** With the pooling of land and other resources, intensive farming practices like horticulture, dairy, poultry, cash crops, multiple and intercropping can be adopted. This will certainly generate employment.
5. **Basis for industrial development:** Cooperative farming when operative successfully can contribute to the overall development of agriculture. Different agro-based industries can thus be established to diversify the agro produce and widen market.
6. **Economic security:** When there is cooperative farming, risk is distributed among the members of the society. Farmers work together to solve each other's problem. This will give the feeling of economic security to the famers.

7. **Less litigation:** Land and other resources are managed collectively by the society in cooperative farming system. So, there is less chances of disputes over boundaries, water resources, pathways, etc. This will save time, money and energy in one hand and maintain peace and prosperity in the society in other hand.
8. **Useful for reclamation of land:** Reclamation of deteriorated and barren lands can be done by cooperative farming.

Disadvantages of cooperative farming

Though the cooperative farming is advantageous, it is not free from limitations. Some of them are listed below:

1. **Lack of initiative:** It is commonly said that everybody's business is nobody's business. Nobody shares the joint responsibility and interest. As a result, there is lack of initiation by the individual farmer.
2. **Inefficient management:** Overall management is carried out by the elected members of the cooperative society. In case they lack professional skill and expertise, expected output can't be achieved.
3. **Difficulty in profit distribution:** As land is different in quality, fertility and other qualitative characteristics, problem arises in the determination of the profit share. This might result in disputes among the members, leading to the failure of cooperative farming.
4. **Misuse of funds:** Farm equipments are misused as they are treated as a common property and no individual takes responsibility for it. Thus there is chance of misuse of funds, increasing the maintenance and management costs.
5. **Fear of unemployment:** In cooperative farming, land is pooled making a single big farm. Then after, the cultivation practices are generally performed using farm machineries rather than the human labor. This will create unemployment. Such situation is not desirable in the least developed countries like Nepal where there is surplus labor.

3.6 Nepalese experience

Cooperative Movement in Nepal was introduced in 1956 for the purpose of enhancing overall economic, social and cultural development of Nepalese people as provisioned in the Executive Order of the then Government, and later on, repelled by the Cooperative Societies Act, 1956. In the same year, credit Cooperative Society for the first time, was established in Chitwan District. After the enactment of Cooperative Act, 1992, new era of cooperatives was started by way of the legal provision which has made cooperatives as autonomous and independent. In 1993, there were many achievements in the field of cooperative development such as enactment of Cooperative Society Rules, 1993, establishment of National Cooperative Federation, establishment of Central Consumer Cooperative Union, and establishment of Central Milk Producers Cooperative Union and Formation of a large number of Single-purpose Cooperatives such as Consumers Cooperatives, Milk Producers Cooperatives, Saving and Credit Cooperatives throughout the country. Cooperative sector is now recognized as one of the three pillars (Cooperative, Public and private Sector) of national economic development of Nepal as reflected in the Interim Constitution of Nepal. NCF/N has been instrumental to carry forward national policies and programs to strengthen cooperatives for inclusive, equitable and sustainable development of the country.

In 2003, National Cooperative Bank Ltd was established. Year 2012 was celebrated as the International Year of Cooperatives 2012. Currently in the year 2015, 18th SAARC summit held in Kathmandu recognized the potential of cooperatives in achieving inclusive, broad-based and sustainable economic growth and development, and called for sharing of experiences, expertise and best practices in this sector. There was also the second Amendment of Cooperative Act 1992 through Ordinance. The government of Nepal has also announced "Member from each household" policy through its annual plans and programs. According to the Statistics of Cooperative Enterprise, 2015, there are total 32,663 cooperatives operating in Nepal. Out of them, 13,460 are saving and credit cooperatives and 9,463 are agricultural cooperatives, 4031 being the multipurpose ones.

Teaching Tips:

- Visit to different cooperative nearby school and record their activities.
- Prepare agriculture marketing channel for milk
- Prepare diagram to show different actors involved in goat marketing

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UNIT - 4

Agriculture marketing and management

Learning outcomes:
After completion of this chapter, the student will be able to know:

- Explain concept of International trade
- Explain advantages of international trade
- Describe status and structure of international trade of Nepal
- Describe WTO and Nepal

1. Conceptual Meaning

1.1. International trade

Concept

Traditionally, the term trade was understood as exchange of goods. With the globalization in this modern era, trade refers to international trade. International trade is the basic character of open economy in accordance with the Keynesian economy. According to Cherunilam (1997), international trade is the trade across the political boundaries. As defined by Paul (1999), it is the exchange of goods and services between different countries. Thus, it can be defined as the flow of goods and services across the national border in global basis. In general, it constitute of import and export.

Some terminologies related to international trade:

Import: It simply refers to the flow of goods and services into the country. Purchase of goods and services from abroad refers to import.

Export: It simply refers to the flow of goods and services away from the country. Selling of goods and services to the foreign countries is export.

Tariff (Duty): It is a tax imposed on imports and rarely on exports as they cross the political boundaries, i.e., from one country the others. Imposition of tariff results in higher prices to the domestic purchasers as the tariff is generally passed forward on resale.

Quota: It refers to a type of trade barrier that nations place on the physical amount of imports or exports of specific kinds of good.

Balance of Payment (BOP): Balance of payment of a country refers to the balance between the payments that are owned to the outside world and that are owned by the country. simply, it shows the export and import situation. The difference of inflows and outflows shows the extent of balance of payment, whether it is surplus (export>import), deficit (export<import) or balanced (export=import). It accounts only for the tangible goods.

Most favored nation treatment: According to this treatment, countries can't normally discriminate among their trading partners. Equal treatment should be done among all the WTO member in all aspects of trade like duty, quota, etc.

National treatment: It means that imported and domestic goods and services should be treated equally.

Intellectual property right: Intellectual property right imply an ownership of ideas including literary, artistic work, invention, sign for distinguishing goods of as enterprise and other elements of industrial property. It includes trademarks, copy rights, patents, geographical indication, etc.

Reasons for the international trade

1. Level of technological advancement differs among the countries. Some goods produced by advanced countries could not be produced by all countries. For example: aircrafts, ships, medical equipments, etc.
2. Developing and under developed countries can't make huge investments for generating human and technical capital in economic level.
3. Natural resources endowment differs among the nations .For example: Petroleum product on Gulf countries.
4. Human capabilities differ among the countries. People of developed countries are more skilled and specialized than those in the least developed countries.

(Sources: Bista, Raghu Bir, Economics of Nepal; Mankiw, N.Gregory, Principles of Microeconomics)

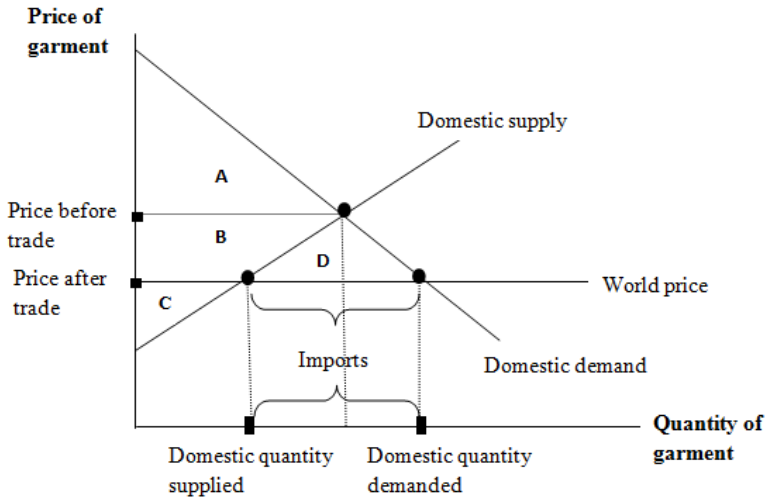
Advantages of international trade

a. Trading globally gives consumers and countries the opportunity to be exposed to goods and services not available in their own countries. Almost every kind of product can be found on the international market: food, clothes, spare parts, oil, jewllery, wine, stocks, currencies and water.

b. It lowers down the price level in domestic market.
c. Increase the availability of high quality goods globally.
d. Global trade allows wealthy countries to use their resources more efficiently.

(Sources: Bista, Raghu Bir, Economics of Nepal; Mankiw, N.Gregory, Principles of Microeconomics)

Suppose the price of garment in domestic market before the trade is above the world price. Domestic quantity demanded is greater than the domestic quantity supplied. Consumer's surplus and producer's surplus before trade is represented by area A and B+C respectively in the graph below. This situation calls for import from abroad. Once, the trade is allowed, supply is increased equating domestic demand at the world price. Price after trade is equal to the world price, which is lesser than the price before trade. As a result, consumer's surplus increases from A to A+B+D and producer's surplus falls from B+C to C. Thus consumers are better off while the producers are worse off after international trade. However, the total surplus rises by an area D. This indicates that the international trade raises the economic well being of the country as a whole.



Disadvantages of international trade

- It helps to transmit bad impulse very quickly.
- In adverse situations like war in a country, there could arise the economic sanction.

Main feature of international trade

- Nations are the business partner.
- Goods and services floe across the national border/political boundaries.
- Comparative advantage is the main reason behind the trade between two countries
- Main information about the status of international trade is the nation's balance of payment.

Status and structure of international trade of Nepal

Liberal trade policy of Nepal expects to accelerate export trade growth and diversification of the trade. Liberalism widens market at international and regional level. However, the policy implication in trade performance, particularly export and trade diversification by country are not found much positive. There is higher import and increasing trade share with India. Conflict period (2052-2062 B.S.), political instability, natural calamities like flood, drought, landslides, devastating earthquake of 2072 B.S. have worsen the environment of industrial growth and other productive activities. Export is very low compared to the import. Goods exported from Nepal to foreign countries constitute of very few commodities like *pashmina*, garments, carpet, handicrafts, tea, cardamom, leather and leather made goods, lentil, some medicinal herbs. On the other hand, large number of commodities are imported in Nepal like petroleum products, gold, silver, chemical fertilizers, electronic goods, machinery equipments, automobiles and raw materials of various goods. Trade direction of the country's economy is expansionary but it is due to uncontrolled import and unexpected contraction of export trade. There is import of high value products while the export basically consists of low value raw products. There is large share of trade with India. If we observe trade structure and share, trade with India will be more than 60 percent of the total trade.

1.2. WTO and Nepal

(Sources: Bista, Raghu Bir, Economics of Nepal; Poudel, Krishna Lal, Agribusiness Management)

The experience of Second World War period (1935-1946 A.D.) can be considered as the genesis of multilateral trading system. The Bretten Woods conference in 1944 tried to form International Trade Organization (ITO), however, it failed. Then after, in 1946 A.D., once the second world war over, 23 countries, led by the USA, formed

General Agreement on Tariff and Trade (GATT) with the aim to reduce tariffs and trade barriers. Series of historical attempts and trade negotiations, known as rounds, took place during the existence of GATT. The eighth round, also called Uruguay Round (1986-1994) of negotiations succeeded to reach an agreement for the establishment of the World Trade Organization (WTO). This round embodied three multilateral agreements, i) General agreement on tariff and trade (GATT), ii) General Agreement on Trade and Services (GATS), and iii) Agreement of Trade Related Aspects of Intellectual Property Rights (TRIPS). The WTO was formally established on January 1, 1995, replacing then GATT. WTO is now the only international organization dealing with the rules of trade in the multilateral trading system.

Major objective of this global international organization is to help producers and traders of goods and services and strengthen the world economy and create more trade, investment, employment and income growth throughout the world. Thus it facilitates trade flow smoothly, freely, fairly and predictably. It is accomplished by:

- administering of trade agreements under WTO,
- serving as forum for trade negotiations,
- settlement of trade disputes,
- review of national trade policies,
- cooperation with other international organizations, and
- technical assistance and training for developing countries.

Principles

There are five fundamental principles of the trading system in WTO, which are as follows:

1. **Non-discrimination:**
   Most favoured nations treatment
   National treatment

1. Protection only through tariff
2. Transparency in economic governance
3. Liberalization and globalization in trade
4. Democratic dispute settlement process

Basically there are three agreements related to agriculture. They are: agreement on

agriculture, agreement of technical barriers to trade and general agreement on trade in services.

1. Agreement on Agriculture under WTO

Agreement on Agriculture (AoA) under WTO consists of following five groups:

i. Market access commitment
ii. Reduction commitment for Aggregate Measures of Support
iii. Reduction commitment for Export Subsidies
iv. Sanitary and Phyto-Sanitary Measures (SPS measures)
v. Trade Related Intellectual Property Rights (TRIPS)

Now let us discuss these agreements individually.

i. Market Access Commitment:

Under market access commitment, there are following provisions:

a) Tariffication of all non-tariff barriers
b) Reduction of all tariffs in a given time bound frame

Countries	Period (Yrs)	Reduction %
Developed	6	36
Developing	10	24
Less Developed	-	-
Those with BoP problem	-	-

c) If import of the foreign goods in the domestic market is less than three percent in the base period (1986-1988 A.D.), it must be brought to three percent and further raised to five percent in the implementation period.
d) The countries will have the freedom to increase the import duty if dumping is proved. Dumping refers to charging of a lower price in export market than is charged for comparable goods in home markets.

ii Reduction commitment for Aggregate Measures of Support (AMS)

There is provision of reducing aggregate measure of support in AoA. The AMS for a country's agriculture is the sum total of product specific and non-product specific subsidies. If AMS in a country is more than the permissible limit in the base period (1986-1988 A.D.), it should be reduced by the following percentage during the implementation period.

Countries	Permissible AMS (%GDP)	Reduction commitment
Developed	5	20
Developing	10	13
Less Developed	-	-
Those with BoP problem	-	-

iii. Reduction commitment for export subsidies:

There is provision of commitment for reducing the export subsidies. Developed countries should reduce such export subsidies by 36 percent in six years while the developing countries could reduce it by 24 percent in 10 years.

iv. Sanitary and Phyto-sanitary Measures:

Sanitary and phyto-sanitary provision of AoA is made to protect animal or plant life or health from risks arising from the entry, establishment or spread of pest, disease, disease carrying/causing organisms. It requires the exporters to follow the specific international standards approved (Codex for food, OIE for animal health and IPPL for plant health). However, SPS agreement can't be used as disguised protectionism. For the global quality and safety concern, the agreement describes: harmonization, risk assessment, pest or disease free area, area of low pest and disease prevalence. In case of default, then the importing countries can restrict import from such defaulting countries.

We have the challenge from this agreement. For example, our honey is famous worldwide, but it was banned by EU for certain duration because of the pesticidal residue on them. But, still we do have opportunities in the sense that most of the products of Nepal are produced with low input technologies and thus are organic in nature. This can help us attract the organic market of the world.

v. Trade related aspects of Intellectual Property Right Agreement (TRIPS Agreement):

As per this agreement, all the member countries are required to make provisions for protection of plant varieties and animal species. Such trade related intellectual property rights includes copyrights, trademarks, patents, geographical indications and

industrial designs. Developed countries were given a time bound of five years to make such arrangements.

In case of least developed countries like Nepal, farmers are very ignorant and we also don't have strong mechanisms for formal lab testing. Thus our traditional rights and properties are on the verse of threats. We might have to pay for using our own resources and technologies to others if we don't be aware in time. Thus, it is our obligations to save our indigenous knowledge, technologies and properties (eg, medicinal plants, local indigenous varieties and species)

2. Technical barriers to trade (TBT)

Technical barriers to trade include different technical measures adopted by the member countries to restrict trade with other countries. Example of such barrier includes labeling, packaging, nutritional content, environmental standards, consumer's interest, etc. Main objective of TBT is to ensure that every member countries can adopt measures necessary for the protection of its essential security interest. It aims to encourage the development of international standards and conformity assessment. Focus of TBT is for the free and fair international norms with technical regulations and standards. Technical Standards should act as disguised protectionism.

Some example of TBT and SPS

TBT	SPS
● Labeling of food, beverage and drug products ● Quality requirements for fresh food products ● Labeling of textiles, etc	● Food additives in foods or beverages ● Toxins in foods and beverages ● Certification of food safety/animal or plant health certificate.

All the least developed countries like Nepal are affected by this agreement. Because such countries have very low resources, has no equipments to meet such standards, their products are highly affected by this agreement. Thus the least developed countries are demanding assistance from the developed countries for developing the

infrastructures regarding this issue.

3. General agreement on trade in services (GATS):

This agreement opens the door for the foreign investment in the different sectors. While accessing the membership of WTO by Nepal, 74 different sectors and subsectors like hydropower, solar plant, tourism business, etc were agreed for the foreign direct investments. However, there are only two sectors related to agriculture: animal medical services and technical experiment and investigation services.

This agreement expects the increment of foreign investment in these sectors. Foreign investors when work with the domestic investors would definitely develop the agriculture sector. Farmers are also expected to get regular and efficient services.

Nepal's membership in WTO

Nepal became the member of WTO on 23rd April, 2004. The membership brings new hope to improve trade and income share at global level for economic development and poverty reduction. Moreover, there is provision of preferential treatment to the least developed countries (LDCs) like Nepal. However, this membership also has challenges of enhanced competition in the domestic market. Let us assess both the opportunities and challenges for Nepal under WTO membership.

Opportunities:

1. **Market access and integration:** The major concern of WTO is to increase accessibility and mobility of goods and service in global market. Thus, Nepalese goods and services could access global market. There would be higher possibility of export trade promotion. By taking benefits of various privileges provided to the LDCs, Nepalese agro produces could expand their market in the international market.
2. **Agricultural development:** Despite the fact that agriculture is the main economic sector of the country, it is still operating in the subsistence level. Due to the constraints like traditional technology, lack of farm inputs (seeds, fertilizers, irrigation), agriculture growth rate is very sluggish. Thus, with the WTO membership, there would be inflow of modern technologies and tools, quality inputs and foreign investments, which could increase the overall

agriculture productivity. Finally, it can contribute to scale up the income and living standard of farmers.

3. **Industrial development:** With the inflow of foreign investment and private investment in the industrial and service sector, industrial sector can be developed. Technology transfer would also enhance the level of production and productivity at minimum cost. Investment and advanced technology when coupled would produce the qualitative exportable goods which increase the trade opportunity.
4. **Employment generation:** Liberal international labor market has absorbed surplus labor of Nepal, thus reducing the unemployment problem. Promotion and establishment of large commercial farms and agro-based industries have generated employment within the country. Outflow of labor has reduced the excess labor supply in agriculture to some extent which would improve labor productivity as well as agriculture production and productivity.
5. **Technological transfer:** With the transfer of technologies, we can reduce cost of production in one hand and increase the competitiveness and scale of agricultural and industrial production in the other hand. Generally, raw or semi finished agro products (low value, high volume) are exported which fetch lower income. With the technological advancement, we can add value to the agro products and export such high value goods.
6. **Multinational investment:** Many multinational companies are interested for investment in Nepal in different sectors like hydropower, agriculture, tourism, etc. Such investment would reduce resource lag situation in industry, agriculture, power and so on. It would also contribute for income and employment generation.
7. **Natural resource utilization:** Underutilized natural resources can be utilized efficiently. For example, hydro projects of Nepal are of 83000 MW potential. With the membership in WTO, there would be inflow of sufficient investment, technology and knowledge, which can help to harness such potentiality.
8. **Human capital development:** With the foreign investment and free international labor market, there is chance of human capital development. Government and non-government as well as multinational companies provide different skill training to the labor which helps to get higher wage rate.
9. **Technical and financial assistance of WTO:** There is a provision of special

preferential and differential treatment to LDCs based on the economic, institutional and development level. Nepal could take advantage of such assistance for improving institutional and policy capacity. This would help to access global market opportunities and benefits.

10. **Environmental conservation:** For the attainment of sustainable development and to address the problems of climate change, WTO membership of Nepal could prove beneficial. Information, technology, expertise and investment required in this field can be obtained from the international trade.

(Sources: Bista, Raghu Bir, Economics of Nepal; Poudel, Krishna Lal, Agribusiness Management)

Challenges:

1. **Poor transportation facilities:** Due to poor road connections and conditions, farmers and trader are having problem to transport the agro commodities to the market. Problem of transportation also leads to the damage of the agro produce.
2. **Poor marketing information facilities:** Market information regarding demand, supply and prices of various farm inputs and farm produces are unavailable as well as inefficient.
3. **Poor physical and technical infrastructures:** Infrastructures necessary to produce quality goods that can compete in the international market are unavailable in Nepal. As a result, they fail to meet quality standards as set by the importing nations and global standard setting organization.
4. **Lack of sufficient processing plants:** Processing of agro commodities adds value as well as prolongs the self life. However, such processing plants are in very few numbers in Nepal which are also of minimum quality standards.
5. **Insufficient investment in agriculture sector:** Government of Nepal is unable to make sufficient investment for the development of agriculture sector. Direct subsidies are given only on chemical fertilizer which is also in insufficient amount. In contrast to this, neighboring countries like China and India are making substantial investment in agriculture sector as well as providing direct subsidies for the export of some agro-produce. This makes our agro-produce difficult to compete with that of other countries.

(Sources: Bista, Raghu Bir, Economics of Nepal; Poudel, Krishna Lal, Agribusiness Management)

4. Price Variation: Spatial and Temporal

(Sources: Tomek, G.William, Agricultural Product Prices)

Price variation

Price variation refers to the process of taking different price of same quality good across different location and along different time periods. Based on this definition, price variations are of two types:

1. Temporal price variation, and
2. Spatial price variation

The purpose studying price variation is to forecast the future price level which may help in proper resource allocation. Now, let us discuss price variations individually.

1. Temporal price variation

Temporal price variation is the process of changing the price of similar quality goods along different time period. Simply, it is the price behavior/pattern through time (Pt).There are five types of temporal price variation:

a) Irregular price variation,

b) Seasonal price variation

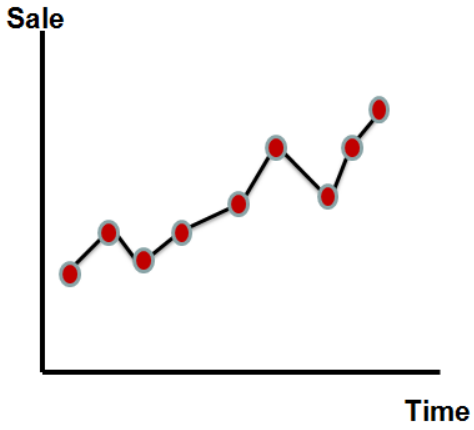
c) Annual price variation

d) Trend/Secular price variation

e) Cyclical price variation

a) Irregular price variation:

Irregular price variation is defined as change in price level of the goods and services due to unforeseen events. It is also known as random price variation. For example: occurrence of insect pest, drought, flood, disease epidemic, strike, etc. Such accidents affect production directly as well as indirectly through infrastructure damage. This will lead to the price variation. Such accidental variations (random or chance) are unpredictable. Thus, it is not possible to forecast. Irregular or random price variations can't be controlled, but minimized to some extent. Insurance, contract farming, etc help to minimize irregular price variation.



2) Seasonal price variation:

Seasonal price variation is defined as uniform change in price in different season with in a year over a long time. It involve pattern of change that repeat over a period of less than one year. Thus, it is easy to predict or forecast the future price of goods and service.

Causes of seasonal price variation:

Seasonality in production of agricultural commodities: Most of the agricultural commodities are seasonal in their production behavior. So, a season of main production shows minimum price level because of accumulated supply. For example: Cucurbits like cucumber, gourds, melons, etc are grown during summer and crucifer/cole crops like cauliflower, cabbage are grown in winter season.

Perishability: More perishable is the commodity, higher is the price variation. For example: Cauliflower shows more seasonal fluctuation in price than potato. Similarly milk shows seasonality in price than food grains.

Length of harvesting: Longer the length of harvesting, lower is the price variation. For example: Four season bean versus watermelon. Four season bean can be cultivated and harvested year round and thus shows less price variation compared to watermelon which can be harvested for only two to three months.

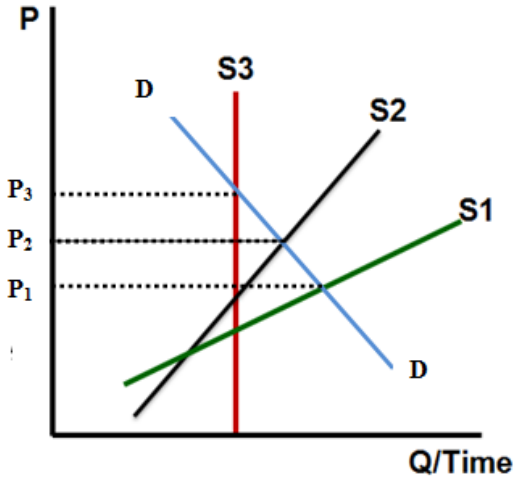
Risk in storage: Higher is the risk in storage, greater ids the price variation. For example: Onion versus potato. Onion is more risky in storage due to the problem of sprouting, thus showing greater price variations than potato.

Cost of storage: Generally, seasonal price variation is due to the cost of storage. Storage cause change in supply and its cost causes price variation. Seasonal price variation must cover at least cost of storage.

Climate: It affects both the demand and supply side of agricultural commodities. There is seasonal production of vegetables. For example: winter-crucifers, summer-cucurbits. Likewise demand of watermelon, ice-cream is higher in summer while that of tea, coffee is higher in winter.

Festivals: During dashain, there is high demand of goat meat, irrespective of supply and price trend.

Suppose, there are three seasons available per year for the selling or supply of rice in the market, say S1, S2 and S3, demand remaining same throughout the year DD. Crop is harvested in S1with the three selling options, S_1 = immediately after harvest, S_2 = mid season and S_3 = pre-harvest. During on-season or immediately after harvest, price is minimum because supply is accumulated in that period. At mid season, price is relatively higher as storage cost is also involved here. At pre-harvest season, farmer have to supply the goods irrespective of price, as the new goods will be available in the market shortly and can not be carried in next season. So, supply is perfectly inelastic. Higher price could be obtained in S2 and S3.



For the crops which are harvested in short period and sold throughout the year like cereals, storage is done. For example, paddy broker stores paddy and incur storage

cost. Storage cost should be such that it covers all the costs involved in paying rent of godwon, insurance, interest, depreciation, future price risk, etc.

Mathematically,

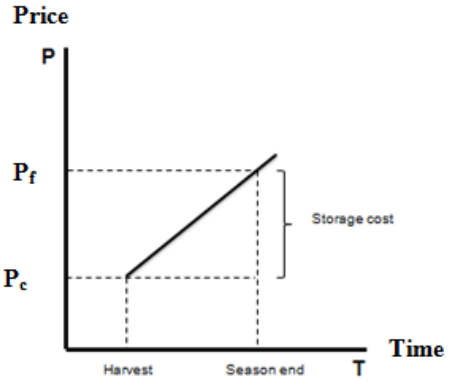
$M = P_f - P_c$

Where,

M= Storage costs between harvest to sale (Godown, insurance, interest, depreciation, future price risk)

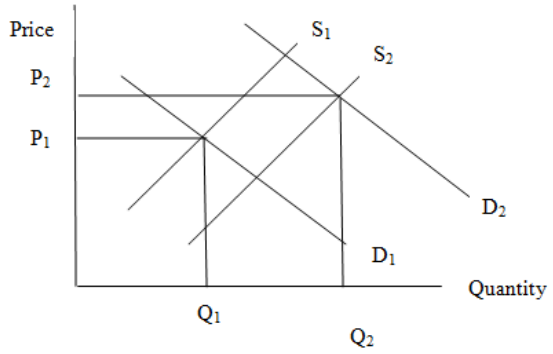
Pf= Expected future price

Pc= Current price



Storage cost depends on various factors like type of commodity to be stored (perishable, fragile), volume, time and duration, etc.

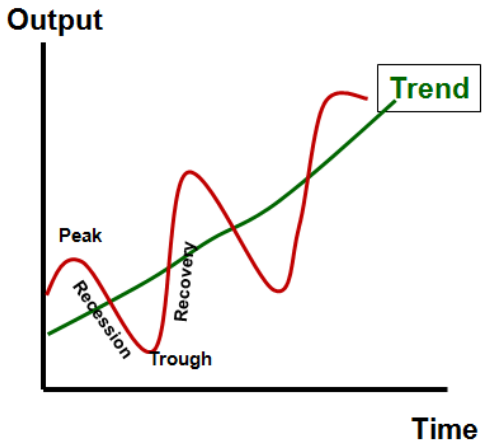
3) Annual price variation: Annual price variation is the process of changing price year to year, due to demand and supply shifters. Shifting may not necessarily be increasing only, it be upward or downward. Demand shifters may be export, systematic increase in population and income. When export increase, price level rises resulting in increase in demand. Thus, demand move away from origin. Supply shifters may be weather, liberal import policies, invention or introduction of some technology, etc. Unfavorable weather shifts supply cure upward. Liberal import policies lower down price level. Invention of some technology also increases demand. As a result price varies. There are possibility of three cases, shifting of both demand and supply, shifting of demand curve only, keeping supply constant or shifting of supply curve only, keeping demand constant.



4) Trend price variation:

Trend price variation is the change in price level over a long period of time, specially for five to ten years. It is a long term variation or secular variation in the time series value of price. Trend not only shows the price difference in between two points of time, it also explains the rate of change in price over time. Agricultural prices are associated with inflation and deflation. Trends may be increasing, decreasing or constant. Factors affecting trend are as follows:

a) Population: There is positive relationship between population and price. As the population size increases, price also increases and vice-versa.
b) Income level: As the income of people increase, price also increases.
c) Change in taste and preferences: Change in taste and preference of the consumer also results in price variation. For example: Cotton quilts are being replaced by blankets.
d) Money supply: As the money supply increases, inflation occurs, resulting to increase in price of the agro-commodities. Likewise, with the decrease in money supply, deflation occurs, resulting in decrease in the price level.
e) Technological changes: Efficient technologies, infrastructural development increase supply, thus decreasing the price level.



v) Cyclical price variation:

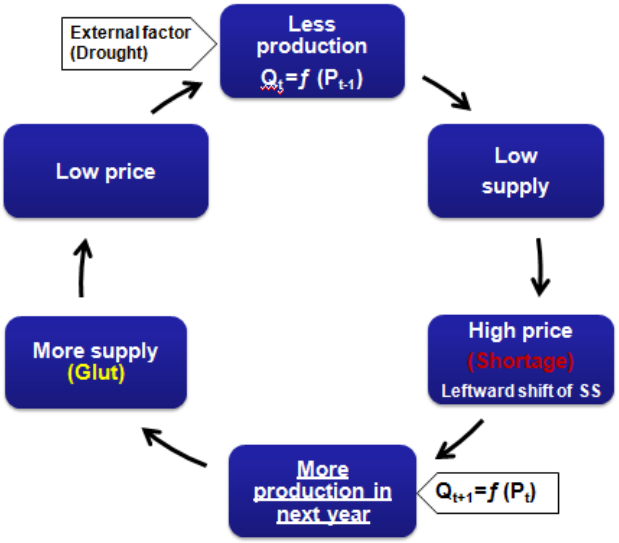
Cyclical price variation is defined as ups and downs in price level over a long period of time in cyclical manner. Or, these are the regular pattern of prices that repeat over a long period of time, which is not by the chance. Such fluctuations do not occur at regular interval (occur>1 year interval and lasts for 2 to 10 years). Cyclical price variations are as a result of economic boom or depression.

This cyclical price variation is based on the following assumptions:

a) Price in current year, 't' is depended on previous year's price 't-1'.
b) Current year's price Pt depends on the last year's quantity of supply'Qt-1'.

So, price and quantity moves in recursive chain like path.

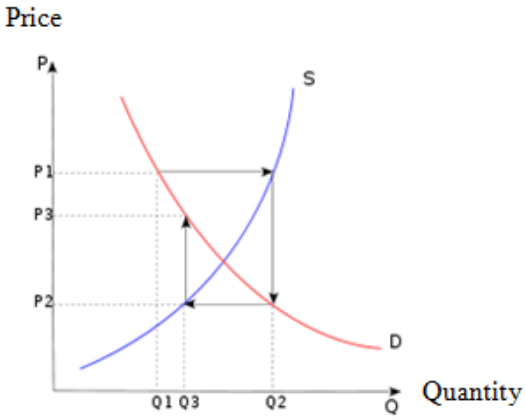
Cyclical price variation makes a cycle in the form of wave, which is also known as cob-web. Cob-web model is an economic model that explains reasons why prices are subjected to periodic fluctuations. Cobweb model is based on a time lag between supply and demand decisions (e.g. agri. lag between planting and harvesting). It is a price-quantity path through time. It describes cyclical supply and demand in a market where the amount produced must be chosen before prices are observed.



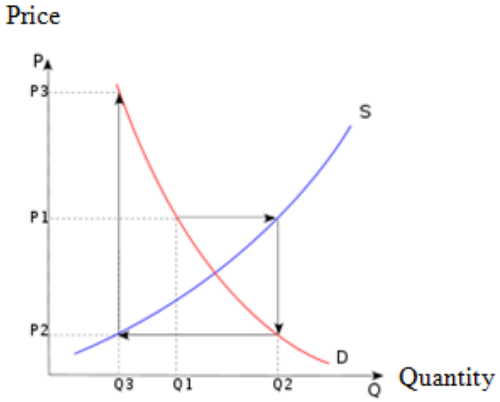
For example: Suppose due to some external factor, say drought occurrence, lowers down the production (Q_0) and eventually supply will be low and thus price (P_0) rises in that year. As a result, farmers will produce more in the following year with the view of fetching good price. Supply (Q_1) will be more which lowers down the price (P_1) in the second year. As a result of decreased price, farmers will grow less in the third year and the process repeats in the following years. In an infinite time period, the price movement converges to centre and that fixes the equilibrium price. But, technology and all the other factors which shift demand and supply should be held constant.

This cyclical price variation consideration for infinite time is not realistic as shifters of demand and supply could not be ignored.

Convergent or Stable case: In this case, each new outcome is successively closer to the intersection of supply and demand. Here, supply curve is steeper than the demand curve



Divergent or Unstable case: In this case, each new outcome is successively further from the intersection of supply and demand. Slope of the supply curve is less than the slope of the demand curve.



2) Spatial price variation

a) Spatial price variation can be defined as the difference or variation in price between regions or markets. Product price generally differ with distance of form and market. Spatial price relations are predominantly determined by transfer cost between region or market.

b) Price difference between the differences in price level of the same commodity of the same quality between two regions.

c) Price difference between two markets that do not trade with each other will be less than or equal to transfer cost.

Transfer cost refers to the all costs associated with the transfer of goods from one market to next, such as loading, handling, transportation charges, etc. It consists of

fixed charges which do not depend on distance such as- loading and unloading as well as variable charges which is related with distance (transportation cost). In general transportation cost is inversely proportional to the distance (transfer cost ∞ 1/distance). However, price difference can't exceed transfer cost. If so, buyers will buy from low price market.

In case, there is no trade between two markets, price determination using transfer cost alone is difficult. In such case, one should know whether goods from surplus market can be collected at central market. If there are many collection markets, it is more difficult to determine spatial price.

Market boundary:

Market boundary is the locus of producer's point from where they get same price by transporting commodities to any markets. Producer's market destination is determined by price at destination minus transfer cost.

i.e., Producer's price= Market price – Transfer cost

Market boundaries may be natural, for example; river, mountain as well as man-made, for example, highway, administration, etc.

Boundaries between two market shifts as the transfer cost changes.

Effect of change in market price and transfer cost on boundary between markets

Suppose, there are two markets, market A and B, where the initial price of same commodity is P_A = Rs. 6/unit and P_B = Rs. 5/unit, respectively. Boundary for market A is upto 400 km and that for market B is upto 200 km, with the transfer cost of T_A = Rs. 2 @0.5/100 Km in market A and T_B = Rs. 1@ Rs. 0.5/100 Km in market B.

We know,

Market boundary (MB) = $P_A - T_A = P_B - T_B$

where,

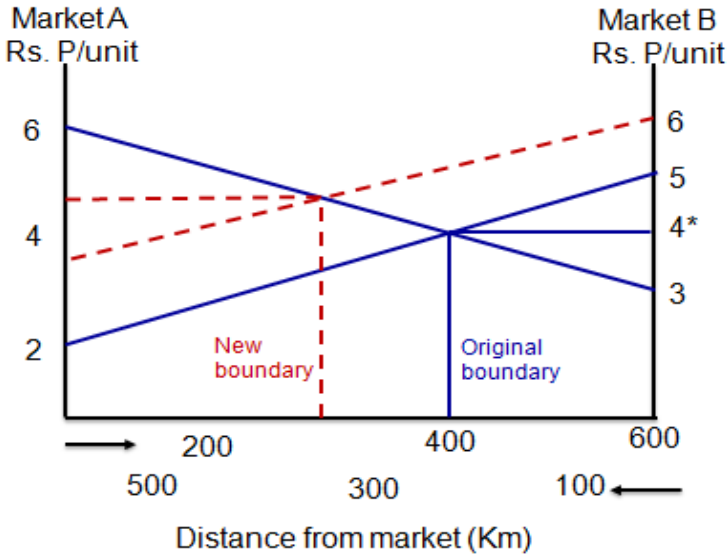
MB = Market boundary,

P_A and P_B = Price at market A and B respectively,

T_A and T_B = Transfer cost from farm to market A and B respectively.

Suppose price rise to Rs. 6/unit in market B and there is efficient transportation, thus there is reduction in transfer cost, such that it is Rs. 0.4/100 Km. Then, some of the

producers located along the boundary would join market B to new boundary and left the old one.



Spatial Equilibrium Model

Spatial equilibrium model is useful in analyzing interregional price relationships and trading pattern. Trade models are illustrated by supply, SS and demand DD functions for two markets or regions (i.e., potential surplus and deficit).

Major assumptions of spatial equilibrium model:

- Competitive market
- Perfect knowledge
- Homogenous products in each market
- Production and consumption in each market occur at same point (i.e., the is no storage)
- Transfer costs within market are ignored
- No barrier for movement of goods between markets

Suppose there are two markets A and B and initially, there is no trade between two market.

Initially,

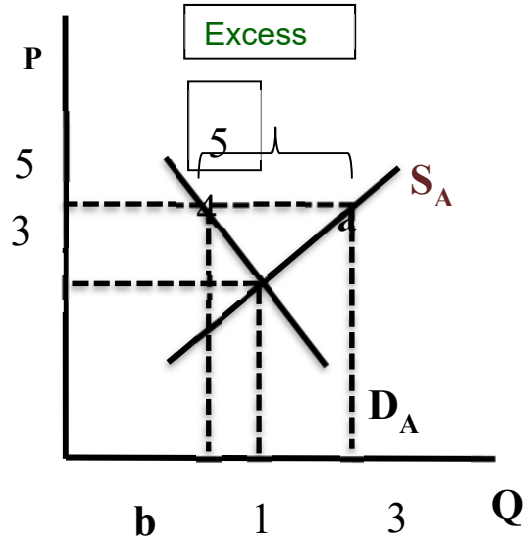
In market A,

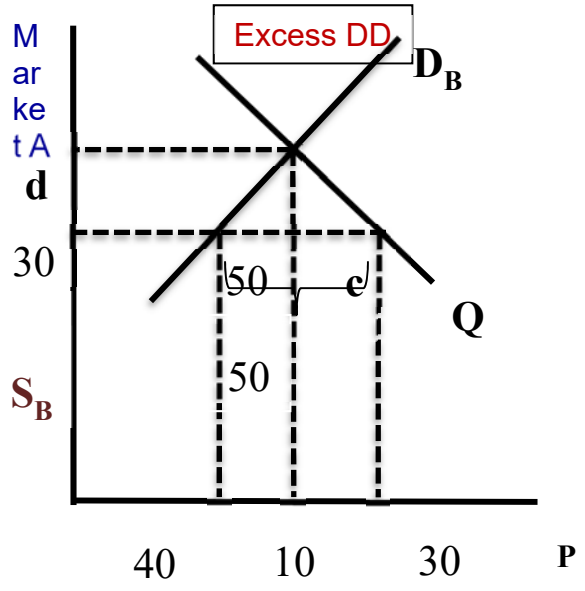
Market is in equilibrium at price (P) = Rs. 30, with excess supply = ab (b-a)

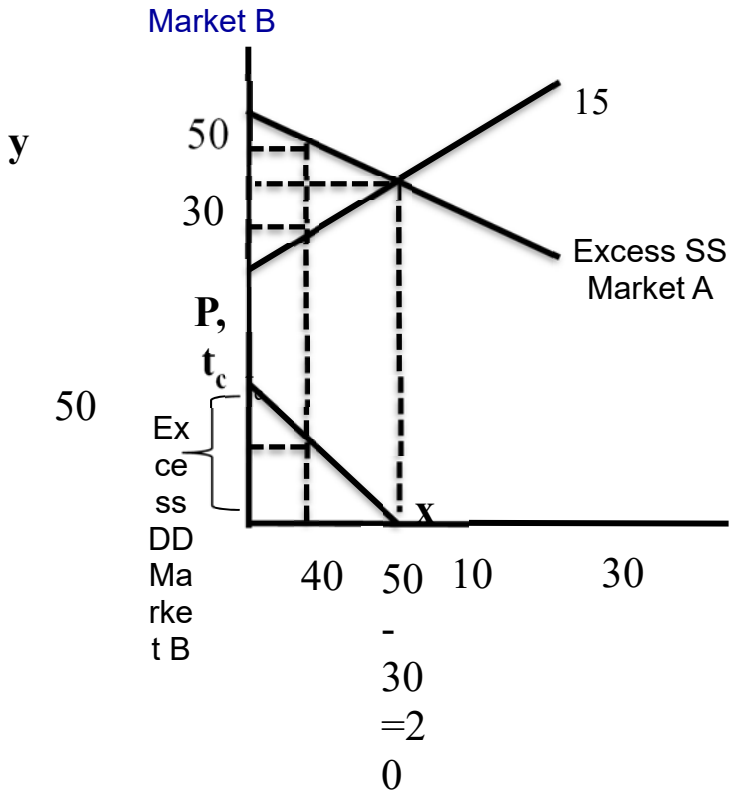
Likewise,

In market B,

Market is in equilibrium at price (P) = Rs. 50 with excess demand = cd (d-c)







Both the market will be in equilibrium when demand equals supply.

Here, excess demand and supply intersect at point where P = Rs. 40

XY line is the trade volume line.

Now, transfer cost is measured by the vertical intercept.

i.e.,Transfer cost = Excess demand – Excess supply

= Rs. 50- Rs. 30

= Rs. 20

Horizontal intercept measures the maximum volume of trade when transfer cost is zero. i.e., point of intersection of excess demand and supply = 15. It means, maximum of 15 units would transfer from surplus market a to the deficit market B (since ab = cd = 15 units).

Finally, price at both market = Rs. 40/unit.

If transfer cost is greater than or equals to Rs. 20, then there will be no transfer of goods.

General condition for change in trade volume or price relationship between two markets:

i. Market demand or supply curve shifts, or
ii. Transfer cost changes.

Limitation of spatial equilibrium model

As the number of markets increase, analysis becomes more complicated.

Applications of spatial equilibrium model:

- To identify international trading pattern
- To assess tariff and import quotas
- To examine effect of trade policy variables (subsidies, tax, tariff) on trade (gain or losses)
- Once surplus and deficit is estimated for each market, linear programming can be used to determine optimization.

Teaching Tips:

- Prepare the list of commodities that exported to international market.
- Prepare the list of commodities that could be exported to international market.
- Discuss about the problem in marketing of different commodities

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UNIT - 5

Practical final

Explore the five examples of price, wealth and value, utility and goods.

Price:

In general, price is the quantity of payment or compensation given by one party to another in return for goods or services. In modern era, prices are generally expressed in units of some form of currency per unit weight or liter of the commodity. For example: Rs./Kilogram, Rs./Litre, etc.

Selling price refers to the quantity of payment requested by a seller of goods or services, rather than the eventual payment amount. **Buying price** is the quantity of payment offered by a buyer of goods or services. The actual payment may be called the **transaction price** or **traded price**.

Wholesale price is the price of the commodity if it is traded in bulk while the **retail price** is the price offered by the retailers who sale in less quantity. **Maximum retail price** is the maximum amount of price that could be paid by the retailers.

Price of any commodity (either goods or services) is determined by the interaction of the demand and supply. Price is fixed such that the quantity demanded is equal to the quantity supplied.

Example:

Price of premium *Basmati* rice = Rs. 125/Kg

Price of petrol = Rs. 105/Litre

Price of mango = Rs. 150/ kg

Price of milk = Rs. 70/Litre

Price of gold = Rs. 57,000/10 gm

Wealth:

Any tangible or intangible thing that makes an individual, family, or group better off can be defined as wealth. Simply in an accounting, wealth can be understood as the

value of an entity's accumulated tangible cash, land, building, etc.) and intangible (copyright, patents, trademarks, etc.) saleable possessions minus liabilities. Wealth refers to the total of all assets of an economic unit that generate current income or have the potential to generate future income. Wealth can be classified as:

1. Monetary wealth:

It is anything that can be bought and sold, for which there is market and hence a price. The market price, however, reflects only the commodity price and not necessarily its value. For example, water is essential for human existence but is usually very cheap. For example: cash, land, building, car, etc.

2. Non -monetary wealth:

Those things which depend on scarce resources, and for which there is demand, but market and price does not exist are the non-monetary wealth. For example: education, health, and defense.Value:

Value is a measure of the benefit or utility provided by any good or service to an individual. It is generally measured relative to units of currency. Value can be referred to the the maximum amount of money an individual is willing and able to pay for certain good or service.

For example: Value of the house in tourist area is higher than that in the rural area. Utility:

Utility refers to the want satisfying power of a commodity. It is the satisfaction which may be actual or expected, derived from the consumption of a commodity. Utility differs from person- to-person, place-to-place and time-to-time. In other words, when a commodity is capable of satisfying human wants, we can conclude that the commodity has utility.

For example:

In a sunny day, water can quench our thirst, thus water has utility.

A loaf of bread has utility for a hungry man.

Any transportation vehicle has utility for travelers.

Warm jacket has utility for a man severing from cold.

Medicines have utility for a sick person.

Goods:
Anything that can satisfy a human wants or needs is called a good. Goods may be commodity or services that satisfy human wants which are the starting point of all economic activity. Goods are tangible in nature and are the material outcome of production.

Goods that are scare i.e., limited in supply in comparison to demand are called economic goods. For example: biscuits, seeds, fertilizers, milk, gold, etc.

Goods whose supply is unlimited and do not need any payment or effort for acquiring them are called free goods. For example: air, sunlight, etc.

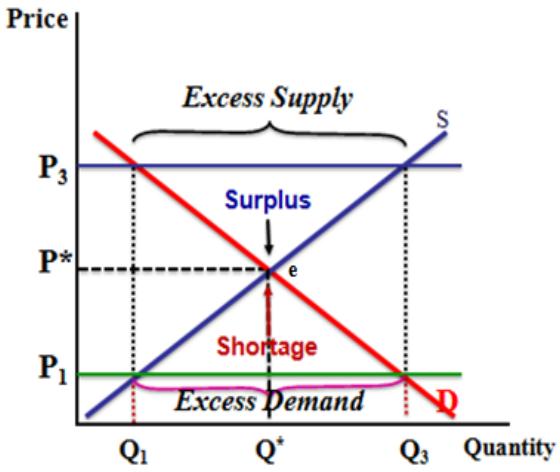
3. Show equilibrium condition and margin (in marketing concept).
Market equilibrium is a situation in which buyers and sellers are satisfied with the current combination of price and quantity bought or sold. For simplicity, equilibrium can be classified for the Individuals i.e., buyers and sellers and the market.

Individual Equilibrium:
It is a situation in which the agent has no incentive to alter current level of economic action.

Market Equilibrium:
Market equilibrium is a situation in which economic agent(s) or market(s) have no incentive to change their economic behavior.

Market equilibrium is attained at the point where the quantity demanded and quantity supplied are equal (Qd=Qs). In other words, it is attained when the supply curve intersects the demand curve.

The corresponding price at the point of intersection is the equilibrium price (market-clearing price, P*), and the quantity is the equilibrium quantity, Q*.



In the figure above, at point e, demand curve intersects the supply curve, i.e., quantity demanded is equal to the quantity supplied. The price P* is the equilibrium price and the quantity Q* is the equilibrium quantity in this case. In case of excess demand (D>S), then there would be shortage of goods and the price tends to rise i.e., P_1 increases. As a result of price rise, producers would produce more goods which will later result excess supply (S>D). There would be surplus goods in the market resulting to the fall in price (P_3). Thus the price would attain equilibrium at a point where quantity demanded is equal to the quantity supplied. Here, the equilibrium price is P* and the equilibrium quantity is Q*.

Marketing margin:

Marketing margin is the difference between price received by producers and paid by consumers. This difference in fact is marketing costs. In other words, marketing margin is simply difference between retail price and producer price.

Margin for each marketing agency can be calculated, such as a single retailer, or by any type of marketing agency such as retailers or assemblers or by any combination of marketing agencies.

There are two methods in estimating the market margin:

Concurrent margin method :

This method stresses on the difference in price that prevails for a commodity at successive stages of marketing at a given point of time.

Lagged Margin Method :

This method takes into account the time that elapses between buying and selling of a commodity by the intermediaries and also between the producer and the consumer. This method indicates the difference of price received by an agency and the one paid by the same agency in purchasing in equivalent quantity of commodity.

The following formula can be used to calculate the total marketing margin:

$$M_T = \sum_{i=1}^{n}[(Si - Pi)/Qi]$$

Where,

M_T = Total marketing margin,

S_i = Sale value of a product for i^{th} firm,

P_i = Purchase value of a product paid by the i^{th} firm,

Q_i = Quantity of theproduct handled by the i^{th} firm,

i = 1, 2, 3, ……,, n (number of firms involved in the marketing channel)

4. Calculate marginal utility (MU) and total utility (TU).

Utility refers to want satisfying power of a commodity. It is the satisfaction that a person derives from the consumption of a good or service. When a commodity is capable of satisfying human wants, we can say that the commodity has utility. Utility differs from person- to-person, place-to-place and time-to-time. Utils are imaginary and psychological units, used to measure satisfaction (utility) obtained from consumption of a certain quantity of a commodity.

Total Utility (TU):

Total utility refers to the total satisfaction obtained from the consumption of all possible units of a commodity. It measures the total satisfaction obtained from consumption of all the units of that good. For example, if the 1st piece of biscuit gives you a satisfaction of 20 utils and 2nd one gives 15 utils, then TU from 2 pieces of biscuit is 20 + 15 = 35 utils. If the 3rd piece of biscuit generates satisfaction of 10 utils, then TU from 3 pieces of biscuit will be 20+ 15 + 10 = 45 utils.

TU can be calculated as:

$TU_n = U_1 + U_2 + U_3 + \ldots\ldots\ldots\ldots\ldots\ldots + U_n$

Where:

TU_n = Total utility from n units of a given commodity

$U_1, U_2, U_3, \ldots\ldots\ldots\ldots\ldots U_n$ = Utility from the 1st, 2nd, 3rd n^{th} unit

n = Number of units consumed

Marginal Utility (MU):

Marginal utility is the additional utility derived from the consumption of one more unit of the given commodity. It is the utility derived from the last unit of a commodity purchased. As per given example, when 3rd piece of biscuit is consumed, TU increases from 35 utils to 45 utils. The additional 10 utils from the 3rd piece of biscuit is the MU.

MU can be calculated as:

$MU_n = TU_n - TU_{n-1}$

Where: MU_n = Marginal utility from n^{th} unit;

TU_n = Total utility from n units;

TU_{n-1} = Total utility from n – 1 units;

n = Number of units of consumption

MU of 3rd piece of biscuit will be: $MU_3 = TU_3 - TU_2 = 45 - 35 = 10$ utils.

Thus, simply, MU is the change in TU when one more unit is consumed. However, when change in units consumed is more than one, then MU can also be calculated as:

$$\text{Marginal Utility (MU)} = \frac{\text{Change in Total Utility}}{\text{Change in number of units}}$$

i.e., $MU = \frac{\Delta TU}{\Delta q}$

Total Utility is Summation of Marginal Utilities:

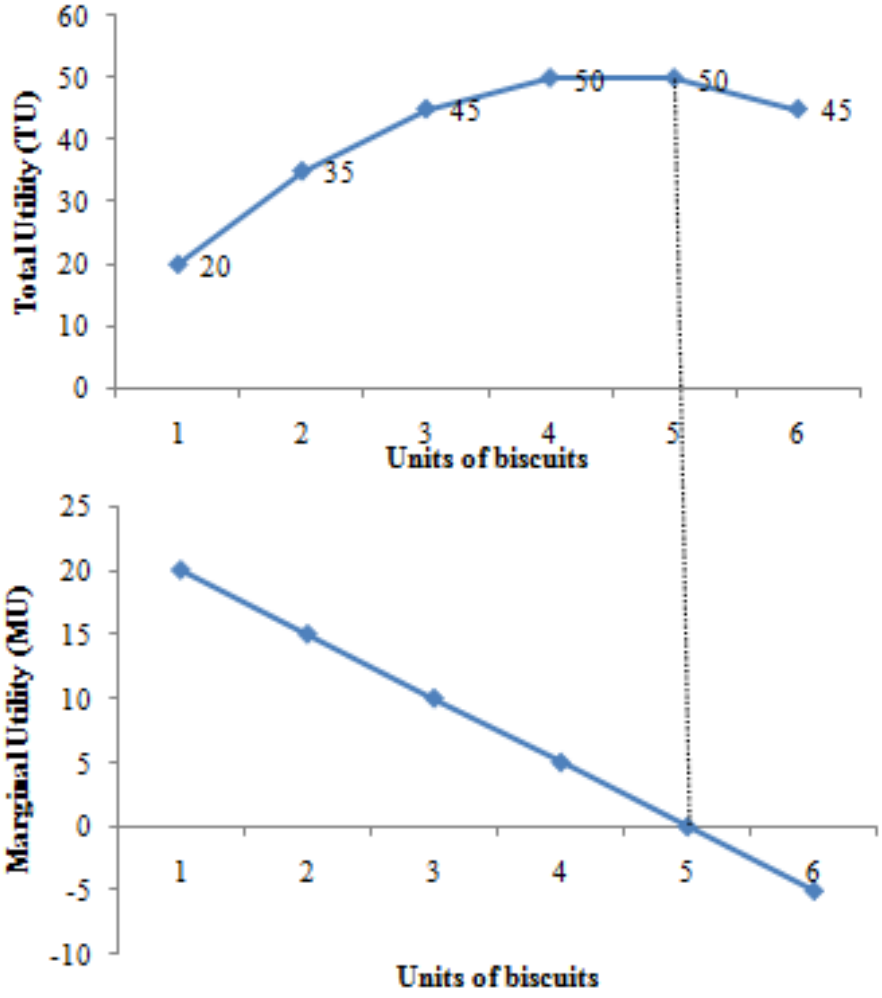
Total utility can also be calculated as the sum of marginal utilities from all units, i.e.

$TU_n = MU_1 + MU_2 + MU_3 + \ldots\ldots\ldots\ldots\ldots\ldots + MU_n$ or simply,

$TU = \sum MU$

The concepts of TU and MU can be better understood from the following example and graph:

Units of biscuits	Total utility (TU)	Marginal utility (MU) = $TU_n - TU_{n-1}$
1	20	20
2	35	15
3	45	10
4	50	5
5	50	0
6	45	-5



In figure above, units of biscuit are plotted along the X-axis and TU and MU are measured along the Y-axis. MU is positive and TU is increasing till the 4th piece of

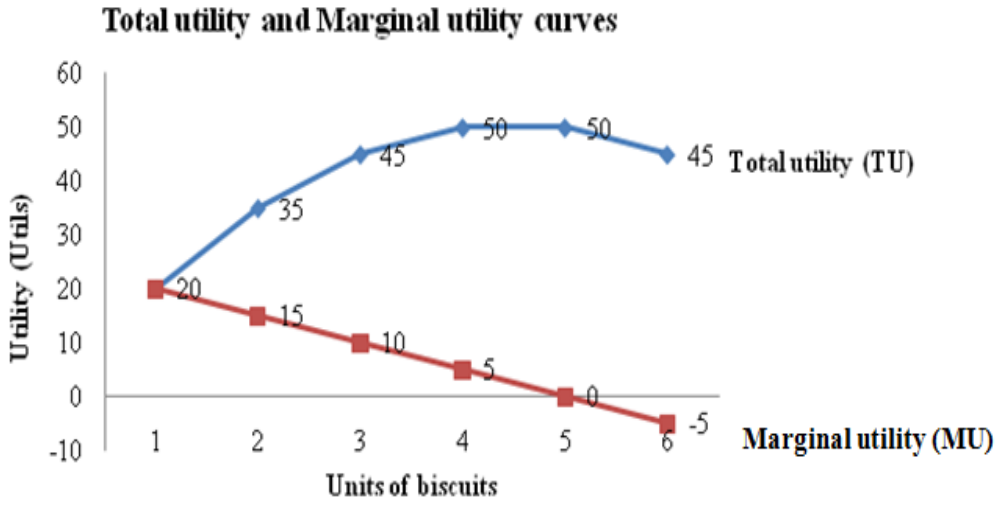
biscuit. After consuming the 5th piece of biscuit, MU is zero and TU is maximum. This point is known as the point of satiety or the stage of maximum satisfaction. After consuming the 6th piece of biscuit, MU is negative (known as disutility) and total utility starts diminishing. Disutility is the opposite of utility. It refers to loss of satisfaction due to consumption of too much of a thing.

5. Present graph of marginal utility (MU) and total utility (TU).

5.1 Based on the following information, plot the graph of marginal utility (MU) and total utility (TU).

Units of biscuits	Total utility (TU)	Marginal utility (MU) = $TU_n - TU_{n-1}$
1	20	20
2	35	15
3	45	10
4	50	5
5	50	0
6	45	-5

Solution:

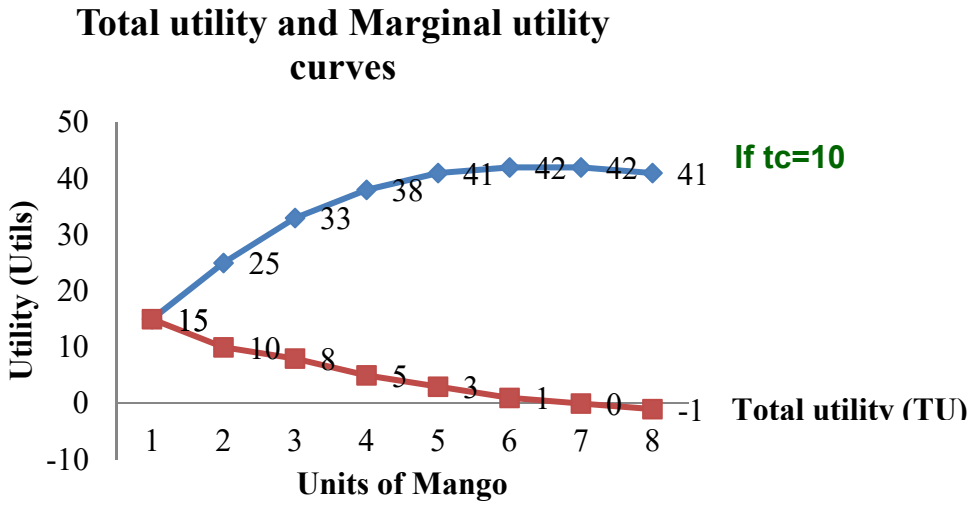


5.2 Based on the following information, plot the graph of marginal utility (MU) and total utility (TU).

Units of mango	Total utility (TU)	Marginal utility (MU)
1	15	15
2	25	10

3	33	8
4	38	5
5	41	3
6	42	1
7	42	0
8	41	-1

Solution:



5.3 Estimate income elasticity.

Income of the consumer is one of the important determinant of demand. With the rise in consumer's income, demand for the normal goods rises and vise-versa. Thus, there is positive relationship between consumer's income and demand of the normal goods. The percentage change in quantity demanded as a result of given percentage change in consumer's income is called income elasticity of demand. Income elasticity simply measures the responsiveness of demand to the change in consumer's income.

Mathematically,

$$\text{Income elasticity of demand} = \frac{\text{Proportionate change in demand}}{\text{Proportionate change in income}}$$

$$\text{i.e., } E_y = \frac{\Delta q/q}{\Delta y/y} = \frac{y}{q} \text{ X } \frac{\Delta q}{\Delta y}$$

where, E_y is income elasticity of demand, Δq is the change in demand, q is original demand, y is original income and Δy is the change in income.

Classification of goods based on income elasticity

a) Normal goods: Normal goods have positive income elasticity of demand. The quantity demanded of such goods increases with the increase in income and vice-versa. In this case, the income demand curve will be positively sloping from left upward to the right.

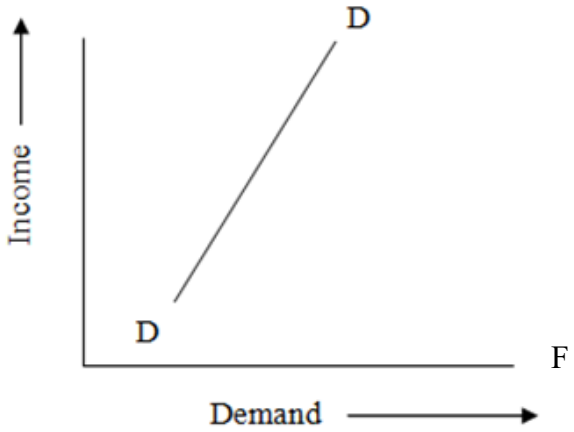


Figure: Normal goods (Positive income elasticity)

Marginal Utility (MU)

Unimportant goods: Necessity goods are completely income inelastic. The quantity demanded of such goods does not respond to the changes in income. In this case, the income demand curve will be a straight line parallel to the income axis. For example: salt.

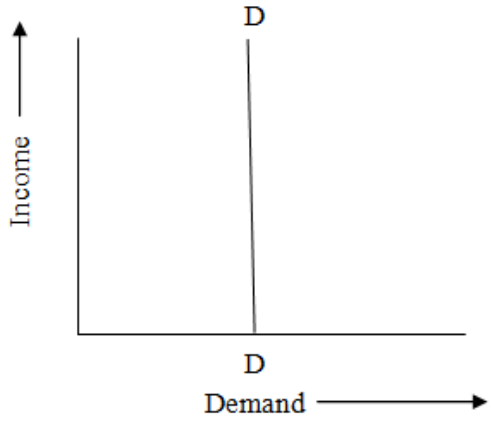


Figure: Unimportant goods (Zero income elasticity)

b) Inferior goods: Inferior goods have negative income elasticity of demand. The quantity demanded of such goods decreases with the increase in income. In this case, the income demand curve is sloping from left downward to the right. For example: finger millet.

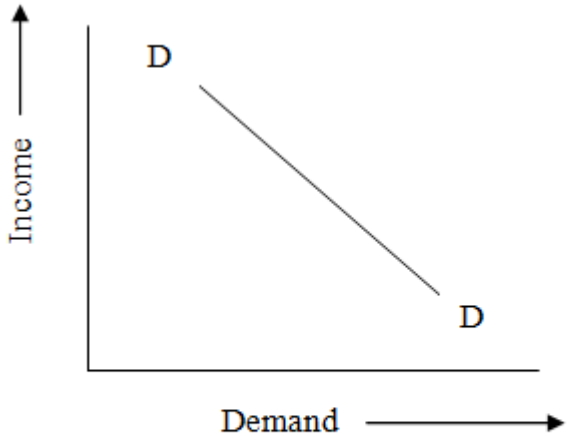


Figure: Inferior goods (Negative income elasticity)

Numerical:

5.4 Suppose a consumer's income is Rs. 25,000 per month and he purchases 8 kg of meat. If his income increases to Rs. 30,000 per month, he is prepared to purchase

12 kg of meat. Calculate the income elasticity of demand.

Solution,

Given, y = Rs. 25,000/month

q = 8kg

Δy = Rs. 30,000 – Rs. 25,000

= Rs. 5,000

Δq = 12kg – 8 kg

= 4 kg

Therefore,

$E_y = \frac{y}{q} X \frac{\Delta q}{\Delta y}$

$= \frac{25,000}{8} X \frac{4}{5,000}$

= 2.5

Thus, the demand for meat is 2.5 which is quite income elastic. Here, the coefficient of income elasticity of demand is greater than unity (E_y>1).

5.5 Suppose a consumer's income is Rs. 15,000 per month and he purchases 4 kg of sugar month. If his income increases to Rs. 20,000 per month, he is prepared to purchase 4.5 kg of sugar. Calculate the income elasticity of demand.

Solution,

Given, y = Rs. 15,000/month

q = 4kg

Δy = Rs. 20,000 – Rs. 15,000

= Rs. 5,000

Δq = 4.5kg – 4kg

= 0.5 kg

Therefore,

$E_y = \frac{y}{q} X \frac{\Delta q}{\Delta y}$

$$= \frac{15,000}{4} X \frac{0.5}{5,000}$$

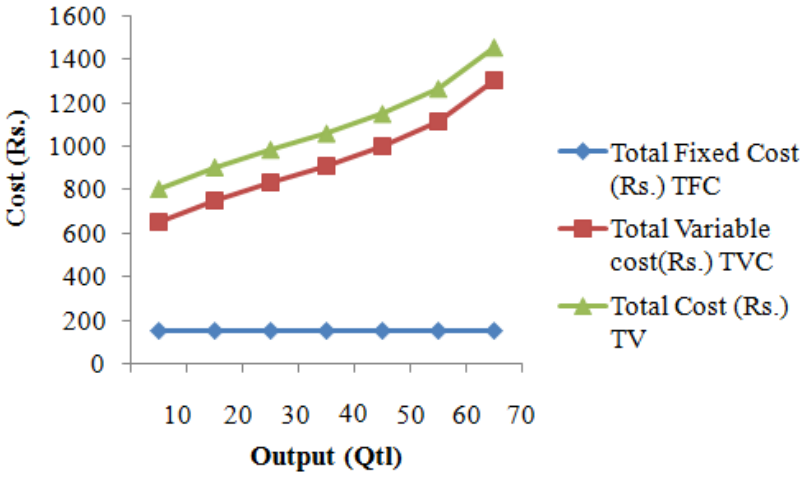
$$= 0.375$$

Thus, the demand for sugar is 0.375 which is quite income elastic. Here, the coefficient of income elasticity of demand is less than unity (E_y<1).

6. Calculate the cost curve.

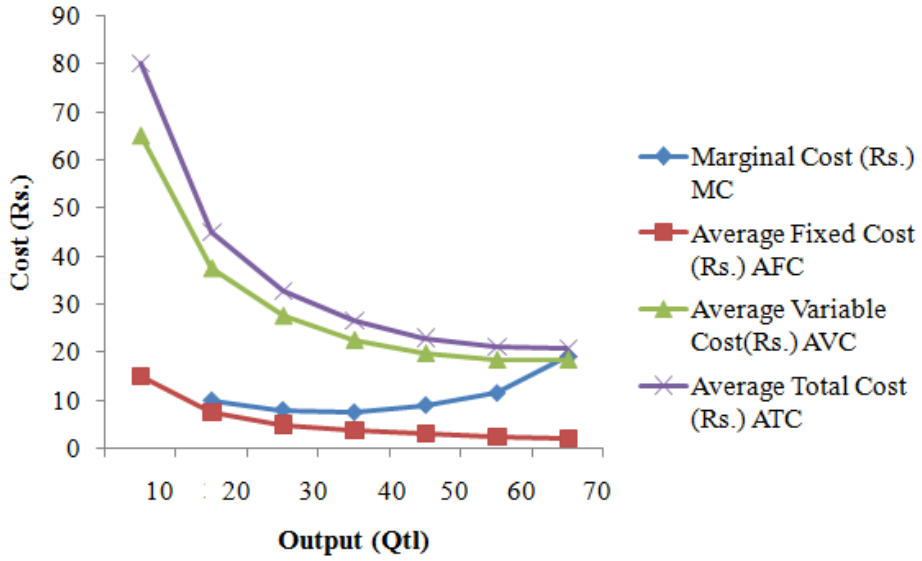
Output (Qtl)	Total Fixed Cost (Rs.)	Total Variable cost(Rs.)	Total Cost (Rs.)	Marginal Cost (Rs.)	Average Fixed Cost (Rs.)	Average Variable Cost(Rs.)	Average Total Cost (Rs.)
Y	TFC	TVC	TV	MC	AFC	AVC	ATC
30	150	650	800		5.00	21.67	26.67
40	150	750	900	10	3.75	18.75	22.50
50	150	830	980	8	3.00	16.60	19.60
60	150	905	1055	7.5	2.50	15.08	17.58
70	150	995	1145	9	2.14	14.21	16.36
80	150	1110	1260	11.5	1.88	13.88	15.75
90	150	1300	1450	19	1.67	14.44	16.11

Solution:



Note: Vertical distance between the TC and VC curve is everywhere equal to FC. Thus, TC and

VC curves are parallel.



Note:

MC < ATC or AVC ⇒ AVC is decreasing (vice-versa)

MC = AVC ⇒ Min AVC

MC > ATC ⇒ ATC increasing (vice-versa)

AFC declines as output increases.

AVC initially falls as output increases and then later rises.

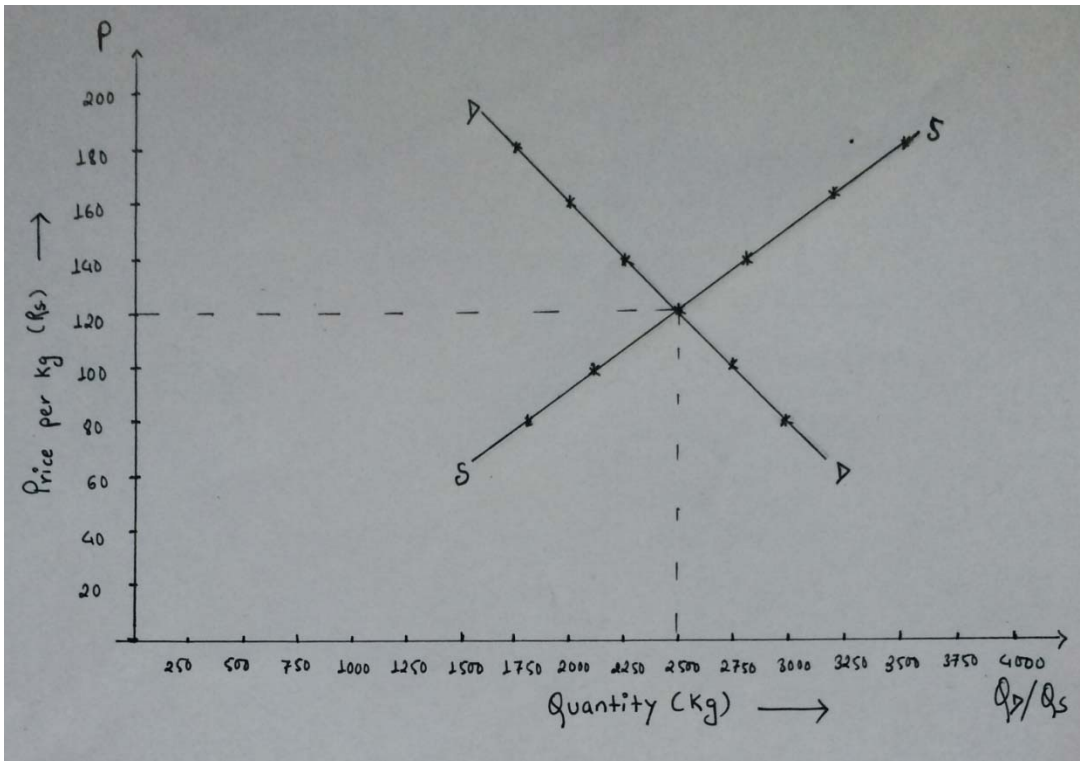
Minimum point on ATC lies to the right of minimum point on AVC.

7. Derive demand and supply (including price determination curve).

Numerical:

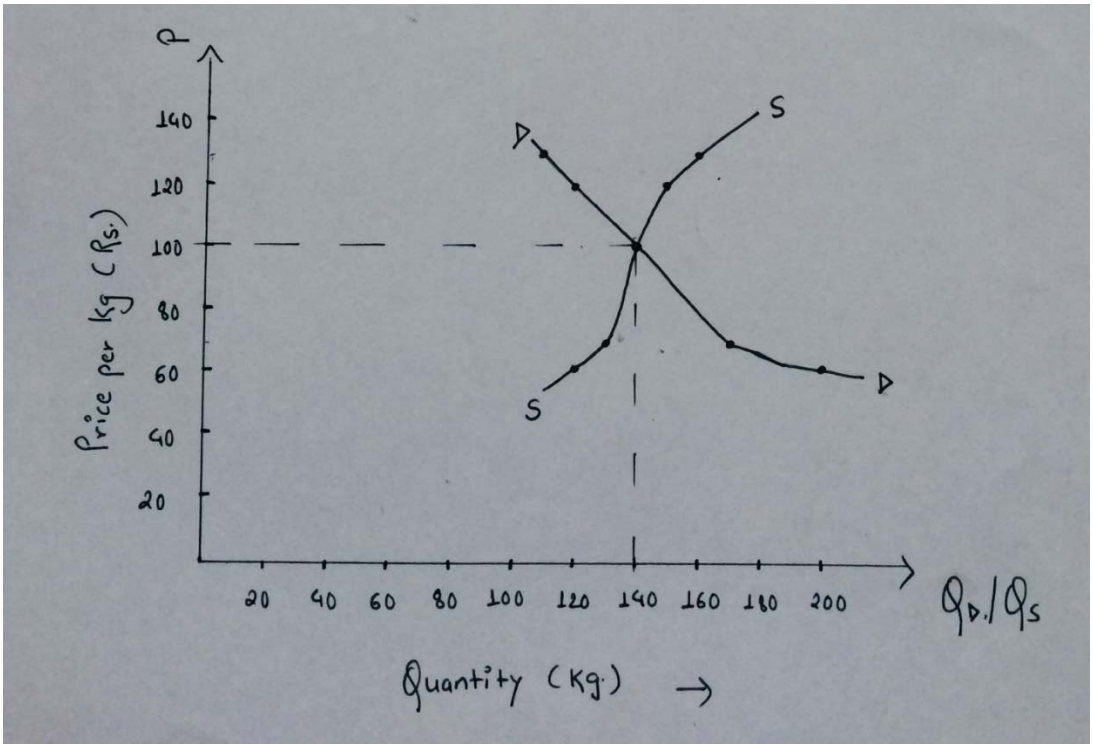
7.1 Based on the following information, plot the graph of demand and supply schedule and find the equilibrium price of the mango in Kalimati fruits and vegetable market.

Price per Kg (Rs.)	Demand (Kg)	Supply (Kg)
80	3,000	1,800
100	2,750	2,100
120	2,500	2,500
140	2,250	2,800
160	2,000	3,200
180	1,750	3,500



7.2 Based on the following information, plot the graph of demand and supply schedule and find the equilibrium price of the onion in Balkhu agriculture market.

Price per Kg (Rs.)	Demand (Kg)	Supply (Kg)
130	110	160
120	120	150
100	140	140
70	170	130
60	200	120



8. Calculate cost (variable, fixed, method of depreciation, cost of production).

Variable cost:

Variable cost is the cost of variable factors of production. Variable Cost increases with the increase in the quantity of production. These are the expenses incurred on the variable factors of production. Variable cost also can be defined as the expenditure on variable factors or inputs, such as labor, which can be changed. For example: Expenses on raw materials, power and fuel; wages of daily laborers, etc.

Total variable cost (TVC) = Quantities of variable factors of production X Factor price

$$= \Sigma q_n x\ P_n$$

For example:

Variable factors of production	Quantity	Unit Price (Rs)	Cost (Rs.)
Land preparation	2	25	50

(Hours)			
Seed (Kg)	.5	100	50
Fertilizer (Kg)	10	35	350
Wage (Mandays)	20	500	10,000
Total fixed cost (Rs.)			**10,450**

Fixed cost:

It is the cost of fixed factors of production. Fixed Cost remains the same in the short run. Fixed cost is also defined as the expenditure, on hiring or purchasing of fixed factors or inputs, which are compulsory and has nothing to do with the amount of production of the good or service. Fixed costs are the costs that do not vary with the output. For example: Rental value of Land, Machine, interest, insurance premium, salaries of permanent employees, Depreciation etc.

Total fixed cost (TFC) = Quantities of the fixed productive service x Factor price

For example:

Fixed factors of production	**Quantity**	**Unit Price (Rs)**	**Cost (Rs.)**
Land rent (Rs./ropani)	2	5000	10,000
Depreciation (Rs./year)	5	100	500
Interst (Rs./year)		2000	2,000
Salary of the permanent worker (Rs.)	1	8000	8,000
Total fixed cost (Rs.)			20,500

Total cost (TC) = Total Variable cost (TVC) + Total fixed cost(TFC)

= Rs. 10,450 + Rs. 20,500

= Rs. 30,950

Example of the total fixed cost and variable cost for different levels of production is shown in the table below:

Output (Qtl)	Total Fixed Cost (Rs.)	Total Variable cost(Rs.)	Total Cost (Rs.)
Y	TFC	TVC	TV
30	150	650	800
40	150	750	900
50	150	830	980
60	150	905	1055
70	150	995	1145
80	150	1110	1260
90	150	1300	1450

Method of depreciation:

Depreciation

Depreciation is the word used to describe the reducing value of an asset like farm building, tractor or implements, as a result of the use, wear and tear, accidental damage and time obsolescence. It is usually a fixed cost as the equipment is used for more than one enterprise for more than a year.

Depreciation involve spreading of the original cost of long lived assets over it's entire useful life. Based on the nature of assets and the extent of use, depreciation cost may be spread uniformly over the entire useful life of an asset or can be charged relatively higher during the early life of an asset.

Methods of calculating depreciation:

1) Straight line method:

In this method, the annual depreciation of an assest is calculated by dividing the original cost of the asset less salvage value by the expected years of life. Mathematically,

$$\text{Annual depreciation (AD)} = \frac{\text{Original cost (OC)} - \text{Salvage value (SV)}}{\text{Expected life (EL)}}$$

Here, annual depreciation is constant throughout the useful life of the asset.

For example: For a plough with useful life of 10 years, whose cost is Rs. 3,000 and salvage value is Rs. 100, what would be the annual depreciation?

Solution:

Annual depreciation (AD) $= \frac{\text{Rs.3000} - \text{Rs.100}}{10}$

= Rs. 290/year

This method is easy, simple and applicable for most of the purposes. It is thus useful for durable assets like building and fences which may require uniform maintenance during the life time. This method is unrealistic as it assumes equal loss in value every year during the entire expected useful life of an asset. For example: tractor depreciates much more during the first year than in the later years.

2) Annual revaluation:

In this method, the market value of the asset is estimated in the beginning and at the end of year inventory and then the difference is taken as depreciation.

For example:

Value of a water pump at the beginning =Rs. 5,000

Value of a water pump at the end = Rs. 4,500

Depreciation = Rs. 5000- Rs. 4,500

= Rs. 500

This method is useful for livestock in the early years of life, i.e., in the appreciation phase. However, annual revaluation of farm assets like building and machineries which are not brought and sold frequently becomes difficult. So, this method is of limited use in such cases.

3) Declining balance method:

In this method, a fixed rate of depreciation is used for every year and applied to the remaining value of the assets at the beginning of each year. The fixed rate is reduced from the balance each year unless the salvage value is reached and no further depreciation is possible. There occurs higher depreciation change during the earlier life of the assets and lower charges in the later years. The assumed constant rate of depreciation should be nearly twice that used under the straight line method.

For example:
Water pump of Rs. 2400 has an expected life of 20 years and a salvage value of Rs. 400. The rate of depreciation would obviously be 100 percent under the straight line method. Hence, a rate of 200 percent depreciation will be used in this method. The calculation of depreciation would be as follows:

Table 8.1: Calculation of depreciation using declining balance method

Year	Value at the beginning of the year (Rs.)	Annual depreciation	Remaining balance (Rs.)
1	2400	2400 X 0.2 = 480	2000 - 480 = 1920
2	1920	1920 X 0.2 = 384	1920 - 384 = 1536
3	1536	1536 X 0.2 = 307.2	1536 - 307.2 = 1228.8
4	1228.8	1228.8 X 0.2 = 245.76	1228.8 - 245.76 = 983.04
.	.	.	.

After the 4th year, the same procedure is continued until the remaining balance reduces to an amount equal to the salvage value, Rs. 400 in this case.

This method is useful in a situation where an asset depreciates at a faster rate in early period of life, for example, machineries and auto-mobiles.

However, the limitation is that it is more complicated than straight line method.

9. The Sum-of-the-year digits method:
When it is desirable to distribute depreciation expenditure more heavily in the first years of the use and more lightly in the later year, the sum-of-the years digit method is highly recommended. Following formula is used for the calculation of annual depreciation in this method:

Annual Depreciation (AD) = F x Amount to be depreciated

where, F = fraction for any year, such that,

$$F = \frac{\text{Years of life remaining at the beginning of accounting period}}{\text{Sum of the years of life of the asset}}$$

Amount to be depreciated = Cost – Salvage value

Example: Any assets with the original cost of Rs. 5000 and expected life of 10 years have the salvage value of Rs. 500. Calculate the annual depreciation of the asset using sum-of-years digit method.

Solution:

Year	Value at the beginning of the year (Rs.)	F	Annual depreciation	Remaining balance (Rs.)
1	5000	10/55	10/55 (5000-500)= 818.20	5000-818.2 = 4181.8
2	4181.8	9/55	9/55 (5000-500) = 736.36	4181.8 - 736.36 = 3445.44
3	3445.44	8/55	8/55 (5000-500) = 654.55	3445.44 - 654.55 = 2790.89

Same procedure is continued until the remaining balance reduces to an amount equal to the salvage value, Rs. 500 in this case.

Limitation of this method is that it is more complicated than straight line method.

a) Cost of production

Cost of production refers to the value of the inputs involved in the production of crops and livestock. For the purposes of simplicity, efficient record keeping and profitability analysis, it is useful to divide costs into two kinds: variable costs and fixed costs.

i) Variable costs

Those costs vary according to the size of the enterprise, the amount of inputs used, and the yields achieved. Variable costs apply to specific farm enterprises and vary with level of production.

For example, if the area of land under a particular crop increases or more inputs are applied, then variable costs also increase. On the other hand, if less land is planted or ewer inputs are used, the variable costs decrease. Some other examples of variable costs are: seeds, feeds, fertilizers, wages, etc.

ii) Fixed costs

These costs usually apply to the farm as a whole and they do not vary with changes in level of production. For example: Rent of the farm land, salary to the permanent workers, depreciation, farm equipments, etc.

Total cost of production (TC): Total fixed cost (TFC) + Total variable cost (TVC)

Example: Calculation of cost of production of *Four Season Bean* in one *ropani* of land in Bhaktapur.

S.N.	Particulars	Unit	Quantity	Rate (Rs.)	Cost (Rs.)
	Variable cost				
1	Wage	Mandays	34	300	10200
2	Seed	Kg	2.5	200	500
3	Compost/FYM	Metric ton	1	3,000	3000
4	Chemical fertilizers				
4.4	Urea	Kg	2	35	70
4.2	DAP	Kg	2.5	60	150
4.3	Potash	Kg	2	150	300
4.4	Micro-nutrients	Kg	2	150	300
5	Pesticides	Kg	0.5	600	300
6	Fuel	Litre	15	109	1635
7	Bamboo for staking	Piece	80	110	8800
8	Jute strings for staking	Kg	5	150	750
A	Total variable cost (Annual operating cost)				26005.00
	Fixed cost				
9	Land rent	Ropani	1	3,000	3000
10	Irrigation management	Ropani	1	1,000	1000
11	Repair and maintenence	Average	1	500	500
12	Interest on operating cost	%	2.5		650.13
13	Depreciation	Average			250
B	Total fixed cost				5400.13
C	Total cost (A+B)				31405.13

10. Prepare income statement.

Income statement:

Income statement is also called 'Profit and Loss Statement', which shows the measure of revenue and expenses during a given accounting period. It can be prepared either for a single enterprise or for all enterprise of a farm business as a single unit. Income statement shows the performance of the farm business during the given agricultural period and thus provides guidelines for improving the farm efficiency in future. Measure of income provided by this statement is useful in tax payment determination, analysis of the business expansion potentiality, evaluation of the outcome of the business activity and justification of loan repayment ability. However, it fails to guide for family spending.

Steps:

In the credit or receipts column on the left hand side, all the receipts or income from the sale of crops, livestock, other miscellaneous farm activities and inventory increase are entered.

In the debit or the expenses column on the right hand side, all the current farm expenses, inventory decrease, imputed rental value of the owned land, imputed value of farm family labor, interest actually paid, interest charges on the average farm capital and imputed value of operator's management are entered.

Total gross farm income is the summation of gross income from crops, livestock, miscellaneous farm activities and the inventory increase.

Gross farm expense is the summation of current expenses and inventory decrease.

Net farm income is obtained by deducting gross farm expense from the total gross farm income.

Returns to land labor and management is obtained by adding the interest actually paid and interest charges on the average farm capital and deducting the amount from net farm income.

Returns to average capital is obtained by reducing imputed rental value of owned land, imputed value of farm family labor and imputed value of operator's management from net farm income and adding to it the interest actually paid.

Returns to average capital = Net farm income - imputed rental value of owned land - imputed value of farm family labor - imputed value of operator's management + interest actually paid .

Simple format of the income statement:

vi. Credits (Receipts)	vii. Debits (Expenses)
viii. Particulars Amounts (Rs.)	ix. Particulars Amounts (Rs.)
1. Agro product (Crop sales) x. 1.1 xi. 1.2 xii. 1.3	xiii. 1. Operating expenses xiv. 1.1 xv. 1.2 xvi. 1.3
xvii. Sub-total	xviii. Sub-total
2. Animal (livestock sales) xix. 2.1 xx. 2.2	xxi. 2. Fixed expenses xxii. 2.1 xxiii. 2.2
xxiv. Sub-total	xxv. Sub-total
A. Gross cash receipt from farm produce (1+2)	B. Gross cash expenses of farm (1+2) xxvi.
3. Other receipts xxvii. 3.1 xxviii. 3.2 xxix. 3.3	xxx. 3. Other expenses xxxi. 3.1 xxxii. 3.2 xxxiii. 3.3
xxxiv. C. Total receipts	xxxv. D. Total expenses
xxxvi. Net cash income = (A-B) xxxvii. Net farm income = (C-D)	

9.1 Prepare an income statement of ABC Farm for the year 2072/73 based on following information:

Sale of crops (maize, rice, vegetables) = Rs.75,000/- ,sale of milk = 45,000/- , livestock purchase = Rs. 30,000/-, fuel charge = Rs. 550/-, sale of dairy cow = 25,000/- , purchase of feed = Rs. 4,500/-, purchase of seed = Rs. 850/-, veterinary service charge = Rs. 850/-, custom work = Rs. 1,500/-, hired labor = Rs. 3,200/-, government subsidies = Rs. 15,000/-, fertilizer purchase = Rs. 9,000/-, Miscellaneous farm income = Rs. 1,650/- , rent for tractor = Rs. 1,050/-, repairs = Rs. 550/-, interest = Rs. 2,500/- , inventory change = (Rs. 2,500/-), closing current account receivable = Rs. 500/-, opening current account receivable = Rs. 250/- , Closing current accounts payable = Rs. 1,000/-, opening current accounts payable = Rs. 650/- , Depreciation = Rs. 3,500/-

Solution:

Farm Income and Expense Statement of ABC Farm

For the period 01/04/2072 to 31/03/2073

Income	Rs.	Expenses	Rs.
Crops	75,000	Livestock purchase	30,000
Milk	45,000	Fuel charge	550
Dairy cow	25,000	Feed	4,500
Custom work	1,500	Seed	850
Government services	15,000	Veterinary service charge	850
Misc Farm income	1,650	Fertilizers	9,000
Total farm cash sales	163,150	Hired labor	32,000
Closing current accounts receivables (Rs.500)		Rent for tractor	1,050
Less: opening current accounts receivables (Rs. 250)	250	Repair	550
Total farm sales	163,400	Interest	2,500
Plus inventory change (ending minus beginning)	-2500	Total farm cash expenses	81,850
		Closing current accounts payable (Rs. 1000)	
		Less: opening current accounts payable (Rs. 650)	350

		Total farm purchases	82,200
		Depreciation	3,500
		Total farm expenses (B)	85,700
Gross farm income (A)	160,900		
		Net farm income (A-B)	75,200

9.2 Prepare an income statement of Narayani Farm for the year 2072/73 based on following information:

Sale of cauliflower = Rs.10,500/- , fuel charge = Rs. 2,500/-, sale of milk = 20,000/- , sale of tomato = Rs.60,000/- , fertilizer purchase = Rs. 20,000/-, FYM purchase = Rs. 2,800/-, fuel charge = Rs. 1,080/-, purchase of feed = Rs. 15,000/-, veterinary service charge = Rs. 350/-, custom work = Rs. 500/-, hired labor = Rs.4,500/-, government subsidies = Rs. 60,000/-, miscellaneous farm income = Rs. 4,000/- , rent for tractor = Rs. 1,800/-, repairs = Rs. 630/-, interest = Rs. 1,500/-, inventory change = Rs. 5,800/, closing current account receivable = Rs. 950/-, opening current account receivable = Rs. 400/- , Closing current accounts payable = Rs. 300/-, opening current accounts payable = Rs. 450/- .Solution:

Farm Income and Expense Statement of Narayani Farm

For the period 01/04/2072 to 31/03/2073

Income	**Rs.**	**Expenses**	**Rs.**
Cauliflower	10,500	Fuel charge	2,500
Milk	20,000	Feed	15,000
Tomato	60,000	Seed	1040
Custom work	500	Veterinary service charge	350
Government services	60,000	Fertilizers	20,000
Misc Farm income	4,000	FYM	2,800
		Hired labor	4,500
Total farm cash sales	155,000	Rent for tractor	1,800
Closing current accounts receivables (Rs.950)		Repair	630
Less: opening current accounts receivables (Rs. 400)	550	Interest	1,500
Total farm sales	155,550	Total farm cash expenses	50,120
Plus inventory change (ending minus beginning)	5,800	Closing current accounts payable (Rs. 300)	

		Less: opening current accounts payable (Rs. 450)	-150
		Total farm purchases	49,970
		Depreciation	2,800
		Total farm expenses (B)	52,770
Gross farm income (A)	**161,350**		
		Net farm income (A-B)	108,580

10. Prepare net worth statement.

Net worth statement is also known as Balance sheet. It lists the assets and liabilities of a business together with the statement of equity or net worth. Here, the term balance is used as the sum total of the assets column is equal to the liabilities and net worth column. It shows the financial condition and stability of the farm business at a particular point of time. In other words, it shows the value of assets that would remain if the farm business were liquidated and all the liabilities in the business are paid off. Net worth statement reflects three essential components, viz., assets, liabilities and net worth or owner's equity.

Mathematically,

Net worth = Assets – Liabilities

Assets refer to anything of value in the possessed by the farm business or a claim of the farm for anything of value in other's possession. Assets constitutes of farm inventory, farm cash and accounts receivable. Farm assets are broadly classified as:

- Fixed assets: Such assets are difficult to convert into cash to meet any current obligations. For example: land, building.
- Working assets: Such assets are more liquid than the fixed assets. For example: Farm machineries and equipments, producing livestock.
- Current assets: Such assets are most liquid assets and are consumable within a year. For example: cash on hand or in the bank, seed, fertilizers, etc.

Liabilities can be defined as other's claim against the farm business, like mortgages, loans and accounts payable. It can be classified into three groups:

- Long-term liabilities: Those liabilities which can be deferred from 5 years to 20

years are classified as long term liabilities.

- Intermediate liabilities: Such liabilities can be deferred for the present. They have to be paid between 1 to 5 years period. For example: promissory notes and medium term loans.
- Current liabilities: Those liabilities which have to be paid immediately, generally within one year. They can't be deferred.

Steps :

- In the assets column on the left side, current, working and fixed entries are made. The total farm assets are then calculated by summing up all those assets entries.
- In the liabilities column on the right side, current, intermediate and long term liabilities entries are made. The total farm liabilities are then calculated by summing up all those liability entries.
- Farm owner's or proprietor's net worth is calculated by deducting total assets from total liabilities and then entered on the liabilities column.
- The total liabilities and net worth on the liabilities on the liabilities column must be equal to the total assets on the assets column.

10.1 Prepare the closing Net Worth Statement/Balance Sheet of Hariyali farm for the year 2072/73 based on following information:

Land (1 hectares) = Rs.75,000/-, farm mortgage = Rs. 1,00,000/-, farm building = Rs. 20,000/-, accounts payable to Bishal agrovet = Rs. 2,000/-, machinery = Rs. 10,000/, supplies in farm = Rs. 25,000/-, dairy cattle = Rs. 30,000/-, cash in hand = Rs. 3,000/, accounts receivable = Rs. 10,000/-, accounts payable to transport company = Rs. 20,000/-

Solution:

Closing Net worth statement/Balance sheet of Hariyali farm Ashad 31, 2073

Assets (Rs)		Liabilities (Rs)	
Land – 1 hectares	75,000	Farm mortgage	1,00,000
Farm building	20,000	Transport company	20,000
Machinery	10,000	Bishal Agrovet	2,000
Supplies	25,000		
Dairy cattle	30,000	Total farm liabilities	1,22,000

Accounts receivable Cash in hand	10,000 3,000	Net worth	51,000
Total Assets	1,73,000	Total liabilities	1,73,000

10.2 Prepare the closing Net Worth Statement/Balance Sheet of Narayani farm for the year 2072/73 based on following information:

Notes & accounts receivable = Rs. 2,500/- , Market livestock = Rs. 32,000/-, Accounts payable = Rs. 2,800/- , Crops & produce for sale = Rs. 28,000/- , Bank operating loans = Rs. 3,000/- , Feed and farm supplies = Rs. 2,100/- , Long term debt due this year = Rs.21,000/-, Growing crops = Rs. 15,000/- , Intermediate debt due this year = Rs. 1,000/- , Dairy cattle = Rs. 40,000/- , Machinery & equipment = Rs. 15,000/- , Interest-long term loans = Rs. 800/- , Land and buildings = Rs. 2,00,000, Land = Rs. 1,50,000/- , Interest-intermediate loans= Rs.500/-, cash in hand = Rs. 3,500/- .

Solution:

Closing Net worth statement/Balance sheet of Narayani farm Ashad 31, 2073

Assets (Rs.)		**Liabilities (Rs.)**	
Notes & accounts receivable	2,500	Accounts payable	2,800
Market livestock	32,000	Bank operating loans	3,000
Crops & produce for sale	28,000	Long term debt due this year	21,000
Feed and farm supplies	21,000	Intermediate debt due this year	1,000
Cash in hand	3,500	Interest-long term loans	800
Growing crops	15,000	Interest-intermediate loans	500
Dairy cattle	40,000	Total farm liabilities	29,100
Machinery & equipment	15,000	Net worth	127900
Land and buildings	2,00,000		
Land	1,50,000		
Total assets	**157,000**	**Total liabilities**	**157,000**

11. Visit farm area for farm record, survey, cost of production, analysis of available farm records, efficiency measures.

Solution:

Farm record:

Farm record is an account of various activities carried out in the farm on the regular and systematic basis. It includes land size, number of livestock and equipments in the farm, procurement and utilization of arm inputs, sales of the farm outputs, etc.

Types of farm records

Farm record can be broadly classified into following three types:

i. Farm inventory
ii. Farm physical records, and
iii. Farm financial records.

1) Farm inventory:

Farm inventory is the initial step in farm accounting. Farm inventory is the complete list of all the physical assets that a farm owns, along with their values at a specific date, generally at the beginning and the end of each agricultural year.

2) Farm physical records

Farm physical records give an idea regarding the physical aspects of the farm business operation. It simply records the physical efficiency of the farm, but does not indicate the financial position. Physical record consists of following records:

i) Farm maps
ii) Farm production records
iii) labor records
iv) Livestock feed records

3) Farm financial records:

Farm financial records are related to the financial aspect of the farm business. There are various types of financial records like,

I. Farm cash analysis account,
II. Classified farm cash account and annual farm business analysis,
III. Supplementary financial records: a) capital assets sale register, b) cash sale register, c) credit sale/purchase register, d) wage register, e) fund borrow/repayment register, f) farm expense (Paid in kind) register.

Visit to the farm and note down different types of available farm records.

a. Cost of production:

Cost of production refers to the value of the inputs involved in the production of crops and livestock. For the purposes of simplicity, efficient record keeping and profitability analysis, it is useful to divide costs into two kinds: variable costs and fixed costs.

i) Variable costs

Those costs vary according to the size of the enterprise, the amount of inputs used, and the yields achieved. Variable costs apply to specific farm enterprises and vary with level of production.

For example, if the area of land under a particular crop increases or more inputs are applied, then variable costs also increase. On the other hand, if less land is planted or ewer inputs are used, the variable costs decrease. Some other examples of variable costs are: seeds, feeds, fertilizers, wages, etc.

ii) Fixed costs

These costs usually apply to the farm as a whole and they do not vary with changes in level of production. For example: Rent of the farm land, salary to the permanent workers, depreciation, farm equipments, etc.

Total cost of production (TC): Total fixed cost (TFC) + Total variable cost (TVC)

Example: Calculation of cost of production of *Four Season Bean* in one *ropani* of land in Bhaktapur.

S.N.	Particulars	Unit	Quantity	Rate (Rs.)	Cost (Rs.)
	Variable cost				
1	Wage	Mandays	34	300	10200
2	Seed	Kg	2.5	200	500
3	Compost/FYM	Metric ton	1	3,000	3000
4	Chemical fertilizers				
4.4	Urea	Kg	2	35	70
4.2	DAP	Kg	2.5	60	150
4.3	Potash	Kg	2	150	300
4.4	Micro-nutrients	Kg	2	150	300

5	Pesticides	Kg	0.5	600	300
6	Fuel	Litre	15	109	1635
7	Bamboo for staking	Piece	80	110	8800
8	Jute strings for staking	Kg	5	150	750
A	Total variable cost (Annual operating cost)				26005.00
	Fixed cost				
9	Land rent	Ropani	1	3,000	3000
10	Irrigation management	Ropani	1	1,000	1000
11	Repair and maintenence	Average	1	500	500
12	Interest on operating cost	%	2.5		650.13
13	Depreciation	Average			250
B	Total fixed cost				5400.13
C	Total cost (A+B)				31405.13

Analysis of available farm records:

i) Balance Sheet/Net Worth Statement:

Balance sheet lists the assets and liabilities of a business together with the statement of equity or net worth. It shows the financial condition and stability of the farm business at a particular point of time. In other words, it shows the value of assets that would remain if the farm business were liquidated and all the liabilities in the business are paid off. Balance sheet reflects three essential components, viz., assets, liabilities and net worth or owner's equity.

It shows whether the business is expanding or contracting. If the owner's equity or net worth is positive (>0), then the business is said to be solvent. When owner's equity is less than zero (-ve), then the total liabilities are not covered by the total resources and

the farm is said to be bankrupt. The difference between assets and liabilities depicts the distance from insolvency position. Greater the positive difference between assets and liabilities, safer is the business.

ii) Income statement/ Profit and Loss Statement:

Income statement shows the measure of revenue and expenses during a given accounting period. It can be prepared either for a single enterprise or for all enterprise of a farm business as a single unit. Income statement shows the performance of the farm business during the given agricultural period and thus provides guidelines for improving the farm efficiency in future. Measure of income provided by this statement is useful in tax payment determination, analysis of the business expansion potentiality, evaluation of the outcome of the business activity and justification of loan repayment ability. However, it fails to guide for family spending.

Income statement measures how well the farm business has performed during the accounting period. Net farm income in a given year is calculated which represents the amount that can be withdrawn from the business without affecting its scale of operation from the beginning of the accounting period.

Cash flow statement

Cash flow statement summarizes the cash inflows and outflow over a given accounting period. It provides an information regarding the timing and magnitude of cash flows. Thus, it guides in estimating following items:

i. surplus and deficit cash period during an agricultural year, so that farmer could plan investment of income and loan,
ii. timing and magnitude of borrowing and repayment of loan, and
iii. the potential affects that the marketing patterns have on the need for borrowed funds.

Efficiency measures:

Physical efficiency measures:

Land use efficiency:

Production efficiency(Yield per hectare)

$$= \frac{\text{Crop yield per hectare in a farm}}{\text{Average crop yiled in the locality}} \text{ X } 100\%$$

Cropping intensity

$$= \frac{\text{Area cropped}}{\text{Total cultivated area}} \text{ X } 100\%$$

Labor efficiency:

2.1) Crop acerage per man equivalent

$$= \frac{\text{Total area in a crop}}{\text{Total labor requirement (Man equivalent)}}$$

The crop with highest crop acerage per man equivalent value is preferred to that with the lowest value.

Financial efficiency measures:

1) Net capital ratio

$$= \frac{\text{Total assets}}{\text{Total liabilities}}$$

It measures the degree of financial safety over a period of time by comparing the current position of the farm business with that on some previous date.

Higher the net capital ratio, safer is the business position.

Current ratio

$$= \frac{\text{Current assets}}{\text{Current liabilities}}$$

It measures the degree of immediate solvency of the business.

Working ratio

$$= \frac{\text{Working assets + Current assets}}{\text{Medium term liabilities + Current liabilities}}$$

It measures the degree of financial safety of the business over an intermediate period of time.

Farm income and profit efficiency

Net cash income

Total cash receipts from production - Total cash operating expenses

Net farm income

Net cash income +_Change in inventory in non-depreciable items - depreciation

on power machinery, livestock, building, etc.

Farm earnings

Net farm income + Value of home consumption and give- away

Family labor earnings

Farm earnings - Interest charges on farm capital

Percent returns to capital

$$= \frac{\text{Farm earning} - \text{imputed value of the family labor}}{\text{Average capital investment}} \text{ X } 100\%$$

Returns to management

Family labor earnings - Imputed value of the family labor

12. Differentiate among different types of market in Nepal.

In economics, market means a social system through which the sellers and purchasers of a commodity or a service (or a group of commodities and services) can interact with each other.

They can participate in sale and purchase. Market does not refer to a particular place or location, but to an institutional relationship between purchasers and sellers.

A market can be of different types, differing from one another due to differences in the number of buyers, number of sellers, nature of the product, influence over price, availability of information, conditions of supply, etc.

Markets of Nepal can be categorized into different types based on different dimensions. Some basic types of market in Nepal are as follows:

Based on location

On the basis of location, markets can be classified as:

a) **Village market:** Such markets are located in a small village. Transactions occur among buyers and sellers residing in that village. For example: small markets operating on the villages.

b) **Primary market:** Such markets are located in towns and transaction occurs between producer farmers and primary traders. For example: markets in town

like Dharan, Naubise of Dhading.

c) Secondary wholesale market: Those markets are located at district headquarters or important trade centers. Here, transaction occurs between village traders and wholesalers (bulk). For example: markets in district headquarters like Chitwan vegetable market, Birtamod agriculture market.

d) Terminal market: Such markets are located either in metropolitan or port. Produce is either finally disposed of to the consumers or processors or assembled for export. For example: Butwal agriculture market, Kalimati fruits and vegetable market.

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Based on area coverage

e) Local market: This market is same as village market. Here, perishable commodities are supplied and traded at local level. For example: markets operating at local level.

f) Regional market: In such market, buyers and sellers come from a larger area. For example: Fruits and vegetable markets of Butwal, Biratnagar, Pokhara, etc.

g) National market: In such markets, buyers and sellers spread at the national level. For example: Kalimati fruits and vegetable market.

Based on time span

h) Short term market: Those markets are held only for a day or few hours (e.g. perishable fish, fresh vegetables, milk etc.).

i) Periodic market: Such markets operate either in village/semi-urban areas on specific days and time (weekly, biweekly, fortnightly or monthly etc.).These are also called haat bazar in Nepal.

j) Secular market: These are the markets of a permanent type (e.g. machinery and manufactured items).

Based on volume of transaction

k) Wholesale market: Such markets are mostly located in towns/ cities and are characterized by bulk trading. Transaction occurs between primary wholesalers and terminal traders. For example: Kalimati fruits and vegetable market, Balkhu

Agriculture market.

l) Retail market: Such markets are located in both urban and rural areas. Retailers buy goods from wholesalers and sell to retailers. For example: retail markets nearby our residence.

13. Prepare partial and complete budgeting.

Farm budgeting refers to the planning of the judicial use of agricultural resources or the attainment of set objective. Well planned farm plan shows the crops and livestock to be grown and reared, practices to be followed for their production, combination of different enterprises, use of farm resources and the investment to be made in the fixed and current assets, volume and place of marketing and other similar details. The process of expressing such farm plan into a monetary terms by estimation of costs, investments, returns and net income is called farm budgeting. Thus, it is the method of estimating expected income, expenses and profit for a particular enterprise or a whole farm business. Farm budgeting is used to select the most profitable plan among the number of alternatives and to test the profitability of any proposed change in plan. It involves testing of a new plan before implementation so as to be sure that it will improve profit. Farm planning and farm budgeting goes side by side as farm budgeting refers to converting farm planning into monetary terms.

Types of farm budgeting

Basically, there are two types of farm budgeting:

i. Partial budgeting, and
ii. Complete budgeting

Partial budgeting:

Partial budgeting refers to the process of estimating the returns from a part of business. It takes into account one to a few activities or a enterprise rather than a whole farm. For example: to estimate the costs and returns from growing a *ropani* of cauliflower in place of wheat. Partial budgeting is commonly used to calculate the expected change in profit for a proposed change in the farm business. In other words, partial budgeting is aimed at answering the questions related to the financial gains and losses resulting from the proposed minor change in the farm. While preparing this, we should consider the extra financial gains and the savings on the account of costs and the

additional costs and the losses in revenue from the proposed change. It is best adopted to analyze relatively small change in the whole farm.

Merits:

It is simple, easy and quick as it can measure the changes in business without complete reworking of the whole plan.

Demerits:

i. Fails to consider all the relevant factors for maximizing net return of the whole farm.
ii. Overlooks the complementarity and competition between different enterprises
iii. Doesn't allow substitution between farm resources
iv. Can't explain the allocation of joint costs between different enterprises.

Changes in the farm plan or farm business which could be analyzed using the partial budgeting techniques are of following three types:

i. Enterprise substitution: This includes a complete or partial substitution of one enterprise for other. For example: substitution of maize for tomato.
ii. Input substitution: This includes a substitution of one input for other,. For example: machinery for labor (human and animal), hybrid seed for local, changing the breeds of livestock and poultry, changing the proportion of chemical and organic fertilizer, etc.
iii. Size or scale of production: Partial budgeting can also analyze the change in size of single business or the total size of the farm business as a whole. For example: buying or renting of the additional land, leasing in or out of the additional land, expansion or contraction of enterprise, etc.

13.1 Prepare a partial budget based on the following information:

A farmer has been using oxen power for land preparation in his 1 hectare field. He wants to replace it with the tractor power. He cost of maintaining a pair of oxen was Rs. 15,000 per year and ten man-days was required for land preparation @ Rs. 500/day. The tractor service charge was Rs. 800 per hour and it takes 10 hours for one hectare land preparation by tractor.

Solution:

Partial budget for selection of oxen power versus tractor power for land preparation

Debit		Credit	
Increase in costs per hectare Cost of tractor service charge 10 hours (@800/hour)	Rs. 8,000	Decrese in costs per hectare Cost of maintaining a pair of oxen @15,000	Rs. 15,000
Financial losses	0	Financial gains Savings in human labor 10 days (@Rs. 500/day)	5,000
Total of (a) and (b)	8,000	Total of (a) and (b)	20,000

Net gain (change in income B-A) = Rs. 20,000 - Rs. 8,000 = Rs. 12,000

Decision: This partial budget analysis shows that the use of tractor power increases net returns per hectare by Rs. 12,000 over oxen power in land preparation.

Complete budgeting: Complete budgeting refers to the estimation of budget for the farm as a whole. It involves the complete re-organization of the overall farm business. Complete budgeting is the statement of expected income, expenses and net profit of the farm as a whole. It considers all the farm resources and estimates the cost and return from all the enterprises in the farm. Complete budgeting is adopted while beginning a new farm business or when drastic changes are contemplated in the existing organization. For example: establishment of new poultry farm, switching out totally from the cereal farming to the commercial vegetable farming, etc.

Merits:

1. Takes an account of the farm as a whole rather than few resources or enterprises.
2. Considers supplementarity, complementarity and competition among different enterprises.
3. Allows space for the substitution among farm resources.

Demerits:

1. It is tedious, complex and time consuming
2. Requires more data in accurate form

13.2 Prepare a complete budget for growing wheat in one *Bigha* of land

Solution:

A complete budgeting of growing wheat in one *Bigha* of land

Particulars	Cost (Rs./*Bigha*)
A. Fixed Costs	
a. Land rent	100
b. Building and equipment depreciation	290
c. Interest on capital used	500
d. Other fixed cost	600
Total Fixed Costs (TFC)	1440
B. Variable Costs	
a. Wage of labor	570
b. Seeds	100
c. Urea	750
d. Irrigation	150
e. Insecticides	70
Total Variable Costs (TVC)	1640
C. Total Cost = TFC + TVC	3080
D. Gross Return	14000
E. Net Return	10920

Total Return = Rs. 10,920/ *Bigha*

Similarly we can prepare the complete budget for some other enterprises in the farm and sum up them to make a complete budget for a farm as a whole.

Complete budgeting versus Partial budgeting

Complete Budgeting	Partial Budgeting
Accounts for drastic changes in the organization and operation of the farm. All the available alternatives are considered. Used for estimating the results of entire organization and operation of a farm	Accounts for minor changes only. Only few, generally two alternatives are considered. Used for studying only net effect, in terms of costs and returns of relatively minor changes.

14. Prepare farm plan.

A farm business plan is a document that records the most important decisions and actions affecting the operation of the farm business. It is a way to make sure that all the things that need to be done are done, and in a way that makes the farm more profitable.

Basic components of farm plan include:

1. Introduction
2. Farm production plan
3. Market plan
4. Financial Plan
    - Profitability or Projected Income Statement
    - Cash-flow or Cash availability
5. Risk management
6. Action Plan

Introduction:

In this section, write about the description of the farm business, including its vision, goal and objectives. It will guide farmer to be focused on this goal.

Farm production plan:

Farm production plan states the types of crops to be grown and the area to be cultivated. Production planning should be done based on the technical feasibility study, market demand study and resource availability.

For example:

Enterprise	Land size (*ropani*)	Expected yield (Kg/*ropani*)	Total yield (Kg/*ropani*)
Tomato	1 ropani	3600	3600
Cucumber	2 ropani	1500	3000

Market plan:

Market plan specifies the target market, price of the produce, marketing cost, target market and the expected marketing cost.

Enterprise	Target market	Buyer	Excepted quantity to sell kg	Market price/kg	Marketing cost/kg	Farm gate price /kg
Tomato (winter)	Dhadingbesi, Kalimati vegetable market	Ramdayal Thakur, Hari Paudel, Sitaram Adhikari	3600 kg	NRs.25/kg	NRs. 5/kg	NRs. 20/kg
Cucumber (Summer)	Dhadingbesi, Narayanghat, Kalimati vegetable market	Rambhagat Mahato, Punya Thapailya,	3000 kg	NRs. 30/ Kg	NRs. 5/ kg	NRs. 25/ kg

Financial Plan

Acquisition of the fixed (buildings, plants , machineries) and current assets (seed, fertilizer, cash, etc), allocation of budget, estimation of costs and profitability of the product, expenditure planning and monitoring, loan repayment schedule, accounting and auditing , risk assessment , etc come under financial planning. Financial planning is done using following two statements.

Profitability or Projected Income Statement

It details the profit contribution from each enterprise, and deducts fixed costs to arrive at whole farm profit.

For example:

Profitability table for tomato:

S.N.	Particulars	Quantity	Unit price (Rs./Kg)	Value (Rs.)
1	Seed	35 gm	78	2730
2	FYM	3.5 ton	1200	4200
3	DAP	21 kg	50	1050
4	Urea	20 kg	20	400
5	Potash	10 kg	40	400
6	Borax	3.5 kg	130	455
7	Plant protection			1000
8	Tractor (land preparation)	3 hours	1500	4500
9	Labor	50 man-day	350	17500
10	Pumping Irrigation electricity	100 unit	10	1000
11	Bamboo sticks	100	100	10000
12	Rope (jute)	10 kg	50	500
13	Plastic Crate	10	500	5000
14	Miscellaneous (10%)			3000
	Total Variable Cost			51,735
	Expected tomato fruits yield	12600 Kg	25	3,15,000
	Enterprise profit = Income - Total cost			2,63, 265

Cash-flow or Cash availability Statement

A cash-flow shows the cash availability in the business. It helps farmer to know how much cash flows into the farm business over a certain period of time and how much flows out of the farm business. The month in which the cash out flow is more than the cash in flow, then the farmer needs to find extra cash for that month to run his business. The "Net cash flow" is the difference between the cash inflow and cash outflow.

For example: Cash outflow statement for tomato

(Table in Another file)

Risk management plan:

Risk refers to things that could happen accidentally and harm the farm business. Farmers need to anticipate these risks ahead of time, and be prepared with mitigation strategies.

For example:

Risk management plan for tomato

Risk	Risk management strategies
Produce can be damaged on the way to the market resulting in a lower market price	Ensure proper packaging for the produce.
Market price can drop, resulting in lower profits.	Remain alert for changes in the market; decide when to sell and how much to sell at a time.

Action plan:

In this action plan, planning is done regarding the job description, responsibilities and time of the work, purchase and selling, etc.

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