## 2.0 MARKET ANALYSIS

**A Market** refers to a place where buyers and sellers negotiate the exchange of goods and services. It is a system by which sellers and buyers of a commodity interact to settle its price and quantity to be bought and sold.

### The Basics of Demand and Supply

**Demand**- is the desire or a mere wish to acquire something.

**Potential demand**-is the desire when you have the resources to purchase it (ability) but no willingness to pay.

**Effective demand** –is the desire backed by ability and willingness to pay

**Quantity demanded** is the amount of that good or service that the consumers are willing and able to buy at a certain price in a given period of time.

### The Law of Demand

The demand law states that the quantity demanded of a good is a function of its own price such that as the price of good increases, the quantity demanded of that good decreases and vice versa other factors held constant.

This negative relationship can be expressed from the following linear demand equation

$$Qd = a - bP$$

Where **α (**constant) is the intercept of the equation and it shows the maximum amount demanded by the consumers when the good is freely available, i.e., when P = 0: The parameter b (constant) is the slope of the demand equation shown below:

$$Slope = \frac{\Delta Q}{\Delta P} = -b$$ Where the negative sign confirms the law of demand stated above

Given the demand function $Qd = a - bP$

Assume:

a=200 b=10

Derive the demand schedule and curve assuming the following price range (0, 5, 10, 15 and20) shs.

### The Demand Schedule

A demand schedule is *a tabular* presentation of the demand curve. It is a table showing various *quantities* of a commodity demanded at *respective* prices

***Illustration***

| Px | $Qd = a - bP$ | Qd |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

| | | |
|---|---|---|
| | | |

**The Demand of Curve**

A demand curve is a graphical presentation of the demand schedule. It has a negative slope which shows the inverse relationship between the price of a commodity and its quantity demanded.

***Illustration***

***Change in quantity demanded and Change in demanded***

**Change quantity demanded** is a change in the amount of a good demanded resulting exclusively from a change in its own price. Hence, Changes in quantity demanded are shown by ***movements*** along the demand curve.

***Diagram;***

***Change in demand***, on the other hand, is a change in the amount of a good demanded resulting from a change in other factors that affect demand other than

its own price. It is represented by a shift (either inward or outward) of the demand curve.

***Illustration;***

**Determinants of quantity demanded**

The demand function explains the relationship between quantity demanded of a commodity and the factors that affect it. This may be expressed in form of a demand function as

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$where X_i$ *are the different factors and* $Q_d$ *is the quantity demanded*

Determinants of quantity demanded may also be expressed in form of statements ie

**The concept of Market Demand**

Market demand refers to the total quantity that all the users of a commodity are willing to buy at a given price over a specific period of time. In fact, market demand is the sum of individual demands. It can be represented using a schedule and/or a curve

The ***market demand schedule*** is a tabular representation of the total amount of a commodity demanded by all consumers in the market at a given price per unit time

| **Price** | **No. soda bottles demanded by** | | | **Market demand = A + B + C** |
|---|---|---|---|---|
| | **A** | **B** | **C** | |
| 200 | 2 | 3 | 4 | |
| 100 | 3 | 4 | 5 | |

**Graphical Derivation**; the market demand curve can be derived graphically by **horizontally** summing individual demand curves at each price level. ***Note;*** the market demand curve is a ***horizontal*** summation of individual demand curves as shown below
***Illustration (the market demand curve)***

**Supply**
Supply is a desire to provide a good or service.
*Effective* supply is a desire to provide a good or service backed by *ability and willingness*. A desire without sufficient resources is merely a wish. A desire with resources but without willingness to provide is only a ***potential supply.***

Generally ***quantity supplied*** is used to refer to the amount of a good or a service that suppliers are able and willing to offer for sale to the market at various market prices during a specified period of time.
The market supply (aggregate supply) shows the total quantity of goods supplied in a market in a given period of time.
**The law of supply**

The law of supply states that an increase in the price of a good motivates the producer to increase production and thus; the quantity supplied of that good must increase and vice versa.
The supply curve illustrates the maximum quantity of a good sellers are willing and able to produce at each respective price. It slopes upwards and to the right implying that when the price increases, the quantity supplied increases because the good becomes more profitable and vice versa.
***Diagram (Supply curve)***

This positive relationship can be expressed from the following linear supply equation

$Q_s = -C + dP$

Where **Error! Reference source not found.** -C is the intercept of the equation and the parameter is d is the slope of the supply equation denoted as

$$slope = \frac{\Delta Q}{\Delta P} = d$$

Where the positive sign confirms the supply law stated above,

The supply function

$Qs = f(x_i)$

$x_i$ are the determinants of quantity supplied

Determinants of quantity supplied

***Personal readings***

- The supply schedule
- The supply curve
- Change in quantity supplied
- Change in supply
- The market supply schedule

**The Concept of Market Equilibrium**

In general sense, equilibrium means a balance of opposite forces. In the context of market analysis, equilibrium refers to a state of market in which quantity *demanded* of a commodity equals the quantity *supplied* of the commodity. The equality of *demand* and *supply* produces an equilibrium price.

The equilibrium price is the price at which quantity *demanded* of a commodity equals its quantity *supplied*. Equilibrium price is also called market-clearing price. The market is cleared in the sense that there is no unsold stock and no unsupplied demand.

Graphically, it is determined at the point of intersection of the demand and supply curves as shown below

***Illustration***

$P_e$ is equilibrium price and $Q_e$ the equilibrium quantity

Deriving market equilibrium using algebra

***eg***

***At equilibrium,***

***Algebraic derivation of equilibrium***

***Example***

***Qd= 36-4p***
***Qs=-12+12p***

*Determine equilibrium price and quantity*

**THE CONCEPT OF *MAXIMUM AND MINIMUM* PRICE POLICY**
**(*Diversion from the equilibrium)***
**Price Ceiling**
Also known as maximum price legislation is the price that is set by the government below the equilibrium and above which it is illegal to sell a commodity. The fixed price acts as the maximum price possible. ***Diagram***

In the case, the market forces set the price at Pe, The government considers this price to be socially undesirable and fixes a maximum price at $P_c$, called price ceiling. At $P_c$, demand increases from its equilibrium level $Q_e$ to $Q_1$ and supply falls from its equilibrium level Qe to $Q_2$. As a result, demand exceeds supply by $Q_1$-$Q_2$. This is called excess demand or supply shortage.

**Reasons for setting a price ceiling**
To enable the consumers purchase essential commodities at a lower price than the one determined by the market forces of demand and supply. This is because during crises, producers take the advantage of scarcity and charge higher prices.

*Effects of a price ceiling;*
- Demand exceeds supply
- Long queue's develop
- Rationing of the commodity
- Hoarding is carried out
- Customer discrimination
- Price discrimination

**The price floor: Minimum price policy**

This is a price that is set by the government above the equilibrium price below which it is illegal to sell the commodity. The fixed price therefore becomes the minimum price at which at which all firms should sell a given commodity. The reason for setting a minimum price is to enable producers recover the *costs of production* and keep them in business. It is mainly done during the period of high *production* and when *supply* exceeds demand and consumers are offering low prices.

***Illustration***

The underlying effect of minimum price legislation is that it encourages production which could result in

i. Over utilization of resources.
ii. Excess supply over demand

## CONSUMER AND PRODUCER'S SURPLUS

### Consumer's Surplus

If the price a consumer is willing to pay is higher than the price which he actually pays, then the consumer is said to have a surplus. *Hence*, consumer's surplus is the difference between the amount of money a consumer is willing to pay and the actual amount of money that he/she pays.

***Illustration***

### Producer Surplus

Producer surplus refers to the different between the amount of money the producer actually receives upon the sale of given commodity and the minimum amount she/ he would be willing to receive for the same quantity.

***Diagram***

## THE CONCEPT OF ELASTICITY

The concept of elasticity is used in many disciplines. It measures the extent to which something changes in response to something else. Thus, it measures the

degree of responsiveness of one variable as a result of a given percentage change in another.

Basically there are two types of elasticity:

- Elasticity of demand and;
- Elasticity of supply.

Elasticity of demand refers to the degree of responsiveness of quantity demanded of a commodity due to a given percentage change in a factor that affects quantity demanded.

**Types of elasticity of demand**

There are three types of elasticity of demand-- price elasticity, income elasticity, and cross elasticity of demand.

**Price Elasticity of demand**

Price elasticity of demand measures the degree of response of the quantity demanded arising from a given percentage change in price of the commodity. The more the response of the quantity demanded to the change in price, the more elastic the demand curve is and vice-versa.

$$\varepsilon_d = (-)\frac{\%\Delta Q}{\%\Delta P}$$

OR

$$\mathcal{E}_d = \frac{\Delta Q}{\Delta P} X \frac{P}{Q}$$

Note that the price elasticity of demand is always negative because of the demand law; however, we express it in absolute terms as we care about its magnitude.
We can have the following cases (***graphs to be illustrated in class):***

**Example**

1. If %ΔQd < %ΔP → |**Error! Reference source not found.**|< 1 → Inelastic demand (steep line)
2. If %ΔQd > %ΔP → |**Error! Reference source not found.**|> 1 → Elastic demand (.at line)
3. If %ΔQd = %ΔP → **Error! Reference source not found.** = 1→Unit elastic demand (45-degree line)
4. If %ΔQd = 0 → **Error! Reference source not found.** = 0 → Perfectly Inelastic demand (vertical line)
5. If %ΔP = 0 → **Error! Reference source not found.** = ∞ → perfectly elastic demand (horizontal line)

**Types of price elasticity of demand**

Price elasticity of demand ranges from perfectly inelastic to perfectly elastic.

**1. Perfectly inelastic *p.e.d***

This is where a given change is the price of the commodity does not affect quantity demanded of the commodity i.e., P.e.d = (zero response).

***Diagram***

**2. Inelastic demand *P.e.d.***

This is where a given percentage change in price leads to a smaller Proportionate percentage change in quantity demanded.

***Diagram***

**3. Unit elastic demand**. ***P.e.d.***

This is where a given percentage change in price leads to an equal percentage change in the quantity demanded of the commodity. ***P.e.d*** =1

**Diagram**

**4. Elastic demand**.

This is where given percentage changes in price lead to a more proportionate percentage change in quantity demanded of the commodity. ***P.e.d*** *ranges* from ***1.1-1.9***

**Diagram**

**5. Perfectly elastic *P.e.d.***

This is where quantity demanded changes ***infinitely*** without a change in price. P. e. d= ∞ response is infinite. **Diagram**

**Factors that affect the coefficient of price elasticity of demand**

- **The number of close substitutes for a good / uniqueness of the product** – the closer substitutes in the market, the more elastic is the demand for a product because consumers can more easily switch their demand if the price of one product changes **relative** to others in the market.
- **The cost of switching between different products** – there may be significant **transactions costs** involved in switching between different goods and services. In this case, demand tends to be relatively inelastic. For example, mobile phone services.
- **The degree of necessity or whether the good is a luxury** – goods and services deemed by consumers to be necessities tend to have an inelastic demand whereas luxuries will tend to have a more elastic demand because consumers can do without luxuries when their budgets are stretched.
- **The portion of a consumer's income allocated to spending on the good** – goods and services that take up a high proportion of a household's income will tend to have a more elastic demand than products where large price changes make little or no difference to someone's ability to purchase the product (cheap goods)
- **The time period allowed following a price change** – demand tends to be more price elastic, the longer that we allow consumers to respond to a price change by varying their purchasing decisions. In the short run, the demand may be inelastic, because it takes time for consumers both to notice and then to respond to price fluctuations
- **When the good is subject to habitual consumption** – when this occurs, the consumer becomes much less sensitive to the price of the good in question. Examples such as cigarettes and alcohol and other drugs come into this category
- **Peak and off-peak demand -** demand tends to be price inelastic at peak times – a feature that suppliers can take advantage of when setting higher prices. Demand is more elastic at off-peak times, leading to lower prices for consumers. E.g., demand for taxi services.

**Income elasticity:** Demand is a function, besides price (P) also of the income (Y) of an individual. However, income and demand hold a direct relationship, such that Y and Q rise or fall together. Hence the sign of elasticity ratio in this case is normally positive.

***Formula,***

**NOTE:** WHEN-

$e_y$ <0 (negative), we have an inferior good

$e_y$ =0 , the commodity is a necessity

$e_y$ >0 (positive), the commodity is a normal good/luxury depending on the size of the elasticity

**C) Cross Elasticity of demand:** The price elasticity of demand that we have studied so far is also called the "own elasticity." This is because we have determined the elasticity for good A with the change in the price of the same good. However, various goods A, B, C etc. hold a mutual relationship. As such if we attempt to find the elasticity of demand for good B whenever the price of good A changes, then it is called a cross elasticity ratio. However, the goods A and B may hold either of the following relationships:

- **Substitutes:** as in case of tea and coffee or different brands of toothpaste, television sets etc. These goods are symbolized as $B_S$ which implies that B is a substitute of A. In this case, whenever the price of A rises the demand for A will fall but that of B will rise. Therefore the relation between $P_A$ and $Q_B$ is **direct**. Hence the sign of elasticity ratio will be positive.
- **Complementary goods:** Consider two complementary, good A - a vehicle and B - gasoline. In this case, with a rise in the price of A the demand for A ($Q_A$) will fall and similarly, the demand for B ($Q_{BC}$) will also fall. The sign of elasticity ratio will then be **negative** in sign.
- ***Formula***

**NOTE: WHEN-**

$e_{xy}$ is negative, the goods are compliments

$e_{xy}$ is positive , the goods are substitutes

$e_{xy}$ =0, they are not related at all.