

## ● TRANSPORT

### ● By the end of the lesson, the learner should be able to:

1. Explain the meaning and importance of transport to business.
2. Explain the essential elements of transport.
3. Describe the modes and means of transport.
4. Discuss the advantages and disadvantages of each means of transport.
5. Discuss the factors that influence the choice of appropriate means of transport.
6. Discuss trends of transport.

### ● MEANING OF TRANSPORT

Transport is the physical movement of people and goods from one place to another. It helps bridge the gap between producers and consumers hence creating **place utility**.

### Importance of Transport to Business

1. **Bridging the gap between producers and consumers/ linking consumers to producers**-Transport links consumers to producers which enable the consumers to obtain the goods they need.
2. **Employment creation**-Transport helps in solving the unemployment problem by creating job opportunities. For example, people may be employed as drivers, pilots, mechanics and road constructors.
3. **Promotes specialization**-Transport enables people to specialize in jobs they are best at. For example; producers would concentrate in production only while other people carry out the distribution.
4. **Making goods and services more useful**-Through transport goods are moved from a place where they are least required to a place where they are most required thereby making them more useful.
5. **Improving people's standard of living**-It enables consumers to get a variety of goods and services thereby improving the standards of living.
6. **Availing a wide market for products**-It helps producers to widen the markets for their products by enabling them access to areas they would otherwise not have accessed
7. **Increased production/ facilitates mass production**-Due to the wider market created through transport, producers are able to increase the volume of goods produced.
8. **Avoiding wastage**-Transport makes it possible for surplus goods to be disposed of by taking them to areas where they are required. Perishable goods such as flowers, fruits and vegetables can also be transported fast hence minimizing/ avoiding wastage.
9. **Promoting the development of industries**-Through transport, raw materials can be taken to manufacturing industries and also finished goods to the market. Similarly, it promotes the development of service industries such as tourism.
10. **Adds value to goods and services**- creates utility in goods by moving them from the point of production to where they are needed thereby adding their value.
11. **Leads to the opening of new markets**- Goods and services can be taken to new areas with ease.

12. **It facilitates the movement of labour-** people can easily move from where they stay to where they work.

## **ESSENTIAL ELEMENTS OF TRANSPORT**

In order for a transport system to function efficiently, it should have certain basic elements. These elements are:

1. Unit(S) of carriage
2. Methods of propulsion
3. Ways
4. Terminals(terminus)

### **Unit(S) of carriage**

This refers to anything i.e. vessel that is used to transport goods and people from one place to another. Units of carriage include ships, trains, aeroplanes, motor vehicles, bicycles and carts. Units of carriage are also referred to as means of transport.

### **Methods of propulsion**

This is the driving force (source of power) that makes a unit of carriage move. The power for most vessels may be petroleum products, electricity, human force or animal power.

### **Ways**

It refers to either the route or path that passes by the vessel. The route can be on land, on water or through the air. Examples of ways are roads, railways, paths, canals, seaways and airways. The ways can be classified into either natural ways or manmade ways.

**I. Natural ways-**As the name suggests, natural ways are the ways that are provided by nature. They are therefore free to acquire. They include airways and seaways.

**II. Man-made ways-**These are ways that are made available by human being. They include roads, canals and railways. Manmade ways are usually expensive to construct and maintain.

### **Terminals (terminuses)**

The vessel used to carry goods and people starts from one destination and ends up at another. At these destinations, the loading and off-loading take place respectively. The loading and off-loading places are referred to as terminals or terminus. Examples of terminuses are bus stations, airports and seaports.

## **MODES OF TRANSPORT**

Mode refers to the manner in which transport is carried out. There are three modes of transport namely:

1. Land transport
2. Water transport
3. Air transport

### **1. Land transport**

This mode of transport involves movement of goods and people using units of carriage that move on dry land. The various means under this mode includes:

#### **1. Human Porterage**

This involves human beings carrying goods on their heads, shoulders or backs. Human Porterage as a means of transport is the oldest kind of transport and is still very common in our society. The means is suitable for transporting light luggage over short distances. It is also appropriate where other means of transport are not available or convenient.

#### **Advantages of Human Porterage**

1. Could be the only means of transport available
2. Compliments other means of transport
3. Flexible as it has no fixed timetable or routes
4. May be a cheap means compared to other means of transport
5. Readily available when required
6. Convenient over short distances

#### **Disadvantages of human Porterage**

- i. Not suitable for long distances
- ii. They add onto congestion on roads
- iii. Not suitable for transporting heavy and bulky goods
- iv. It is relatively slow
- v. Relies on human energy which is exhaustible

#### **Carts**

Carts are open vessels usually on two or four wheels that are pushed or pulled by either human being or animals such as oxen and donkeys. The carts pushed or pulled by human beings are referred to as hand carts or mikokoteni. The ones pulled by animals, on the other hand, are called animal-driven carts. Carts are used to carry relatively large quantities compared to human portorage. Like human portorage, they are not suitable for long distances. Types of goods that are transported using this means include, agricultural produce, water and animal feeds.

### **Advantages of carts**

- i. Compliments other means of transport
- ii. Relatively cheap to hire
- iii. Initial buying and maintenance cost is low
- iv. Appropriate in remote areas where other means are not available
- v. Readily available for hire
- vi. Can carry fairly heavier and bulky goods
- vii. Convenient for transporting goods over short distances

### **1. Disadvantages of carts**

- i. May are not suitable for transporting heavy and bulky goods
- ii. Cause traffic jams on roads leading to congestion and accidents
- iii. Not suitable for transporting goods over long distances

### **1. Vehicles**

These are means (units of carriage) of transport that ferry goods and people on roads. Vehicles are the most commonly used means of transport.

Vehicles are either passenger or goods carriers. Passenger carriers may be buses, matatus, taxis and private cars while goods are transported using Lorries, pick-ups, tankers and trailers. Vehicles are expensive to acquire and maintain. The convenience of vehicles may depend on the nature of the road on which they travel.

Some roads are impassible especially when it rains while others are usable throughout the year (all-weather roads). Of special concern in road transport is the matatus. These are privately owned passenger vehicles that were introduced to supplement the existing mainstream transport companies that were inadequate at independence. They got their name from the amount of fare they used to charge originally, that is, mapenimatatu. The operators have to obtain the relevant

documents such as insurance cover in order to be allowed to operate. Their owners may form associations that take care of their interests along given routes or in certain areas.

### **Advantages of matatus**

- i. They supplement regular bus companies, especially in remote areas where they are the only means.
- ii. They fill up faster than buses hence save time
- iii. They are more flexible since they can change routes easily depending on demand
- iv. They reach out into the interior of rural areas where big buses cannot access
- v. They are more flexible with the fares they charge
- vi. They are easier to hire as most of them are readily available
- vii. They are cheaper to acquire as compared to buses

### **Disadvantages of matatus**

- i. Some matatus are poorly maintained to the extent of being unroadworthy
- ii. Most drivers are reckless as they rush to compete for customers. They pick or drop passengers anywhere
- iii. In some cases, touts use impolite language when dealing with passengers
- iv. They may cause noise pollution such as unnecessary hooting and loud music
- v. They may cause congestion in towns unnecessarily because of careless driving and parking
- vi. Uncalled for sudden increase in fares at peak hours, during the night and on public holidays
- vii. Their operation is concentrated on-peak hours, rarely operating at night.
- viii. They at times unexpectedly change their route hence causing a breach of contract.

### **Advantages of vehicles**

- i. Most readily available means of transport
- ii. Relatively fast compared to carts and human Porterage
- iii. Relatively cheaper over short distances

- iv. Flexible as it can offer door to door service
- v. Vehicles may be available for transporting special goods
- vi. Roads are widely spread thereby making many areas accessible.

### **Disadvantages of vehicles**

- i. Acquisition and maintenance costs are high
- ii. May not be suitable for transporting heavy and bulky goods over long distances as compared to railways
- iii. Traffic jams in roads may cause delays
- iv. Vehicle transport is prone to accidents which may lead to loss of goods and life
- v. Some roads may be impassable especially during the rainy seasons.

### **1. Trains**

Trains are vessels that transport goods and people on rails hence the term railways.

The terminuses of trains are the railway's stations. Therefore; the goods to be transported by trains have to be taken to the railway station. Railway transport is suitable for heavy and bulky goods as well as passengers. There are two types of trains: cargo and passenger train.

### **Advantages of Trains**

- Relatively secure as cases of theft and accidents are rare
- Enables a transporter to plan for the transport of his/her goods as trains follow a fixed timetable
- Economical for transporting heavy and bulky goods over a long distance
- Trains may have facilities for carrying special types of goods e.g. gas, petrol and vehicles
- Where shunting facilities are available trains may deliver goods up to or from the owner's premises

### **Disadvantages of Trains**

- Not flexible as trains follow a strict timetable
- Railway lines are expensive to construct and maintain

- Not all areas are served by railway lines
- Not suitable for transporting urgently required or perishable goods as it is slow
- Unsuitable for transporting goods over short distances
- Trains are expensive to acquire and maintain

### **Pipeline Transport**

This is the movement of liquids and gases from one place to another through a pipe. Products transported through pipes include water, gases, petrol and diesel. Solids that cannot be dissolved or damaged by water may also be transported through pipes as suspension. Examples coffee berries from machines to drying places. The pipeline is both a vessel and a way.

Products flow by the force of gravity or pressure from an original station. If the original terminal is at a higher level than the receiving terminal, the force of gravity is adequate to move the product. But if the receiving terminal is at a higher level than the original than the originating terminal, then power is required to pump the product uphill. For example, petroleum from Mombasa which is at sea level needs pressure to pump it to all the receiving stations.

### **Advantages of Pipeline Transport**

- It is labour saving as it requires minimal manpower
- It is environmentally friendly since it is free of noise or smoke
- It may be constructed in areas where it is difficult to construct roads or railway lines. For example, over rugged terrain
- Pipelines allow a continuous flow of the goods being transported
- It ensures that road damage is reduced as the number of tankers is reduced on roads
- It helps to reduce accidents that may be caused by tankers on roads
- It reduces delays arising from congestion on roads
- Maintenance costs are reduced as it relies on gravitational force and booster stations along the way
- It may not be affected by adverse weather conditions

### **Disadvantages of pipeline Transport**

- A leakage not detected in good time may lead to high losses

- Initial construction cost is high
- Accidents leakages may lead to environmental pollution
- It is unidirectional that is, travels only in one direction
- It can transport only one product at a time
- It is not flexible since once a line is laid, it cannot be adjusted according to transport patterns or demands
- Generates comparatively fewer job opportunities as it is capital intensive
- It is vulnerable to sabotage by enemies.
- Once laid, it is difficult to re-route or relocate.

## **Water Transport**

It is a mode of transport where the units of carriage transport goods and people on the water. Water, in this case, includes; navigable rivers, lakes, seas and oceans. The means of transport which are the units of carriage or vessels using this mode include; ships, dhows, boats, steamers and ferries. Water transport can be divided into inland waterways and sea transport.

### **Inland waterways**

This is transport carried out on lakes, rivers and inland canals. Lake Victoria facilitates transport among the three east African countries i.e. Kenya, Uganda and Tanzania. Ferries also connect the mainland to islands such as Rusinga Islands, found in Lake Victoria.

Water hyacinth has however been a threat to transport on the lake. Most rivers in Kenya are not navigable due to reasons such as:

- Too small
- Presence of rapids and waterfalls
- Too shallow
- Most are seasonal
- High gradient

### **Sea Transport**



This is where goods and people are transported in seas and oceans. All types of water vessels may be used in sea transport. Sea transport is important as it connects continents of the world thereby facilitating international trade. Kilindini in Mombasa provides a good natural harbour facilitating sea transport between Kenya and other countries of the world. Ferries also connect the island of Mombasa and the mainland.

## **Types of Water vessels**

### **Ships**

A ship is a large vessel that transports people or goods through the water. Their sizes however vary depending on the number of goods and passengers they carry. Ships help in connecting countries or places that border the sea. They load and offload in terminals referred to as harbours found at seaports. For example, the Kilindini harbour is found in the port of Mombasa.

Ships that transport people are referred to as passenger ship while those that transport goods are referred to as cargo ships. Cargo ships are convenient for carrying heavy and bulky goods.

Ships may also be classified as either liners or tramps.

### **Liners**

These are ships that are owned and operated by shipping companies called conferences. Each conference is responsible for specifying the route on which each liner would operate the rates to be charged and setting the rules and regulations to be followed by the members.

### **Characteristics of liners**

- Have fixed routes
- Follow a fixed timetable
- Charges are fixed
- Call at specified ports along the route at specified intervals
- Travel at regular intervals.

### **Tramps**

These are ships that do not follow a regular route or time table. Their routes therefore depend on demand. During times when demand is high, they charge higher rates and when demand is low they lower their rates. Tramps can therefore be likened to matatus. Tramps may be owned by either individuals or firms.

### **Characteristics of tramps**

-Do not have a fixed rate. They therefore move to wherever there are goods or passengers to carry.

-Have no set timetables. They therefore move according to demand

-Their fares change according to demand.

-Their travelling patterns are irregular and therefore cannot be relied upon

**NB:** Liners and tramps owners are in constant competition business. Traders therefore need to choose the type of ships to hire. Liners are however more popular than tramps among traders because of their reliability.

When a trader hires an entire ship to transport goods to a given destination, he/she and the ship owner signs a document called a **charter party**. This document shows the terms and conditions under which the goods would be transported.

Other information included in the agreement is destination, nature of the goods and freight charges. When the ship is hired to carry goods for a given journey the document signed is referred to as **voyage charter**. On the other hand, if the ship is hired to transport goods for a given period of time, the document signed is called a **time charter**.

Ships may be specially built to carry special commodities. These may include tankers specially built to transport petroleum products and other liquids. Refrigerated ships may also be available to transport perishable commodities such as meat, fish and fruits.

### **Boats and Ferries**

These are water vessels used in transporting goods and people over short distances. They are therefore found in both inland water transport and also the sea transport. e.g the Likoni ferry in Mombasa carries people from and to the island of Mombasa and the mainland.

### **Advantages of water transport**

-Sea transport is economical to the owner as the number of employees to carriage volume ratio is less compared to road transport

-Suited for transporting heavy and bulky goods

-It is cheap as the way is natural and free

-Connects countries of the world which border the sea

- Special types of ships are available for transporting goods
- Large volume can be carried thereby reducing cost per unit
- Not affected by traffic congestion
- Some ships can be very luxurious for passengers and may even provide swimming pools.
- At the port/dock, there are many depots for the storage of goods.

### **Disadvantages of water transport-**

Sea-sickness, sea pirates and storms may occur

- They are slow therefore not suitable for transporting perishable and urgently required goods
- It is expensive to construct and maintain artificial harbours
- Unfavorable weather conditions may affect water transport
- Sea transport is not accessible to landlocked countries
- Lack of loading and off-loading facilities may lead to delay
- Cost of acquiring and maintaining ships is high.
- Theft of cargo and other valuables may occur during loading and offloading.

### **Air Transport**

This refers to the movement of goods, people and documents by aircraft. Aircraft/ aeroplanes are the units of carriage and air the way. The terminals include airports and airstrips.

Aeroplanes are fast compared to other means of transport i.e. they are the fastest means of transport. They are therefore suitable for transporting urgently required goods like drugs and perishable goods Such as flowers over long distances.

Aircraft may be classified as either **passenger planes** or **cargo planes**. Passenger planes transport people from one place to another. On the other hand, cargo planes transport light cargo to the required destinations. Aeroplanes may be fitted with special facilities for handling special goods. Aeroplanes are expensive to acquire and maintain. Their operations may also be affected by weather conditions.

## **Advantages of Air Transport**

- There is less handling of goods on the way since aeroplanes may move directly to the final destinations.
- The way does not require construction or maintenance as it is natural and free.
- Planes can move through places where other means cannot, such as over the earth poles and across high mountains/ planes are not hampered by physical barriers.
- Have efficient interconnections between airlines all over the world which makes it convenient
- Suitable for long-distance travellers especially from one continent to another
- Very fast therefore suitable for transporting perishable and urgently required goods.
- Chartered planes can be used to reach remote areas.
- The movement of aircraft is smooth therefore suitable for transporting fragile goods such as glassware and eggs.
- Passengers are given the highest degree of comfort and personal attention making it the most comfortable means of transport.

## **Disadvantages of Air Transport**

- Causes noise pollution
- Airfields are not available in all places
- Cannot be conveniently used to carry heavy and bulky goods
- Expensive to acquire and maintain aircrafts
- Requires highly trained manpower e.g. air traffic controllers, pilots e. t. c
- Unfavorable weather conditions such as fog, mist and heavy rains may cause delay
- It is an expensive means of transport in terms of freight charges
- Not suitable for transporting inflammable goods such as cooking gas and petrol
- In case of accidents results are catastrophic/ accidents are rare but fatal.

-Has limited carrying capacity that should not be exceeded.

-It is not flexible.

-Most airfields/ terminals are located some distance away from town/ city centres and therefore require transport or railway links that are affected by jams occasionally causing delays.

-Recent hijackings by terrorists have made air transport an insecure means especially for transporting valuables.

## **Containerization**

This is a recent development in transport. It refers to the packaging of goods in standardized 'box like' containers designed for use in transporting cargo. The containers are mainly made of metal though a few are made of wood. They can either be hired or bought from firms that provide them. The hired containers are returnable to the owner after the goods have been transported.

Containers are designed in a way appropriate to transport goods by ships, train, lorry or by air. To safeguard the goods against risks such as theft and unfavourable weather conditions the containers are sealed immediately after goods have been packed. The sealed containers are then transported up to the final destination where they are off-loaded. The consignee can then break the seal.

Goods can be transported in containers as **Full Container Load (F.C.L)** or as **Less Container Load (L.C.L)**. Full container load applies where the container is filled with goods belonging to one person. In FCL, goods are delivered to the consignee intact. On the other hand, less than container load applies where a container is filled with goods belonging to several consignors. This may be the case where a single consigner does not have enough goods to fill a container. When such a container reaches the destination, it is opened and the various consignees take their goods.

There are special handling facilities for loading and offloading containers onto and from the units of carriage.

Apart from the container depot at Mombasa, Kenya Ports Authority (K.P.A) has established inland container depots referred dry ports. An example of a dry port is found at Embakasi in Nairobi. The establishment of dry ports aims at relieving congestion at the seaport. It also aims at making the handling of cargo easier and efficient for inland importers and exporters.

When containers are offloaded from ships at Mombasa, they are loaded into special container trains called raitainer which transports them by railway to the inland container depot at Embakasi. Containers can also be transported by specially designed trucks between the ports or from the port to the consumer's destination.

## **Advantages of containerization**

- Minimizes the risks of loss or damage of goods as containers are sealed at the source
- Containers are lifted with devices that make movement and handling easy
- Saves time and labour in loading and off-loading due to the use of machines
- Containers sealed at the source in presence of customs officials may not be opened until they reach their final destination. This reduces delay.
- Special containers are available for goods requiring special attention like chemicals.
- Insurance costs are relatively low as risks are less
- Space is saved when containers are used as opposed to when individual items are packed in the carrier.
- Can carry large quantities of cargo if packed well.
- Containers are tough structure, which offers protection to sensitive and fragile goods.

### **Disadvantages of containerization**

- They are expensive and this increases the cost of transporting goods
- Contributes to unemployment since it is capital intensive
- Not suitable for transporting small quantities of goods.
- Requires special handling equipment which may be expensive
- May not be suitable for goods with irregular shapes.
- Training the labour force is long and expensive.
- They may be used to smuggle illegal goods.
- The large trucks used on the road increase road damage and may increase accidents.

### **Factors that influence the choice of appropriate means of transport**

**i. Cost;** The cost of transporting a good should be reasonable; except where other factors should be considered such as need for quick delivery. Otherwise should be proportional to the value of goods transported.

**ii. Nature of goods;** The nature of goods should be considered when choosing a means of transport. For example, perishable goods require a fast means. Similarly, heavy and bulky goods require a means of transport convenient for such goods e.g. trains and ship.

**iii. Reliability;** The means chosen should be able to deliver the goods to the required place at the right time and in the right form.

**iv. Urgency;** For goods that are urgently required, the fastest means available should be chosen.

**v. Safety and Security;** The means chosen should ensure that the goods on transit are secure against loss, theft or physical damages.

**vi. Distance;** Some means of transport are suitable for long distances while others are suitable for short distances. If goods are to be transported for long distances, air, sea or railway transport would be appropriate, otherwise, roads would be suitable for short distances.

**vii. Availability of means;** The means of transport to be selected should be based on its availability. For example, where there is only one means of transport, it would be the only one to be chosen.

**viii. Flexibility;** This is the ability of means of transport to be manipulated to suit the convenience of the transporter. Where flexibility is required, then the means that would provide such should be chosen. For example, a matatu is usually more flexible than an aeroplane.

**ix. Terminals;** Some means of transport may have their terminals near the transporter than others. In this case, the transporter should choose the means whose terminals are conveniently accessible to facilitate loading and offloading of goods.

**x. Value of goods to be transported-** goods of high value require special handling and high security during transportation.

### **Trends in transport**

- Pipeline and containerization
- Electric trains are replacing diesel engines
- Underground tunnels for trains are being used to ease congestion on the surface
- Dual-carriage roads are being developed in various parts to ease congestion and minimize accidents
- The development of planes with larger carrying capacity and speed is a major feature in the transport industry
- The use of bicycles commonly known as bodaboda are a common feature in towns, bus terminals and rural areas, supplementing other means of transport to ferry people and cargo to their destinations. The bicycles are being modified to make them more convenient. It is not unusual to find a bicycle (bodaboda) that has been fitted with facilities such as:
  - Motors to increase their speed and reduce energy applied by the cyclist.

- Music systems to entertain passengers and More comfortable seats.

Motorcycles are also being used as bodabodas in various areas. Similarly, the three-wheeled vehicles commonly known as 'TukTuk' is a major feature in cities and most towns.

- Private personal vehicles with less carrying capacity e.g. four-seater vehicles are being used as matatus. The vehicles are convenient to the passengers as they:
  - Fill up within a shorter time compared to larger vehicles
  - May accommodate each of the customer's interests.
  - Passenger vehicles are being fitted with radios, music systems and videos to entertain customers as they travel. However, some forms of entertainment may not be conducive to all.

## REVISION QUESTIONS ON TRANSPORT

### KCSE PAST PAER 1

1. 1996 State four circumstances under which a businessman would choose to transport goods by air? (4mks).
2. 1997 Outline four reasons why a school in Kisumu may prefer to transport its sixty students to a music festival in Nairobi by train rather than by bus. (4mks).
3. 1999 Give five reasons why a manufacturing firm would be located in an area well served by good road network.(4mks).
4. 1999 Outline four limitations of containerization. (4mks).
5. 2000 State four reasons why road transport is popular in Kenya.(4mks).
6. 2001 State four ways in which the nature of goods would influence the choice of transport.
7. 2002 Outline four reasons why a transporter of goods from Mombassa to Nairobi may prefer rail transport to road transport. (4mks).
8. 2003 State the unit of carriage for each of the following modes of transport. (5mks)

Mode of transport

Units of carriage

1. Portage
2. Sea
3. Road
4. Cartage
5. Air



1. 2004 list four ways in which transport promotes growth of trade. (4mks)
2. 2000 State four reasons why road transport is popular in Kenya. (4mks)
3. 1995 Give 3 disadvantages of railway transport in Kenya. (4mks)
4. 1998 List 4 disadvantages of using containers to transport goods. (4mks)

## **KCSE PAST QUESTIONS PAPER 2**

1. 1995 Explain five reasons that may account for continued use of hand carts as a mode of transport in Kenya. (12mks)
2. 1996 The oil pipeline has recently been extended from Nairobi to western Kenya.
3. Explain five benefits that may be accounted to the country from the extension. (10mks).
4. 1997 Explain five ways in which an efficient road transport system may promote trade within a country.(10mks).
5. 1998 Discuss five factors that have hindered the expansion of railway transport in Kenya.
6. 1999 Explain five features of an efficient transport system (8mks).
7. 2000 Explain the advantages of pipeline as a mode of transporting oil products. (12mks).
8. 2002 Outline five factors that should be considered when choosing a means of transport.
9. 2003 Explain six advantages of containerization as a mode of transport.(10mks)
10. 2004 Discuss six factors that may discourage the use of pipeline as a means of transporting petroleum products in a country.(12mks).
11. 2005 Discuss 5 circumstances under which a trader may choose to transport goods by rail.