MODES OF TRANSPORTATION

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Reference:
Logistics Management World Seaborne Trade
- Krishnaveni Muthiah
DIFFERENT MODES OF TRANSPORTATION

I. Railways:

- Indian railway system has grown into Asia’s largest and the world’s fourth largest. It has route length of 72,000 kilo meters by the end of 1990. The daily run is 15,000 kilo meters with running of 12,000 trains carrying 7 lakh tons of goods. The average cost per ton kilo meter is 27 paise.

Reference:

https://www.yourarticlelibrary.com/geography/transportation/5-commonly-used-transport-modes/49185
DIFFERENT MODES OF TRANSPORTATION

Merits:

1. Large carrying capacity:
   • Compared to other means of transport, railways are known for bulk carriage of goods over long distances.

2. It is economical:
   • As the freight rates are telescopic and referential, it works cheaper particularly in case of heavy goods over long distances.

3. It is all weather modes:
   • Railways provide all season protection to the products moved on uninterrupted basis.

4. It has containerisation:
   • Indian railways have done a good job by containerising on major routes facilitating safe, uninterrupted and speedier movement of goods.

5. It links international markets:
   • Railways are the main sources of connections with the markets outside the country moving goods from interior parts to the points of overseas supply and shipping.

Reference:
https://www.yourarticlelibrary.com/geography/transportation/5-commonly-used-transport-modes/49185
DIFFERENT MODES OF TRANSPORTATION

Demerits:

1. Costlier over short distances:
   - Railway transport works costlier over short distances because of tapering and differential tariff rates.

2. Slower movement:
   - As compared to road and air transport, the speed of movement is slower.

3. Inordinate delays:
   - In India we have three types of lines as broad, meter and narrow gauge resulting in frequent transhipments; again shortage of wagons and, therefore, space forces the business community to tolerate inordinate delays.

Reference:

https://www.yourarticlelibrary.com/geography/transportation/5-commonly-used-transport-modes/49185
DIFFERENT MODES OF TRANSPORTATION

II. Roadways:

- Indian road network is one of the largest in the world. It has a total road length of 18 lakh kilo meters of which 50 percent is surfaced. Of this, national highways account for 35,000 kilometers account for the 50 percent of total traffic. On this road length, 9 lakh vehicles ply carrying goods.

Reference:

https://www.yourarticlelibrary.com/geography/transportation/5-commonly-used-transport-modes/49185
DIFFERENT MODES OF TRANSPORTATION

Merits:

1. Economical over short distances:
   • As compared railways, it is more economical. The studies have proved that it is cheaper by 25 percent.

2. Speedier movement:
   • Road transport is speedier than the railways giving point to point service resulting in price stabilisation and consumer satisfaction. The business community needs not wait because of wagon shortage, transhipment because a truck has a smaller capacity and is flexible available 24 hours.

3. Touching for-flung markets:
   • Much beyond the capacity of railways, the roadways are known for reaching impregnable market particularly hilly regions where railways cannot reach.

4. Lesser conditions of service:
   • The roadways do not insist on strict packaging requirements because of least transhipments shocks to goods carried. Again, damage claims are settled faster.

Reference:

https://www.yourarticlelibrary.com/geography/transportation/5-commonly-used-transport-modes/49185
DIFFERENT MODES OF TRANSPORTATION

Demerits:

1. **Uneconomical over long distances:**
   - Long haulages work out much costlier because disproportionate rise in fuel and spare-parts expenses.

2. **It is fair weather friend:**
   - Roadways are closed during monsoons and winters resulting in handicapped movement of goods.

3. **Not suitable for bulk transport:**
   - Bulky and heavy goods to be moved particularly over longer distances need railway services than roadways as it has a major limitation of carrying capacity.

Reference:

https://www.yourarticlelibrary.com/geography/transportation/5-commonly-used-transport-modes/49185
DIFFERENT MODES OF TRANSPORTATION

III. Airways:

• We cannot boast of airways in India as we do in case of railways and roadways because, it is underdeveloped and underutilised. It acts as a feeder or supporting transport means. Domestic capacity available is 115 lakh ton kilo meters but utilised only to the extent of 12 lakh ton kilometres in 1990.
• International capacity corresponds to 218 lakh ton-kilo meters of which 175 lakh ton-kilo meters are used. India has 4 international airports, 92 aerodromes with 50 intermediate and 40 minor aerodromes.

Reference:

https://www.yourarticlelibrary.com/geography/transportation/5-commonly-used-transport-modes/49185
DIFFERENT MODES OF TRANSPORTATION

Merits:

1. Fastest means of transport:
   • Air transport provides the speediest movement of cargo over the distant places by eliminating practically spatial barriers.

2. All weather friend:
   • It is known for its dependable service during the times of floods, wars, earth-quakes. It is all weather means, of transport though flights are cancelled due to bad weather conditions.

3. Consumer satisfaction:
   • The level of consumer service and, hence satisfaction is of high order as it is known for immediacy, speed and least damage to cargo.

4. Reduced inventory holdings:
   • As it provides fastest and uninterrupted service, capital investments in the form of stocks of goods is less. This is of particular importance in case of highly perishable items.

Reference:

https://www.yourarticlelibrary.com/geography/transportation/5-commonly-used-transport-modes/49185
DIFFERENT MODES OF TRANSPORTATION

Demerits:

1. **It is costlier means of transport:**
   - The cost of air transport is very high and there is limit of weight of cargo. Hence, it is suitable for light weight, high grade and costly items only.

2. **Limited coverage:**
   - The planes cannot land at all the places of our choice. It connects metropolis and some important cities only.

3. **Limited cargo capacity:**
   - The cargo capacity of a plane is much smaller because of its size as it works against the force of gravity.

Reference:

https://www.yourarticlelibrary.com/geography/transportation/5-commonly-used-transport-modes/49185
DIFFERENT MODES OF TRANSPORTATION

IV. Waterways:

- Waterways of the nation provide other alternative means of transport. Unfortunately, in India, waterways are not fully developed though she has a great potentiality.
- Though India has 7,000 kilo meters of navigable river waterways, only 2,500 kilometres are used. Again, we have 4,800 kilo metres of canals of only 600 kilo metres are navigable but hardly 400 kilo meters are actually used.

Reference:

https://www.yourarticlelibrary.com/geography/transportation/5-commonly-used-transport-modes/49185
DIFFERENT MODES OF TRANSPORTATION

Merits:

**It is cheaper means of transport:**
- Inland waterways tariffs are much lower and, therefore it works cheaper for both short and long distances.

**Most suitable for heavy and fragile products:**
- The items which are bulky and heavy and which are fragile can be moved with ease.

**Loading and unloading facilities:**
- The sender of cargo has the facilities of loading and unloading from boats and wharves on and from steamers and barges. Even the receiver has the similar facilities.

**No problem of congestion:**
- Waterways provide an independent movement unlike road system where road is meant for all kinds of vehicles creating the problem of congestion.

Reference:

https://www.yourarticlelibrary.com/geography/transportation/5-commonly-used-transport-modes/49185
DIFFERENT MODES OF TRANSPORTATION

Demerits:

1. Slow speed:
   • The speed of the boats and steamers is badly limited in case of canals and rivers. Goods needing quick movement as perishable can be hardly transported.

2. Unreliable:
   • Changing seasons create problems. Winter may freeze the rivers and canals and summer eats the depth of rivers and canals. Again, the rivers are known for changing their course of flow.

3. Limited service:
   • The inland waterways are connecting the given places. Again, the cargo capacity is quite limited.

Reference:

https://www.yourarticlelibrary.com/geography/transportation/5-commonly-used-transport-modes/49185
PIGGY BACK AND BIRDY BACK

• Piggy Back: Piggyback transportation refers to the transportation of goods where one transportation unit is carried on the back of something else. Trailer-on-Flatcar (TOFC) “Piggybacking”: The goods are packed in trailers and hauled by tractors to the railway station. At the station, the trailers are moved onto railway flat cars and the transport tractors, which stay behind, be then disconnected. At destination, tractors again haul the trailers to the warehouses of the consignee.

• COFC (Container-On-Flatcar): This type of piggybacking facilitates multiple containers to be transported on a flat cars.

• Birdy Back: It is a combination of road and airways and is generally use in International shipments. Local cartage is a vital part of every air movement because air fright must eventually transport from the airport to the final delivery destination. Air-truck movements usually provide service and flexibility comparable to straight motor freight.

Reference:
https://www.slideshare.net/RaviKSingh3/logistics-transportation-58848916
MULTI MODAL TRANSPORTATION

MEANING

• Combination of two or more modes of movement of goods, such as air, road, rail, or sea. Also called combined transport.

DEFINITION

United Nations convention defines Multimodal transportation as, “International multimodal transport' means the carriage of goods by at least two different modes of transport on the basis of a multimodal transport contract from a place in one country at which the goods are taken in charge by the multimodal transport operator to a place designated for delivery situated in a different country“

Reference:
https://www.slideshare.net/rinuthomas969/multi-modal-transportation
There are four types of US multimodal transportation – Land bridge, Mini bridge or Micro bridge, Land bridge rate, Combined or air truck

LAND BRIDGE

A variation of intermodal option is the Land bridge which moves containers by a combination of sea and rail. It is commonly used for cargo bound for Europe from the Pacific Rims.

MINI BRIDGE / MICRO BRIDGE

Two other international intermodal options are mini land bridge and micro bridge. Mini bridge is a variant of land bridge in which freight movement originates or terminates at a point within the United States. Micro bridge refers to door to door service available along the west coast of United States rather than traditional port to port services.

Reference:
https://www.slideshare.net/rinuthomas969/multi-modal-transportation
MULTI MODAL TRANSPORTATION

• LAND BRIDGE RATE

A freight rate embracing two maritime tariffs and surface transport rate. It may be a consignment from a European port to Japan and involving a voyage across the Atlantic, a rail journey across North America and the final journey to Japan by sea.

• COMBINED AIR & TRUCK

Air and motor carriage combination into small cities from metropolitan airports provides a needed service at a competitive cost. Many air carriers have extended their motor freight range to provide services to expanded areas.

• BENEFITS OF MULTIMODAL TRANSPORTATION

- Easy documentation as confined to one document.
- Carriage cost is reduced
- Cost of product is reduced
- Quick delivery
- Easy for handling
- No need of physical clearance at each point.

Reference:
https://www.slideshare.net/rinuthomas969/multi-modal-transportation
a) Mode of transport

- For an organization, the decision regarding selecting the particular mode or modes of transport for distributing its finished products is very critical. In the case of distribution of its products, the company has to think of
- The transit time, or the time lapse between the production of goods and its ultimate sale.
- The amount of transportation costs involved.
- Normally speaking there is an inverse relationship between the transit and transportation cost i.e. lower the transit time, higher is the transportation cost. This is because to cut down on transit time. The company would like to transport its goods faster by possibly a combination of various modes of transport. This would definitely increase its cost of transportation. But as stated this need not be a generalization. E.g.: If a company decides on slower transit time to reduce transportation costs then unsold inventory would pile. Thus there would be higher inventory cost for the organization.

b) Transit Capital

- When goods are in transit, the capital of the company (i.e. money) is locked up. The company would like to convert goods into cash as quickly as possible so that the cash (i.e. capital) so generated can be put to profitable use. Hence the company must ensure that the transit time of goods is kept to minimum level. Here an effective and planned transportation should be evolved within the company's logistical system so that the overall transit time is kept at the minimum level.

Reference:
https://www.bms.co.in/what-are-the-factors-influencing-transportation-costs/
FACTORS INFLUENCING TRANSPORTATION COSTS

c) Obsolescence

When a company is tied down to a slow or say an erratic mode of transport (E.g.: Roadways in monsoons) it is necessary for the company to maintain a higher level of inventory at depots/ware houses/distributors. This required so that the customer can be assured of continuous and uninterrupted supply of company’s products. However in case the designs of the products change rapidly or the wants/desires of the customers change, the goods of the company will remain unsold which may become time –barred and obsolete (E.g.: medicines and drugs). Again, rapid changes and innovations in technology (E.g.: electronic items and computers) will be the technical obsolescence of the goods. Any goods in the process of manufacture or, which are in transit to the depots/warehouses, will realize a lower sales value when new models arrive. Hence, with proper coordination and planning involving logistics the company has to decide on swifter more efficient modes of transport to avoid possible obsolescence of goods/products.

Reference:
https://www.bms.co.in/what-are-the-factors-influencing-transportation-costs/
d) Packaging

Packaging can be considered as an inevitable factor which needs due consideration before goods are transported from one place to another. The mode of transport (apart from the type of the product) very often influences the type of packaging required. E.g.: Long distance transport by road will require different sort of packaging for a product, as compared to the same product being transported by air. Hence, the mode of transport determines the type of packaging required. This can increase the cost of the product since packaging costs have to be incorporated in profitability calculations. Also, more the packaging means more weight and volume, which will increase the cost of transportation. Hence, design of packaging has become very important in logistical planning.

Reference:

https://www.bms.co.in/what-are-the-factors-influencing-transportation-costs/
FACTORS INFLUENCING TRANSPORTATION COSTS

e) Insurance

Insurance risks are based on the modes of transport, transit time as well as on the possibility of damage to the goods on route. In case the transit time for the goods is smaller and the handling of the goods by the transport companies is skilful there will possibly be no damage to the goods. Proper management of the goods in transit by efficient staff is also essential. Insurance premiums paid would be lower since less or no damage to the goods is expected.

f) Breakages

The cost of the breakages of the products during transport has to be considered by any company while calculating cost incurred on goods transported. Insurance companies do cover damages, cost to the goods due to breakages during transport. The company cannot overlook this cost. Apart from the high premiums paid during transport (called transit insurance), the delay in, establishing and receiving claims, the cost involved in making replacements, and consequent loss of established customers and market will prove very expensive to the company.

Hence, the logistic manager must select that mode of transport which will reduce or eliminate the loss due to breakages in transit. The firm must ensure that handling systems are sophisticated during transit, also if possible special containers should be used to safeguard products from breaking. If direct door to door delivery is possible by the transport company, it would ensure less multiple handling thereby safeguarding the goods from breakage:

Reference:
https://www.bms.co.in/what-are-the-factors-influencing-transportation-costs/
g) Pilferage

The Problem of pilferage of goods during transport—whether it be rail, truck or water—is very common in our country. The cost involved due to losses suffered because of pilferage is enormous, especially when the products are expensive. Practically speaking, the problem of pilferage is difficult to be eliminated from our country. But it can be attempted to be reduced by proper storage containers that are pilfer proof, adequate security arrangements during transit, etc. But the loss due to pilferage during transit is real and has to be taken into account during cost benefit calculations.

h) Deterioration

Many goods that are transported over long distance by rail, water and truck get deteriorated due to various reasons. First, the goods may not have been protected against adverse weather conditions like heavy rains or scorching sun. Second, the roads may be extremely bad making it difficult for the truck to move smoothly, the rough seas may make water transport dangerous, long waiting times at railway yards can be a cause of concern about the conditions of the goods. Deterioration during transport can prove to be expensive. Again, to avoid losses due to deterioration in terms of special packages, conditioning, etc. may add to the cost of the goods, making them expensive.

Reference:
https://www.bms.co.in/what-are-the-factors-influencing-transportation-costs/
PACKAGING REQUIREMENTS

1. Packaging

- For transport of all pathology specimens and associated materials by air or surface transport methods, the packaging must consist of three components: primary receptacle
- secondary packaging
- outer packaging.

2. Labelling and marking

- The IATA Dangerous Goods Regulations describe the markings and, if required, the labels required on packages for air transport.

The Australian Standard Packaging for surface transport of biological material that may cause disease in humans, animals and plants describes the minimum marking required on packages for surface transport. If dry ice or nitrogen refrigerants are used during transport, their presence must be indicated.

3. Documentation

- Documentation required by a transporter or operator should be accessible without opening the package.

Packages for or from overseas destinations must be accompanied by the necessary documentation, including customs and/or quarantine permits. A check of the Australian Quarantine and Inspection Service website may be necessary to review.

Reference:

PACKAGING REQUIREMENTS

4. Choosing the mode of transport

- The packaging required for pathology specimens depends on the mode of transport that is to be used, and therefore can vary. (latest relevant information)
- There are many questions to consider when choosing the mode of transport for pathology specimens, including: Should the specimens be kept cold or frozen?
- Are the specimens being sent within Australia and to whom?
- Collection centre to laboratory?
- Doctor’s surgery to laboratory?
- Laboratory to laboratory?
- Within hospital (i.e. from ward to laboratory)?
- Externally from one part of a hospital campus to another?
- Are the samples being sent overseas?
- What packaging is required to send these samples safely?
- What paperwork or documentation is needed?
- Are there additional hazards such as chemicals (flammable, acid or other substance), dry ice, liquid nitrogen, etc.?

Reference:

PACKAGE MARKINGS AND LABELING

• Marking and labeling are important steps when preparing a dangerous good package for transportation. Labels often communicate the hazards associated with the package, and markings ensure the shipment is handled so that spills, accidents and exposure are prevented. As such, they must be applied appropriately, reflect correct information, and comply with the regulations.

• **Marking**

  • *Marking* means a descriptive name, identification number, instructions, cautions, weight, specification, or UN marks, or combinations thereof, required on outer packagings of hazardous materials or dangerous goods.

  • The marking required:

    • Must be durable, in English, and printed on or affixed to the surface of a package or on a label, tag, or sign.

    • Must be displayed on a background of sharply contrasting color;

    • Must be unobscured by labels or attachments; and

    • Must be located away from any other marking (such as advertising) that could substantially reduce its effectiveness.

Reference:

https://www.faa.gov/hazmat/safecargo/how_to_ship/mailing_labeling/
• Specialized markings:

There are specialized markings that you should be aware of as well. Among them are:

For liquid hazardous materials or dangerous goods:

• Labeling

Labels identify the specific primary and subsidiary hazards posed by the materials in a dangerous goods package. These methods of communication rely on specific colors, codes, and pictograms to clearly and immediately identify the type of materials in the package.

Reference:

https://www.faa.gov/hazmat/safecargo/how_to_ship/mailing_labeling/
THANK YOU