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Importance of Transport Network

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Transport Network:

The origin of the word 'Transport' can be traced to Latin.

Transport comes from the Latin words portare, which means "carry," and trans, which means "across."

The Cambridge English Dictionary defines Transportation as:

1. The movement of people or goods from one place to another
2. A system of vehicles for getting from one place to another

A transport network, or transportation network is a realisation of a spatial network, describing a structure which permits either vehicular movement or flow of some commodity.

Good transport network is crucial for sustained economic growth and development of a nation. This vital infrastructure is regarded as an important determinant for the success of a nation's effort in diversifying its production base, expanding trade and linking together resources and markets into an integrated economy

History of Transportation

As it is rightly said, 'Necessity is the Mother of Invention', transportation was improved further and further due to man's needs of trade and survival and curiosity. Before every other form of transportation, humans traveled on foot. Human Beings learned to use animals such as donkeys, horses and camels for transportation from 4000 BC to 3000 BC. In 3500 BC, the wheel was invented in Iraq and the first wheel was made from wood. Initially, a canoe-like structure was used for water transportation, which was built by burning logs and digging out the burned wood. In 3100BC, the sailing boat was invented by Egyptians while the Romans built roads across Europe. During the Industrial Revolution, the first modern highway was developed by John Loudon McAdam.

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In the 17th and 18th century, many new modes of transportation were invented such as bicycles, trains, motor cars, trucks, airplanes, and trams. In 1906, the first car was developed with an internal combustion engine.

Mode of transport

Mode of Transport is a term used to distinguish between different ways of transportation or transporting people or goods. The different modes of transport are air, water, and land transport, which include Rails or railways, road and off-road transport. Other modes also exist, including pipelines, cable transport, and space transport. Human-powered transport and animal-powered transport are sometimes regarded as their own mode, but never fall into the other categories.

The most common five modes of transport are: railways, roadways, airways, waterways and pipelines.

We, due to the limitations of time and space, will be concentrating on Rail Transportation in this article.

Rail networks.

Collins English Dictionary defines 'Rail Transport' as the system of taking passengers or goods from one place to another by railway.

Such networks are a linear nodal hierarchy with nodes related to intermodal yards, train and transit stations. Because of the fixed character of their paths and capacity, they are allocated usage windows during which grouped units circulate. While linear rail networks are vulnerable to disruptions, complex rail and transit networks have a mesh-like structure, making them more resilient.

Rail transport then commenced in mid 16th century in Germany in the form of horse-powered funiculars and wagonways. Modern rail transport commenced with the British development of the steam locomotives in the early 19th century.

History of Trains

Trains are connected vehicles which run on rails. They are powered by steam, electricity or diesel. The steam engine is mostly fueled by coal, wood or oil. The first steam powered engine to

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be used in trains was introduced by James Watt, a Scottish inventor. The first rail transportation was used to move coal from mines to rivers.

The modern rail system was developed in England in 1820, progressing to steam locomotives. In 1825, Stockton and Darlington Railways opened and underground railway was first built in 1863 in London. In 1880, electric trains and the trams were developed. Today, most of the steam locomotives have been replaced by diesel. The fastest commercial High Speed Rail trains which use magnetic levitation technology can go up to 431 km/hr.

History of Railways in India

Railways were first introduced to India in 1853. The British introduced the railway system in India because they felt the need for a fast and quick transportation to carry the raw materials across the country easily which was needed by them. By 1947, the year of India's independence, there were forty-two rail systems. In 1951 the systems were nationalised as one unit, becoming one of the largest networks in the world.

India is one of the largest rail networks in the world. Indian Railways is a complex system serving millions of people every day.

Speaking of trains and railway network, Mumbai's local rail network is the busiest commuter train system in the world; with 7.5 million people using the trains to commute daily. Annually, the local railways transport 2.6 billion passengers, which is about a third of the world's population.

Mumbai Suburban Railway

The Mumbai Suburban Railway (colloquially called local trains or simply locals) consists of exclusive inner suburban railway lines augmented by commuter rail on main lines serving outlying suburbs to serve the Mumbai Metropolitan Region. Spread over 390 kilometers, the suburban railway operates 2,342 train services and carries more than 7.5 million commuters daily. By annual ridership (2.64 billion), the Mumbai Suburban Railway is one of the busiest commuter rail systems in the world. Trains run from 04:00 until 01:00, and some trains also run up to 02:30. It is the second largest suburban rail network in terms of route length after the Kolkata Suburban Railway.

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History of Mumbai Suburban Railway

The Mumbai Suburban Railway is an offshoot of the first passenger railway to be built by the British East India Company, and is also the oldest railway system in Asia. The first train was run by the Great Indian Peninsula Railway (now Central Railway) between Bori Bunder (now Chhatrapati Shivaji Maharaj Terminus) and Thane, a distance of 34 km, on 16 April 1853 at 15:35. The 14-coach train took 1.25 h to complete the 34 km journey, with a halt at Sion to refill the train's water tanks.

The next major train was run between Virar and Churchgate by the Bombay, Baroda and Central India Railway (now Western Railway), in April 1867. Colaba was also added as a station on this route, but later shut down. On 3 February 1925, the first EMU Service was started from Victoria Terminus (now Chhatrapati Shivaji Maharaj Terminus) to Coorla Harbour (now Kurla) on the Central line which was run on 1.5 kV DC traction and also started on the Western line from Churchgate to Borivali on 5 January 1928. By 2016, the entire network had been converted to 25 kV 50 Hz AC traction

Travel classes

The suburban fleet consists of 12 and 15-coach rakes. There are two main classes of travel; the First and Second classes. The first class fare is approximately 8 times more expensive than second class, and therefore tends to be less crowded during the non-rush hours, though at times it is equally or more crowded than the general compartments during rush hour, due to most office employees having a first class transport pass provided by their employer. First class and Senior Citizen compartments also have cushioned seating, while the rest are typically plastic. There are following classes of travel:

Class I (first class compartment):

Commonly known as gent's first class or simply first class, since most commuters are men. Women and children can also board this compartment. The coach is designated by red and yellow slant stripes. The location of the same is designated by colouring the platform walls with similar stripes. The price is generally hiked up by eight times to prevent the compartment overcrowding. The seats in this class are leather made.

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Class II (general compartment): Also called gent's second class or simply second class as the majority of passengers in these compartments are men. The compartment is open to women and children as well. The seats in this class are plastic-made.

Class I-L (ladies first class): similar to normal First Class, reserved solely for females, however male children up to the age of 13 can travel in this compartment. Men are not allowed to travel, and may face a penalty. Some of the coaches of ladies compartments are open to general public between 23:15 and 06:30. These are indicated by a note near the doors of the compartments. The coach is designated by red and yellow slant stripes. The location of the same is designated by colouring the platform walls with similar stripes. This compartment is often adjacent to the ladies general compartment.

Class II-L (ladies' second class): This compartment is reserved solely for females; however male children up to the age of 13 can travel in this compartment. Men are not allowed to travel and can face a penalty. Some of the coaches of ladies compartments are open to the general public between 23:15 and 06:30. These are indicated by a note near the doors of the compartments. The coach is designated by green and yellow slant stripes. The location of the same is designated by colouring the platform walls with similar stripes.

Divyangjan (Handicap and Cancer patients' compartment): for people with disabilities or cancer. On a platform, one can locate these by signs or by following a beeping sound indicator for the visually impaired, or also by following a yellow tactile path with a walking stick. These coaches are open to all the genders. One needs a valid certificate of disability to board the compartment. Failure to do so may result in a penalty.

Senior citizens: is reserved for passengers above the age of 60. These coaches are open to all the genders. One needs a valid age proof to board the compartment. Failure to do so may result in a penalty.

Luggage: heavy goods and luggage can be transported using this compartment. These compartments are spacious and only have seats along the walls and are made to haul goods.

There are also women-only cars (termed ladies) and since 1992, Ladies Special trains with the entire train set reserved for women passengers. A semi ladies special is a train with a few (e.g., 3) coaches reserved for women.

The Importance:

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The total length of rail lines that form the local network adds up to over 400 kms. Mumbai Suburban Railways operates over 2,300 train services every single day. There is never an interval of more than 4-5 minutes between train arrivals and departures, ensuring minimal waiting time. Dabbawalas who practically run the city's food delivery service depend primarily on the city's local trains to get to their various destinations. It took just three hours for service to be restored after the deadly train bombings of 2006.

Fares for Mumbai locals are among the cheapest in the world, with commuters travelling distances of around 120 km for as little as Rs. 30. Mumbai's rail network is apparently the only local one to have a separate first class compartment. The suburban railway in Mumbai operates 2,342 local train services. Between 2014 and 2017, the Railways earned Rs 5,206.16 crore from the suburban service while its expenditure was Rs 9,486.66 crore, the Centre told Lok Sabha. Suburban trains' contribution: 1/3rd of traffic, 3 per cent of railway earnings The Mumbai Suburban railway in addition to being such a huge part of the commuters life provides huge employment opportunities for people. Apart from the government jobs provided it also provides an opportunity for people who own small businesses to test out their products in these railways. With six Lines, Mumbai Suburban Railway Transportation Network has several stations, viz. Western: 37, Central: 62, Harbour: 32, Trans-Harbour: 16, Nerul–Uran: 10.

Thus, the Suburban Railway transportation network is the lifeline of Mumbai and the heartbeat of 1.84 crore people. The Mumbai Suburban Railway is the best example of "**The importance of transport network."**

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