

Comparative study on Mumbai's Suburban Railway Network with Tokyo, London and New York Suburban Railway Network

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ABSTRACT

Mumbai's Suburban Railway Network or Mumbai Local is a major part of public transportation of Maharashtra cities. Every year more than 2.64 Billion passengers traveling on this network, making it one of busiest network in world. Suburban railway of Mumbai is made up of three lines to connect Mumbai city to its nearby areas of Mumbai Metropolitan Region. This network includes Central, Western and Harbour line. In this paper we try to compare this Mumbai suburban network with commuter network of other foreign developed cities, including New York, Tokyo and London. The different parameter like crowd management, managing delays, locomotive used and its specification, facilities provided on platform for the passengers etc. are used to compare railway networks. This papers also include study on privatization of railway of Tokyo and London and also benefits of adopting privatization on Mumbai Suburban Railways. The study will be based on data provided on official government websites.

Keywords

Mumbai Local, Mumbai Suburban Railway, Subway, Indian Railways, Commuter

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Introduction

Suburban Rail also called also local train are one of the cheapest transport systems available for travelling from cities to nearby areas. These Suburban Railways operates on daily basis on a fixed time. Suburban Rail may use the main line or it may have a dedicate line for itself. Their speed varies from 40 to 120 kmph depending on area, Time, or season on which it is operating. Passengers of these networks are charged on basis of total distance they travelled. One should not confuse metro rail with suburban rail, as suburban rails are designed for connecting city with nearby villages, whereas metro rail are used inside the city only. Number of passengers travelling on this network are increasing day by day, because of different reasons like cost of personal vehicle and also lack of parking facilities, increase in petrol prices, traffic problems. One of main reason is passengers prefer these local Rails because of it is easily accessible.

Merit of Local Trains over Metro Rail

- Easily Accessible
- More sitting capacity and also travel while standing
- More economical than any other modes of transport
- Can be used for travelling outside city.
- These networks can share tracks with Express and Goods train.
- It has fixed running schedule.

Demerits of Suburban Railway

- Always Over crowded passengers, especially in case of Mumbai. It has been noted that all train carry doubles its capacity.

- Since these networks operates on old tracks, they always face speed restriction to prevent accidents.
- Due limited infrastructure space these railways are hardly able to expand its network lines.
- Profit margin generated on suburban railway network is very low, as it is designed for middle class or low-income public.
- It has been reported that these railways are not properly monitoring its ongoing projects, for example maintenance of rail track and bridges, upgrading platforms etc.

Mumbai Suburban Rail

The Suburban or Commuter rail system in India is one among the oldest and largest railway networks in the world. Suburban trains in India is the backbone of public transport in many cities including Mumbai, Kolkata, Chennai, Lucknow, Kanpur, Delhi, Hyderabad, Pune. Bengaluru, Ahmedabad, and Coimbatore are in the pipeline.

The Mumbai Suburban Railway network consists of numerous lines run by the central and western railways. And the overall network extends over 319 km of Western Railway manages western lines, while central line manages other remaining lines namely Central and Harbour Lines. It also regulates lines such as Vasai Panvel and Trans Harbour. Mumbai's local trains are of different styles, based on their punctuality; slow and fast. Recently an additional class of AC local was added.

According to recent statistic report published by Railway, more than 7.5 million passengers travel day and night on suburban rail of Mumbai including both passengers and also small vendors. Passengers in Mumbai use Suburban Rail to reach their office and shops, so its punctuality is important factor for them. More than 2435 local train operated on this

network according to western railway. As per report, Mumbai

suburban is most crowded network in the entire world. As per design only 1800 passengers can travel including both sitting and standing, with sitting capacity of 900, but in reality, more than 4000 passengers including both sitting as well as standing travel daily on this local trains, makes most overcrowded rail network in the world. Which is major concern for safety of passengers. People in Maharashtra call Mumbai Suburban Railway as Life Line of Mumbai and also term "Local" in local train in native language.

New York Subway

New York City is very big and many areas, like Manhattan are densely populated. The New York City Subway is best way to travel from one point to another. We can get to almost any landmark or place of interest all of the boroughs. Maps and directions are plentiful and posted everywhere.

Unless we're on a wheelchair, the subway is the best option. The buses we will find it much slower. Besides the traffic, bus drivers contend with trucks, pedestrians, taxis, those drivers just looking for parking places and pedestrians will often walk in front of us, considering all this subway would be a better option.

As per the report, everyday more than five million passengers travel in New York subway from one place to another, making it busiest rail network of United States.

New York Subway Commuters/ trains is of three types, which are as follow: -

1. Long Island Rail Road (LIRR)
2. New Jersey Transit
3. Metro-North Railroad

Tokyo TOEI Subway

The word Toei is derived from Tokyo Metropolitan Bureau of Transportation, it is a suburban or subway network similar to New York subway, used by the passengers to travel from one part of Tokyo to other. It consists four main lines namely, Asakusa, Mita, Shinjuku and Oedo. As per the recent report generated by Toei Subway, more than 3.2 million traveller/ passengers use this Subway network. Similar to other subway network, passengers use this network to reach their offices on time and hence depend on punctuality of these 3 rails. Toei Subway is most punctual subway rail in entire world.

The whole network is spread across 109 km operating on 106 station of Tokyo.

London Suburban Rail

London Suburban Rail, also London tube, similar to other subway network, used by the passenger to travel from one part of London to another nearby place. It consists of both underground and overground networks. This network is operated by central government department named as Transport for London (TFL), headed by London Mayor. As per report published by TFL, more than 5 million passengers use this network. London Subway including both underground and over ground is spread across 400 km connecting more than 270 stations. Passenger prefer Subway

more than other modes of transport like bus, cars etc because of easily available. London Transport has introduced a Travel card, which is ticket or pass and can be used to travel in all other type of transport apart from railway, for the convenience of passengers.

Literature Review

1. Mumbai Local: Life Line or Life Stealing

Published on Journal of Indian Academy of Forensic Medicine Year: 2015, Volume: 37, Issue: 3

By Tyagi Shashank1, Sukhadeve Rajesh B., Parchake Manoj B., Pathak Harish M.

This paper analyses the Mumbai local based on fatality rate. It analyses different causes of death, its age group and rate of repetition of accidents. The paper gives the recommendation on how we can reduce and prevent accidents.

2. Suburban Train Services in Indian Railways

Published on date August 31, 2016 at PRS Legislative Research

By Prachee Mishra

The paper analyses CAG report of India from 2010 to 2015, of different suburban Railway. This study compared different suburban network of India including Mumbai, Kolkata and Chennai. This study provided detailed information on the pattern of passengers travelling on suburban network, it covers information about the passengers, different accidents, punctuality, and the facilities provided on railway stations.

3. Network Analysis of World Subway Systems Using Updated Graph Theory

Published on January 1, 2009

By Sybil Derrible, Christopher Kennedy

This paper explains how network arrangement play a crucial role in attracting passengers, by comparing 19 subway of different countries in the world. The parameters were length of full network, maximum number of passengers travelling and last one was sense of mobility or connectivity. Relation between these parameters was showed by multiple regression analysis.

4. Innovative Strategic Management: The Case of Mumbai Suburban Railway System

Published on VIKALPA on March 2011

By P C Sehgal and Teki Surayya

The paper plots a contextual investigation of US \$2.5 billion extension and improvement of the Suburban Railway Network, under multi-modular Mumbai Urban Transport Project (MUTP). Development of Mumbai local has not stayed up with the traveller request and in this way stacking in the current rural trains have expanded and the voyaging conditions in the trains have gotten terrible. The paper gives a knowledge into the way toward building social and political agreement while mulling over the yearnings of individuals for helpful and agreeable recompense. The

differing however incorporated goals that were accomplished comprehensively, is in fact through creative vital administration that drove MRVC to achieve consumer loyalty, vitality protections, financial advantages, natural up gradation through afforestation, downpour water gathering, and noise pollution decrease.

5. Structural Equation Model of Customer satisfaction for the New York City Subway System

Published on Transportation Research Record 1735, Paper No. 00-0988

By Kenneth R. Stuart, Marc Mednick, and Johanna Bockman

This paper was on study of customer satisfaction at New York City Subway System. The study was done on ten parameters that affect customer satisfaction. Using Model Diagnostic, the data was presented and discussed.

6. Challenges in Better Coordinating Tokyo's Urban Rail Services

Published on 2016

By Hironori Kato

This paper made a study on Tokyo suburban network, which is managed and operated completely by a private company. All the expensed is manged by this private company only. This paper shows how a private company improves a railway network including its punctuality, crowd management, infrastructure upgradation. And also, it takes little help from government to improve its network. The study of this paper was used to make opinion about the privatisation of Mumbai suburban railway.

7. The Backdrop to Privatization in Japan – successful “surgical operation” on Japanese Railway

Published on June 1994 EJRCF

By Yukihide Okano

The division and privatization of JNR have been effective. Today, privatisation of railroads is being arranged and advanced around the world, however when the JNR changes were examined in Japan, redesign of a state-claimed railroad organisation into privately owned businesses was seen as a major examination; there had been instances of nationalisation of private rail routes falling into money related troubles.

Methodology used in this Paper

The approach of research used was to make a comparative study instead of qualitative. We collected official data from government websites, and make a comparison to draw final conclusion from it. In this research we study the four suburban railway networks in different part of the world. We study on both merits and demerits of the network on basis of people place and groups. The Study was started by gathering data from official websites, and made a detailed comparison of Mumbai suburban Railway network with that of Tokyo, London and New York. The comparison was made on certain parameters and some of them have been discussed below: -

- Details about daily number of passengers using this service to reach destinations.
- Comparison on type of locomotive used based on specification including speed and power used.
- Comparison based on total length of Suburban Railway network lines and also how they are managed.
- Crowd management and infrastructure facilities provided to passengers at stations.
- Traffic Management at Suburban railway lines
- Study on Privatization of Railway by considering case study of Japanese Railway.

Discussion

A. Daily Ridership in Suburban Railways

Quick Comparison

As we can see in table 1, Mumbai suburban rail is the oldest network among all four cities and it also transport more passengers daily compared to others.

TABLE I. COMPARISON OF DAILY NUMBER OF PASSENGERS (IN MILLIONS)

City	Year of origin	Daily Number of Passengers (in Millions)
Mumbai	1853	7.5
Tokyo	1911	3.2
London	1863	5
New York	1904	5.44

Mumbai

From the past six to seven decades, the passengers on Suburban rail of Mumbai has grown more than eight times on the other hand railway network has grown only 3 times, which shows how infrastructure of Mumbai suburban is lacking far behind compare to other cities. Mumbai Railway network is linear instead of round circular, starting from north to southern most part,

As Mumbai is the financial hub of the country, people from all over the country come to Mumbai, some in search of job, some to earn money, and some just because they want to live in Mumbai. People in Mumbai look for cheaper stay and transport because of high population and also high cost of living. The reason for people preferring Mumbai local (lifeline of Mumbai) for most economical mode of transportation.

As per the report of Western Railway regarding Suburban rail which is much more than Tokyo subway who is known for its overcrowdings, as we can see in the Fig. 1, only 292 million riders where there on 1952 compared to 2.7 billion in 2018, which show number of passengers travelling increases every year. Data also shows that number of trains operating is also increased over the year from 741 to 2435 as of today, according to western railway.

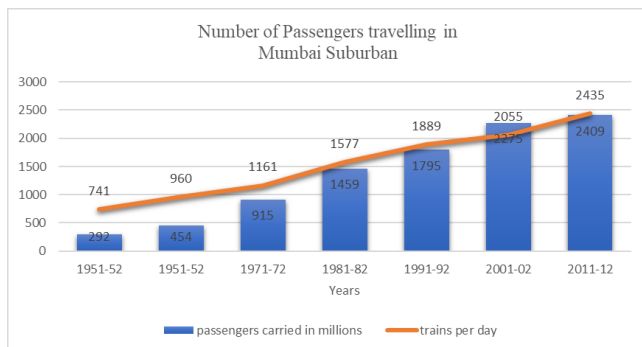


Fig. 1. Daily Number of Passengers in Mumbai suburban
Source: - [1]

Tokyo

Tokyo Metropolitan Bureau of Transportation or simply TOEI, is similar to other suburban network, used by the passengers to travel from one part of Tokyo to other. It consists four main lines namely, Asakusa, Mita, Shinjuku and Oedo. As per the recent report generated by Toei Subway, more than 3.2 million traveler/ passengers use this Subway network. Similar to other subway network, passengers use this network to reach their offices on time and hence depend on punctuality of these rails. Toei Subway is most punctual subway rail in entire world.

The whole network is spread across 109 km operating on 106 station of Tokyo. Two main factor that makes Tokyo local trains crowded. First, the length network continuously growing irrespective of population, because of growing demand from public. Second, every new train introduced after one or two years, it attracts new passengers and become over crowded easily because of easily accessible.

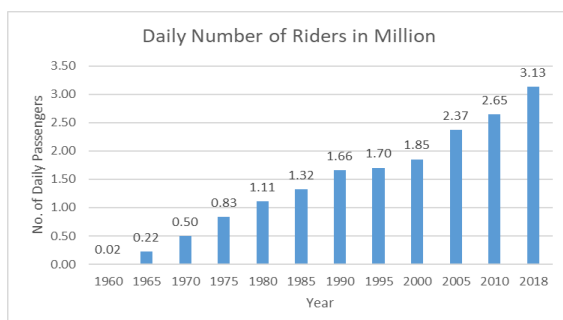


Fig. 2. Daily Number of Passengers in Tokyo Subway
Source: [2]

London

London Suburban Rail, also London tube, similar to other subway network, used by the passenger to travel from one part of London to another nearby place. It consists of both underground and overground networks. This network is operated by central government department named as Transport for London (TFL), headed by London Mayor. As per report published by TFL, more than 5 million passengers use this network. London Subway including both underground and over ground is spread across 400 km connecting more than 270 stations.

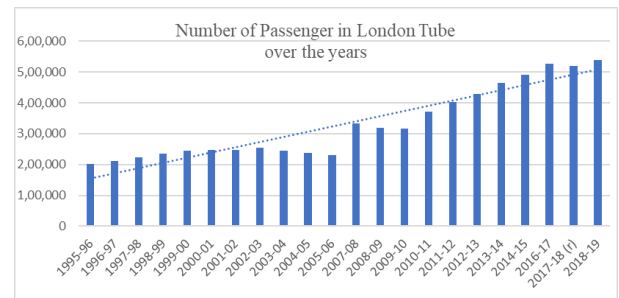


Fig. 3. Daily Number of Passengers in London Tube
Source:- [3]

New York

New York City is very big and many areas, like Manhattan are densely populated. The New York City Subway is best way to travel from one point to another. We can get to almost any landmark or place of interest all of the boroughs. Maps and directions are plentiful and posted everywhere. Unless we're in a wheelchair, the subway is the best option. The buss we will find it much slower. Besides the traffic, bus drivers contend with trucks, pedestrians, taxis, those drivers just looking for parking places and pedestrians will often walk in front of us, considering all this subway would be a better option.

As per the report, everyday more than five million passengers travel in New York subway from one place to another, making it busiest rail network of United States.

As per following data provided by MTA website, the daily Ridership in New York subway is showing decline in the past few years. Similar decline had happened few decades back, but this time, decline is less compared to past.

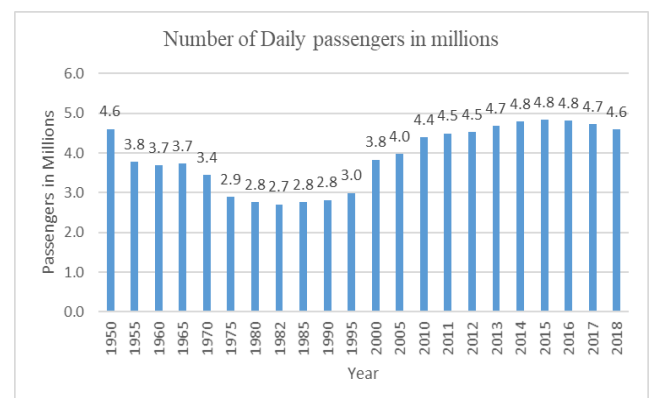


Fig. 4. Daily Number of Passengers in New York Subway
[4]

B. Locomotive Used in commuters or subway

Mumbai

As of today, Mumbai Suburban Railway, uses new fast-moving commuters manufactured by different Indian companies like Bharat Earth Movers Limited (BEM), Bharat Heavy Electricals Limited (BHEL), Integral Coach Factory (ICF Perambur). This trains are used in both central and western railways. And it has speed of 85 kmph average being 35 kmph on slow and 40-50 on fast local.

Tokyo

Tokyo subway known as Toei subway recently introduced new series of trains on 7th July 2017, called Tobu 70000 series which is operated by Tobu Railway, a private company. These train can go speed of up to 110 kmph. And it uses overhead lines of 1500 DC for power.

New York

There are two different subway trains used in this Subway system, one is A division and other B division having different length and width of railway lines. As of Today, more powerful, R46 type commuters are used by New York subway, which can run at speed of 89kmph and uses third rail power supply of 600 Volt DC.

London

London Tube also uses more powerful, commuter rails, of Aventra class 710 series and Capitalstar class 378, 315 series and these are capable running at speed of 121 kmph, and uses third rail power supply of 750 V DC.

Quick Comparison

Mumbai Local trains are slowest among all other suburban rails, as we can see in the following table.

TABLE II. COMPARISON ON TECHNOLOGY USED

Suburban Railway	Manufacturer Name	Top Speed
Mumbai	BEML, BHEL, ICF	85
London	Aventra 710 Class and Capitalstar 315, 378 Class	121
New York	R46	89
Tokyo	Tobu 70000 Series	110

C. Rail network

Quick Comparison

London Subway network is the longest network of about 400 km, among all four networks. It comprises of both underground and over ground networks and consist of 22 lines.

TABLE III. COMPARISON ON LENGTH OF NETWORK

City	Total Network length in KM	Number of Lines
Mumbai	319	4
Tokyo	109	4
New York	394	22
London	400	11

Mumbai

The Mumbai Suburban Railway network consists of numerous lines run by the central and western railways. And the overall network extends over 319 km of Western Railway manages western lines, while central line manages other remaining lines namely Central and Harbor Lines. It also regulates lines such as Vasai Panvel and Trans Harbor. Suburban Railway of Mumbai are of various types, depending on its speed; slow and quick. Another class of air conditioning (AC) Suburban Rail was presented couple of years back. Various lines are talked about beneath: -

Western Line

The Western Line which is spread across major parts of Mumbai Suburban Railway network. It connects the Western Railway of northwards from Churchgate parallel to the west coast. The Western line of Mumbai Suburban rail connects the city's business centre Dahanu Road to Churchgate. The first electric train was started in 1928 between Andheri and Colaba.

Central Line

The Central Line of Mumbai consist of three main corridors that spread throughout suburban satellite towns. There are two corridors that starts from the Chhatrapati Shivaji Terminus (CST) to Kalyan. From here, it divides into Kasara and Khopoli. Both slow and fast local train are available here. The slow locals halt at every station, while the fast locals halt at only a few stations. There is also an additional line from Vasai Road-Bhiwandi Road-Diva to Panvel, which is a part of the Central Railways. Another line, i.e. Nerul/CBD Belapur-Uran, is under construction and will be operational soon.

Harbour Line

Central Railways operated Harbour Line starts from Chhatrapati Shivaji Terminus (CST) to Andheri and Panvel. This line operates as slow service. A branch line of this main Line from Wadala Road joins the Western Line at Mahim and goes till Andheri. Larger section of this line is elevated.

New York City Subway

New York City is very big and many areas, like Manhattan are densely populated. The New York City Subway is best way to travel from one point to another. We can get to almost any landmark or place of interest all of the boroughs. Maps and directions are plentiful and posted everywhere. Unless we're in a wheelchair, the subway is the best option. The buss we will find it much slower. Besides the traffic, bus drivers contend with trucks, pedestrians, taxis, those drivers just looking for parking places and pedestrians will often walk in front of us, considering all this subway would be a better option.

As per the report, everyday more than five million passengers travel in New York subway from one place to another, making it busiest rail network of United States. New York Subway Commuters/ trains is of three types, which are as follow: -

- Metro-North Railroad
- New Jersey Transit
- Long Island Rail Road

Various Lines of New York Subway System are: -

- Lexington Avenue line
- 6th Avenue line
- 7th Avenue Line
- 8th Avenue line
- Broadway lines
- Brooklyn- Queens cross town line
- Nassau Street or Jamaica Line
- Shuttle Lines
- flushing lines
- Canarise line

Tokyo

Toei Subway consists of four lines which operate a total of 109 kilometres

1. Toei Asakusa Line
 2. Toei Mita Line
 3. Toei Shinjuku Line
 4. Toei Oedo Line
- Asakusa line was opened in 1960 and is 18.3 km long connecting Nishi-Magome to Oshiage. The colour representing line is Rose
 - Mita line was opened in 1968 and is 26.5 km long connecting Nishi-Takashimadaira to Meguro. The colour representing line is Blue
 - Shinjuku line was opened in 1978 and is 23.5 km long connecting Shinjuku to Moto Yawata. The colour representing line is Leaf (Green)
 - Oedo line was opened in 1991 and is 40.7 km long connecting Hikarigaoka to Tochomae. The colour representing line is Ruby

London

London Suburban Rail, also London tube, similar to other subway network, used by the passenger to travel from one part of London to another nearby place. It consists of both underground and overground networks. This network is operated by central government department named as Transport for London (TFL), headed by London Mayor. As per report published by TFL, more than 5 million passengers use this network. London Subway including both underground and over ground is spread across 400 km connecting more than 270 stations. Passenger prefer Subway more than other modes of transport like bus, cars etc because of easily available. London Transport has introduced a Travel card, which is ticket or pass and can be used to travel in all other type of transport apart from railway, for the convenience of passengers.

The lines in London Network

- Waterloo and City Line
- Circle Line
- Jubilee Line
- Metropolitan line
- Hammersmith and City Line
- District Line
- Central Line
- Northern line

- Victoria Line
- Piccadilly Line

D. Management of Delays and Accidents

Mumbai

The Western Railway has initiated to make the Mumbai local or Mumbai suburban Rail more punctual. They are trying to make the current rail more punctual while adding more trains in its network. They are planning to reduce or give some relaxation on maximum speed of trains, while keeping safety consideration. By increasing speed from 70 to 90 kmph for Bombardier Type Trains. Railway has plans to update the entire signaling infrastructure over its network. By adding additional yellow light (representing speed reduction) to the current three-color light signaling scheme.

Tokyo

While Japanese trains are known for its overcrowding, it is also known for its punctuality. No rains can be delayed for more than 5 min, and if they did so, the railway ask for apology, via official announcement to every passenger. They may also give an official delay certificates to its passengers. However, in many cases, numerous reported has reprimanded that railroad workers are feeling the high pressure of work from senior authorities.

New York

According to Q1 2017 current MTA statistics, approx. Seventy-five percent of the subway trains were frequently behind the schedule, five of which were for most of t. The most alarming performance was of the 2 line, the 4 line, and the 5 line, according to The New York Post. the top 3 least delay of trains were only 3.6 per cent, 32.7 and 32.8 per cent of the actual time. The reason for lack of punctuality including slowdown of old locomotive, lack of maintenance of trains, overcrowding etc.

London

London Subways are frequently delayed, and to deal with this, they have arranged a committed far off checking framework for subway rail network which alerts about any delay, deferral or mishap occurs.

At first, Railway's Employee or in charge officer evaluate what will be the impact of delay or incident may happen to other train administration. In case that any delay or any unfortunate event will occur, then an expert lead operation controller at territorial office, and furthermore a director will reach for other on location prerequisites. A while later, they will give a declaration having subtleties of area and lines influenced. At that point an announcement for the passengers, through correspondence channels or station commentators or National Rail site. If a chance that delay could severely affect passengers, then at that point they will trigger a more significant level of communication.

E. Facilities provided at Railway Station

Mumbai

Mumbai suburban or Mumbai local railway station (Mumbai CST Station) has given numerous facilities to their travelers and also continue adding newer ones. Examples of such facilities are: -

- The platform of Mumbai CST Station is partitioned into 2 halves, western rail line and the Churchgate-Vihar suburban rail line. Mumbai CST station has 4 dedicated suburban platform inter connected through FOBs.
- Ticket counters have huge section dedicated for unreserved and suburban train tickets, these tickets can also be purchased from AVMs
- Women or Ladies only coach was introduced for female passengers. Some trains are completely for females called as ladies special.
- Smart cards Automatic Ticket Vending Machine (ATVMs) providing seasonal tickets (one, Quarterly or annual passes)
- Fast food counters providing delicious Indian food and snacks are setup by government and private entity.
- Book stall for newspaper and magazines.
- Washrooms on every platform.
- Free WIFI from RailTel.
- Luggage compartment for transportation of heavy goods.
- Mobile app called UTSONMobile app launched on December 2014 to pre-book tickets before reaching station.

Tokyo

Tokyo subway has offered several platform services like other cities. for example: -

• Station Nomenclature

Tokyo Metro and Toei Subway have proposed a system for station numbering for the Tokyo Subway route. This makes any traveler, whether neighborhood or tourist, get distinctive station guidance. Every station has a varied code consisting of one subway line letter set and one station number.

• Display at Station

Every station has a wide screen displaying important train data such as delay, operation status, and so on in four languages including Japanese, Chinese, English, and Korean. For new travelers this is very beneficial.

• Free Wi-Fi

Free Wi-Fi provided at 35 stations for the passengers.

• Station Concierge Service

Toei Subway has positioned attendants at 29 stations which direct traveler who are new to railroad framework, including for the most part unfamiliar tourist and senior citizens.

• Tourist Information Centre (TIC)

On March 10, 2018, Toei established the Tourist Information Center inside the Oedo Line Ueno-okachimachi

Station. Such staff can speak both English and Chinese to direct non-Japanese speakers. Excess to this facility is open to all travelers.

• Ticket counter

At Tokyo Subway, TOEI has organized passes system that provides boundless travel to Tokyo travelers on both Toei Subway and Tokyo Metro administration using same ticket. Today travelers can choose specific time-based passes such as 24, 48, or 72 hours. Such tickets are available for purchase from any regional location, such as air terminals and other travel services. These tickets can also purchase from other Toei stations as well.

• AVMs

Toei Subway unveiled cutting-edge AVMs on February 2017 that bolster eight distinct languages at 31 stations. Numerous foreign riders use these machines. The machines allow travelers to purchase tickets by selecting stations to start and end.

New York Subway

The London Tube has offered several platform services like other cities. for example: -

• Priority Seating

New York Subway has accelerated subway Priority seating. Such seats are uncommonly reserved for disabled persons and senior citizens. They have excess wheelchair from the station and can be placed on train seating space by collapsing standard seat, their wheel should be locked when making a trip to keep a strategic distance from hurting passengers.

• Parking Facility

Travelers can leave their own vehicles at parking spaces provided at suburban railway stations, these offices are supervised by either Long Island Rail Road or Metro-North Railroad or even neighboring regions.

• Book stall for newspaper and magazines.

• Washroom and restrooms at stations

• Additional facility of attendants for senior citizens and disabled to guide them and take care of them throughout the journey.

London Tube

The London Tube has offered several platform services like other cities. for example: -

- Official National Rail site showing data from London 's railway administration including different routes, planned schedules, tolls, and how to reach stations and trains and buses.

- Individual with handicap has given a Railcard can opt for additional concession of limiting 33% cost of real ticket.
 - Ramps and Wheelchair to excess train and also moving across platform
 - Baggage Loss Counter services
- Offices for lost or abandoned luggage are available at mainline London train stations. Organizational name Excess Baggage Company maintains an office at all major stations.
- Absence of ventilation is an issue in London tube.
- At the point when it's too hot in view of loo outside travelers need to take in full perspiration and blood and body gets dried out much more. Regardless of whether we get some ventilation by moving cylinders, the hot moving air isn't unreasonably agreeable.

F. Privatisation

Privatization of Indian Railway has many benefits to the government. It will show major impact after 5 to 10 years once completely privatized. Some of the benefits would be:

-
- All Indian passenger trains will have an operating speed of 150 to 300kmph.
- All goods trains will have an operating speed of 100 to 150 kmph and will improve transportation business in India.
- Japanese technology French technology and various new technology will improve the performance of Indian railways.
- land acquisition problem in projects would be resolved to some extent.
- Complete electrification will be achieved by Indian Railways.
- Corruption would reduce.
- Food quality will be better.
- Tax revenue would be much higher for the government.
- Political interference in the functioning of Indian railways will reduce a lot.
- Punctuality of trains will improve.
- All railway crossing will have railway under bridges and railway over bridges.
- Better fencing around railway tracks which will prevent accidents.

Some consequences of Privatization of suburban rail would be: -

- Increased fare rate
- Small MSME business like chips/toy vendor will be affected as they might be restricted to sell items in trains.
- Trains will still not run on time; believe me it will be worse than now.
- Passenger and express trains being shut off, if less people are travelling.
- Improved pantry facilities.
- Reduced wages for employees.
- Thousand acres of railway land will be utilized for some constructive work

Considering Privatization of Japan Suburban

Privatization has made Japanese Railways regulate both the real estate market and the manufacturing sector. Total non-transportation revenue today is 33 percent of Japanese Railway East revenue, and 60 percent of Japanese Railway Kyushu income, respectively. The Japanese East Railway runs shops, lodgings and malls. Many major rail suppliers in New York and London control vast holdings of property, too. India is also in line with the proposal to make Mumbai Suburban private and take a shot.

In contrast with air carriers, Railways is comprehended as regular restraining infrastructure in financial aspects is as these are having introductory costs so high in contrast with cost of activity, that appropriate market rivalry is beyond the realm of imagination.

We know it's difficult in India to make railway private, to make it profitable, well-working, and furthermore appropriate market serious. Notwithstanding, a portion of the railway function and even a few trains and stations may possibly be privatized for instance Tejas Express in India. In any case, consequences of such activities may not work somewhere else on the world, for instance; London, privately owned businesses are moving stock back on open foundation. This has expanded the worries of diminish in number of interests in the system, which likewise decrease the nature of administration.

Conclusion

Number of passengers

The daily ridership of Mumbai Suburban Railway is 7 million, Tokyo 3.207 million, London 5 million and New York 5.44 million. We have seen increment in day by day ridership in each city in most recent couple of decades, aside from in the event of New York, where it gives some decline.

Technology Used

Comparing technology used, Mumbai suburban rail made by BEML, BHEL and ICF is being slowest among all other cities. Mumbai suburban rail has highest speed of 85 kmph in comparison to 110 in Tokyo, 89 in New York and highest 121 in London. Similarly, acceleration of 1.16 Km/h/s is lowest compare to 3.3 in Tokyo, 4.0 in New York and 2.22 in London.

Delay Management

The punctuality is major advantage for preference of subway network in Japan, compare to all other subway railway in the world. most people in Japan are depended on this network. Mumbai is following the equivalent with so as to reduce delays, but still positive result is yet to come.

Infrastructure Facilities

The framework of Mumbai Suburban Railway network has been improved over recent decades. There are appropriate facilities available including, free wi-fi, foods, yet at the same time are inadequate as far as offices like passenger information center, administration to impair and senior citizens and crowd management, which are very much

managed by other different nations. With increment in population in trains, the suburban rail industry needs to deal with these things.

Privatization

Privatization may not be the best thought according to a monetary perspective. with assistance of expert administrators, we have to improve how the Indian Railways run and is organized.

Also, Indian Railway is known for providing huge opportunity of jobs to people, this may be impacted after privatization, as private company may focus on lesser work forces.

As of now, Government of India and Western Railway has setup, Mumbai Railway Vikas Corporation for the Redevelopment of Mumbai Suburban Railway Network.

Limitations Of Study

The study is limited to comparative study rather than a qualitative study. The study is based on data provided in official websites of Railways, and each website publish in different ways, so there may have certain flows while comparing data.

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