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UN-ANSWERED CRIES OF PUBLIC TRANSPORT: MUMBAI SUBURBAN RAILWAYS AND THE QUESTION OF OVERCROWDING, WHAT SHOULD BE DONE?

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Abstract

Mumbai is one of the largest and populous cities in India and in the world at large. The demand for convenient means of transport is high but the existing means looks to be overwhelmed by the needs and demand of the population. For more than a decade now the Mumbaikars normally depend on railways in which at least it accommodates larger number of people than other means of transport. Railways specifically the suburban railways which is expected to support and easy the conveyance in the city has normally being noted as one of the deadly railways in the world as due to the problem of overcrowding and also the nature of trains which normally lacks doors and windows, death normally caused by falling from Trains, Track crossing, Hit against pole, Falling in platform gap and Electrocution.

This paper has been purposely prepared to oversee on various measures that can be taken to solve the challenge of overcrowding in Mumbai Sub-urban Railways that is highly depended by high percentile of Mumbaikars for going and coming from homes to work places and also to facilitate transportation of goods to foster trade and economy at large, for both people and the government.

The preparation of this paper has highly depended on the literature review method and to a little extend interview to some selected respondents basing on the criteria of experience with Mumbai suburban railways. From the mentioned methods it was possible to achieve the goal of the paper by getting the necessary data regarding Mumbai Suburban railways and its services. From the paper a clear analysis of Mumbai Suburban railway and its operation has been provided, the various measures undertaken to solve the problem and also the recommendation on what can be done to solve the unanswered cries has been well presented as the major aim of the paper.

Key words: *Railway, Mumbaikars, transport, suburban, collaboration, contacting out*

INTRODUCTION AND BACKGROUND OF THE STUDY

The Mumbai Suburban Railway 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 (240 mi), the suburban railway operates 2,342 train services and carries quite 7.5 million commuters daily (rao, 2017). By annual ridership (2.64 billion), the Mumbai Suburban Railway is one among the busiest commuter rail systems within the world. It is the second largest suburban rail network in terms of route length after the Kolkata Suburban Railway.

The Mumbai Suburban Railway is an offshoot of the first passenger railway to be built by British Malay Archipelago Company, and is additionally the oldest railway in Asia. The first train was run by the Great Indian Peninsula Railway currently Central Railway between Bori Bunder which is now Chhatrapati Shivaji Maharaj Terminus and Thane, a distance of 34 km, on 16 April 1853 (anvaya, 2012). 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 close up. On 3 February 1925, the first Electrical Multiple Units (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 (IRFCA, n.d.).By 2016, the whole network had been converted to 25 kV 50 Hz AC traction. (Bhutada, 2016).

The Mumbai Suburban Railway system is operated by Indian Railways (IR), which is India's national railway system operated by the Ministry of Railways. It is one among the general public facilities given by the government and manages the fourth largest railway network within the world by size, with a route length of 95,981-kilometre (59,640 mi) as of March 2019 (Railways, 2020).About 61.62% of the routes are electrified with 25 kV 50 Hz AC electric traction while 33% of them are double or multi-tracked (Railways, 2020). India Railways operates in two zonal divisions Western Railways (WR) and Central Railways (CR).The fast commuter rail corridors on Central Railway also as Western Railway are shared with long-distance and freight trains, while inner suburban services operate exclusive parallel tracks. WR operates the Western Line and CR operates the Central Line, Harbour Line, Trans-Harbour Line as well as the Vasai Road- Bhawani-Diva-Panvel

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line.

Western Central Harbour railway map (Western Central Harbour Railway Map, 2019)

Figure 1: Mumbai Guide 31st March, 2019

THEORETICAL ANALYSIS OF THE PROBLEM

Mumbai is one of the crowded cities in India and in the world at large. So with such populous character the presence of suburban railways that has capability to easy travel to large number of people at once is one of the key area to soften the transportation activities on the area. Even though Mumbai suburban railways is of great importance to the residents and business men of Mumbai city is not safe at all, it has been endangering life of people, thousands of lives have lost and that is due to some reasons like overcrowding in trains and that is due to the fact that the infrastructure has been overwhelmed by the needs.

Almost a hundred years since the first electrical multiple units (EMU) service was started from Chhatrapati Shivaji Maharaj Terminus (CST), then Victoria Terminus, not much has changed for Mumbai's suburban railway network. Known as the maximum city's 'lifeline', the network is crumbling with respect to infrastructure and passenger safety. A report released on 2018 asserted that six people died after falling in the gap between a platform and a train across Mumbai in 2008, however, that number has skyrocketed over the past decade. In 2018, 711 citizens died after falling off running, overcrowded trains on Mumbai's suburban railway network. In 2017, the number of locals who died on the railway tracks crossed the 3,000 mark. Shockingly, a single 12-car train on Mumbai's suburban railway network has the capacity to carry 1,174 passengers. However, a single train with that many cars currently carries close to 6,000 passengers in one go.

Figure 1: Source: Hindustan Times Jul 04, 2019.

On an average, overcrowding caused seven-eight deaths every single day on the suburban railway network, revealed a report released last year. The fact that frequent rail fractures cause a minimum delay of 30 minutes for running trains is proof enough of how desperately Mumbai's suburban railway network needs an overhaul. Just last year, 23 innocent civilians died during a stampede which occurred on a footbridge at the Elphinstone Road station which has now been renamed as Prabhadevi. Despite repeated claims by top officials including

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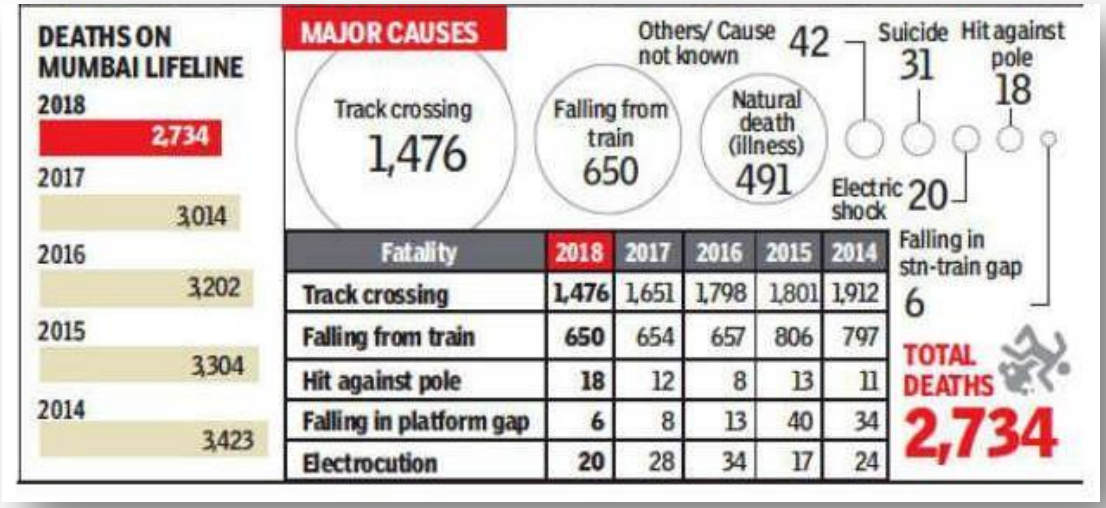
ministers in the railway ministry, little has been done on the ground to ensure the safety of passengers and curb overcrowding along Mumbai's suburban railway network. The fact is, the high rising demands for transportation have overwhelmed the prevailing means of transport in Mumbai and that is not a problem of today it has decades and this shows to what extent the authorities have failed to find solution to the problem as time goes on, this paper tries to undercover the incompetence of authority on planning area as they establish projects without keen observation to the overgrowing population in the area.

Trains are dangerously overcrowded. Suburban railways in Mumbai, during high demand hours trains carries twice of their maximum design capacity, leading to inhuman traveling conditions, with so-called "super dense crush loads" of 14 to 16 standing passengers per square meter of floor space (Varshneya, Jain & Sahai 2002; Ministry of Railways 2002 (Putcher John, 2004).This congested condition on public transport vehicles, stations, and rights of way not only slow travel but make it outright dangerous. Thousands of passengers are killed or injured once a year in accidents. Statistics of deaths can be seen on the following table from 2014-2018.



Fatality	2018	2017	2016	2015	2014
Track crossing	1,476	1,651	1,798	1,801	1,912
Falling from train	650	654	657	806	797
Hit against pole	18	12	8	13	11
Falling in platform gap	6	8	13	40	34
Electrocution	20	28	34	17	24

Table 1: Times of India 4th January 2019

Most trains don't even have doors and windows which can be closed, which only encourages passengers to ride by protruding from inside the vehicle or by hanging on from outside and leads them to fall from the train and even hitting poles when train is in motion. Research that has been made to understand why most trains does not have doors and windows came with unsatisfactory answers from authorities, the major reason is to allow natural ventilation on trains to cut the cost of operation because the artificial ventilation is comparatively expensive and requires regular repair, another discovered reason was to allow fast entrance on the train as it stops for only few seconds on the station after arrival, hence dependence on door entry will cause a lot of passengers to miss the rides. Slow, uncomfortable, undependable, and unsafe conditions within the first 1990s led to riots of passengers protesting these inhumane conditions (Acharya 2000). Today's population explosion is becoming more high than usual during which things are predicted to be worse if appropriate measures won't be taken. In summary, the problem is increasing day by day so the immediate solution should be undertaken based on real facts from the beneficiaries of the service.

PURPOSE OF THE STUDY

Which steps has been taken to unravel overcrowding challenge on Mumbai Sub-urban Railway System (MSRS)?

The government has undertaken various measures to solve the problem of overcrowding in the area.one of the measures undertaken is the Mumbai Urban transport project (MUTP). The target of the project was to scale back overcrowding in suburban locals to 4,000 passengers, and convey down the time period by two to 6 minutes between various sections in Mumbai. The project have increased train capacity by up to 35% each in the first and second phase of project, but the travel demand busted goals that was set to be achieved. The implementation of MUTP second phase began on October 2010, but the targets for the project were set in April 2009 and were supposed to be accomplished by June 2015. MUTP second phase failed to achieve these targets till the end of December 2016, when this delayed project was partially completed. The total completion of the project is expected to be completed by 2022.

Mumbai faces a public transport problem with 20-22 million residents, the town is projected to grow by another 6-8 million by 2030.Yet its suburban railway, the most method by which residents commute to figure from far-flung residential areas, only carries 7.5 million people per day, despite severe overcrowding during

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rush hours. The shortfall in capacity isn't negligible; neither is that the incontrovertible fact that excessive crowds on the trains claimed the lives of quite 36,000 people within the decade up to 2012, translating to more than 10 people a day. The inability of the suburban trains to deal with the increasing population of Mumbai and fatalities from overcrowding means there's a requirement for brand spanking new ideas on how to get many Mumbaikars to figure and residential a day safely and comfortably. The response of the Indian and Mumbai government has been to style an in depth metro system which will cover the town with a further 130 kilometers of tracks by 2020. However, at the value of nearly $50 million per km.

The Mumbai Metro project is hardly the foremost economical solution. Moreover, while benefiting areas currently not connected to the suburban railway network, the Metro project fails to the address the elemental question of the way to alleviate overcrowding and lack of capacity on the existing suburban network. There also are political and logistical bottlenecks in developing a Metro system within the densely populated Mumbai peninsula. Even digging underground requires the relocation of thousands of individuals and narrowing of existing roads, if only to form way for station entrances above ground. Religious communities complain of underground trains encroaching on and desecrating their sacred grounds. Such issues make the development of Metro tracks in central Mumbai, where additional capacity is most needed, and most difficult. The situation begs for an answer which will deliver additional capacity without disturbing existing homes, religious sites, and roads. Thus, while constructing the new Metro system, the government must consider low-cost solutions which will boost conveyance capacity within the most trafficked areas of central Mumbai, all the while using only existing spaces dedicated to infrastructure. The only solution that matches such a stringent requirement may be a comprehensive upgrade of Mumbai's existing suburban rail network. Several solutions can squeeze extra capacity out of the network, with a smaller tag than the $6.5 billion to be spent on the Metro system. "Is the challenge can't be solved?" This is the question that arose in the head of each commuters who gets service from the MSRS, on the basis of the question the study suggested several measures that looks to be worth considered, below analects explains in detail:

Purchasing Double Decker Trainsets: To ease overcrowding, Mumbai Suburban Railway has been replacing nine-car trainsets with 12- or 15-car sets. The additional capacity from the switch is unquestionably appreciated by commuters, but any longer lengthening of the trains to extend capacity would be difficult given the finite lengths of station platforms and lack of space to lengthen them. Instead, it might be knowing consider further expanding the capacity of trains by adding a second level. Double-decker trains provide a 30 percent increase in carrying capacity, without significantly increasing the energy needed to tug the trains. The ability to increase capacity without a proportional increase in operational costs makes the double-decker option worthy economically. In fact, Indian Railways already operate double-decker trains within the sort of several long-distance services, like the Bengaluru-Chennai Double-Decker Express.

The experience of operating double-deckers in long-distance routes are often transferred to the Mumbai Suburban Railway. And while double-decker train sets are never cheap, they compare favorably to the huge investment on the Mumbai Metro. Bombardier reported that in 2017, the French national railways purchased 83 sets of its top-of-the-line high-speed double-decker sets for $968 million. The cost of constructing the Mumbai Metro is like around 600 of those train sets. If a cheaper variation of the double-deckers is purchased, Mumbai Suburban Railway can almost completely rely on them for its more than 2,000 daily capacity.

Building an Express Railway on Top of the Current Suburban Network: As noted above, one of the primary difficulties with constructing the Mumbai Metro has been obtaining land by relocating existing residents and buildings, especially in densely populated central Mumbai, moving and compensating an outsized number of individuals are often a logistical and financial nightmare. A truly low cost infrastructure project should require as little relocation as possible to ease the project and reduce the cost. Mumbai Suburban Railway presents a singular advantage here because it already occupies a big piece of land in central Mumbai within the sort of rail tracks and stations. More capacity are often squeezed from an equivalent land by constructing a parallel, elevated railroad on top of the prevailing tracks. Instead of providing an equivalent services, the elevated railways would act because the express version of an equivalent network, calling at only certain stops on the road. By mimicking the setup of the New York subway and Tokyo's commuter rail system in having separate tracks and platforms on some stations for local and express services, the system can ease overcrowding by shifting more long-distance travelers to faster trains.

Reasonable Expansion Further to Rural Hinterlands: Given the continued expansion of Mumbai outward from its center on the peninsula, it's commendable that concrete projects are being undertaken to increase the Suburban Railway to new residential areas. However, it should be understood that the extensions by themselves cannot solve the matter of overcrowding trains in central Mumbai, nevertheless trains are going to be even more crowded as expansions of the network provide access to more people that were previously not commuting to the town center by train. Instead, any extensions of the rail lines should only be amid suitable measures to supply enough capacity to handle the additional traffic. For instance, the previously noted use of double- decker trains and separation of local and express services should be implemented before the system

expands further. Any expansions into new areas should have future capacity increases in mind. Extra land should be acquired at the time of expansion in order that longer station platforms and quadruple-tracking are often built, making it possible for extended trains and separation of slow and fast trains. By acquiring extra land when the areas are still relatively sparsely populated, expansions of the Suburban Railway to the hinterlands can avoid the troubles surrounding relocations faced by the Metro in central Mumbai today. Ultimately, the goal of getting a fast, adequate railway that extends far into the agricultural hinterlands should be dispersing Mumbaikars' workplaces. If trains can provide safe, fast, and cheap means of transport throughout the larger metropolitan area, businesses would not got to pay the high land prices of clustering in central Mumbai for the sake of having the ability to succeed in their clients and partners quickly. If business travelers can rapidly move among the various neighborhoods of Mumbai, then it might make financial sense for businesses to maneuver to the city's outskirts, where the value of operations would be significantly lower. As businesses move outside central Mumbai, fewer Mumbaikars will got to commute long distances, naturally reducing overcrowding on the suburban trains. It is certainly commendable that the Mumbai government is functioning hard to resolve the matter of overcrowding on the city's conveyance system.

Constructing the Metro, designed to maneuver people through areas not covered by the prevailing suburban rail system, is certainly a right breakthrough. However, the high costs related to digging through a densely populated peninsula means the Metro, by itself, won't be a comprehensive solution. To further increase conveyance capacity at relatively affordable prices, an upgrade of the prevailing Mumbai Suburban Railway network should be considered. By increasing the capacity of the system that the bulk of Mumbaikars depend upon for daily travel, the pressure on the city's conveyance can truly be alleviated. Basing on randomly selected samples of respondent, the monopoly of Indian Railways (IR) on Mumbai Suburban Railway System has been noted as one of the reason for the problem. In the year 2000s the World Bank recommended highly for the privatization of the sector to allow the private player to provide new direction and modify the system to handle such kind of problems. On analyzing the information, final recommendation has been also emphasized to advise the government to see the means of allowing private players on the railway system rather than leaving the full mandate to Indian Railways (IR). The recommendation has been made basing on the aim of reducing burden to the government to fund the railway system and also the amount needed to upgrade the existing railway network as suggested on previous paragraphs as well as buying new double decker trains is highly expensive. Complete privatization is not recommended because the purpose of the system is to provide service to the public under affordable cost. The following suggestion can be worth considered; *contracting out*, refers to the reduction of state involvement in the provision of public service through contractual arrangement and usually involves the non-governmental organization. On the current era of neo public administration it is hard for government to uphold and run larger projects and that may be one of the reason for various problems facing MSRS, hence the study suggests that its time now for the government to re-think, re-fore see, review and re-plan the various policies that runs the project it is the moment to allow part of the project to be operated by the private players to increase its efficiency and capability. *Collaboration*, the concept is referring to voluntary and reciprocal support that two or more distinct public sector agencies or public and private administrations provides each other to deliver public service. This also suggests the same area on involving private players the situation of transport on MSRS shows that to a larger extend the system has been overwhelmed by the demands of the people, failure to fulfill the demands shows the incapacity to run the system therefore it is the time to devolve and allow the private efforts and achieve the Mumbaikars thirst of decades now.

CONCLUSION

Overcrowding in public transport is not a new phenomenon in Indian cities ranging from road transport to railway system, but that does not give a guarantee that it is write to overcrowd on transport vehicles as it endangers the life of those who gets the service. For the case of MSRS as articulated on the paper the number of deaths caused by railway transport has been high and even if it declines is just a small percentage. It is a long time cry of Mumbaikars to have safe and convenient means of transport and that gave a great momentum toward writing this paper. Re- planning of existing railway policies to encourage private investment and operation with mutual interest to the government, investor and the service beneficiaries is highly encouraged, expansion and renovation of existing means of transport also is one the important area in which it will be effectively implemented will give an answer to the problem and lastly but not buying the double decker train sets has proven successfully in some big cities including Tokyo in Japan and New York in USA.

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