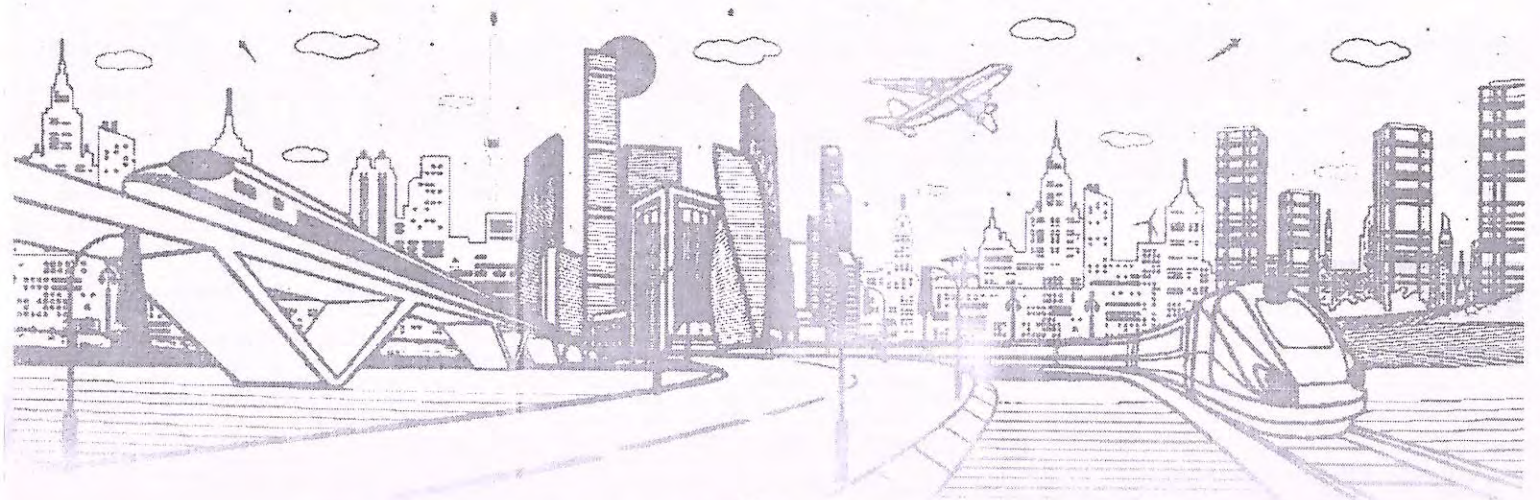
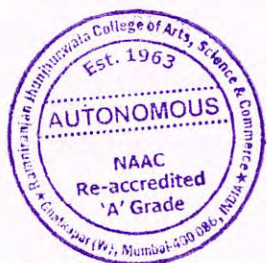
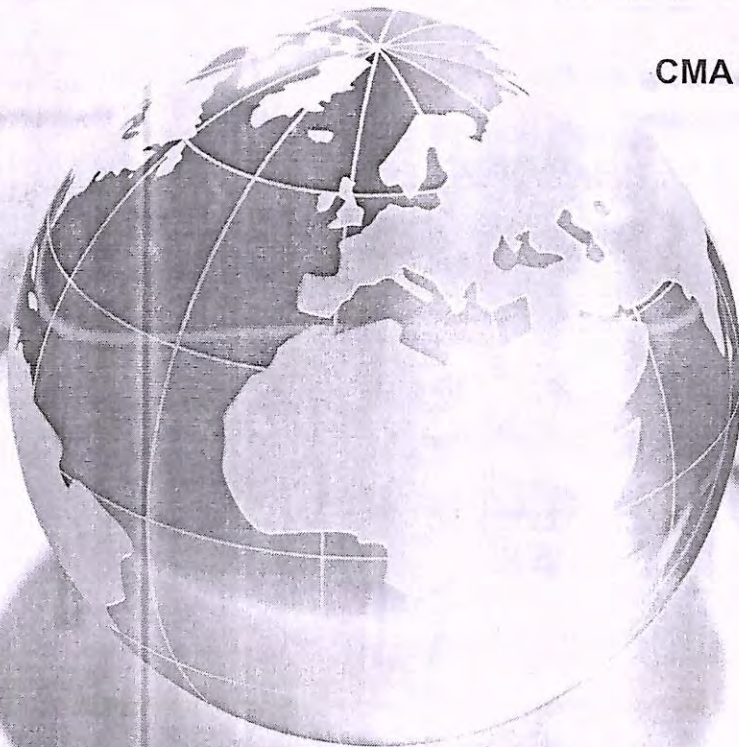


# World Economy

Trade & Employment –  
Navigating the Future



Edited By  
CMA Dr. Kinnarry Thakkar




  
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# “World Economy, Trade and Employment – Navigating the Future”

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**GAURANG PUBLISHING GLOBALIZE PRIVATE LIMITED, MUMBAI**

CIN No. U22130MH2016PTC287233

UAN - MH19D0008178



**“World Economy, Trade and Employment – Navigating the Future”**

© 2021 CMA Dr. Kinnarry Thakkar, Dept. of Commerce, University of Mumbai  
Kalina, Santacruz, Mumbai 400 098

**Published by:**

**Gaurang Publishing Globalize Pvt. Ltd.**

1, Plot 72, Wadia C., P.M.M.M. Marg, Tardeo, Mumbai 400 034.

Mobile: 99693 92245

E-Mail: [gpglobalize@gmail.com](mailto:gpglobalize@gmail.com) • [www.gpglobalize.in](http://www.gpglobalize.in)

CIN No.U22130MH2016PTC287238

UAN - MH19D0008178

Cover Design by : Vedant Graphic Design Studio, Dharavi, Mumbai - 400 017.


Printed at : Rajesh Printouch, 85, Modi Street, Fort, Mumbai - 400 001.

**ISBN : 978-81-953844-1-9**

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ISBN: 978-81-953844-1-9

## A STUDY ON PERSPECTIVE OF COMMUTERS TOWARDS METRO RAILWAY IN MUMBAI REGION

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Subodh S. Barve and Dr. Shripad Joshi

### ABSTRACT

*Mumbai has been economically and socially developed city compared to other cities in the country. Everyday millions of people are commuting from different modes of transportation for variety of reasons such as employment, education, medication etc. The existing transport system includes suburban railway, BEST, Rickshaw, Taxi etc is already over utilised than their capacity. As growth in private vehicles is seen in last few decades that resulted in to pollution and traffic congestion on many roads in Mumbai.. Thus, government is desperate to extend transport infrastructure in Mumbai so that commuter commuting problems will be minimised. Government believes metro rail network will prove to be useful to mitigate the transport issues in Mumbai. A network of Metro rail in Mumbai region will help not only to overcome existing traffic problem but also it will increase mobility of passengers across Mumbai. This paper will study the perspective of commuters towards Metro railway in Mumbai region.*


**Keywords:** Metro Rail, Pollution, Congestion

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## INTRODUCTION

Greater Mumbai is the financial capital of India as well as base of various commercial and trade activities. Population of Mumbai is spread in Mumbai city and suburban city as well as MMR region. Therefore commuters travel from different parts to Mumbai for education, employment, tourism etc. In Mumbai commuters travel by different modes of transport and their share includes 52 % local trains, 26% BEST buses and 12% by taxis and private vehicles<sup>1</sup>. The existing Mumbai Suburban Railway carries over 7.5 million passengers every day, and is supplemented by the BEST bus system, which provides feeder services to station-going passengers to allow them to complete their journeys. However, due to the city's geographical constraints rapid growth of residential complex, corporate houses and International airport, road and rail infrastructure development has not been able to keep pace with growing demand over the past several years. Maharashtra Government on the basis of detail study of TWEWT in TCS companies in the year 1997-2000 decided to introduce mass rapid transit system in Mumbai region. This gave birth to first metro line between Ghatkopar to Versova which is of 11.40km. However, to strengthen the transport facilities in Mumbai, MMRDA revised master plan of Mumbai in 2012 and extended metro rail services in other parts of Mumbai also. The following metro line projects have been proposed and sanctioned by MMDRA.

Line no.	Route	Length Kms.	Expected Date of opening
1	Versova-Andheri-Ghatkopar	11.40	Opened
2	2A - Dahisar - D. N. Nagar	18.5	2020
	2B - D. N. Nagar - Mandala	23.6	2022
3	Colaba - Bandra - Seepz	33.5	December 2021
4	Wadala- Kasarwadavli	32.32	2021
5	Thane - Bhivandi- Kalyan	24.9	2022
6	Lokandwala- Jogeswari	14.5	2022
7	Dahisar E- Bandra E	16.5	2020
7A	Andheri - CISA	3.17	---
8	CSIA- NMIA	35	---
9	Dahisar E - Mira Bhayandar	10.3	---
10	Gaimukh - Miraroad	9.2	---
11	Wadal - CSTM	12.7	---
12	Kalyan- Dombivali- Taloja	20.7	---
13	Mira bhayandar- Virar	23	---
14	Kanjurmarg - Badlapur	35	---

Source: MMRDA- Mumbai Metro Master Plan 2014

<sup>1</sup> Presentation on Mumbai Metro Rail project - an overview by G.R.Madam , Director MMRDA/MRTS



## LITERATURE REVIEW

**Murthy M. et al. (2008)** mentioned that use of public transport is rising in urban areas resulting into serious threat to eco system due to pollution and changing use of land. Thus, for protection of ecosystem it essential to have an appropriate mix of alternative transport system which will ensure cost saving and environment protection. . As per the study, Delhi metro rail has provided several benefits like saving of foreign exchange due to saving of fuel consumption, reduction in time, accidents, pollution, cost reduction on road construction etc.

**Badami S. (2010)** in order to make over transport system in Mumbai, MMRDA and State government have decided to start with some ambitious projects like Metro rail, Mono rail, Sea link road and so on but these projects seem long gestation time and completion time. Even the wrtiter is feeling that these projects are difficult to complete expeditiously because of odds in Mumbai and suburban region like scarcity of land, narrow roads, traffic, residential area etc. It is seen that metro will have 36000 person per hour per direction capacity. The two lines north-south and south andheri carrying capcity will be 72000 pphpd whereas expected requirement would be 170000 pphpd after competition of MUTP (Mumbai Urban Transport Project). This means metro project cannot actually adress the transportation problems in Mumbai. Even the expected cost of Mumbai Metro for 146.7 km would be more than Rs.60000 cr.

**Bag S. et al. (2012)** pointed that organisations need to understand several factors affecting customer satisfaction. As per the satisfaction survey conducted of Kolkata Metro Rail, it is found that most of the passengers using metro rail service were in the age of 26 to 35. They are using metro service mainly for time and cost saving. Evrn pople are using metro for better promotional offers, better atomosphere inside the train, multi ride scheme etc.

**Ramteke A. et al. (2015)** with the rise in population private vehicles on the roads also rises which casue pollution and traffic congestion. Thus people should be discourage to use priavte vehicles. Rail based Mass Rapid Transport System will help to solve the traffic congestion and pollution problem to a greate extend becasue metro rail is a eco friedly transport.

**Tiwari Geetam (2013)** planning commission 2012-17 suggested metro rail transport system for the cities with population more than 2mns. It is seen that metro cities are having poor population who do not have own vehicles and mostly depends on non -motorise transport. Even for longer trips people are using bus transport where organised transport system is not available. This means if metro or bus transport is made accessible people can use them on regular basis. Most of the metro rail projects in India do not have integration with other modes of transport. In respect of Delhi metro estimated ridership was 45000 per day per kilometer but actually less number of people are travelling.

**Dr. Bhagwan Singh et al. (2014)** Understanding customer expectations is essential for long term



standing in the market. As delhi metro is well integrated people can easily change their route or even they can opt other mode of transport for further commuting. The research shows that there is a strong relationship between assurance, tangibility, empathy and customer satisfaction.

#### **Objectives**

1. To study the prospects of Metro rail in Mumbai region.
2. To understand the challenges due to metro rail project in Mumbai region.

#### **RESEARCH METHODOLOGY**

This paper is based on primary as well as secondary data. Primary data has been collected from different age groups by questionnaire method. The sample size for the study is 95 respondents. Secondary data has been collected through books, journals, government publications, reports of research agencies, newspaper, websites etc. The research is mainly exploratory in nature and analysis is on the basis of observations. The analysis is done by using median and mode methods.

#### **Hypothesis**

H<sub>0</sub> : there is no prospect for metro rail projects in Mumbai region.

H<sub>1</sub> : there is prospect for metro rail in Mumbai region.

H<sub>0</sub> : There are no challenges due to metro rail projects in Mumbai region.

H<sub>1</sub> : There are several challenges due to metro rail projects in Mumbai region.

#### **Why Metro Is needed in Mumbai ?**

- a) To augment transport service within Mumbai and MMR region.
- b) To improve connectivity between different part of Mumbai.
- c) Better Connectivity with other mode of transport.
- d) To avoid traffic congestions and provide convenient and economical transport.
- e) To improve overall mobility of passengers.
- f) To overcome monopoly of taxis, and rickshaws.
- g) To provide better services and facilities to commuters compared to other modes of transport.
- h) To make the transportation convenient and safe.
- i) To minimise road accidents.



**Research analysis of prospects and challenges of Metro rail in Mumbai Region**

Prospects	Percentages				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Reliable and dependable service	10.8	4.3	10.8	38.7	35.5
Metro rail gives relief from traffic congestion	9.7	4.3	10.8	23.7	51.6
Eco- friendly mode of transport	8.6	9.7	16.1	29.0	36.6
Facilities to passengers are better than other transports	7.5	0.0	14.0	33.3	44.1
It provides better Security to passengers	7.5	2.2	22.6	35.5	31.2
To connect those areas where no rail connectivity.	9.7	7.5	19.4	36.6	25.8
Alternative and Modern mode of transport	6.5	2.2	9.7	40.9	40.9
Chances to reduce road accidents	7.5	3.2	11.8	33.3	43.0
To uplift status of Mumbai as a capital	8.6	3.2	15.1	25.8	46.2
To increase mobility of passengers	6.5	3.2	11.8	35.5	41.9

Source: Primary Data

**Findings**

1. Around 74% passengers feel that metro rail is reliable and dependable service so there is better prospect than other modes of transport.
2. Out of 95 respondents 74% are of the opinion that metro rail is giving lot of relief from daily traffic congestions, 65% respondents say that metro rail is eco friendly transport and better than other modes but around 15% are disagreed with environment friendly feature. This means compared to other modes of transport metro railways would be having better prospect due to eco friendly nature of transport.
3. 77% respondents are of the opinion that metro rail gives better facility than other modes of transports, 14% said they cannot say about facilities so they prefer to be neutral. Even in respect of security 66% respondents felt metro rail gives better security than bus, taxi, auto etc. About 22% respondents said they are unable to make opinion about security to passengers provided by metro rail.
4. 61% respondents are of the opinion that metro rail in future will connect those areas where railway facility is not available this will increase mobility of passengers in future. But 17.2% respondents said that they are sure about connectivity because some areas in Mumbai do not have land space to construct metro rail and about 19.4% people remained



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neutral about connectivity.

5. 76% respondents are agreed that due to network of metro rail in Mumbai it will reduce road accidents which are impident problem in Mumbai. 11% people are not agreed that road accidents will reduce because road transport in Mumbai in unaviodable transport, so this will result into some road accidents.
6. 82% passengers are agreed that metro rail in Mumbai will definately prove to be alternative mode of transport to bus, tax, auto, rail and so on.
7. The study reveals that 77% repondants agreed that better network of metro rail will increase mobility of passengers' across Mumbai. Around 11% people remained neutral and could not make opinion about mobility, whereas 10% are disagreed about likely increase in mobility of passengers.
8. 76% respondents agreed that Mumbai being financial capital of India network of metro rail will make addition to existing transport network, this will help to raise its image in near future.

**Challenges for Metro Railway in Mumbai Region**

Challenges	Percentages				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Traffic has increased nearby metro stations	10.9	10.8	17.4	41.3	19.6
Noise and air pollution during construction is possible	6.6	5.5	12.1	48.4	27.5
Limited land space available in Mumbai region	6.6	7.7	14.3	36.3	35.2
Fare charges of metro train is costlier than other modes of transport	7.7	7.7	20.9	35.2	28.6
Noise pollution to nearby people due to continuous announcement	8.7	25.3	26.1	26.1	14.1
Privacy of people in nearby area of metro train is affected	13.0	23.9	18.5	35.9	8.7
Land acquisition is difficult in Mumbai	6.6	8.8	16.5	36.3	31.9
Displaced people do not get compensation easily	7.9	11.2	29.2	29.2	22.5
Underground metro is not suitable due to water logging problem in rainy season	8.8	9.9	17.6	28.6	35.2
Migration likely to increase to Mumbai	7.6	7.6	27.2	30.4	27.2

Source: Primary Data



### Inferences

1. 61% respondents are of the opinion that due to metro rail projects, traffic congestion is seen nearby metro stations, as commuters are travelling to metro stations from different areas. Around 21% are not agreed about traffic congestion near to metro stations. 17.4% could not decide about the problem.
2. 75% respondents are agreed that noise and air pollution during construction are major problems. Further 61.5% respondents agreed that Mumbai is having limited land space due to which construction of metro projects is a big challenge.
3. 63.8% people agreed that fare charges of metro rail are costlier than other modes of transport like bus, taxi, auto etc. 20.9% respondents remained neutral, maybe because they felt that against facilities the fare charges are acceptable.
4. In case of noise pollution due to continuous announcement respondents gave mixed opinions i.e. 40.2% people were agreed about the problem and 34% people were disagreed about the problem.
5. With respect to privacy issue of local residents people have given dubious reply that is 39.9% disagreed, 43.7% were agreed and 18.5% were neutral about the problem.
6. As Mumbai has limited land space 68.2% respondents agreed that land acquisition is a big challenge which can create challenge for future projects.
7. Around 52% respondents felt that displaced people do not get compensation easily.
8. 63.8% respondents are of the view that underground metro is not suitable as Mumbai is near to sea and water logging is a major problem in rainy season.
9. 57.6% respondents are agreed that migration likely to increase due to development of metro rail projects in Mumbai.

### HYPOTHESIS TESTING

#### Hypothesis 1

In case of prospects of metro rail, 10 different questions were asked to which total 906 responses were obtained from 95 respondents.

#### Median:

Responses	Strongly disagreed	Disagreed	Neutral	Agreed	Strongly agreed	Total
	77	37	114	309	369	906
Cumulative frequency	77	114	228	537	906	



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N = 906

906/2<sup>th</sup> position, median is 453<sup>th</sup> position,  
Thus, median lies between 228 to 537 position.

**Mode:**

Out of 906 responses, 369 responses strongly agreed that there is prospect of metro rail in Mumbai. Thus,

Alternative hypothesis : there is prospects for metro rail in Mumbai region is accepted and null hypothesis is rejected.

**Hypothesis 2**

In case of challenges for metro rail, 10 different questions were asked to which total 915 responses were obtained from 95 respondents

**Median:**

Responses	Strongly disagreed	Disagreed	Neutral	Agreed	Strongly agreed	Total
	77	108	185	317	228	915
Cumulative frequency	77	185	370	687	915	

N = 915

915 + 1/2<sup>th</sup> position, 916/2<sup>th</sup> position  
Median is 458<sup>th</sup> position. Thus media lies in between 370 to 687.

**Mode:**

Out of 915 responses 317 responses agreed that there are challenges for metro rail in Mumbai region.

This proves that alternative hypothesis: There several challenges for metro rail projects in Mumbai region is accepted and null hypothesis is rejected.

**Findings:**

1. Mumbai is one of the busiest cities in the country as well as world. The existing transport infrastructure is over burden to meet the rising demand; at times metro rail will be better option for internal connectivity.
2. The existing metro rail passengers are getting several facilities like security, digital tickiting, escalators, Air conditioned compartments etc. These modern facilities will



attract more passengers from different parts because it gives reliable, dependable and hassel free travellling.

3. Better security makes transportation in todays vulnerable days.
4. Traffic congestion and road accidents are serious issues in several parts of Mumbai; this problem can be resolved to a great extent by network of metro rail because it is safe and eco friendly transport.
5. As Mumbai is expanding in length and breadth, suburban rail cannot reach everywhere. As a result metro rail will help to connect those areas where railway is not reached. Even city bus transport BEST is not sufficient the rising transport demand in Mumbai region.
6. Mumbai has limited land space, thus construction of metro rail projects is a big challenge.
7. Land acquisition is a daunting problem because cost of land is unprecendent, even government plots have been illegally encouraged by some people. Displacement of people and their compensation are unresolved issues in the wake of metro constructions.
8. Many people have reservations about fare charges because costlier than other transports.
9. Underground metro may not be suitable because of water logging problem and nearness of sea. Even alleviated projects will be costly.
10. Due to infrastructural development in Mumbai there is possibility of migration to Mumbai. This will increase number of passengers result in to failure of metro rail.
11. Even though there are challenges for metro rail projects, considering future transport demand and making the transport system well equipped metro rail is far essential. It is also needed to make the city as smart city and for better urbanisation process and contribute to social transformation in Mumbai.

#### RECOMMENDATIONS

1. There should be proper feasibility study of routes and expected mobility of passengers.
2. There should be proper integration of metro connectivity and other modes of transports.
3. A development fund should be created to pay compensation to those people who are likely to be displaced.



4. As far as possible project should be constructed on government land so that project cost will be under control. This will help the government to keep fare charges low.
5. A fare regulating committee should be set up to decide fare charges from time to time.
6. It is suggested that project should be controlled and managed by government for benefit of general public.
7. Regular feedback must be taken from local residents and passengers about the problems and inconvenience faced by them.
8. Allieuated metro will be better option because of limited land space in Mumbai.
9. The passengers should be some offers like cash back, Gifts, discounts etc. This will boost travellers' attraction towards metro rail.

### CONCLUSION


In coming years number of commuters are going to be increased due to economic development Mumbai being financial capital and exapanding it horizon in several sides alternative mode of transport is highly essential. Metro projects will help the government to solve existing transport problems faced by and add utility to passengers. If fare charges are under control and proper routes are selected then it will definitely attract more commuters to travel through metro rail. During construction necessary precautions should be taken to avoid resistance of local people. Similarly, proper compensation policy needs to have been drafted to pay compensation to displaced people. At last, Mumbai is an economically important city for the nation; therefore, metro projects are needed for the benefit of the several stakeholders.

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