



REVIEW OF RESEARCH

ISSN: 2249-894X

IMPACT FACTOR : 5.7631 (UIF)

UGC APPROVED JOURNAL NO. 48514

VOLUME - 8 | ISSUE - 9 | JUNE - 2019



HYDERABAD URBAN AGGLOMERATION – CHALLENGES IN MOBILITY AND TRANSPORT – A WAY FORWARD

P. Ganeswara Rao¹ and V. Shekhar²

¹PP MAN.0533, Research Scholar, Rayalaseema University, Kurnool, Andhra Pradesh, India .

²Professor, Department of Business Management, Osmania University, Hyderabad,
Telangana, India .

ABSTRACT:

In India urban population is increasing at a very faster pace. During the last sixty years the population of India has grown 3.5 times, but Urban India has grown by nearly six times. In numerical terms, India's urban population is second largest in the world after China, and is higher than the total urban population of all countries put together barring China, USA and Russia. Urban areas contribute substantially to the economic growth of the country. Urban transport is an important factor which contributes to the productivity of urban areas by providing quicker mobility to men and material. It helps in reducing the pollution, greenhouse gases and makes the urban areas livable. Hyderabad Urban Agglomeration with a population of about one crore is witnessing rapid growth in population and spatial expansion necessitating people's movement for long distances which requires an able, functional and reliable passenger transport system. In Hyderabad, TSRTC is providing city bus services and Indian Railways provide MMTS services and other passenger services connecting Sub-Urban areas and nearby towns / villages. Hyderabad Metro with its state-of-the-art technology is providing services currently in two sectors which have become popular with a ridership of 2.8 Lakh passengers per day. Punctual running of trains, feeder services at originating and destination stations, common ticket for bus/MMTS/Metro are a few suggestions which have emanated from the commuters who have participated in the survey undertaken.



KEYWORDS: Travel mode, Hyderabad Urban Agglomeration, Mode of travel, Peak Hour problems, Rail based Transport System.

1. INTRODUCTION:

1.1 The contemporary phenomenon of unbridled and rapid urbanisation is leading to urban-sprawl. This is resulting in the need for people to undertake longer commutes. People are spending an increasing amount of

time commuting between their residence and workplace. An important factor behind this trend is related to residential affordability as housing located farther away from central areas (where most of the employment remains) is more affordable. Therefore, commuters are

trading time for housing affordability.

1.2 The consequence of this is the multiple fold increase in personal vehicles. As more and more people move into cities, more cars and bikes are also hitting the streets. These vehicles

not only spew greenhouse gas emissions, they can cause urban traffic fatalities. We already see 1.2 million traffic-related deaths per year worldwide. According to the World Health Organization, with increased urbanization and motorization, road fatalities are expected to become the fifth-leading cause of death by 2030.

1.3 By 2050, 70 percent of people are expected to live in cities. At the same time, the number of cars – too often a symbol of individual success – is set to hit 2 billion worldwide by 2020 if we stay on a business-as-usual track. The collision of these two trends—urbanization and personal motorization—will make for a very different traffic safety challenge in the future.

1.4 It is also leading to increased pollution in cities. For instance, Air pollution levels in the city have seen a rise in 2017 in comparison with 2016, though officials say the rise has not reached alarming proportions. Air pollution data collated and published online by Telangana State Pollution Control Board (TSPCB) shows a hike across various parameters and locations, with industrial, commercial and residential areas all falling prey to the same malaise. Among the top five air pollution parameters, namely, nitrogen oxides (NO_x), particulate matter (PM₁₀ and PM_{2.5}), sulphur dioxide (SO₂) and ozone (O₃), there is not a single indicator that does not show an increase.

1.5 The consequence of this is multiple fold increase in personal vehicular population. The undesirable consequences of this vehicular explosion are –

- i) Increase in pollution levels much beyond the accepted levels causing health and environmental issues. The increased levels of pollution causing malignancy and cancer in metro areas shortening the lives of the people.
- ii) Loss of valuable human life in road accidents,
- iii) Loss of productive time in the roads due to congestion,
- iv) Increase in use of fossil fuels with serious economic repercussion to the nation as we depend on imports.

1.6 Across the world it has been proved that a well - functional urban transport system is a safe-bet to overcome the problems originating from urban sprawl and vehicular explosion. In international context, London is a good example where London Metro (Tube Rail) and public transport ensured that London remained best among the liveable metros of the world. In Indian context, Mumbai's suburban rail system of Western and Central Railways along with BEST Buses ensured that Mumbai remained as what it is for a good period of time. In the very recent context, the role of DMRC and its active contribution in reducing the hassles of capital region territory of Delhi need no emphasis.

2. HYDERABAD URBAN AGGLOMERATION:

2.1 Hyderabad is the capital of Telangana State and prior to it, it was the capital of Andhra Pradesh and Nizam State (Hyderabad State). It was founded in the year 1591 by Mohd. Quli Qutub Shah on the banks of river Moosi. As per 2001 census the population of Hyderabad Metropolitan Area is about 6.5 million, spread over an area of nearly 1864 Sq. Kms, with decadal growth rate of 29% and ranking 6th in population among the major Metropolitan Cities in India. It is estimated that the population will grow to about 9.5 million by 2011. The areas falling under Municipal Corporation of Hyderabad, Secunderabad Cantonment Board and ten municipalities around these, constitute this Urban Agglomeration. Municipal Corporation of Hyderabad and the Municipal Corporations around it (viz., Malkajgiri, Kapra, Uppal, L.B.Nagar, Qutbullapur, Kukatpally, Alwal Serilingampalli, etc) were merged to form Greater Hyderabad Municipal Corporation – GHMC. The intra city transport needs are mainly met by local trains (railways); City bus services (TSRTC), chartered buses by corporate houses etc, and these are supplemented by autos and SETWIN (Self Employment in Twin Cities) buses. With the growth of

software industry during the past decade, areas like Madhapur, Kondapur, Gachibowli, Serilingampalli, Tolichowki etc., witnessed a spiralling growth transforming themselves into “Cyberabad” and “HITECH CITY”. With this growth, the population of Hyderabad metropolitan area has crossed 10 million mark moving above one crore.

2.2 The spurt in the population in the surrounding municipalities and in the city proper resulted in increased commuting needs within the urban agglomeration. This is clearly indicated by the overburdened road links connecting these areas. Commensurate with the growth in population, the number of vehicles also grew at a rapid pace within the urban area. The MCH area has a major road network of 235 KMs length constituting about 10.71% of MCH area. HUDA area on the other hand has an overall Kilometrage of 365 KM constituting a mere 3.3% of the total area. The road space covered as a percentage of total area in the city is a meagre of 6% as against the standard international norm of 20-30%. It is also one of the least among major Indian cities. What really a matter of concern, is the density of vehicles per km is the highest among the six cities at an astounding 2600 vehicles per Km of road space. This is probably due to more two wheelers. Any further increase in the road density will seriously cripple the road transportation network and hence is the need for alternative mass rapid transportation system.

2.3 Experts opine that the absence of an efficient public transportation system all these years had led to more and more people starting to rely on personal transportation. The Metro Rail has started to fill that gap and once its entire network is in place and future plans to extend it further works out, a difference could be noticed, they observe. The TSRTC has 3,800 buses ferrying 33 lakh passengers and 121 Multi-Modal Transport System (MMTS) services that carry 1.8 lakh passengers and these added to Metro services carrying an average of 1.5 lakh passengers every day works to meeting the commuting needs of over 35 lakh passengers. According to Transport Department senior officials, since 2015, over four lakh vehicles were being registered in the city every year and numbers have just been going up. “With lack of public transportation and last mile connectivity, commuters are relying on personal transportation,” they maintained. With a total of 1.06 crore vehicles in the State, the city limits comprising Hyderabad, Rangareddy and Medchal districts, alone account for 53 lakh vehicles, that is, around 50 per cent of overall vehicle population in Telangana.

2.4 The rapid strides Hyderabad Urban Agglomeration made resulted in urban sprawl of city exceeding almost 100 sq. kms, population increasing above 1 crore, pollution levels touching dangerous levels surpassing the accepted norms, congestion on roads leading to crawling vehicular speeds averaging below 10 kms an hour and unfortunate loss of human life in road accidents. Thus, the need of the hour is to reduce the vehicular population and their movement on the roads, by doing whatever it takes and needs. Hyderabad has had a good functional bus system provided by RTC, which saw the city through, till end of 20th century. Rapid urbanisation of city in 21st Century, with Hyderabad becoming ‘Cyberabad’ and consequent increase in population has thrown up usual problems discussed supra. Unless these problems are tackled in a timely and planned manner, it would lead to chaos and resultant socio, economic and environmental ill-effects. Thus, the need of the hour is to develop well-functional transport systems both rail - based and road- based and to ensure their popular use.

2.5 A few initiatives were taken in this direction. Introduction of good quality buses under JNNURM by RTC; expansion of roads by Municipal Corporation and State Government; introduction of MMTS trains by Indian Railways from Falaknuma – Secunderabad/Hyderabad – Lingampalli sectors; and introduction of Hyderabad Metro Rail in three busy corridors of the city are a few steps in the right direction. The erstwhile State Government of Andhra Pradesh enacted a legislation creating UMTA – Unified Metropolitan Transport Authority naming it as Hyderabad Unified Metropolitan Transport Authority. They have also created a Corporation named Hyderabad Metro Rail Limited (HMRL) for creation of Metro Rail System in the city of Hyderabad and Suburbs. But what is of utmost importance

is to make these public systems popular by ensuring them to be user friendly and successfully wean-away the public from the personal vehicles to using these public systems. In this regard, it becomes highly essential to study and analyse the transport and mobility problems that exist in Hyderabad city and also to make an attempt to understand the role of Hyderabad Metro Rail. Accordingly, **the objectives of the study** are formulated.

3. OBJECTIVES OF THE STUDY:

1. To understand the transport and mobility problems of Hyderabad Urban Agglomeration;
2. To evaluate the functioning of Hyderabad Metro Rail and other Public Transport systems from user perspective;
3. To suggest a way forward with possible steps and solutions to make the transport systems user friendly and popular;

4. METHODOLOGY:

The subject of Urban Transport is under study by the author from 2010 onwards and was associated with developments in South Central Railway and provision of MMTS during 2003 – 2004. This subject has been continuously studied and followed since then. With a view to gain deeper insight on the subject extensive review of connected literature, including articles in journals and newspapers and websites, has been done. To achieve the Objectives of the Study – it is necessary to understand the problems of users at micro level in the field and address them suitably. To understand these problems at micro level in the field from user perspective, a survey is undertaken among various types of users of RTC buses, MMTS commuters, and Metro travellers. This survey was conducted between February and May 2019 on various dates. Commuters were approached at bus stops, by MMTS trains and by Metro Rail trains. A total of 337 commuters responded. The responses of the survey have been tabulated on an Excel sheet and using the Analytical tools, cross tabulations have been done and analysis is made.

5. THE ROAD TRAVELLED SO FAR:

In-depth study made into the urban transport arrangements and other related issues in Hyderabad Urban Agglomeration revealed the following important developments and initiatives.

5.1 MMTS: On 25/9/2000, MOU between Government of Andhra Pradesh and Indian Railways was signed for implementation of Multi Modal Suburban Commuter Transport System on 50:50 cost sharing basis. A Joint Task Force constituting of members from State Government and Indian Railways has been nominated to oversee the implementation of the project. Work for development of fixed infrastructure commenced on November 1st, 2001 and services have been commenced in two stages. Services on Hyderabad/Secunderabad-Lingampally sector were commenced in Aug. 2003 while on Falaknuma-Secunderabad section commenced in Feb. 2004.

Phase- 2: Government of Andhra Pradesh and Indian Railways have assigned process management of this phase to Andhra Pradesh Industrial Infrastructure Corporation Limited, (APIIC) for conducting a Detailed Feasibility and Investment Banking Report (DFIBR) and develop this stage on a Public-Private partnership mode. M/s L&T Ramboll, appointed consultants for Phase II. Based on the report given by L&T Ramboll, a SPV was to be formed but this did not take place. However, at the instance of Telangana State Government, railways have undertaken works on Phase II to introduce MMTS services on Secunderabad – Ghatkesar section, Secunderabad – Medchal section and Sanathnagar – Moula-ali section via Ammuguda. The works are in final stages of completion and the services could be started before the end of 2019. MMTS services between Secunderabad/Hyderabad and Lingampalli (33 Kms - 17 stations) were started on 9/8/2003 and Secunderabad and Falaknuma (14.54 Kms -11 stations) were started from 14/2/2004.

5.2 HYDERABAD METRO:

DMRC assisted by RITES Ltd. prepared a Detailed Project Report for “Hyderabad Metro” in June 2003. They proposed elevated railway on two corridors Miyapur – Chaitanyapuri (26.22 kms with 25 stations); and Secunderabad –Falaknuma (13.18 kms with 14 stations). This is expected to cost about Rs.15,000 crores. This project is supposed to serve the intra urban needs while MMTS would serve suburban needs. The EIRR is 25.6% and FIRR is 7.73%.

Initial bidding: The bidding process was completed by July 2008 and awarded to Maytas which failed to achieve financial closure for the project as per schedule By March 2009. In July 2009, the State Government cancelled the contract and called for fresh bids for the project.

Re-bidding : In the July-2010 rebidding process, Larsen & Toubro (L&T) emerged as the lowest bidder for the ₹121.32 billion (US\$1.8 billion) project. L&T came forward to take up the work for about ₹14.58 billion (US\$210 million) as viability gap funding as against the sanctioned ₹48.53 billion (US\$710 million). Groundbreaking (Bhoomi Puja) for the project was conducted on 26 April 2012 the concessionaire started the pillar erection on the same day for Stage-I and on 6 June 2012 for Stage-II. The work for Corridor 2 has been delayed due to traders in Koti and Sultan Bazar demanding realignment of the route to safeguard traders and old age heritage markets. If the recent bill proposed in Parliament which allows construction within a 100 meter radius of heritage structures and sites of historical or archaeological importance is passed, Metro might receive a chance as it helps to connect the Old city with IT corridor. The following are the proposed three lines:

- Line 1 - Red Line - Miyapur – L B Nagar - 29.2 km (18.1 mi)
- Line 2 - Green Line - JBS - Falaknuma 15 km (9.3 mi)
- Line 3 - Blue Line - Nagole – Raidurg - 28 km (17 mi)

The Hyderabad Metro has commenced regular operation of services on Miyapur – Nagole - Raidurg route upto Ameerpet w.e.f. 29.11.2017 and the line between Miyapur and L.B.Nagar was made operational upto Ameerpet. The L.B.Nagar – Miyapur Section became fully operational in March 2019.

On March 26, 2018, Telangana Govt announced that it would set up a SPV "Hyderabad Airport Metro Limited (HAML)", jointly promoted by HMRL and HMDA, to extend the Blue line from Raidurg to Rajiv Gandhi International Airport, Shamshabad. This work at present is in DPR stage.

5.3 A population explosion of a different kind is happening in Hyderabad. The once laid-back city is witnessing a real loud boom in the number of vehicles, both private and public. The statistics available with Telangana’s Road Transport Authority (RTA) showed that during the year 2018, on an average 1,200 new vehicles were registered every day. This include, on an average, 1,000 new two-wheelers and 200 four-wheelers. And as on December 31, 2018, the statistics put the registered vehicle population in the city at 53.21 lakh! The increase in the number of vehicles in the city mainly had been in the last five years with the addition of about 20 lakh private vehicles. If in the year 2013, the number of registered vehicles in the city was around 33lakh, the figure leapfrogged to 53lakh by the end of 2018. The city’s growth in ever widening circles encompassing the suburbs and beyond into its fold and absence of efficient public commuting option connecting the new areas along with increasing sense of affordability, are among the reasons cited for the rising number of vehicles.

Telangana Today Web 29.5.2019

- Over 53 lakh registered vehicles in city
- Four wheelers crossed 10 lakhs mark in 2018
- 1,200 vehicles enter city roads daily
- 4.46 lakhs vehicles added in city in 2018
- 20 lakh vehicles registered over last five years
- Public transport caters to 35 lakh passengers daily
- 50% vehicles across State registered in city limits

Vehicle population in Hyderabad

Year	Two Wheelers	Four Wheelers	Total Vehicles
2012	24,90,730	5,74,895	30,65,625
2013	27,35,713	6,36,527	33,72,240
2014	30,09,503	6,97,661	37,07,164
2015	32,96,641	7,62,400	40,59,041
2016	36,21,713	8,35,753	44,57,466
2017	39,54,520	9,20,045	48,74,565
2018	43,16,629	10,04,799	53,21,048

(Source: Telangana Today Website – 29.5.2019)

At the beginning of the year, of the 53 lakh private vehicles that criss-cross the city roads, 43.16 lakh were two-wheelers. Interestingly, the number of four-wheelers in the city has been on a rapid rise for the last few years and last year touched the one million mark. If the number of cars stood at around 9.20 lakh in 2017, it rose to 10.04 lakh by the time the year 2018 came to a close. In fact, the gap between the population of city and the vehicle population has started to narrow down in the last few years. As against an estimated population of one crore plus population of Greater Hyderabad, the number of vehicles here crossed the 53-lakh mark which translates to one vehicle for every two persons.

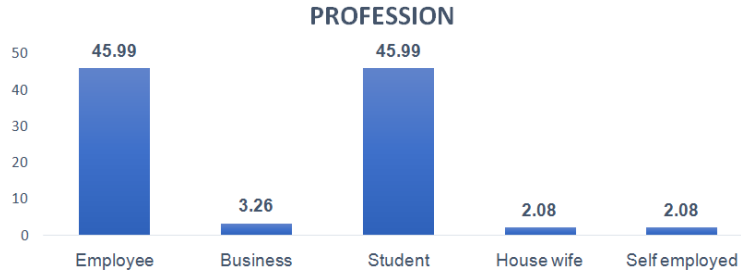
5.4 Currently, there are only 3,800 buses and 129 Multi-Modal Transport System (MMTS) services in the Greater Hyderabad region for a population of over one crore. As a result, people are depending on their own modes of transport, which in turn has spurred the growth in vehicle population, officials say. "Public transport is not able to keep pace with the increase in the population, which is why people are depending on Ola, Uber, other taxi services and private vehicles. Eventually, vehicles have been growing every year by 15 per cent," says J Pandurang Naik, Joint Transport Commissioner. "The road network has expanded very slowly, and is unable to cater to the needs of the population. From 2002, there has been a drastic increase in number of vehicles, with the advent of Hitech City and the overall expansion of the city," he adds. Hyderabad, as of now, holds the fifth position in terms of vehicle population, with Delhi, Bengaluru, Chennai and Mumbai topping the list. If the number of vehicles in the Greater Hyderabad region is considered, Hyderabad will surpass Mumbai, officials say. The arrival of the Hyderabad Metro Rail, they feel, could ease the situation, with the public getting a new mode of public transport, they add.

6. RESULTS OF COMMUTER SURVEY:

As already mentioned, the responses of the commuters have been tabulated on an Excel sheet and using the statistical / analytical tools, cross tabulations have been made and the results are studied. The profile of the commuters and the results of the survey based on responses to each question are analysed below.

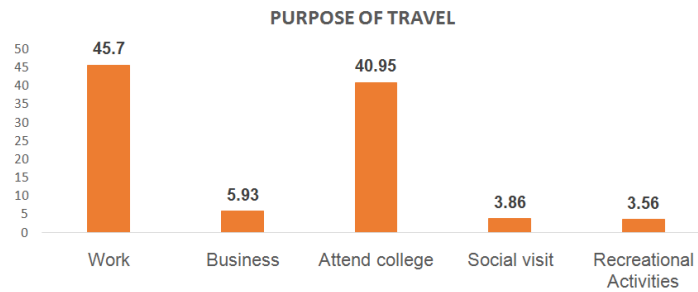
6.a Profile of the commuters:

62.6% are male and 37.4% are female. Coming to the profession, employees are 46% out of which 75% are male and 25% are female. The next big group is of students constituting again 46% of the total among which 53.5% are male 46.5% are female. While employees and students constitute 92% of the commuters, the other professions like business, self-employed and housewife make-up the rest of 8%.



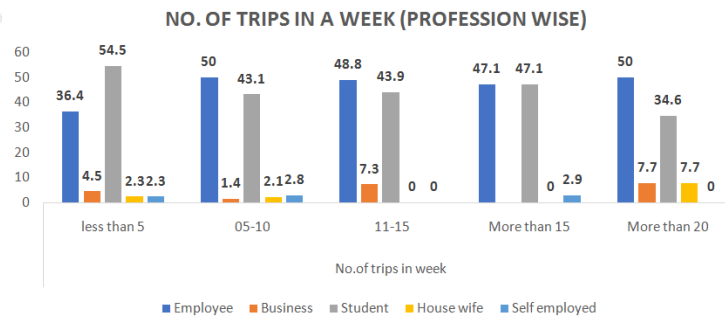
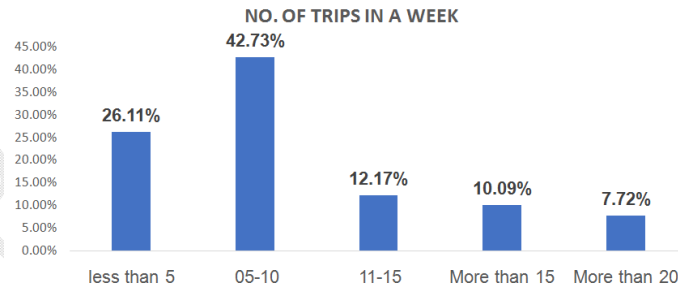
6.b. Purpose of the travel:

45.69% of the commuters have indicated their purpose of travel as work whereas 40.94% have indicated their purpose of travel is to attend college. It can be assumed that all employees have opted for work while all the students have opted for attending college while filling up the questionnaire. Business visits constitute 5.93%, social visits 3.85%, and visits for recreational activities 3.56%.



6.c Number of trips in a week:

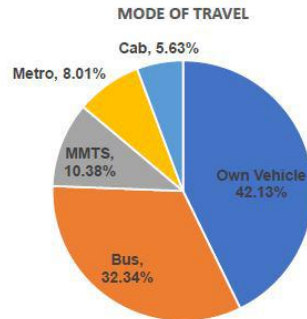
42.7% of the commuters are making 5 – 10 trips a week. 26.11% of the people make less than 5 trips. 10% of the people are making more than 15 trips a week while 7.7% of commuters are making more than 20 trips a week.



6.1 Mode of travel:

To ascertain the mode of travel, they were asked – “By what mode of transport do you regularly commute/travel. The details of gender-wise, profession-wise data is enclosed in the table. As regards the mode of travel, the following are the results:

Own Vehicle	-	42.13%
Bus	-	32.34%
MMTS	-	10.38%
Metro	-	8.01%
Cab	-	5.63%
No response	-	1.48%

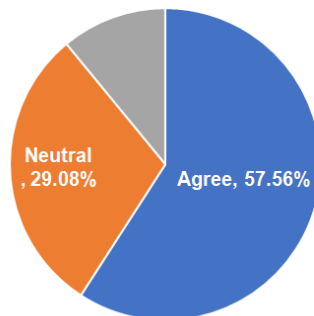


As could be seen, the use of own vehicle and cab at 42.13% and 5.63% together account for 47.7% which is quite high compared to the travel by public transport. As could be seen, the public transport consisting of bus, MMTS, and Metro account for just over 50% (50.39%). This indicates that travel by own vehicle and cab is quite high due to inadequacy of public transport.

6.2 Comfort of travel:

57.56% of commuters have indicated that their travel is comfortable by opting for agree or strongly agree. 29.08% responding have remained neutral while 10.68% of the people have disagreed or strongly disagreed. Thus, it could be safely concluded that majority of the people are happy with the comfort level of the travel.

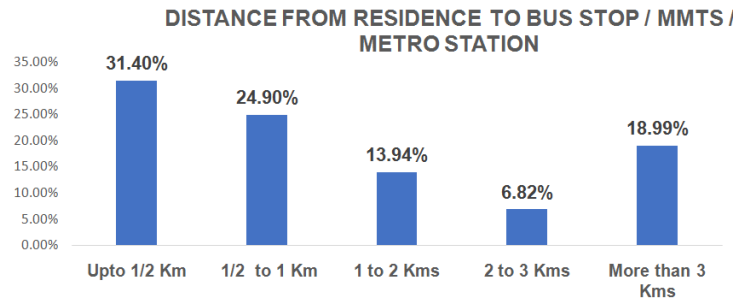
COMFORT OF TRAVEL



6.3 Distance from residence to bus station/MMTS/Metro station:

31.4% of the people commuting are within half kilometre range from the bus/MMTS/Metro station. 24.9% are between half kilometre to onekilometre range while 13.94% are from 1 to 2 Km range. 6.82% are 2 – 3 Kms, 18.99% are more than 3 KMs. It could be seen that more than 56% are

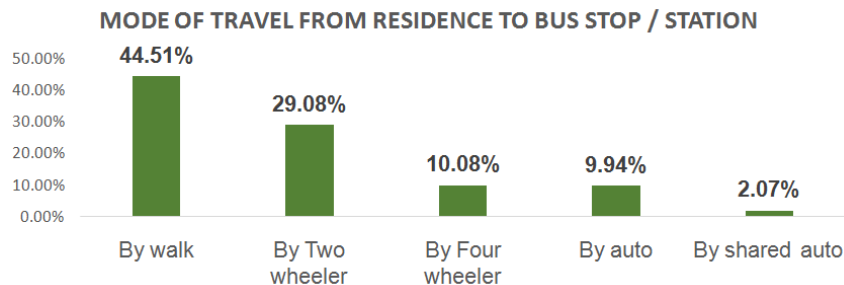
living within one kilometre range from their public transport point. People who are in more than 2 Kms range are more than 25%. To help these people, it is necessary that connecting services are developed. Such step is bound to increase the ridership in MMTS/Metro trains.



6.4 Mode of travel from residence to Bus stop / station:

To ascertain how the commuters are moving from their residence to the bus stop/Metro/MMTS station, the following options have been given – by walk, by two-wheeler, by four-wheeler, auto, shared auto. The results are as under:

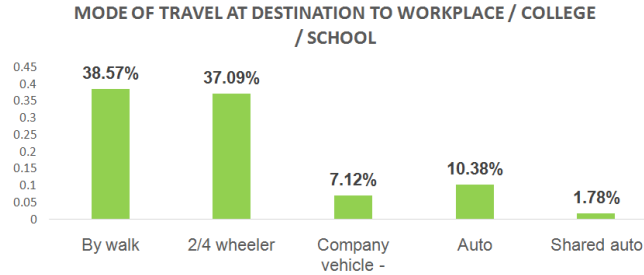
By walk	-	44.51%
By Two-wheeler	-	29.08%
By Four-wheeler	-	10.08%
By auto	-	9.49%
By shared auto	-	2.07%



6.5 Mode of travel at destination to workplace/college/school etc.:

To ascertain how the commuters are moving after alighting from the public transport at destination to their place of work / college/school/residence etc. The following options are given – by walk, 2/4-wheeler, company vehicle, Auto, shared auto. The results are as under:

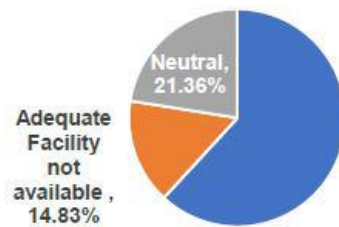
By walk	-	38.57%
2/4-wheeler	-	37.09%
Company vehicle	-	7.12%%
Auto	-	10.38%
Shared auto	-	1.78%



6.6 Parking facilities at metro stations:

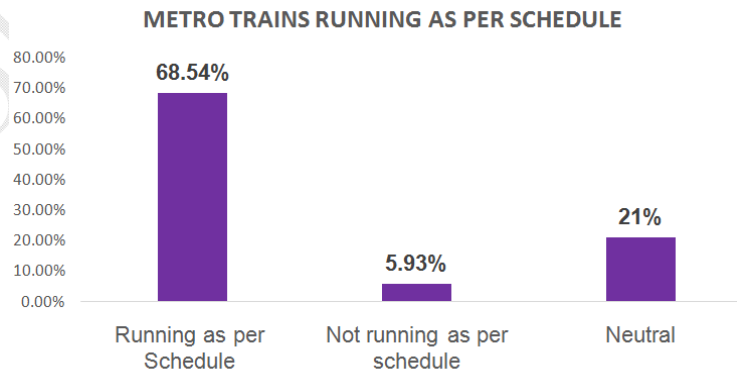
When the question regarding adequacy of parking facilities at Metro stations is asked, 58.75% responded saying that there is adequate facility while 14.83% of people have said that adequate facilities are not available. 21.36% people have remained neutral by opting for neither agree nor disagree, while 5% have not given any response. Augmenting the parking facility at Metro stations is a top priority requirement which shall be adequately addressed without any further loss of time. At many Metro stations, there is no parking facility which is a hindrance for the commuters to use Metro services.

PARKING FACILITIES AT METRO STATIONS



6.7 Metro trains running as per schedule:

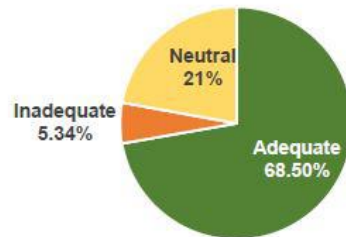
When this question was posed to the commuters, 68.54% of the people responded by stating that they are running as per schedule while 5.93% of the people said they are not running as per schedule. 21% remained neutral by opting for neither agree nor disagree. 4.45% of the people have not given any response. Making the schedule of services available and adhering to it is a primary requirement of public transport.



6.8 Adequacy of facilities at Metro stations:

68.5% of the people have responded by stating that facilities provided are adequate. 5.34% have said that facilities are inadequate by opting for disagree or strongly disagree. 21% of the people remained neutral, while 5% of the people have not given any response.

ADEQUACY OF FACILITIES AT METRO STATIONS



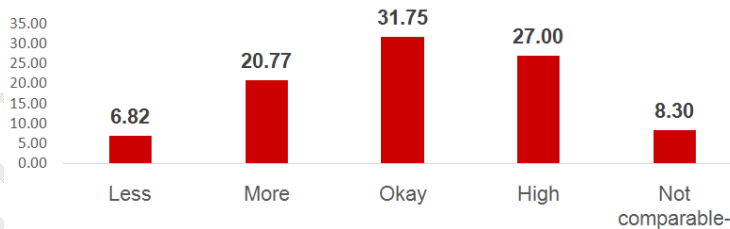
6.9 Comparison of Metro fare:

Is the fare by Metro comparative with other modes of transport is the question asked with the options less, more, okay, high, and not comparable. The results are as under: -

Less	-	6.82%
More	-	20.77%
Okay	-	31.75%
High	-	27%
Not comparable-		8.30%

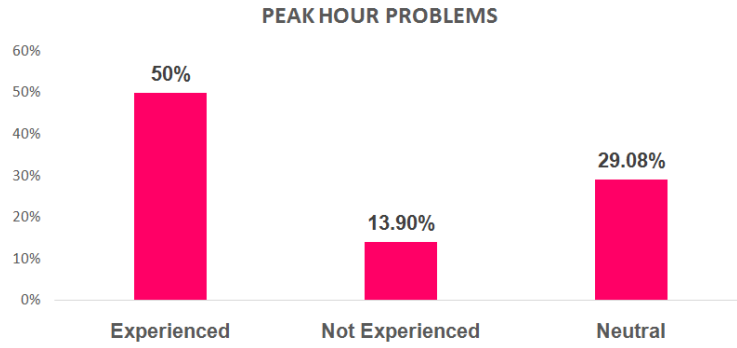
The percentage of the people who say that the fare in Metro is more or high is 47.77%. When the responses of students is analysed 54.19% of them have said that the fare in Metro is more or high. In the category of employees, 41.29% have said it is more or high. When gender-wise analysis is made among the male participant in the survey 49.76% have said it is more or high and in the female category 46.03% people have said Metro fare is more or high. Thus almost 50% of the respondents felt that the fare in Metro is more or high compared to other modes of transport.

COMPARISON OF METRO FARE



6.10 Peak hour problems:

To ascertain the problems during peak hour a question has been posed to the commuters. 50% of the respondents have confirmed that they experienced during peak hours while 13.9% have said they have no problems while 29.08% people remained neutral by opting for neither agree nor disagree. 6.52% have not given any response to this question.



6.11 On social visits/shopping/holidays/festivals – how do you go?

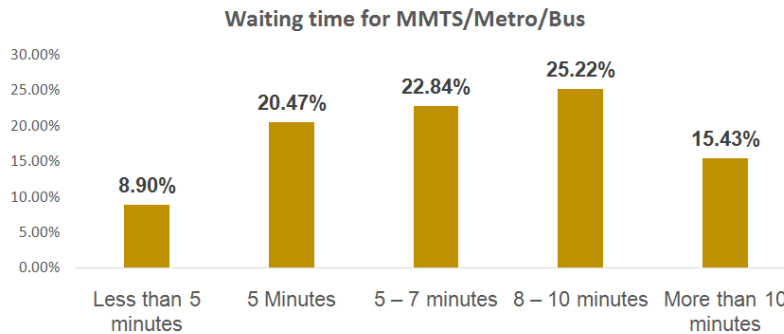
As the responses indicate about 68% of the respondents go by either two-wheeler or four-wheeler, which must of their own.

By walk	-	6.52%
By two-wheeler	-	42.13%
By four-wheeler	-	26.4%
Auto/sharing auto	-	10.97%
Cab	-	11.86%
No Response	-	2.07%

6.12 Waiting time for MMTS/Metro/Bus

More than 40% of the people wait for more than 8 minutes and among them 15% of the people wait for more than 10 minutes. This indicates need for increasing the frequency of public transport.

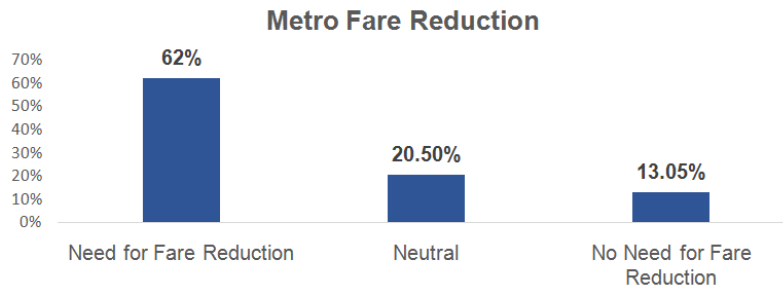
Less than 5 minutes	-	8.90%
5 Minutes	-	20.47%
5 – 7 minutes	-	22.84%
8 – 10 minutes	-	25.22%
More than 10 minutes	-	15.43%
No response	-	7.12%



6.13 Metro Fare reduction:

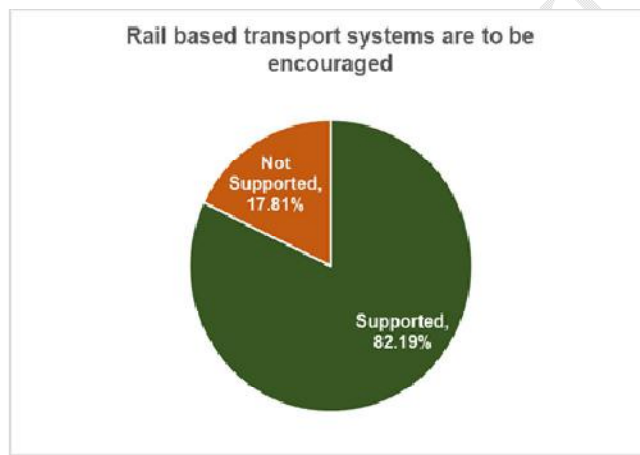
A question was posed “Do you think that any fare reduction is needed in metro rail?”. A similar question was also earlier asked “Is the fare by metro comparative with other modes of transport?”. About 62% of the respondents have answered that there is a need for reduction of fare while 20.5% remained neutral. 13.05% people did not feel any need for fare reduction, while 4.45% have not indicated any response. When this data is co-related with the responses to earlier similar question,

majority of the respondents feel that the fare in metro requires a review and move it towards lower side.



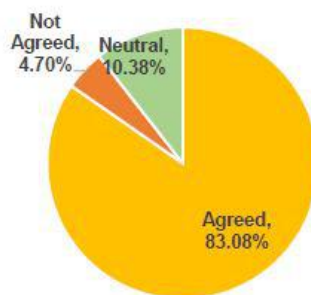
6.14 Rail based transport systems are to be encouraged in view of safety considerations:

A overwhelming percentage of people – 82.19% have supported that rail based system is to be encouraged.



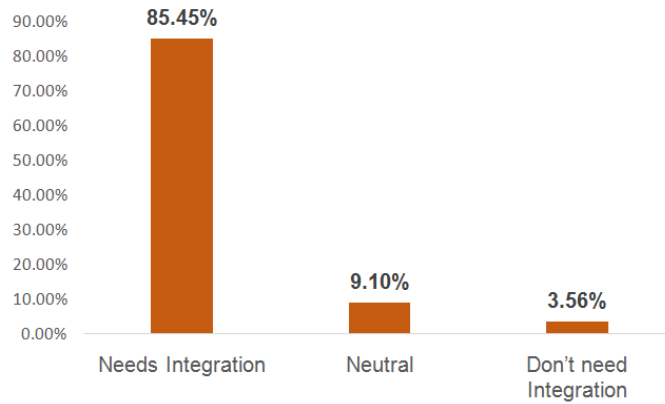
6.15 Rail based transport systems are to be encouraged in view of fuel efficiency:

83.08% of the respondents have agreed with the concept that rail based systems needs to be encouraged in view of their better fuel efficiency. 10.38% remained neutral, 4.7% did not agree and 1.78% have not given any response.



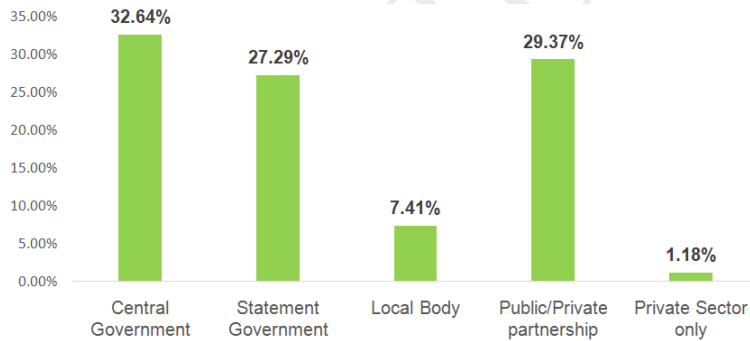
6.16 Integration of various modes of transport:

85.45% of respondents agreed that there is need to be integration between road transport and rail transport consisting of Metro and MMTS, while 9.1% remained neutral and 3.56% did not agree and 1.78% did not give any response.



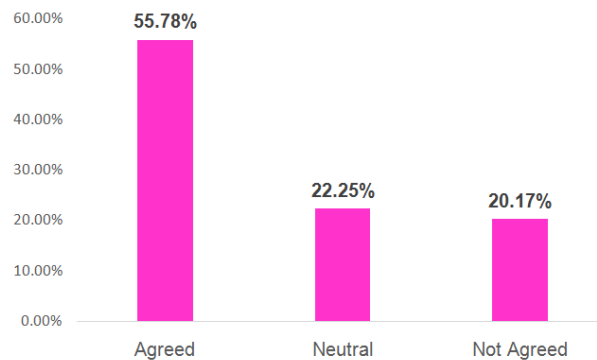
6.17 Funding of Urban transport projects:

Central Government	-	32.64%
State Government	-	27.29%
Local Body	-	7.41%
Public/Private partnership	-	29.37%
Private Sector only	-	1.18%
No response	-	2.07%



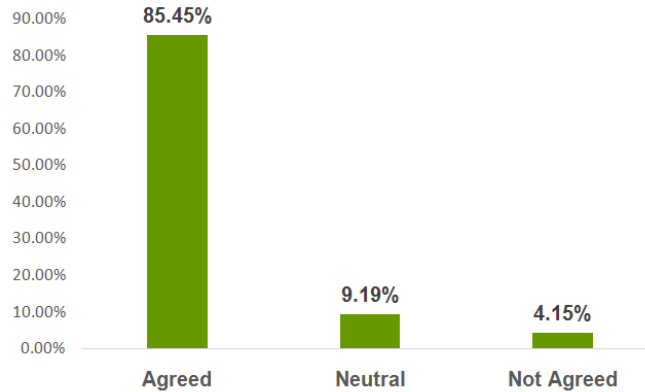
6.18 Users should bear the cost:

55.78% have agreed with the suggestion that the cost for providing urban transport should be fully met by the passengers without any subsidy from any agency, while 22.25% of the people remained neutral, 20.17% have not agreed with the suggestion, while 1.78% have not given any response.



6.19 Encouragement to rail-based system:

85.45% of the people have agreed with the suggestion that in view of the safety environmental and energy considerations, rail-based transport systems are to be encouraged while 9.19% have remained neutral. 4.15% have not agreed with this suggestion, while 1% have not given any response to this question.



6.20 Suggestions received to the open-ended question – “Any other relevant information /suggestion you want to bring to light in brief”. The suggestions received are perused and segregated and enlisted below:

- 1) Bring the metro fares to affordable level.
- 2) i) Last mile connectivity is needed.
- ii) Other modes of revenue must be generated than fares.
- 3) i) Encourage public transport to reduce traffic problems.
ii) Low prices for public transport encourage people to travel in them instead of own vehicles.
- 4) Frequency of buses is very low, increase the number of buses.
- 5) Roads should be widened to reduce traffic.
- 6) Introduction of Unique Smart Travel card and to bring all modes of transport system under one domain.
- 7) Increase of frequency during special occasions.
- 8) Introduction of ticket booking application on mobile like book my show.
- 9) Women safety assurance is lacking during peak hours. Theft and abusive behaviour control have to be set up.
- 10) Electrical vehicles should be encouraged to reduce pollution.
- 11) Improvement of parking facility.
- 12) Public private partnership is efficient.
- 13) More buses should be provided to reduce waiting time.
- 14) Integration of RTC, Metro Rail/MMTS to save travel time.
- 15) Arrange shuttle cabs to nearest bus stations, ATM Machines at metro, Online ticketing.
- 16) Increasing coaches during peak hours and decrease fares in 4 – 14 kms.
- 17) Provision of canteen and washrooms at stations.
- 18) Benches and toilets to be provided at Metro stations.
- 19) All Government offices and important business centres should be covered either by MMTS or Metro Rail.
- 20) People using own vehicles should be taxed more.
- 21) Encourage use of bicycles.
- 22) Mini buses connecting metro / MMTS stations to residential areas to be introduced.
- 23) Metro rail should be extended to some more areas.

- 24) Combined ticket and season ticket to be introduced for metro / MMTS.
- 25) Thickly populated areas which are left out of any connectivity of MMTS/Metro like Malkajgiri should be connected.
- 26) Extension of Metro to Alwal and Hakimpet.
- 27) Provision of medical assistance. Police/security personnel in ladies compartment.

7. ANALYSIS AND DISCUSSION:

The study has thrown interesting results elucidating user requirements, which when addressed comprehensively will definitely result in popularising the public transport systems of Hyderabad.

i) The present study has revealed that there are first mile and last mile issues, which require attention and suitable solutions. To reach people to the Metro/MMTS stations some feeder services are required at originating point and destination points. They could be in the form of some mini bus services. Another important facility that is required is parking at Metro rail stations. L & T Metro with the involvement of State Government (UMTA) through HMRL should earmark sufficient space at Metro stations for parking especially of two wheelers. This would facilitate and contribute towards increased ridership of metro rail by attracting two-wheeler riders to Metro, occupation of road space gets that much reduced and eases the congestion on the roads. This would have other environmental co-benefits in reducing the carbon emissions and bring down the pollution to low levels, which are reaching hazardous levels.

ii) Another area where there is overwhelming opinion in its favour is integration of public transport services like bus, MMTS, Metro with provisions like common pass/ticket etc. Since sharing of these common revenues among the service providers is a contentious issue which may take time to sort out, HMRL has taken initiative to provide a smart card, which can be utilised for travel on bus/MMTS/Metro rail.

iii) The survey had indicated that majority of commuters, about 60%, consider Metro rail fares high and suggest them to be reduced. As the financial health of service provider, L&T Metro Ltd, also need to be kept in mind, which is essential for continued, efficient and comfortable services of Metro rail on the long run, experts and Government need to address this issue at micro level as it has ramification for sustainability of Metro rail.

Originally it was envisaged that L&T Metro would garner revenues in the following manner: -

- | | | |
|--|---|-----|
| a) From fare box | : | 45% |
| b) From Commercial exploitation of land allotted to them as per concession agreement | : | 45% |
| c) From commercial advertisements | : | 10% |

After completion of the project lines and commencement of service on all sectors and completion of commercial properties and their utilisation only the exact revenue potential of the project will be clearly known. This may take a few years. Then only this issue could be adequately addressed and a final view can be taken. If the popularity of metro and its increase in ridership is any indication, the commuters are willing to pay the fare at prevailing rates. However, they expect that all trains run as scheduled and the facilities like parking, safety, toilets, catering etc., are augmented and maintained. This could be seen in the response to the questions that users should bear the cost, almost 56% of the Respondents have agreed that users should meet the cost of provision of urban transport.

iv) There is overwhelming response, more than 80% of the respondents are in favour of the rail based public transport system in view of safety, environmental and energy considerations.

v) During the peak hours, additional services are required to be provided. In the same manner during festivals and special occasions like cricket match, public meetings etc., services should be suitably increased.

8. FINDINGS AND CONCLUSIONS:

- i) With increasing population, the pressures on the urban infrastructure are being increased.

- ii) Such pressures are leading to deteriorating quality of life in urban areas.
- iii) Only a sustained and concerted effort by all the agencies involved, with special focus on sustainability and long-term growth can meet the demands of urban life.
- iv) For developing such an approach there needs to be a holistic synergism among the various agencies involved in urban development including the town planners and Municipal Corporations.
- v) Urban transport's importance in increasing the ease of living in urban areas has been well stated. In the early stages of development and while planning the expansion of cities, the concept of 'Transit Oriented Development' shall be scrupulously followed.
- vi) The unique challenges facing urban transport like congestion, pollution, financing and administration required special focus with innovative approach by the use of engineering and technological solutions.
- vii) Urban transport in Hyderabad has its own unique problems and prospective solutions. Chief among are lack of space for expansion of roads, lack of oceans and seas surrounding the city, lack of inland water transport support, over-dependence on road transport, lack of dedicated funding for developing alternative transport modes.
- viii) We can see that the initiatives made in the last 2 decades like MMTS/Metro Rail, construction of fly-overs, outer and inner ring roads etc., have yielded fruitful results, but they are not enough to meet the future needs.
- ix) The administrators need to build on the past initiatives and improve them using new technological advances.
- x) From the research data it is clear that people of the city are suffering from the ill-effects of urban transport congestion and are ready to do their bit for improving the transport situation.
- xi) While majority mention that investing in Metro rail type solutions is the need of the hour, they are also quick to point that investing in any one of the solutions will not yield positive results.
- xii) Only by investing in all types of transport can we ensure that transport in urban areas can deliver last mile connectivity, which eliminates the need of private transport.
- xiii) People are ready to pay for such a system not necessarily with subsidies from the public sector. But they are expecting standards in delivery of such services with full accountability.
- xiv) People suggested for integration of various transport modes. However, they preferred primacy of rail-based systems because of their dependability, safety and lack of pollution.
- xv) By keeping the above points in focus, we have to move towards transport systems, which are accessible, affordable, environment friendly, energy efficient, dependable and safe. Such systems will not only make the city livable in the present and remain as a backbone for sustainable urban growth.

9. A WAY FORWARD:

The following steps are required to be taken:

- i) **Comprehensive Transportation Study** – There is an imminent need for comprehensive transportation study for Hyderabad Urban Agglomeration for obtaining credible, reliable and accurate data pertaining to the movement patterns including issues of mobility in first and last mile connectivity, which shall be useful in further planning of the transport systems.
- ii) The task force which has already been set up to study modes of transport for IT corridor for Hyderabad shall submit their findings and recommendations immediately so as to facilitate planning of expansion of Metro rail and initiations of other steps like Mono Rail/Tramway, E-Vehicles etc. Such study should keep in view the requirements for the next 50 to 100 years.
- iii) **Preparation of City Development Plans (CDP)**. The local bodies in Hyderabad should formulate a CDP in accordance with the recommendations of Task Force and keeping in focus the concept of 'Transit Oriented Development'. All proposed projects by ULBs were required to be in tune with the city development plans.
- iv) **Introduction of Common mobility card for Hyderabad commuters:**

The Govt. of Telangana is planning to introduce a common mobility card for the commuters who use metro train, RTC buses and other transport systems for capital city Hyderabad. After the introduction

of card, the commuters will be eligible to travel by Metro Rail, MMTS, TSRTC buses, autos and other private vehicles like Ola, Uber, etc. They do not need make payments in cash for any of mode of transport facility. Simply, they have to swipe the card for arranging payments digitally. This need to be implemented expeditiously partnering all stake holders.

v) **Resource Mobilization** – a) Tapping private source of capital through Public Private Partnerships-Instances of Hyderabad metro should be better implemented in other projects using the experience of such PPP models. b) Setting up the National Urban Transport Development Fund as proposed in the Ninth Five-Year Plan, c) Tax exemptions for urban transport projects like Metro etc.,

vi) **Transferability of best practices** Several state governments and urban local bodies have come up with innovative ideas to plan and implement projects to improve urban mobility in their cities that have resulted in significant benefits to the users. The state government should establish a standing committee to continuously study the best practices of other state and international governments and work out a plan to implement the same here.

vii) **Cab sharing:** government should incentivise cab aggregators and cab owners to encourage travellers to use sharing facility so as to ease congestion and decrease pollution. Employees can also use car-pooling facility with their co-workers using each other's vehicles on alternate days. Also, private organisations which provide cab facility to their employees should collaborate with other companies to rationalise their transport routes so that minimum number of buses can be utilised.

viii) **Infrastructural support:** State government should incentivise private investments into urban transport by giving tax benefits, subsidised land allocation, longer contract periods etc.

ix) **Development of corridors:** For congested corridors, which are not suitable for rail-based mass transport systems, upgrading of existing bus systems is the only possibility to enlarge the overall transport capacity.

x) **Metro Rail** - Extending support to the concessionaire – L&T Metro Rail (Hyderabad) Ltd – by sorting out the outstanding issues will go a long way in expeditious completion of the remaining sections of project and their operation. Further expansion of Metro to other areas like International Airport, need to be studied and implemented expeditiously.

BIBLIOGRAPHY & REFERENCES:

- 1) Dissertation submitted in Partial Fulfilment of Requirements for the Post Graduate Programme in Public Policy and Management to Indian Institute of Management, Bangalore by the author of this paper with the title "Strategic Interventions at Policy Level and Inter-Institutional Linkages for Sustainable Urban Passenger Transportation Systems in India." (2003-05)
- 2) Telangana Today Web - 29.5.2019
- 3) Acharya, S. Motorization and Urban Mobility in Developing Countries: Exploring Policy Options through Dynamic Simulation. *Journal of East Asia Social Transportation Studies*, 6 (2005), pp. 4113-4128.
- 4) Calthrop, E., Proost, S. and Dender, K. Van, Parking policies and road pricing, *Urban Studies*, 37 (2000), pp. 63-76.
- 5) Cohen, B, Urbanization in Developing Countries: Current Trends, Future Projections, and Key Challenges for Sustainability, *Social Technology*, 28 (2006), pp. 63-80.
- 6) Paulose N. Kuriakose, National Transport Policy of India: Organization, Issues, and Bottlenecks for Implementation, *Institute of Town Planners, India Journal* 10 x 4, October – December (2013). pp. 59-70
- 7) Pucher, J., et al, The Crisis of Public Transport in India: Overwhelming Needs but Limited Resource. *Journal of Public Transportation*, 7 (2004), 4.
- 8) Pucher, J.; Buehler, R, Making Cycling Irresistible: Lessons from The Netherlands, Denmark and Germany. *Transportation Revaluation*. 28 (2008), pp. 495-528.
- 9) Sreedharan, Rail based Urban Transport, *Indian Journal of Public Administration*, 3, 8 (2001), pp. 45-57.
- 10) Draft Concession Agreement for Hyderabad Metro Rail (MRTS) Project.
- 11) Metro Rail Policy-2017, Government of India.

- 12) National Transport Development Policy Committee (NTDPC) – Final Report.
- 13) Urban Transport – National Transport Development Policy Committee-2013 (NTDPC-Vol.03 Part 2-Ch 05. Indd 388)
- 14) <https://hmrl.co.in/>
- 15) <https://tspcb.cgg.gov.in>
- 16) India Infrastructure, November -2014; Page 42
- 17) Construction Opportunities, April – 2017 – Cover Story.
- 18) NBM & CW, August-2016 – Pages 58 – 62.



P. Ganeswara Rao

PP MAN.0533, Research Scholar, Rayalaseema University, Kurnool, Andhra Pradesh, India .