

The problems in Public bus transportation system: Assessment by passengers and transport authority, Aurangabad, Maharashtra.

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Abstract -The aim of the research topic is to understand current problems of Aurangabad (MH) city bus transport system from passenger's response and Transport authorities view point. Public bus transport system lacks in management and connectivity. Daily user finds it unattractive option, which causes increase in individual motorized traffic, noise pollution, Environment sustainability, loot from Auto rickshawalas.

The study shows time consumption, connectivity in city, no timetable for buses, these are important problems which makes public bus transport unattractive option. These factors vary according to user's educational status, sex, age and any specific part of city with topographical condition. Mediocre bus stops, non-usable pathways to the bus stop, no schedule, poor bus quality contributes in decline of the Public bus transport system.

Key Words: Public bus transport, survey, social network, user behaviour.

1. INTRODUCTION

1.1 Background:

Transportation system is a spine of any City. Mobility in metropolis occurs with the help of transportation system and its related services. Big amount of financial resource and land area allied with this, so Public transport system become main element for mobility in the city. It connects work spaces, join and simplifies family life which helps in social networks. [1]

Bus services are used to be considered as the major mode of public transport in the city of Aurangabad (MH) in (2007-2010). AMC (Aurangabad Municipal Corporation) introduced new Public bus transport system called AMT (Aurangabad Municipal transport). After 2010 because of shortage in Public transport fund and bus services were running in loss, the operations of AMT bus service stopped. Again in 2011 MSRTC decided to run city buses, but this bus transport has as poor bus condition and terrible service. Bus condition, safety issue, expand in personal operators (Rickshaw), difficulty to reach bus stops of passengers and lack of security makes the bus transport system as the most unusable option for city. [2]

Adding to that, Lack of timetable on the bus stop create confusion. This mismanagement causes traffic on the streets, arrival of multiple busses at same time, disagreements between the bus operator and passengers. Stopping busses in the middle of the road on passenger's demand causes accidents. observations shows pedestrian access to bus stops haven't considered in planning, amenities and infrastructure not enough. Women's safety, security, no street lights, forcing users to avoid public transport. [1]

There is need of

providing appropriate driver training to bus drivers. Traffic Police needs to be strict by rules. government authority lacks taking control of whole scenario. private transport (Autorickshaw) takes advantage of the situation.

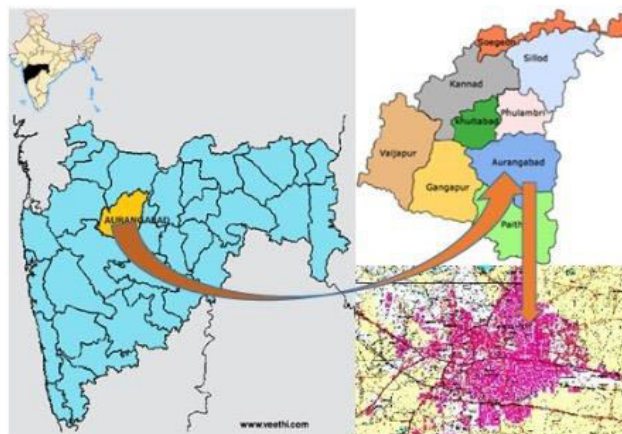


Figure 01: Aurangabad (MH) City Geographical location [7]

1.2 Objective of the study

This research paper includes two main objectives:

- 1) Observe existing bus problems in the city from day to day user point of view.
- 2) How Local authority handles Public bus transportation system.

1.3 Research questions

- 1) What are the principal troubles in public Transport sector?
- 2) What are the elements causes problems in service quality?

2. THEORETICAL FRAMEWORK

In the theoretical framework there are some concepts and some understanding of the topic which will support the research methodology. Some concept already been given in research question for helping further out. [1]

2.1 Urban transportation

The year 1970 there is always connection between the urban form, population growth and transportation science. There is bridge between the city transport and city structure. The user / people respond when user travel the place by walking it indicate the city structure is compact. The transport system of the city is very strict due to its land use planning like commercial area, residential area, office area. In the 19th century after industrialization the railway network starts growing. Which change the scenario of work home distance. Now people can travel using these transports further to home in short period of time. Which also changes the city structure and separation of Residential area and commercial area started. After the world war 2 USA making and sailing car for the people as non-public transport.

The relation between transport and urban formwork given below:

Period	Transport	Urban formwork
Pre-industrial	Pedestrian, draught animal	Very Compact
Early industrial	Electric tram, street car, public transport	High density suburbanization, satelliteform, especially in developed cities
Industrial	Motor bus, public transport, early cars	Lower density suburbanization, industrial
Post industrial	Towards universal car ownership	Low density suburbanization, widespread functional decentralization

Table no. 01 Source: (Herbert & Thomas, 1997) [1]

In this urbanization classism between people formed with their income and vehicle owners. The cities were developing rapidly with that road network too but growth in vehicle ownership increase rapidly. In the third world cities the rapid development of cities formed by the migration of people in search of job and better lifestyle. Urban planning shows the distance between the Work and home in the city plan. The main purpose of providing public transport in the city is access. But the land for the road network is below average for current city traffic. Problems of Public transport and chaotic city network, people in the city faces major problem of social connection.[1]

3. STUDY AREA

3.1 Introduction

Aurangabad (MH) city knows as ‘City of gates’. The city has historical 52 Gates, but only 13 have survived over a period of time. Aurangabad becoming one of the fastest developing cities in Maharashtra. Major attraction of Aurangabad (MH) because of its historical places like Ajanta-ellora caves, Bibi ka makbara . for tourists. Migration of people from Rural areas increased due to development of Industrial areas and search of Better lifestyle, education, work .The city is surrounded by hills on all directions. Population of city 11 lack (2011). In area of 139 square km. &8400 people per km density.[3]

Aurangabad is the capital of Marathwada region including political background, cultural background and historical capital. Aurangabad city has experienced organic growth and planned development at the same time. Due to which road networks are not up to speed of development which create traffic problems in the city. The problems like bad condition of roads, reckless drivers, traffic sign ages, no monitoring over the transport system . After this problems user of the public transport system faces the problems like physical stress and financial losses in terms of man hour while travelling on working days. Due to such problems people are going towards the private transport operators, to save time as

well as to avoid physical stress, for commuting between work and home. [3]

3.2 Types of city transportation:

Mainly Aurangabad city divided into 3 different Govt. organization, Aurangabad municipal corporation, CIDCO and MIDC.

Transportation divided into three main parts :

1. Air
2. Rail
3. Road

Also including **Public transport** and **Private transport** [4]

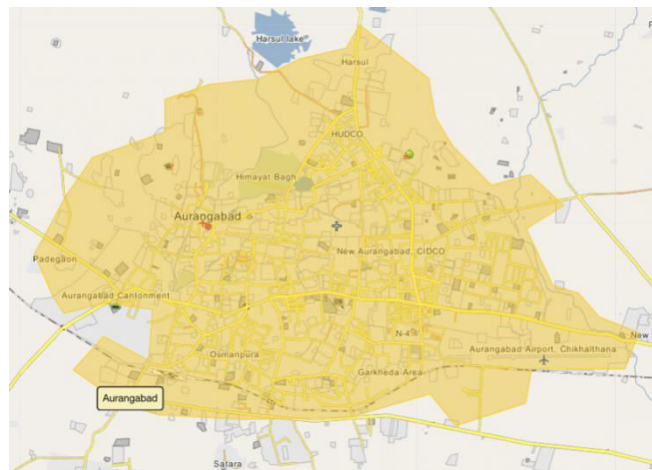


Figure 02: Aurangabad City map [5]

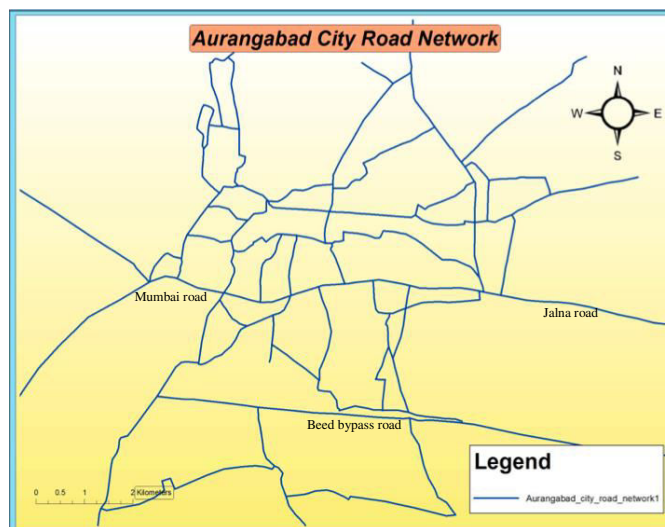


Figure 03: Aurangabad City road network [5]

3.3 Urban transport policy of India:

In year 2006, the National Urban Transport Policy (NUTP) was introduced as a guideline for transportation planning in cities of India. Introduced giving the focus on pedestrian than vehicles in the city, also more road spaces, public transport system also other mode like cycling, walking .Cities with a population of 10 lakh or more are expected to establish a Unified Metropolitan Transport Authority and an Urban Transport Fund to manage financial resources for all transportation projects. This will ensure that each agency works in coordination and follows an identical vision.

Key objectives of policy enforced on cities:

- Safety and convenience offered to pedestrians, cyclists and public transport users.
- Reducing usage of personal vehicles
- Our transportation infrastructure must be is universally accessible
- Road fatalities should be drastically reduced
- Ambient air quality should meet or Central Pollution Control Board norms.

Need to Offer 50% of the cost of development of project at a time such projects are wanted to be taken up through private-public partnerships. The remaining cost of such project development would need to come from the town development authority/State government and a project developer.[6]

Transport authority of Aurangabad lacks in following government policies. There are no control on the system causes chaos. That traffic condition, mismanaging bus service, difficult access for pedestrian, shortage of amenities, timetable . making public transport unattractive option. People moved to private transport option which causing heavy traffic jams, air pollution, noise pollution, increase in cost of fuel .

3.4 Existing scenario:

Bus services used to be considered as the leading mode of public transport in the city (2007-2010). AMC (Aurangabad Municipal Corporation) introduced new Public bus transport system called AMT (Aurangabad Municipal transport). After 2010 because of shortage in Public transport fund and bus services were running is loss, and these buses get stopped. Still in 2011 MSRTC decided to work on city buses,

Transportation system considered as a low status and poor service for the passenger. the reason behind this is the lack of maintenance of buses, bus conditions, increase in private operator service i.e. Rickshaw, problems of reaching to bus stops, a lack of bus information to passengers, lack of safety, lack of timetable . Due to which it seems as public bus transport system is non attractive option for the users in the city. [2]



Figure no. 04 No bus stop covers.



Figure no. 05 Poor bus condition



Figure no. 06 Over speeding



Figure no. 07 No nameplate [11]

3.5 Public transport vs Private owners:

Aurangabad city (MH) works on basic two public

transport system 1) Autorickshaw 2) City bus. Municipal corporation is the mean authority of planning in the city. The

Census	Pop.	%±
1901	36,837	—
1911	34,902	-5.3%
1921	36,876	5.7%
1931	36,870	0.0%
1941	50,924	38.1%
1951	66,636	30.9%
1961	97,701	46.6%
1971	165,253	69.1%
1981	301,000	82.1%
1991	592,000	96.7%
2001	902,179	52.4%
2011	1,171,260	29.8%

presence of public transport system and private transport system direct affect the city traffic condition.

Table 02: Pollution growth in Aurangabad city throughout the year. [7]

Above table indicate the percentage of population increased each year. Lack of public transport leads to using of private vehicle. The population increase cause increase in vehicle on road. Which leads to problems like traffic jam, road accidents, increase in fuel price .

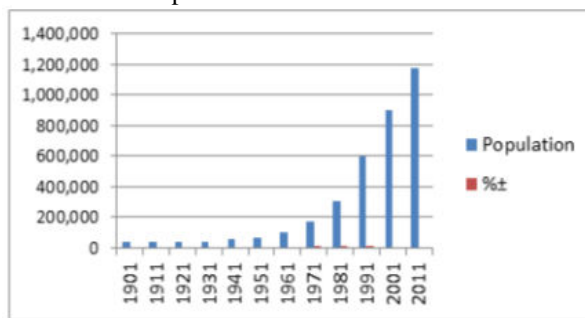


Figure no. 08: Bar chart showing the growth in population throughout the year [7]

In recent years, there's tremendous increase within the population of Aurangabad city, which indirectly affects the transportation. as per Regional Transport Office of Aurangabad, number of two-wheeler 5000, four-wheeler 165 in

Vehicle type	Vehicles registered/month	Total number Vehicles
Two wheeler	5000	--
Four wheeler	120-160	--
Three wheeler (Transport permit)	60-65	16807

every month, where 60- 65 percent three-wheeler auto used for transportation purpose are registered in the city.

Table 03: Vehicle registration table

3.6 Importance of Bus transportation for Aurangabad:

Public bus transportation system as important part of any city. It is very easy to implement the public bus transport system in the city, it required purchase on bus, garage and maintenance facilities and monitoring network. Bus stars along to selected nodes and neighborhood. In the study conducted by an Aurangabad municipal corporation that according to a record of thenumber of buses used to run in Aurangabad were 120 plusby AMT in 2007-2010. Which help toconnect inner part of the city in minimum time, efficiently and in less cost. 2]

3.7 User behavior:

How to reduce use of private transport and also increase in public transport is the major task to promote bus as a public transport. The loyalty of the regular users is the key point how this public transport system works. Factors like customer response, buses running on the road, quality services . Needs to be reviewed time to time.

4. METHODOLOGY

4.1 Qualitative data – Quantitative data:

Research topic business is collaboration of qualitative data and quantitative data. Qualitative method consist by tangible aspect with involves calculation, presentation techniques, geographical condition and its relation. The important statistics which will help to generate hypothesis using the given data and calculation. Helps to derive the initial assumptions of the methodology.

Qualitative methodology also an important part for collection of data.it includes the pointers in the microlevel like society patterns, living standards, daily routine. Also, it connects to people’s emotional connection, feelings, understanding of the knowledge . Also, can be derived from the qualitative. To do that formal/informal interviews, discussion, observation, meetings are involved.[1]

4.2 Quantitative data:

Questionnaire survey

Questionnaire survey is the important method to collect quantitative data.To do that we planned to conduct interviews of 50 respondents in the study area. we have selected study area in the city which are bipolar to each other. One area is purely commercial node which has huge amount of traffic and otheris residential area. It will help to analyze different pattern of users. Kranti chowk area&Shivaji Nagar (Garkheda parisar). We did ask the questions to the people who daily uses \bus transportation for their work or other use.

Open questions and close questions. close ended questions are the multiple-choice question, and open-ended questions for to write something about the related questions. The questionnaire began with the general information of the user, which include Area of study, time required for the travelling, time required go to the bus stop, safety of the passengers, availability of the buses time to time, accessibility, comfort, transportation cost .

The end of the questionnaire includes to thanking all the answering questions and participating in the activity.in the questionnaires remains in short manner to does not contain any time and get more valuable information in short amount of time. From interviews were done face-to-face and some of the interviews done using digital platforms like WhatsApp, Gmail or a simple phone call. [1]

Questionnaire Survey for Bus Users

(The survey is voluntary and completely anonymous. The results of this survey will be used for academic purpose only.)

Respondent No.: _____ Address: _____

Put (✓) mark on selected option

Age	Education	Sex
18-28	Primary	Female
29-38	Secondary	Male
39-50	Graduation	Other
51-59	Post Graduation	

1. What is the distance from your home to bus stop??
a) Less than 1 km b) 1.1- 2 km c) 2.1- 3 km d) More than 3 km
2. What is distance from your home to work place?
a) Less than 5 km b) 5.1- 10km c)10.1- 15 km d) More than 15 km
3. What is your office time in the morning?
a) Sharp 9am b) 9-10am c) 10-11 am d) other flexible hours
4. How many hours do you usually spend to reach at work??
a) Less than 1 hr b) 1.1-2 hr c) 2.1- 3 hr d) More than 3 hr
5. Is it same travelling hours to get back home? If no, then how many hours?
a) Less than 1 hr b) 1.1-2 hr c) 2.1- 3 hr d) More than 3 hr
6. At what time you usually get out from your home to reach office on time??
7. How often do you travel by bus to reach office?
a) Everyday b) 4-3 days in a week c) 2-1 days in a week d) Hardly a day in a week
8. What is the main problem you face in travelling by bus?

Prioritize three most important attributes among the list

Attributes	Priority (Three most important in order)
Comfort	
Safety	
Frequency/Regularity	
Availability	
Accessibility	
Economy (Fare)	
Travel time	
Security(unpleasant episode, pick-pocketing, harassment)	

Figure 09: Survey questions draft (Asked to fill-up by daily users of the bus)

5.0 SELECTION OF STUDY AREA

Kranti chowk

5.1History:

The city of Aurangabad wasinvolved in the freedom battel of

1857. At this time the Nizam of Hyderabad lived in the fort inside the ramparts of Aurangabad city and the British officers lived in the camp outside the fort area. Kranti Chowk, Kala Chabutra and Usman Pura areas were colonized by Hindu soldiers. There was a conflict between the revolutionaries and the British officers in the Hindu army. The rebellion was crushed by the British authorities. Twenty-one rebel soldiers were shot dead. Three revolutionaries were shots. Mir Fida Ali, who shot at the British officers, was paraded with a rope tied to a cannon cart and taken to Kala Chabutra and hanged in public. Rani Lakshmibai Udyan has been set up near this black platform.The Municipal Corporation has acquired

fifteen feet of space for widening the road. Sham Deshpande, Anil Paithankar, Subhash Kumawat, Sanjay Mande and others of Yuva Prabodhan Manch have demanded to save this area instead of damaging it. [8]

5.2 Location:

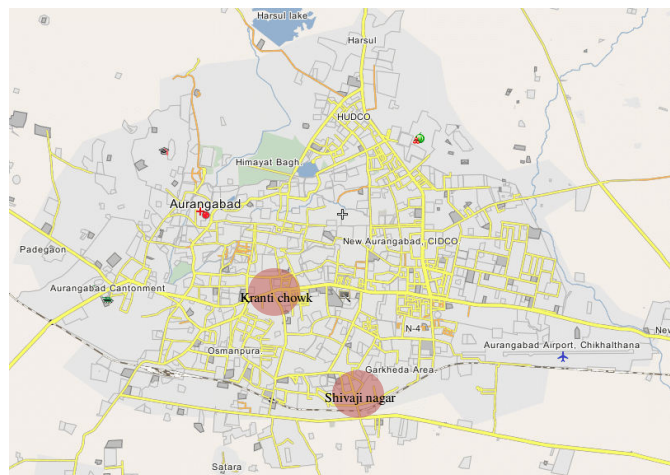


Figure 10: Aurangabad City map
(Source: <http://aurangabad.wikimapia.org/map/> [9])



Figure 11: Kranti chowk map [9]



Figure 12: Shivaji Maharaj statue [10] Figure 13 : Kranti chowk bridge [10]

As per history and current importance of the city Kranti chowk is the major node of the city. From which EAST highway known as Jalna road. WEST highway called Nagar - Mumbai road. NORTH road connected to Aurangpura and old Aurangabad city and SOUTH road connected to Aurangabad railway station. Due to hub location the intensity of passengers going around in city mode than other part of city. Also it has more commercial areas including offices, petrol pump, coffee shops, restaurants, historical places. So different kinds of people visit the Kranti chowk. Due to which there is a need of study in this area and analyze the bus transportation and passengers respond to it.

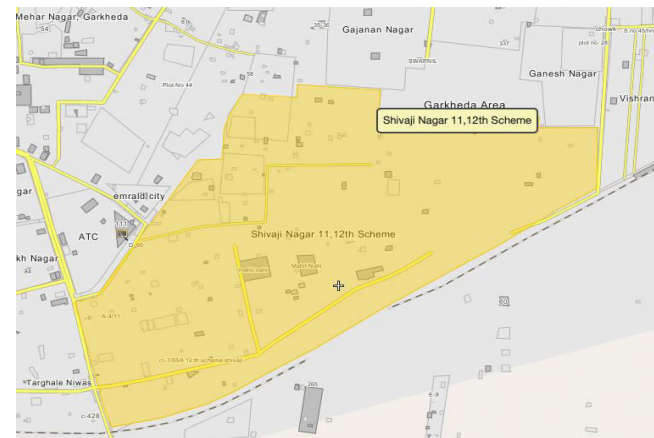
Shivaji nagar

5.3 History:

It is a residential area developed by CIDCO in development of new Aurangabad. They were using neighborhood planning principles to develop LIG and MIG housing for the people working in the area. Also managing work-home distance is fairly connected to nearby commercial areas like Connaught place.

5.4 Location:

Shivaji nagar is located at the south end of the city developed by CIDCO. This area includes residential and Mix use building. There is one bus stop through which passengers connected to all part of the city. Selection of this area to



understand and find out the difference of flow of traffic, passenger type, population. Which will help to analyze the bus transport system in a better manner.

Figure 14: Shivaji nagar map [9]

5.5 Sampling:

After working on the questionnaire, the next step is to do the sampling of the data. We collected all possible data and short period of time with questions to the point. Now to analyze the data we need to divide it into some parts which will help to determine the result. Sampling has been done on the primary respondents' different regions of the city. which will get the correct information and analyze the difference between the two areas and their problems. [1]

Age group	Aurangabad			
	Shivaji Nagar area		Kranti chowk area	
	Male	Female	Male	Female
18-28	4	4	9	5
29-38	5	4	7	4
39-50	4	1	2	2
51-59	0	1	0	1
Total	13	10	18	12

Table no 04: Distribution of respondents (Bus passengers)

Users divided in to age group. The age group of 18-28 are the core users of the bus transport on daily basis. Kranti chowk is important node connect each part of city has more users than Shivaji nagar.

5.6 Response rate:

While doing the survey there are lots of people who help to get the information and some of the people rejected. While conducting this survey I asked total 75 people among which 50 people responded to the questionnaire hence the response rate is more than 50%.

5.7 Qualitative data:

Semi structured

In the semi structured interview, we asked informal question related to topic to the officer in the authority because of they did not have sufficient time so we gone with the informal conversation with ex-officer of transport authority in Aurangabad. We went to their house and ask some informal questions in the conversation to get related information to research topic. Among which topics are connected our government initiative, bus transport for system, future plans . [1]

5.8 Observation:

We stopped at two different bus stop at different time of the day to analyze public pattern, pick hours, changing shift of drivers and conductors, bus condition, bus stop conditions, footpath condition, or Road traffic .

5.9 Secondary data:

The information considered as secondary data collected from newspaper, internet, city roadmaps, public bus stops photos and news reports from the internet of Aurangabad municipal Corporation.

6.0 ASSESSMENT BY PASSENGERS:

6.1 Introduction

The first objective of the research paper is to know daily user experience of bus transport system. Kranti chowk and Shivaji nagar these two areas considered which are bipolar in nature. The study shows very less people prefer bus as primary transport option. the respondent different from each other by its age, gender, its annual income, distance from the bus down to house . Every morning it's a chaos to go to the bus stop and find a bus on time and reach the destination of my time with passengers' safety. Due to which people started going by auto rickshaws. But high fair cost of the rickshaws creates other problems for the user. Rs.40 to Rs. 30 for short distance travel. Those who wants to travel more than 10 km prefer private transport, but private transport causes traffic jams, increased cost of fuel, peak hour traffic . problem. [1]

6.2 Problems in the public bus system

6.2.1 Bus stops

The questionnaire there is the question about distance between the nearest bus stop and users house.70% of the respondents said that their nearest bus stop is within the 1 km and 20% of people said that bus stop with more than 1 km. 30% of respondents say best of located more than 2 km so they use private transport for date today commute.

From the figure number 11 we can analyze that the current situation of the bus stops in the city that there are no timetables, bus stop is not good to stand in, no weather protection, no seats, no ticket counter, no rest stop for the drivers and conductors, no drinking water provided. If the expectations of the user do not match by the bus stop they will not use the bus stop or a bus transport system.



Figure 15: Aurangabad Bus stop [09]

6.2.2 Distance between home and workplace

Aurangabad is very compact city. The work distance is not that long but it takes lots of time due to traffic jam and order issues. Lots of people in the study area have their work place more than 5 to 10 km if they used to use the bus it wouldn't take half an hour. Among all the responders 42% of people from Kranti Chowk work within 5 km and 53% of people were killed in 5 to 10 km and only 4% of people were in 10 to 15 km. In case of Shivajinagar 29% of people work within 5 km, 39% of people work in 5 to 10 km and 1% of people work in 10 to 15 km radius. [1]

6.2.3 Distance and travel time

Time	Number of respondents (%)			Total
	<1hr	1.1 to 2 hr	2.1 to 3hr	
<5km	91.7%	5.6%	2.7%	100% (18)
5.1 to 10km	17%	83%	0%	100% (23)
10.1 to 15km	0%	88.2%	11.8%	100% (9)
>15km	0%	0%	0%	100% (0)
Total	41%	56%	3%	50

Table no 05: Travel time to work / distance to work

6.3 Prioritizing the attributes



Priority Area	Number of Responses (%)			Total
	1	2	3	
Kranti chowk	42.0 %	25.0%	31.0%	100% (23)
Shivaji nagar	53.0%	20.0%	25.0%	100% (15)
Total	48.0%	23.0%	28.0%	100% (38)

Figure 16: Travel time [1]

Table No 06: Travel time according to study area.

6.4 Safety

Safety of the passengers is very important and each and everyone concerned about it. The amount of accident happened due to road traffic in the city is very high. From the survey 29 respondents say that it's a major consideration for the bus Authority to run buses on the city Road. Among all 42% of people gives it a first priority 20% of people give its second priority and 36% of people gives it third priority.

6.5 Frequency:

Frequency of the buses is another important factor to determine how best transport system works after analyzing two different bus stops at two different location I have noticed in that bus drivers and conductors does not follow any time. Buses were delayed by 15 to 30 minutes to schedule time.

6.6 Comfort

Comfort is very important aspect in any public transportation system. passengers need comfort from throughout the journey and the bus

6.7 Security

Security is another important aspect of the transport system. And the bus transport passengers getting much more injury than the private car users, due to bad bus condition, bus stop condition, footpath, running boarding the bus . Also, in woman's cases like snatching bags, sexual harassment, misbehavior staff in the bus. The study will analyses that 60% of female responder's emphasis on the security in the bus.

6.7 Economy

Comparing other modes of transportation in city bus transport system is more affordable than the private cars/ rickshaw. Due to bus condition and its issues, people are not using bus transport system. From the survey we analyze that people are still using bus transport with having problem with the bus service because of its low-cost transportation. The fare from one bus stop the other is fix but sometime people argue with the conductor for the free bus travel. In the study clearly see that these are the very important attributes which are depend on the use this age, gender, its residential location. Also, we can see that the transport policy is not focused on any gender, senior citizen avoids problems in the service. Due

to city infrastructure, road condition, bus transport system it is very challenging to add any non-motorized transportation system like bicycle lanes in the city. [1]

7.0 CONCLUSION

Study shows to observe the current bus transport situation in the city of Aurangabad also with passengers point of view, there reaction. How transport Authority of Aurangabad handling the situation of the bus service in the city.

In findings of this research paper is to observe, the current bus transport situation in the city of Aurangabad from the passenger's view and to find out how transport authorities in Aurangabad. Mainly focus on the daily travelling people by the public transport.

7.1 Major findings

Important attribute of the Bus transport system which causes the problems are the travel time, safety of the passengers and frequency of the buses. From the interviews including age group, sex, location of the user. In the city in the time required for to go from point A to point B is much more higher due to traffic and other technical problems with public bus transport.

No see footpaths were provided considering peoples access to bus stop, handicapped people, senior citizen people . Transport authorities does not support or have any monitoring how buses work on daily basis. including bus repair cost, amenities cost, running bus timetable.[1]

7.2 Final discussion

In this research paper we use qualitative and quantitative data to get results about analysing public transportation system and its problem in the Aurangabad city. To analyse that we have studied two bipolar areas of Kranti Chowk and Sivaji Nagar in the city. There are different surveys formal and informal interviews has been done to find actual problem of the passengers and the transport authority. Semi structured interview also been conducted with the officer in the authority of Aurangabad municipal Corporation. With primary information also we have collected is in secondary information from the internet newspaper and literature.

7.2.1 Problems in public bus system

Objective of the research paper is to observe the bus transportation system its problem from passengers point of you authority point of you. Study shows that passengers are not excited to use bus as their daily public transport system. Because of buses condition, their timetable, and there safety issues . People prefer using their private vehicle for day to day commute to avoid time in traffic jam.

There are other transportation option rickshaw also available but people does not more often due to their high fare, monopoly, it's safety issues, cost issues.

This study also helps us to understand the problems which are attached to bus services like bus stops, timetable schedule, behaviour of drivers and conductors, bus condition. passengers want fully satisfied comfort ride from point A to point B. But the problem is like bus stop located far from their house, no pathways provided, getting late for work due to traffic, pick and drop off the passenger from the running buses. Also this bus drivers are not good drivers and causes accident which is factor important considering passages safety. Enter the rush hour there is a longer wait for the bus to come to bus stop there is no schedule time period for buses in coming and going out of the bus stop. [1]

7.3 How authority handle the situation

Second objective is to find how Municipal Corporation / transport authority handles the ongoing bus transportation system and also the problems of the passengers and their queries. In current scenario the bus system is very unplanned, and mismanaged. Number of buses required for particular route are insufficient, Buses do not follow any time schedule. The monitoring system is not there which causes problems in bus transportation system.

The present situation of Public Transport System of Aurangabad is not at all up to the mark, bad condition which needs to be rejuvenated. In this study only two important nodes have been considered but the situation is worse than this on other routes particularly which are passing by / through the old and busy, market area of the city.

There is a need to study the Urban transport policy of India and set up the system once again with strict monitoring of the policies. All the necessary provisions of the Transport Policies needs to be fulfilled and provided before restarting the Transport Service. Necessary infrastructure is also required to be provided and build up by AMC.

ACKNOWLEDGEMENT

The authors gratefully acknowledge all the responders to the survey and Aurangabad municipal Authority for giving valuable time helping research paper possible.

REFERENCES

1.The Problems in Public Bus Transportation System: Assessment by Passengers and Transport Authority in Dhaka. Moumita sen. [May2016]

URL:

<https://ntnuopen.ntnu.no/ntnuxmlui/bitstream/handle/11250/2449689/Moumita%20Sen-%>

2.Times of India newspaper article Arpita Sharad | TNN | Sep 10, 2019, 04:49 IST

<https://timesofindia.indiatimes.com/city/aurangabad/commuters-unhappy-with-smart-city-bus-service/articleshow/71054972.cms>

3.Tourist places in India. Indian holiday Pvt. Ltd. 2017

<http://www.touristplacesinindia.com/aurangabad/>

4.Wikitravel.org

<https://wikitravel.org/en/Aurangabad>

5.Wikimapia,city guide

(Source: <http://aurangabad.wikimapia.org/map/>)

6.National Urban Transport Policy

<http://www.urbantransport.kar.gov.in/National%20Urban%20TransportPolicy.pdf>

7.Analysis of Present Transport System of Aurangabad City Using Geographic Information System. - Dhananjay B.

Nalawade^{1*}, Sumedh D. Kashid², Rajesh K. Dhupal³, Ajay D. Nagre⁴, Karbhari V. Kale⁵

8.Masharashtra times report

<https://maharashtratimes.com/maharashtra/aurangabad-marathwada-news/kranti-chowk/articleshow/34907826.cms>

9.Aurangabad city map

<http://aurangabad.wikimapia.org/map/>

10.Google image search Kranti chowk

https://www.google.com/search?q=kranti+chowk+images&client=safari&channel=mac_bm&sxsrf=ALeKk01n2ZOjgNRLCyO1vpp9BCaLSSFi8A:1594290450997&source=lnms&tbn=isch&sa=X&ved=2ahUKEwiZgYDg-r_qAhVVWX0KHWeEBrkQ_AUoAXoECAsQAw&biw=1324&bih=770

11.Bus condition

<https://www.flickrriver.com/photos/30580679@N06/sets/72157607319033520/>