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A SURVEY REPORT ON RTC TRANSPORATION SYSTEM

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ABSTRACT

Public transportation plays a critical role in socio & economic development of the country, the vast majority of people in Telangana state travel by public transportation. The study intends to understand the dependency of people on public transportation system & the risks that they are exposed to and to scout for solutions than can reduce the problems, inconvenience faced by common man. It also provides drivers perspective of the RTC services and the required improvements needed for them. This study reveals the plans proposed by the government to improvise public transportation system in Hyderabad.

I. HISTORY AND INTRODUCTION OF TSRTC

RTC was established in 1932 as a unit of Nizam's State Railways – Road Transportation Division. Later by State Recognisation Act, Andhra Pradesh formed with merger of Hyderabad state with Andhra state. On 11 January 1958 RTC was incorporated as APSRTC. The initial fleet consisted of 27 buses and has expanded since to about 22,459 buses as of 31 May 2014.

Current Status of TSRTC

Network connects cities, towns and villages in the state every town has a Bus Depot, which have administration to plan and oversee the operations. It operates in all cities and towns of Andhra Pradesh. It also operates to the neighboring states as per the agreement reached with the respective state bus corporations of Telangana, Tamil Nadu, Karnataka, Pondicherry, Maharashtra, Orissa, Chhattisgarh and Goa.

- Total zones in states are 7
- 3 zones for Telangana
- 4 zones for AP
- State wise total RTC bus depot's are 216
- In that depot's located in Telangana are 94 and depot's located in Seemandhra are 122
- Total buses are 19,416 in this busses allotted to Telangana are 9,064and busses allotted to AP are 10352
- Staff allotted to Telangana is 63,479
- Staff allotted to AP is 70,231
- Credit rupees allotted to Telangana is 2,096Crores
- Credit rupees allotted to AP is 2,631Crores
- If we look at region wise, we are getting 45% of profit from 3zones in Telangana
- And we are getting 55% of profit from 4zones in Seemandhra
- Total profit from Seemandhra is 12Crores
- And 7Crores from Telangana but in future definitely profits will be increased and these profits are used to develop TSRTC.

Present Condittion Of Rtc

If we look at occupancy, the percentage of occupancy of Telangana is more than Seemandra; After partition, there is little chances of loss in Seemandhra RTC, but Telangana RTC will run in profits. And previously government use to develop Seemandra Depot's and busses from the profit of Telangana. Nearly 1300 busses from Seemandhra are departing in Telangana. Nearly 15000 people are going to get jobs in TSRTC.

II. VIEWS OF RTC UNION LEADERS (DRIVERS)

as telangana rtc has already proposed for 14 bus depots in hyderabad and 1depot in karimnagar zone the drivers say that there is a need for increasing number of buses too. based on this account drivers are estimating that there will be an increase in jobs and are expecting increase in salaries on par with state government employees.

III. DIFFERENT TYPES OF SERVICES OFFERED BY TSRTC.

City buses

Initially the city buses very primarily called ordinary buses with green and dark green shades. They were supplemented with few double-deckerbuses in the same color scheme. But in the year 2003 the corporation has

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decided to withdraw double-deckers because of the operational difficulties. The color scheme of the ordinary city buses has also been changed to white and orange gradually from the year 2002.

In the year 1994 a new kind of buses with dark blue and white color scheme called the Metro liners were introduced in Hyderabad similar kind were introduced in Visakhapatnam under the name of City Liners these were instant hit but the passengers had to pay higher for the services which had fewer stops. APSRTC then introduced Metro Express buses whose charges were in between that of the ordinary and the Metro liners. In the year 2002 when the National games were held in the city of Hyderabad the APSRTC complimented the Hyderabad's successful organization by providing new Yellow colored buses for transporting the participants/organizers between the venues and places of stay. These buses were named Veera who was the mascot for the 2002 National Games. Veera is based on Ongole Bull. After 2002 National Games Veera buses are used for Hyderabad Local Transport.

Then came few AC buses called SeethalaHamsa's .But the city regions got a big boost with the coverage of urban transportation under the JNNURM scheme in which the Union Government funds the purchase of buses to be used for improving urban transport. APSRTC has got more than 2000 buses sanctioned under this scheme. Out of these buses 1000 were sanctioned to Hyderabad city region in which 750 were Semi Low Floor (SLF, Ashok Leyland and TATA motors make), 200 Low Floor buses (TATA Marco polo) and 50 AC Low Floor buses (8 Volvo and remaining Tata Marco polo).From 2009 end the JNNURM Metro Expresses with a distinct blue and white color scheme having LED electronic display boards are prominently seen on the roads of twin cities, Vijayawada and Visakhapatnam. It has also introduced CNG buses in some cities viz. Vijayawada and will soon introduce in other major cities and towns. Some CNG buses have started in Hyderabad in 2011.

Current services

Unlike the past there is less standardization in the body structure or the color scheme of a particular kind of buses even leading to confusion among the passengers in identifying them.

IV. DIFFERENT TYPE OF INTERCITY, DISTRICT, AND VILLAGE SERVICES ARE

Deluxe

Previously known Luxury buses have been named as Deluxe. Can be seen in different color patterns but mostly in Purple and white combination.

Super Luxury

Most popular non-AC service between towns and cities and vice versa. Usually in a single predominant color with black windows. The color is usually pink, light Green, Blue, Orange.

Indra A/C [Ashok Leyland]

APSRTC has introduced 155 air-conditioned Leyland vehicles christened ‘Indra' for people who wish to travel air-conditioned buses at affordable fares. To begin with, these buses would be run on Hyderabad-Vijayawada.Hyderabad-Ongole, Hyderabad-Kakinada,Hyderabad-Visakhapatnam, Hyderabad-Nellore, Hyderabad-Kadapa and other routes.

Garuda A/C [Volvo, Isuzu]

When the Swedish Auto major Volvo entered the South Indian Market with its B7R (Volvo 9400) buses APSRTC was among the few operators who have brought the Volvo B7R buses. They have named the bus Services as Garuda. These buses are very fast, comfortable and safe. People have patronized these services even at a higher ticket costs. TPSRTC is operating Garudas between major cities in the state and to cities in the neighboring states like Bangalore, Mumbai. Now the enhanced version B9R, Multivalve with more seating capacity is to come with advanced features.

Garuda Plus A/C Multiaxle [Volvo, Benz]

To provide smooth comfortable riding and faster journey to the passengers of interstate and Intra state, APSRTC planned to introduce Multi Axle A/C buses of Mercedes Benz and Volvo make under brand name of "'GARUDA PLUS". Initially 41 buses (20 Mercedes Benz & 21 Volvo) are planned which meet BS-III emission norm.

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V. TSRTC STATE TRANSPORT UNIT (STU) ACHIVEMENTS

Andhra Pradesh State Road Transport Corporation has been leading by an example. It has a number of firsts to its credit in India.

- First to nationalize passenger Road Transport Services in the country-1932.
- First to introduce long distance night express services.
- First to introduce A/C Sleeper, Hi-tech, Metro Liner, Inter-City Services and Metro Express.
- First to introduce Depot computerisation-1986.

VI. STATEMENT OF THE PROBLEM

TSRTC is the public transportation system that is providing services to all the places in the city. However, there are many problems faced by public from this system. Therefore it is of utmost importance to understand and evaluate these problems to provide solutions so that the public transportation system develops rapidly.

VII. OBJECTIVES OF THE STUDY

- To identify the major factors responsible for accidents.
- To study the growth & availability of transportation infrastructure in Hyderabad city.
- To identify the problem faced by public in TSRTC with respect to Hyderabad city.
- The study is to assess the public transportation system & provide solution for strengthen the condition of transportation modes to be used by all income groups.

VIII. DATA COLLECTION METHODS

The study is based on primary and secondary data. The secondary data is collected from news papers, television news and from different web sites. Primary data is collected through questionnaires designed for public and also RTC drivers.

Sampling design For the purpose of study 100 respondents have been chosen in Hyderabad. A questionnaire was prepared and administered in person to all respondents. The information collected has been edited for reliability and consistency.

IX. TOOLS FOR ANALYSIS

In this survey the following tools were used: ANOVA, CHI-SQUARE, and Percentages.

X. DRIVER RELATED QUESTIONNARE

Testing of Hypothesis / Driver Related QUESTIONNARE

Q1:

Ho:-There is a significant relationship between the problems faced by drivers and the reasons for accidents.

H1:-There is NO significant relationship between the problems faced by drivers and the reasons for accidents.

		Reasons for accidents		
		Non-Compliance	Negligence	Improper Maintenance
Problems faced by drivers	Traffic	21	11	8
	Foot Boarding	10	4	6
	Over Crowded	10	6	24

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SUMMARY	Count	Sum	Average	Variance
Traffic	3	40	13.333333	46.333333
Foot Boarding	3	20	6.6666667	9.3333333
Over Crowded	3	40	13.333333	89.333333
Non-Compliance	3	41	13.666667	40.333333
Negligence	3	21	7	13
Improper Maintenance	3	38	12.666667	97.333333

ANOVA

Source of Variation	SS	df	MS	F	F crit
Problems faced by Drivers	88.888889	2	44.444444	0.8368201	6.9442719
Reasons for accidents	77.555556	2	38.777778	0.7301255	6.9442719
Error	212.44444	4	53.111111		
Total	378.88889	8			

Inference

Since the F calculated value is less than the F critical value we accept null hypothesis. Therefore we conclude that there is a significant relationship between problems faced by drivers while maneuvering on the city roads and the reasons for accidents. We find that traffic is the major problem faced by drivers and a major relation between the improper maintenance of the RTC buses and overcrowded buses as causes for accidents.

Q2:

Ho:-There is a significant relationship between the reasons for accidents and type of automobile causing accidents.

H1:- There is NO significant relationship between the reasons for accidents and type of automobile causing accidents.

	Type of Automobile				
		Two-Wheeler	Four Wheeler	Large Trucks	Trailers
Reasons for accidents	Non-Compliance	11	9	18	3
	Negligence	8	9	2	2
	Improper Maintenance	17	13	5	3

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SUMMARY	Count	Sum	Average	Variance
Non-Compliance	4	41	10.25	38.25
Negligence	4	21	5.25	14.25
Improper Maintenance	4	38	9.5	43.66666667
Two-Wheeler	3	36	12	21
Four Wheeler	3	31	10.33333333	5.333333333
Large Trucks	3	25	8.333333333	72.33333333
Trailers	3	8	2.666666667	0.333333333

ANOVA

Source of Variation	SS	df	MS	F	F crit
Reasons for accidents	58.16666667	2	29.08333333	1.247914184	5.14325285
Type of automobile	148.6666667	3	49.55555556	2.126340882	4.757062664
Error	139.8333333	6	23.30555556		
Total	346.6666667	11			

Inference

Since the F calculated value is less than the F critical value we accept null hypothesis. Therefore we conclude that there is a significant relationship between the reasons for accidents and the type of automobiles causing accidents. We also see that Non-compliance of traffic rules by two wheelers and large trucks as the major reasons for accidents and Improper maintenance by two wheelers and four wheelers also as primary reasons for cause of accidents.

Q3:

Ho:-There is a significant relationship between the working hours a job satisfaction.

H1:- There is NO significant relationship between the working hours a job satisfaction.

		Working Hours		
		7	8	9
Satisfaction	Yes	70	8	2
	No	0	2	18

SUMMARY	Count	Sum	Average	Variance
Yes	3	80	26.666667	1417.333333
No	3	20	6.6666667	97.33333333
7	2	70	35	2450
8	2	10	5	18
9	2	20	10	128

ANOVA

Source of Variation	SS	df	MS	F	F crit
Satisfaction	600	1	600	0.601202405	18.51282051
Working Hours	1033.333333	2	516.66667	0.517702071	19
Error	1996	2	998		
Total	3629.333333	5			

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Inference

Since the F calculated value is less than the F critical value we accept null hypothesis. Therefore we conclude that there is a significant relationship between the working hours and job satisfaction. It is very evident from the data those seven hours of shift gives higher job satisfaction to the drivers.

Q4:

Ho:-There is a significant relationship between the number of trips per shift and the possibility of meeting the assigned trips per shift.

H1:- There is NO significant relationship between the number of trips per shift and the possibility of meeting the assigned trips per shift.

		Number of Trips per shift			
		3	4	5	>5
Meeting the trips	Yes	62	17	6	1
	No	3	3	4	4

SUMMARY	*Count*	*Sum*	*Average*	*Variance*
Yes	4	86	21.5	773.6666667
No	4	14	3.5	0.333333333
3	2	65	32.5	1740.5
4	2	20	10	98
5	2	10	5	2
>5	2	5	2.5	4.5

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Meeting the trips	648	1	648	1.62406015	10.12796448
Number of trips per shift	1125	3	375	0.939849624	9.276628154
Error	1197	3	399		
Total	2970	7			

Inference

Since the F calculated value is less than the F critical value we accept null hypothesis. Therefore we conclude that there is a significant relationship between the number of trips per shift and the possibility of meeting the assigned trips per shift. It is also observed that 3 trips per shift is ideal as the drivers can only meet these many trips due to the constant traffic problems faced by the drivers in the city.

XI. RESULTS AND DISCUSSIONS/ FINDINGS FROM DRIVERS RELATED QUESTIONNAIRE

1. The basic qualification required to get a job as a driver is 7th standard.
2. It is found that 7hrs of work has higher satisfaction among drivers.
3. Drivers are expecting extra benefits from the government such as Government pay scales, Children Educational Allowances, Housing Scheme and Insurance Schemes.
4. Traffic being the major problem, improper maintenance was also found to be another reason for accidents.
5. There is a significant relationship between the reasons for accidents and type of automobile causing accidents. Non – compliance of traffic rules by two wheelers and large trucks was identified as the key reason for accidents.
6. There is a significant relationship between the number of trips per shift and the possibility of meeting the assigned trips per shift. It was identified that 3 trips per shift has proved to be the ideal number of trips per shift.
7. Due to improper maintenance, higher pollution exists.

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XII. SUGGESTIONS

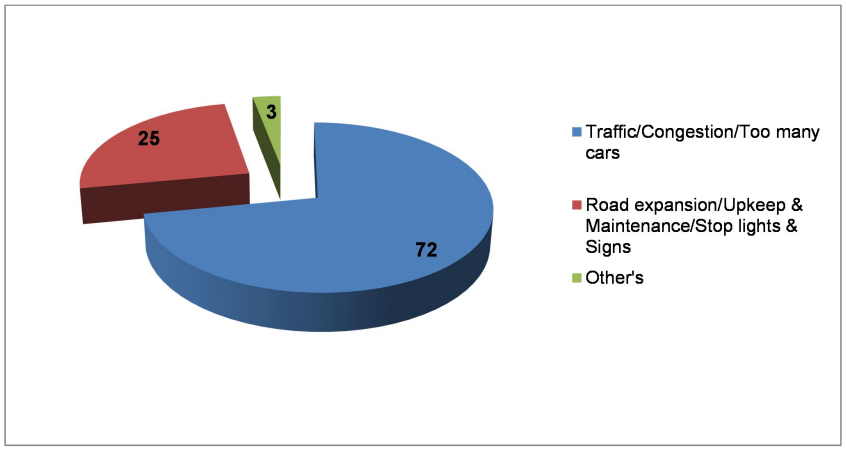
1. Personal Accident Insurance policy and Life Insurance policy must be provided to employees of RTC.
2. Retirement benefits must be considerably increased.
3. Individual performance must be monitored for providing Annual performance Incentive.
4. Drivers and conductors must be given a duty to mandatorily check the condition of bus before starting the bus every day and submit the report.
5. In case of break downs drivers must get immediate help from nearest depots
6. Drivers and employees must be given training relating to behavior to avoid impolite language and unacceptable attitude/behavior towards public.
7. One/ two types of tickets should be issued to the passengers. One for a short distance and the other for long distance travel. This reduces the menial work of conductors and increases the possibility of RTC.
8. It is suggested to use CNG fuel to reduce pollution problems.

XIII. PUBLIC RELATED QUESTIONNARE

Testing of Hypothesis / Public Related QUESTIONNARE

Q1:

Issues related to development in prublic transportation	Percentage
Traffic/Congestion/Too many cars	72
Road expansion/Upkeep & Maintenance/Stop lights & Signs	25
Other's	3
Don't Know/Refused	0



Inference

A vast majority of the people expressed that traffic/congestion/too many cars in the area are the main hindrances for development in public transportation system in the city.

Q2:

Availability of Public Transport				
VeryImportant	Somewhat Important	Neutral	Somewhat unimportant	Unimportant
90	8	1	1	0

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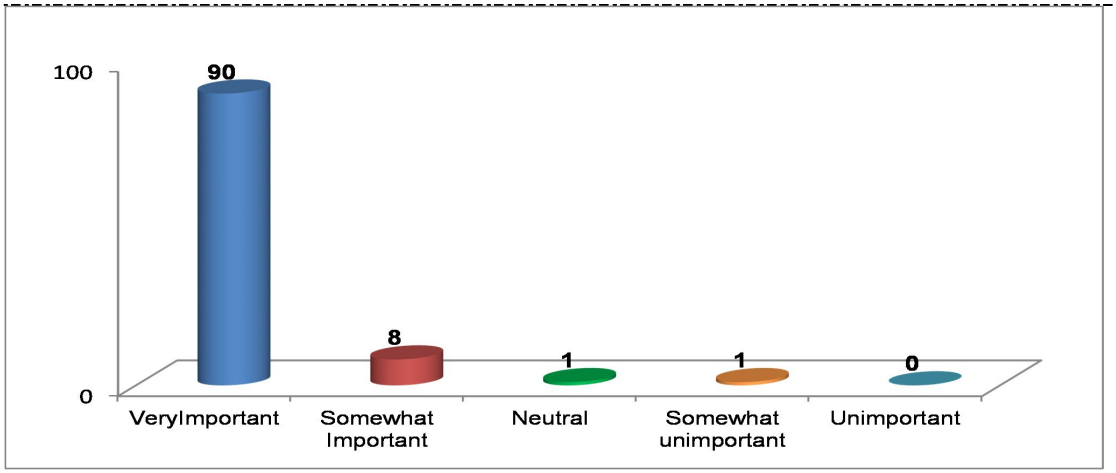
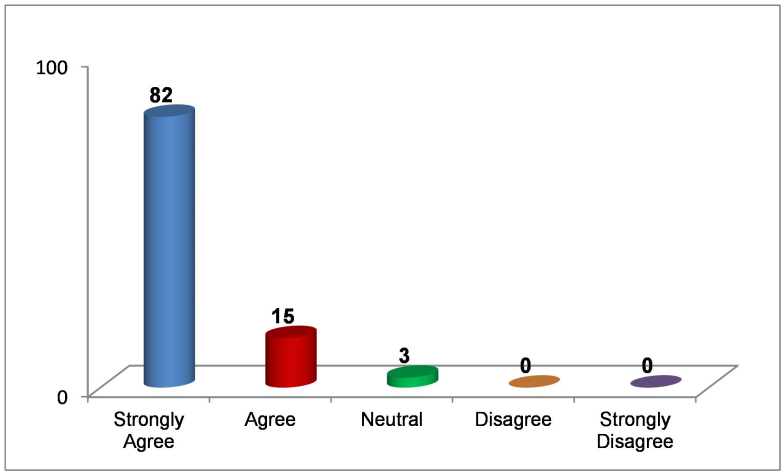


Inference
A vast majority of the people expressed that it is very important to have a public transportation system that is easily accessible and efficient for quick and faster travel within the city limits.

Q3:

Special Transportation for Ladies in college and school areas				
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
82	15	3	0	0



Inference
A vast majority of the people felt very strongly that ladies should be provided with special services especially in the colleges and school areas as the number of working women and college going students have increased in number. Instead of providing very few seats in the bus it would be more appropriate to provide special buses for ladies.

Q4:
Ho:-There is a significant relationship between the need to have a guide at the bus stop and also a computerized system providing details of bus services from that particular bus stop.
H1:- There is NO significant relationshipbetween the need to have a guide at the bus stop and also a computerized

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system providing details of bus services from that particular bus stop.

		Guide to Assist Public	
		Yes	No
Necessary computerized system	Yes	57	29
	No	11	3

Observed (Oi)	Expected (Ei)
57	58.48
29	27.52
11	9.52
3	4.48

$$X^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i}$$

X2 = 0.8345

Inference

Since the x2 calculated value is less than the X2 critical value we accept the null hypothesis. Therefore there is a significant relationship between the need to have a guide at the bus stop and also a computerized system providing details of bus services from that particular bus stop. We clearly see that the public see the computerized system as a necessity as there are times when the guide may not be available or there may be language barriers for the public to communicate with general public or the guide.

Q5:

Ho:-There is a significant relationship between existence of difficulties while boarding the buses and the type of difficulty.

H1:- There is NO significant relationshipbetween existence of difficulties while boarding the buses and the type of difficulty.

		Type of Difficulty			
		Improper Timings	Skips Bus Stops	Unclear Bus Numbers	No Queues
Facing Difficulty while boarding bus	Yes	28	22	5	30
	No	2	4	8	1

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SUMMARY	Count	Sum	Average	Variance
Yes	4	85	21.25	128.9166667
No	4	15	3.75	9.583333333
Improper Timings	2	30	15	338
Skips Bus Stop	2	26	13	162
Unclear Bus Numbers	2	13	6.5	4.5
No Queues	2	31	15.5	420.5

ANOVA

Source of Variation	SS	df	MS	F	F crit
Face Difficulties while boarding bus	612.5	1	612.5	5.88	10.127964
Type of Difficulty	103	3	34.33333333	0.3296	9.2766282
Error	312.5	3	104.1666667		
Total	1028	7			

Inference

Since the F calculated value is less than the F critical value we accept null hypothesis. Therefore we conclude that there exist difficulties while boarding the buses and types of difficulties. It is evident that there are difficulties while boarding and the major difficulty being the improper timings maintained by the buses and the bus drivers skipping the bus stops.

XIV. RESULTS AND DISCUSSIONS/ FINDINGS FROM PUBLIC RELATED QUESTIONNAIRE:-

1. Traffic/congestion is the major problems for public transportation system to work efficiently.
2. Illegible bus numbers make it difficult to identify the bus routes.
3. Separate buses are needed for women at higher frequency especially in the college and school areas.
4. A computerized information system is required at every bus stop.
5. Improper timings and skipping of bus stops are the major problems faced by the public in using public transportation system.
6. Queue system is not followed by the public while boarding the bus.
7. There is no cleanliness maintained in the buses and bus stops.

XV. SUGGESTIONS

1. There is a need to control traffic jams, further expansion of roads and strict implementation of traffic rules.
2. Bus Timings must be followed to avoid inconvenience to the public.
3. Increased special transportation facility to ladies, old age and PHC. It is better to have a queue system to be followed. So that public of all ages do not experience any inconvenience while boarding the bus.
4. It is necessary to implement computerized system and automatic announcement teller machine in every bus stop.
5. There is a need to increase the number of bus stops for every 2kms.
6. First aid / fire extinguishers must be available in buses
7. CC cameras in buses and bus stops should be fixed to control thefts and mischievous activities.
8. Special buses must be provided to the students during morning and evening times to eliminate foot boarding and to control over crowd in buses.
9. Cleanliness should be maintained at bus stops and even in buses.
10. GPS facility must be implemented in all buses.
11. Usage of mobile phones by the drivers must be banned while driving the bus.
12. Number plate's sizes should be increased so that it is visible to all.
13. More number of seats should be allocated in buses to senior citizens and PHC.

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14. Request stops must be implemented for senior citizens and PHC.
15. Single type of buses common bus fares must be implemented.

XVI. CONCLUSION

From the detailed analysis we conclude that for TSRTC to gear up as a hi-tech service provider, major problems should be addressed. The problems faced by general public are traffic/congestion, maintenance of buses, improper timings and availability of buses during peak hours and also in college and school areas. It is identified that TSRTC can overcome these problems by providing greater technology based facilities which were emphatically requested by the public.

It is also concluded that the facilities provided for drivers should be improved for them to provide better service to the public. Drivers have expressed their major problems as overcrowded buses, potholes on roads, and non-compliance of traffic rules by two wheelers, no queue system for boarding buses and foot boarding. It is concluded that the causes for accidents are also the problems as mentioned above. Hence it is important to increase the number of buses to reduce these problems.

The government has assured allocation of fund which will be collected from major companies in the form of a corporate social responsibility initiative to address these issues and has released a statement professing its support in technology based bus stops enabling full-time surveillance through CCTV cameras and police personnel.

XVII. LIMITATIONS OF THE SURVEY

1. The survey was limited to the population of Hyderabad city.
2. The sample size may not be appropriate to analyze the accurate data.
3. The survey cannot be generalized as the opinions from the public and drivers may not be true and biased.
4. This report is only for the information purpose.
5. The survey was carried out with a limited time and resources.

XVIII. References

News papers, Television news, Google.