

**PERSPECTIVE ABOUT BRTS (BUS RAPID TRANSIT SYSTEM) IN
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Bus rapid transit System (BRTS), also called a busway or transitway, is a bus-based public transport system designed to improve capacity and reliability relative to a conventional bus system. The world is

adapting this Modernized form of transportation of passengers. The purpose for such mode of transport is obviously for the convenience, speedy commutation and impressive services. The objective of this study is to analyse the feasibility of the BRTS and the services by conducting the survey by using questionnaire. Acceptance of the system by the public and their enthusiasm is very crucial for the success of the system. A study has been carried out at pre and post launch of BRTS where the time gap between the two survey is less than a year. Factor analysis is calculated to study the loadings and reliability of factor influencing the effectiveness of BRTS. Chi-Square supports the positive impact of BRTS in Hubballi Dharwad city. At the last, the public has also expressed a vision of metro train would have been a better alternate of BRTS.

INTRODUCTION

The first BRTS in India is Rainbow Bus Rapid Transit System in Pune, started in 2006. A green background indicates routes undergoing construction which is in process in 3 states. A blue background indicates routes currently in a planning phase which is going on in 6 states. A yellow background indicates proposed routes that have yet to be planned and is in none of the states. A pink background indicates defunct routes occurred unfortunately in 1 state.

However, the first BRT system in the world was the OC Transpo system in Ottawa, Canada. Introduced in 1973, the first element of its BRT system was dedicated bus lanes through the city centre, with platformed stops and the first exclusive separate busways (termed 'Transitway') for this system occurred in 1983.

Bus rapid transit in India

After a long wait, the Bus Rapid Transit System (BRTS) on the 7.1 km stretch between Sangamwadi and Vishrantwadi in Pune, India was launched. The system is called 'Rainbow', and the high quality, high speed BRT system has been developed with the aim of offering high quality services to commuters. Growth of Bus Rapid Transit in India can be traced to the announcement of the National Urban Transport Policy in 2006 by the Government of India. The cities of Delhi and Pune were the first to start pilot BRT projects in the country, with plans for 257 km and 100 km networks respectively. But with only 5 km operational in Delhi and 15 km in Pune, both these systems were limited in scope and were heavily criticized for their poor quality of implementation. Perceiving the pilot survey, BRT as a modified bus lane did not address the need for BRT-specific service plans, integration with existing bus operations, poor supporting infrastructure and ineffective enforcement measures. By 2014, Janmarg paves the way for a new phase of BRT in India of high quality, expansion of operational length of road and providing connectivity across the city. More recently, another successful BRT system—known as Rainbow BRT—was implemented in various cities. Various studies were carried to understand existing ridership, daily travel patterns, passenger transfers, and waiting times on potential corridors to create a service plan to optimize the system operations. Based on findings from these surveys, the cities decided to create a hybrid system with BRT services operating on dedicated trunk line, and then extending in mixed traffic to outlying areas. The cities also worked on rationalizing the routes of the public bus service, to efficiently complement the BRT system. Whether it is Janmarg or Rainbow, new BRT systems in India are characterized by better infrastructure design and administrative structures with high quality buses with doors on both side ensures smooth operations. Intersection designs that prioritize BRT buses help in improving bus speeds, better enforcement ensures corridors that are reserved exclusively for BRT buses, overtaking lanes at stations to allow for express service and GPS that allows monitoring by the central control centers ensuring reliable service to cater to rising demand.

All these features contribute to make BRT a reliable means of commute in Indian cities. Daily riderships have touched numbers of 150,000, and studies indicate that 27% of private vehicle users have shifted to BRT. Cities are increasingly realizing that they cannot increase road capacity by adding road space in the form of flyovers and elevated roads. With a focus on moving people rather than vehicles, cities are prioritizing sustainable mass rapid transport modes. This new paradigm, coupled with the realization that bus rapid transit systems can increase capacity at a lesser cost, makes the future of BRT in India undoubtedly bright overcoming all the constraints and limitations.

Objectives for The Study

- To study whether BRTS is the delightful journey for the public
- To check whether BRTS will be easily obliged by public
- To study about the factors influencing for acceptance of BRTS
- To analyze whether there is a change in opinion of public towards pre-launch and post-launch of BRTS

Research Methodology

Research type - Descriptive

Sampling Design

Sampling technique – Simple Random Method

Questionnaire was used for the survey. And survey was being conducted before and after launch of BRTS and the time gap between both the period is less than 6 months. The respondents of the survey are the regular commuters and during both the survey the respondents were different, which were selected based on simple random technique. The survey was carried out in Hubballi Dharwad city and there were 50 respondents in each case. The survey is about the perspective of BRTS operating in Hubballi-Dharwad which extends upto 18km.

Analysis and Interpretation

H0: BRTS is not an unfavorable commuter

H1: BRTS is an unfavorable commuter

Particulars	BRTS is favorable for		
	Convenience	Transformation	Modernization
TOTAL Pre-launch	21	12	12
TOTAL Post-launch	28	6	8
TTest	0.452		

The Critical value at the 95% Confidence level is 1.96 and the calculated value of TTest is less than critical value and hence we accept the null hypothesis indicating that BRTS would be favourable for Convenience of the public, Transformation and Modernization of Mode of transport.

H0: BRTS would not be rejected by the public

H1: BRTS would be rejected by the public

Would BRTS would be Success	
Yes	No
36	12
35	13
TTest	0.014

The value at the level of significance of 5% the calculated value of TTest is less than the value of level of significance and hence we accept the null hypothesis indicating that BRTS would be favourable for Convenience of the public, Transformation and Modernization of Mode of transport. There is acceptance for BRTS before and after launch and there is no much difference of opinions.

H0: BRTS is not a failed project

H1: BRTS is a failed project

TABLE OF OBSERVED VALUE			
Particulars	Reasons for Success	Reasons for Unsuccessful	TOTAL
TOTAL Pre-launch	45	15	60
TOTAL Post-launch	49	17	66
TOTAL	94	32	126
TABLE OF EXPECTED VALUE			
Particulars	Reasons for Success	Reasons for Unsuccessful	TOTAL
TOTAL Pre-launch	44.76	15.24	60.00
TOTAL Post-launch	49.24	16.76	66.00
TOTAL	94.00	32.00	126.00

Observed Value (O)	Expected VALUE (E)	(O - E)	(O - E) ²	(O-E) ² /E
45	44.76	0.24	0.06	0.001266
15	15.24	-0.24	0.06	0.00372
49	49.24	-0.24	0.06	0.001151
17	16.76	0.24	0.06	0.003382
Degree of Freedom	1.00	Chi-square value		0.00952

The reason for success is considered are Benefit the public, Benefit for the transport system and Elite the status of state. The table value of Chi-square for 1 degree of freedom at 5% level of significance is 3.841. The calculated Chi-square is much lower than this table value and hence the result support the Null hypothesis concluding that the BRTS would not be a failure and it would be successful for delightful commuters.

H₀: The factors are not negatively influencing the execution of BRTS

H₁: The factors are negatively influencing the execution of BRTS

	<i>Fascinating Look</i>	<i>Mesmerizing effect of would be service</i>	<i>Time saving</i>	<i>Delightful cool journey</i>	<i>Mere demand from the public</i>	<i>Cashless journey</i>
Fascinating Look	1	0.769974	0.434414	0.591327	0.649926	0.604643
Mesmerizing effect of would be service	0.769974	1	0.360976	0.4016	0.687459	0.471102
Time saving	0.434414	0.360976	1	0.377335	0.432274	0.664527
Delightful journey	0.591327	0.4016	0.377335	1	0.638181	0.430685
Mere demand from the public	0.649926	0.687459	0.432274	0.638181	1	0.508524
Cashless journey	0.604643	0.471102	0.664527	0.430685	0.508524	1
column Sums	4.050	3.691	3.270	3.439	3.916	3.679
Total Column sum	22.046	SQT of total column	4.695			
Centroid A	0.863	0.786	0.696	0.732	0.834	0.784

Variable	FACTOR LOADINGS				COMMUNALITY
	Centroid Factor A (a)	(a) ²	Centroid Factor B (b)	(b) ²	(a) ² * (b) ²
1	0.863	0.74412	0.593	0.351519	1.095639
2	0.786	0.617997	0.390	0.152488	0.770485

3	0.696	0.484889	0.490	0.239743	0.724632
4	0.732	0.536499	0.379	0.143657	0.680156
5	0.834	0.695726	0.301	0.090693	0.786419
6	0.784	0.614109	0.436	0.190345	0.804454
	4.695	3.69334	2.589	1.168445	4.861784
Variable	Factor Loadings		Communality		
	Centroid Factor A	Centroid Factor B			
Eigen value	3.69334	1.168445	4.861784		
Proportion of total variance to common variance	0.759668	0.240332	1		
Proportion of total variance	0.615557	0.194741	0.81		

The variables for Factor analysis are Fascinating Look, Mesmerizing Service, Time saving, Delightful Cool Journey, Mere Demand from the Public, and Cashless Journey with their absolute loading of 0.863, 0.786, 0.696, 0.732, 0.834 and 0.784 respectively. Factor loading for individual variance as per the Factor loadings of Centroid Factor B is just 24% and the proportion of common variance is 75% which is supported favorably by the Eigen value which is scored by the Centroid Factor A accounting @3.69334. Communality value for Variable –firstly, Fascinating look and secondly, variable for cashless journey is highest. Lowest is for the variable –Delightful cool journey. Proportion to total variance accounts @ 81% which ranges between -1 and +1 and hence we accept the null hypothesis.

H0: Absolutely there cannot be an alternate for BRTS

H1: Absolutely there can be an alternate for BRTS

	Which can be another best alternate of BRTS					
	Metro train	A/C bus	Replacing with new buses	increase in Ferries of existing buses	Focus for Smart city	More of flyovers
Pre-launch	26	8	15	8	12	20
Post-launch	25	6	10	6	7	13
Total	51	14	25	14	19	33
	TTest	0.199509				

The Critical value at the 95% Confidence level is 1.96 and the calculated value of TTest is little more than critical value and hence we reject the null hypothesis indicating that BRTS not the best mode of transport that is Convenient for the public, Transformation and

Modernization of Mode of transport. The vision of Metro train is stronger as an alternate for BRTS.

CONCLUSION

BRTS was introduced to the public as a time, economy saving project and it turned out to be quite effective and acceptable by the public. According to the survey carried out there was not much difference in opinion during pre and post launch of BRTS. According to the T Test it can be positively concluded that BRTS is one of the successful project. The factors like Fascinating Look, Mesmerizing services, Time saving, Delightful cool journey, inbuilt technological modifications and high safety measures, etc. Are influences for creating demand for BRTS .Factor analysis by using centroid method proves that the above factors bears high percentage of loading that creates impact. Reasons for success of BRTS are the benefits for the society and commuters which overcomes the causes of unsuccessful reviews which are difficulty in operation, less affordable, inconvenient and resist to change. The survey preludes for the lanes of metro train connecting Hubballi – Belgaum in Karnataka state extending to 94km. A well implemented efficiently-run BRTS will also cause citizens to switch travel modes from car to bus, which will further alleviate the traffic situation.

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