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COMMUTER PERCEPTIONS ON APSRTC BUS SERVICES

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ABSTRACT

Bus transport is and would continue to be a predominant mode of Urban Transport System. It is, therefore, essential to improve its efficiency and promote its patronage. In this direction, an understanding of commuter's perceptions about the quality of bus service and their level of satisfaction would go a long way in bringing about necessary improvement. This Paper presents an analysis of commuter perceptions about city bus services, based on field surveys conducted in selected cities of Andhra Pradesh.

1.0 INTRODUCTION

Promotion of public transport solves the imperatives of energy crisis, environmental pollution, traffic congestion, parking problems, increased accidents and road capacity. Among the various public transportation systems, the bus transport remains a predominant and captive mode for many. An idealistic public transport has to serve the community in general and the user and the operator in particular keeping the following important aspects with respect to each.

User oriented aspects

- Increased Mobility
- Increased Reliability
- Reduced Travel Time
- Increased Comfort
- Reduced Accidents
- Reduced User Costs

Operator oriented aspects

- Reduced Capital Cost
- Reduced Operating and Maintenance Costs
- Increased Coordination
- Better Resource Utilisation and Increased Revenue

Community oriented aspects

- Increased Accessibility,
- Reduced Air and Noise Pollution &
- Encouraging the Desirable Settlement

However, the recent change of the role of Intermediate Public Transport (IPT) systems from a mere feeder service to a fierce competitor to the public transportation in general and bus transportation in particular, is of grave concern to the State Transport Undertakings (STUs) and has resulted in heavy commercial losses to them. It is appropriate to mention here that the Study Group on Alternative Systems of Urban Transport had recommended higher shares for mass transit like bus, as city size increases. Keeping in view the energy requirements and the demand for road space, it is absolutely necessary to encourage high occupancy vehicles like buses for carrying more passengers per vehicle requiring minimum space per person-trip.

The success of any STU depends on customer satisfaction thereby increasing the operational revenues. In order to improve its performance, the organisation must be clear about the customer expectations with respect to service and product quality. This can be achieved by

evaluating the Level of Public Transport Service (LOPTS) from the user point of view. Many a time, socio-economic characteristics of the passengers may dictate the mode choice behaviour and therefore it becomes necessary to collect information regarding the socio-economic status of the passengers. This paper attempts to analyse the commuter perceptions about public bus transportation.

2.0 DATA COLLECTION

The following four cities were selected for data collection for commuters travelling by Urban Bus Transport System operated by Andhra Pradesh State Road Transport Corporation (APSRTC).

- Hyderabad
- Visakhapatnam
- Vijayawada
- Warangal

Questionnaires had been designed for obtaining the commuter attitudes towards the mode choice, the socio economic characteristics of the trip maker along with the trip particulars. Six travel attributes and twelve service related attributes have been judiciously chosen to determine the relative importance of travel attributes as rated by the commuter and to find the Level of Public Transportation System (LoPTS) provided by Urban Mass Transport Services, in this case the Bus.

Attitude is defined as the sum total of inclinations and feelings, prejudice or bias, preconceived notions, ideas, fears, threats and convictions of a person about any specific topic. A measure of individual attitudes toward the transportation systems quality is developed from the traveller's perception of transportation system attributes. Attributes are represented by the importance placed on each set of system attributes by the individual traveller for a given trip, and his satisfaction with the existing quality of each attribute. Basic rating scales have been used to capture the attitudes of commuters in this study. Basic rating scales are measurement situations in which the respondent evaluates an object or some phenomenon on a point along a continuum or in a category. It is assumed that the perceived importance of the attributes themselves is a function of characteristics of a group of travellers. The data on relative level of importance placed on various attributes by commuters has been obtained on a 5 point rating scale or categories, which are defined as

1. Not at all important
2. Less important
3. Important
4. More Important
5. Very much important

Similarly, the relative satisfaction derived from APSRTC Bus service with respect to attitudinal variables like comfort, convenience, reliability, crew behaviour, etc. has also been measured on 5 point rating scale, which is defined as

1. Very bad
2. Poor
3. Satisfactory
4. Good
5. Excellent

The opinions are noted down in the printed questionnaires by the trained and qualified student enumerators. Further, limited *on-board* interviews are also conducted by the enumerators in the vehicles of Intermediate Public Transport (IPT) such as Jeeps, Autos etc. With this, it was ensured that both captive and choice riders are captured. While choosing the interviewees, care has been taken to see that the sample represents the total cross section of people, to the extent possible. The sample size particulars are presented in Table 1.

Table 1
Commuter Attitude Survey – Sample Size

S.No.	City	Sample size
1	Hyderabad	4337
2	Visakhapatnam	2217
3	Vijayawada	3683
4	Warangal	2668

3.0 ANALYSIS OF ATTITUDINAL DATA

The direct interview method of the attitudinal surveys with random sampling enabled to capture socio - economic characteristics, travel particulars, importance of travel attributes and degree of satisfaction towards APSRTC bus service. The socio economic characteristics like the gender of the interviewee, educational levels, type of employment and income category have been deduced and presented both in tabular and graphical forms. In the trip particulars, the purpose of travel, weekly trip frequency, their share by RTC and other modes as well as the reasons for not travelling by RTC bus have been analysed and presented as results.

The relative weights for various attributes are quantified using the method of successive categories. In this method, no assumption is made concerning the psychological equality of category intervals. It is assumed that the categories are in correct rank order and that their boundary lines are stable except for sampling errors. The critical assumption is that the distribution of responses to a stimulus is normal on the psychological continuum. The scaling problem is to estimate the values of the categories, or of their limits, along the psychological continuum, and from these reference values to derive representative scale measurement of estimates.

Relative weights of various attributes based on perceived relative importance ratings are obtained using scaling theory of successive categories. The assumption made in this analysis is that the distribution of responses to a stimulus is normal on the psychological continuum. There are two approaches to estimate scale values on an interval scale. In the first approach, values for the limits of the categories are determined. The scale value of each attribute is, then, the median of its frequency distribution on the interval scale. These scale values are considered as relative weights of the attributes. In the second approach the main principle involved in the scaling of categorical judgements is the determination of a central value representing each category rather than a limiting value. That is, the principle is to compute category mean.

Irrespective of median or mean approach to compute relative weights, the relative position of travel attributes is same. In addition to that the first approach leaves the terminal categories unevaluated, while computing scale values, whereas the second approach obtains the mean of the cases falling within each category. In view of this, the second approach, i.e. mean approach is adopted for calculation of relative weights of travel attributes in the present work.

The following are the details of results to be obtained for Urban travel for each city.

- Socio-economic characteristics of Commuters
- Gender particulars
- Educational qualifications
- Employment particulars
- Monthly family income particulars
- Trip particulars of commuters
- Purpose of travel
- Purpose of travel vs. Income
- Particulars of vehicle chosen
- Frequency distribution of trips made
- Reasons for not choosing APSRTC bus
- Travel attribute preferences
- Degree of satisfaction of APSRTC Bus services
- Relative weights of travel attributes
- Relative satisfaction weights of APSRTC Bus services
- Relative weights of travel attributes perceived by different segments of population

- Relative satisfaction weights of APSRTC bus services perceived by different segments of population

The analysis has been carried-out for urban services and is presented for each city. The city wise findings of attitudinal studies are presented in the following articles.

3.1 Commuter Attitude Study of Hyderabad

Socio-economic characteristics and trip particulars of Hyderabad Urban commuters are summarised in **Annexures I and II.** It was observed that degree holders and female passengers prefer bus compared to other modes. Eighty percent of bus passengers are either office goers or students. About 46 percent of commuters make 9 to 12 trips per week. Majority of the commuters prefer other modes because of non-availability of the bus service. Preferences of travel attributes and satisfaction levels of RTC services are summarised and presented pictorially in **Figures 1 and 2.** It is observed from the figures that safety and travel time are perceived as most important travel attributes followed by comfort, convenience and reliability. The relative weights of travel attributes and satisfaction levels of bus services are computed as mentioned earlier. It is observed that passengers are giving first rank to safety followed by time, convenience, reliability, comfort and cost. All the RTC Bus service characteristics except the safety are not satisfactory to the passengers, which is reflected through their negative scale values.

3.2 Commuter Attitude Study of Visakhapatnam

The results of the commuter attitude study for urban travel in Visakhapatnam city show that as in Hyderabad, passengers in this city are also giving maximum weight to safety followed by time and comfort. Commuters perceive RTC as safest mode. They are happy with the number of stops. They feel that punctuality of RTC Buses is very poor, which is reflected in its rank at the bottom among the 12 service factors evaluated.

3.3 Commuter Attitude Study of Vijayawada

As mentioned earlier, detailed analysis of attitudes has been carried out for Vijayawada urban travel. Safety, time, convenience, reliability and comfort are perceived as important travel attributes in the same order of preference. Except seat availability, fare and punctuality, all the other bus service characteristics are having positive scale values. This implies that urban passengers are more than satisfied with all the other service aspects of APSRTC Buses.

3.4 Commuter Attitude Study of Warangal

The results of attitudinal study for urban travel of Warangal city show that urban commuters travel preferences are in tune with other city passengers. However, their perceptions about RTC services are not positive except safety, crew behaviour, comfort and number of stops.

4.0 SUMMARY OF FINDINGS

The objective of the Attitudinal Surveys through direct interview technique is to understand the passenger's perceptions and mode choice behaviour. Since the study is conducted on a sample basis, the pre-requisite for drawing conclusions is that the sample is unbiased, covers the total cross section of the passengers to make sure that the behaviour exhibited by the sample is a true reflection of the behaviour of all the passengers. Accordingly, the surveys were planned and organized with random sampling technique covering all sections of the people travelling by buses as well as other competing modes. The salient features and findings are presented below.

It can be seen from the Tables that the sample covers male and female passengers, people with no literacy to that of highest education, unemployed to those having different types of employment with wide variation in the income levels as well as students and house wives. The survey also covers the travel made for

different purposes as well as those using different modes of transport for their travel. It has been observed that 50 percent to 60 percent of the people are found to make 9 to 16 trips per week on an average, and some people are found to make even more than 20 trips per week. The mode chosen is almost 80 percent with respect to buses, with a marginal percentage of other modes.

It has been revealed in the study that Bus being not available is the main reason for not travelling by RTC Buses. All through the state, where surveys have been organized, safety while travelling has come out as a preferred travel attribute followed by travel time. While comfort, convenience and reliability have been given as preferred travel attributes with lesser weightage, it is revealing that almost all passengers treated travel cost as a non-entity among the travel attributes. When specially questioned for the passengers' degree of satisfaction towards RTC services, people held the opinion that RTC provides maximum safe travel followed by comfort, number of stops and speed. From the passengers point of view, the worst feature with respect to RTC services is its failure with respect to punctuality, and is ranked at the bottom. Out of the set of twelve attributes with respect to satisfaction of using APSRTC buses, more than 50 percent are happy in respect of seven attributes while less than 50 percent of people are not happy with the rest of them. The findings reveal that the travellers are not interested to travel in RTC buses but would like to travel if improvement is made with respect to the attributes like reliability, frequency, fare, and punctuality.

5.0 CONCLUSIONS

Field studies carried-out in four cities of Andhra Pradesh to know commuter perceptions have brought out the following facts duly quantified. There is consistency in the passenger perception with respect to the relative importance of travel attributes. Safety and travel time dominated the set on the top and travel cost coming as the most insignificant of all the attributes. Convenience, comfort and reliability factors have a marginal variation with the passengers' attributes among various cities. However, this is not truly reflected while the degree of satisfaction with RTC services is measured where passengers ranked the fare charged by RTC almost at the bottom indicating that they are not satisfied with the fare structure.

The passenger satisfaction level for safety provided by RTC is number one from a set of 12 parameters, while the punctuality has the dubious distinction being at the bottom

The passengers on the whole have expressed satisfaction to very good against 6 factors out of the set of 12 but indicated that their satisfaction level is very poor and poor with respect to the other 6 factors

The factors that gave a better account of RTC buses are

- Safety
- Comfort
- Number of stops
- Speed
- Crew behaviour
- Convenience

The factor with which the travellers are not happy with RTC include

- Reliability
- Luggage Facility
- Availability
- Frequency
- Fare
- Punctuality

5.1 Suggestions for Improvement of RTC Patronage

From the outcome of the study, suggestions are being made to improve RTC performance to attract patronage from the competing modes.

It is evident from the commuter perceptions that they have worst experience with respect

to punctuality of buses. Truly, this has the rock bottom ranking. Even though, at some places, passengers felt that there was a marginal improvement in punctuality of late, much can be done to maintain the punctuality of services. This, incidentally, reflects on the reliability of services which could positively result in better patronage.

Though, cost of travel is revealed as insignificant attribute. passengers always compare the fare of the competing modes while making the mode choice. Particularly for the short distance travellers, fare being the same, the attraction towards readily available mode is imminent and therefore there is a need to review the fare structure of short distance travel, particularly in the urban context.

The factors about which the travellers are not happy are the frequency of buses and the availability at the required time. Though, it is not possible to provide services to each passenger at his will, there is a need for close monitoring of schedules based on the demand, subjected to system constraints.

When schedules are improper and the availability of the services is not assured, the reliability of the system is at stake. In those circumstances, the passengers are tempted to take the mode readily available. Therefore, efforts should be made to improve the reliability of the service to retain the patronage, if not attracting from the other competing modes.

The organisation should look in to the possibility of operating chartered services between defined origins and destinations for assured patronage. This will definitely improve the image of RTC and have positive impact on bus travel.

Appropriate measures are to be initiated to make the public aware of the role and responsibility of RTC as a public service organisation which should be more transparent in its policies. This will have a better public perception and is likely to improve the patronage.

There is ample scope for improving the crew behaviour in certain situations. They should be ready to help and attend to the needs of the passengers when called for, with courtesy

The bus stops and bus bays should be maintained properly with the necessary information to the passengers and stopping of buses at the designated places. Also, the buses may need better up keeping with regard to neatness to avoid the passengers' aversion towards RTC

All components of RTC have to have introspection and self-disciplining in order to enhance the falling image of the organisation in the public view. This suggestion is prompted based on the interaction of the study team with public at many cities, where the surveys were carried-out.

Annexure I

Socio-economic Characteristics of Urban Passengers(All Cities)

Gender Particulars

Gender	Hyderabad		Visakhapatnam		Vijayawada		Warangal		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Male	2773	63.9	1534	69.2	2616	71.0	1972	73.9	8895	68.9
Female	1468	33.8	664	29.9	996	27.0	679	25.4	3807	29.5
Not Available	97	2.2	20	0.9	71	1.9	17	0.6	205	1.6
Total	4338	100	2218	100	3683	100	2668	100	12907	100

Educational Qualifications

Education	Hyderabad		Visakhapatnam		Vijayawada		Warangal		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Illiterate	222	5.1	171	7.7	275	7.5	141	5.3	809	6.3
Primary	146	3.4	97	4.4	243	6.6	144	5.4	630	4.9
SSC	422	9.7	385	17.4	482	13.1	240	9.0	1529	11.8
Inter	711	16.4	392	17.7	577	15.7	581	21.8	2261	17.5
Diploma	251	5.8	245	11.0	243	6.6	129	4.8	868	6.7
Degree	1651	38.1	618	27.9	1121	30.4	1025	38.4	4415	34.2
PG+	520	12.0	167	7.5	252	6.8	249	9.3	1188	9.2
No response	415	9.6	143	6.4	490	13.3	159	6.0	1207	9.4
Total	4338	100	2218	100	3683	100	2668	100	12907	100

Employment Particulars

Employment	Hyderabad		Visakhapatnam		Vijayawada		Warangal		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Unemployed	252	5.8	203	9.2	354	9.6	243	9.1	1052	8.2
Agriculture	62	1.4	46	2.1	97	2.6	143	5.4	348	2.7
Contract Labour	105	2.4	106	4.8	148	4.0	37	1.4	396	3.1
Private Job	1259	29.0	426	19.2	856	23.2	230	8.6	2771	21.5
Government Job	428	9.9	389	17.5	468	12.7	465	17.4	1750	13.6
Business	256	5.9	174	7.8	366	9.9	167	6.3	963	7.5
Student	1462	33.7	657	29.6	902	24.5	1156	43.3	4177	32.4
House wife	175	4.0	76	3.4	207	5.6	66	2.5	524	4.1
No response	339	7.8	141	6.4	285	7.7	161	6.0	926	7.2
Total	4338	100	2218	100	3683	100	2668	100	12907	100

Monthly Familiy Income Particulars

Income in Rs.	Hyderabad		Visakhapatnam		Vijayawada		Warangal		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
< 2000	241	5.6	305	13.8	284	7.7	355	13.3	1185	9.2
2000 - 6000	1301	30.0	569	25.7	801	21.7	581	21.8	3252	25.2
6000 - 10000	816	18.8	310	14.0	541	14.7	367	13.8	2034	15.8
10000 - 15000	506	11.7	238	10.7	324	8.8	219	8.2	1287	10.0
15000 - 20000	486	11.2	206	9.3	269	7.3	129	4.8	1090	8.4
> 20000	310	7.1	60	2.7	148	4.0	65	2.4	583	4.5
No response	678	15.6	530	23.9	1316	35.7	952	35.7	3476	26.9
Total	4338	100	2218	100	3683	100	2668	100	12907	100

Travel Particulars of Urban Passengers (All Cities)

Purpose of Travel

Trip Purpose	Hyderabad		Visakhapatnam		Vijayawada		Warangal		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Work	2048	47.2	1165	52.5	1756	47.7	948	35.5	5917	45.8
Education	1411	32.5	540	24.3	911	24.7	1199	44.9	4061	31.5
Recreation	106	2.4	136	6.1	156	4.2	68	2.5	466	3.6
Others	372	8.6	207	9.3	437	11.9	261	9.8	1277	9.9
No response	401	9.2	170	7.7	423	11.5	192	7.2	1186	9.2
Total	4338	100	2218	100	3683	100	2668	100	12907	100

Particulars of Vehicle Chosen

Vehicle Chosen	Hyderabad		Visakhapatnam		Vijayawada		Warangal		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
APSRTC Bus	3463	79.8	1862	83.9	3139	85.2	2088	78.3	10552	81.8
Jeep / Van	11	0.3	49	2.2	39	1.1	30	1.1	129	1.0
Auto - 3 seater	75	1.7	34	1.5	56	1.5	286	10.7	451	3.5
Auto - 6 seater	408	9.4	3	0.1	5	0.1	9	0.3	425	3.3
Lorry / T407	5	0.1	7	0.3	1	0.0	10	0.4	23	0.2
Others	83	1.9	15	0.7	35	1.0	118	4.4	251	1.9
No response	293	6.8	248	11.2	408	11.1	127	4.8	1076	8.3
Total	4338	100	2218	100	3683	100	2668	100	12907	100

Frequency Distribution of Trips made

No. of Trips / week	Hyderabad		Visakhapatnam		Vijayawada		Warangal		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
1 - 4	486	11.2	634	28.6	1099	29.8	574	21.5	2793	21.6
5 - 8	374	8.6	680	30.7	643	17.5	606	22.7	2303	17.8
9 - 12	1984	45.7	448	20.2	687	18.7	827	31.0	3946	30.6
12 - 16	634	14.6	71	3.2	499	13.5	200	7.5	1404	10.9
16 - 20	203	4.7	12	0.5	112	3.0	45	1.7	372	2.9
More than 20	70	1.6	8	0.4	57	1.5	39	1.5	174	1.3
No response	587	13.5	365	16.5	586	15.9	377	14.1	1915	14.8
Total	4338	100	2218	100	3683	100	2668	100	12907	100

Reasons for not Choosing APSRTC Bus

Reason	Hyderabad		Visakhapatnam		Vijayawada		Warangal		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Bus is not available	430	50.8	69	26.2	243	46.9	420	46.6	1162	45.9
Seat is not available	150	17.7	52	19.8	58	11.2	149	16.5	409	16.2
It is not stopping at destination	72	8.5	42	16.0	43	8.3	65	7.2	222	8.8
It is not touching destination	32	3.8	32	12.2	28	5.4	27	3.0	119	4.7
Other reasons	162	19.1	68	25.9	146	28.2	241	26.7	617	24.4
Total	846	100	263	100	518	100	902	100	2529	100

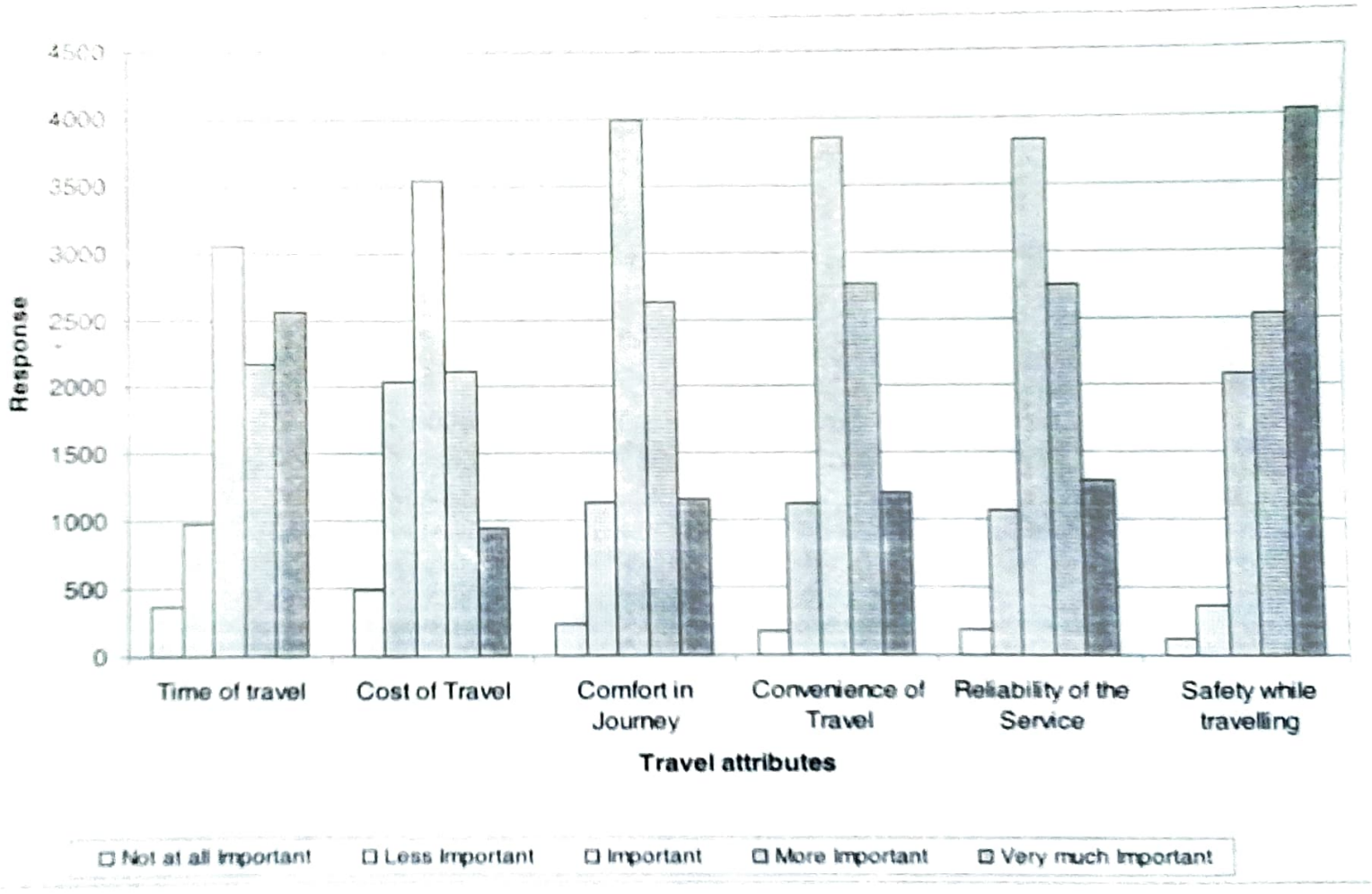

Figure 1: Importance of Travel Attributes Perceived by Urban Commuters(All Cities)

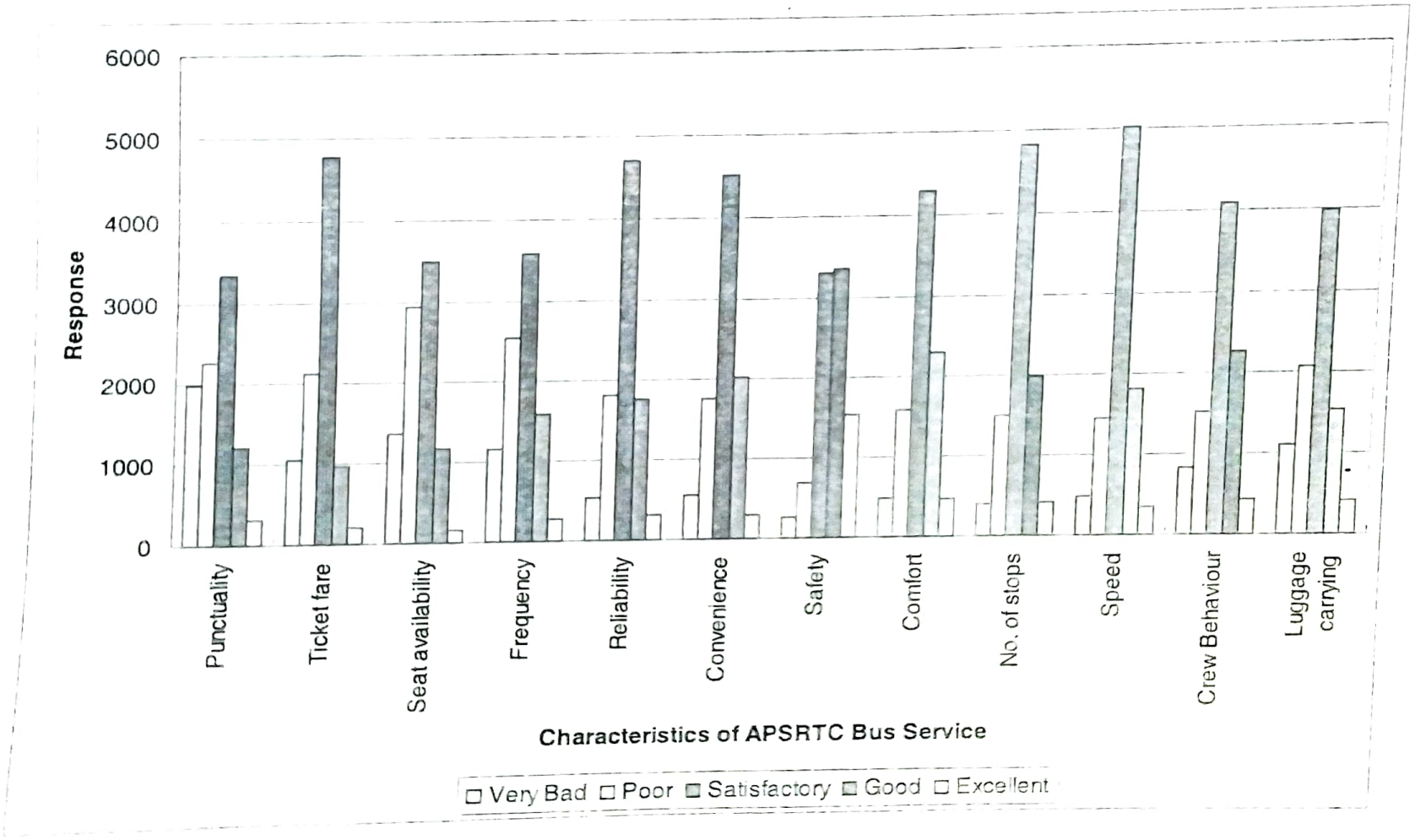

Figure 2: Evaluation of APSRTC Services by Urban Commuters (All Cities)