Quality Expectations of Transport Services and Willingness to Pay: Case of KSRTC

TV Ramanayya, Vishnuprasad Nagadevara, Shyamal Roy
Indian Institute of Management Bangalore
Bangalore 560076, India
(tvr@iimb.ernet.in), (nagadev@iimb.ernet.in)
(sroy@iimb.ernet.in)

DOI: 10.26573/2007.1.1.3
Volume 1, *Number* 1
January 2007, *pp*. 39-52

Abstract: *Road transport brings about greater mobility in the country. Data was collected from commuters and opinion makers in seven districts of Karnataka, to understand their perceptions about the quality of transport services. The attributes considered are: comfort and convenience, schedule and operations, crew behavior, cost and other aspects. This paper deals with the differences in expectations in the level of quality of service of different categories of commuters based on the various demographic characteristics. The findings of the study are expected to help the transport operators in designing specific services with sharper focus on different commuter categories.*

Keywords: Quality of service, commuter perceptions, willingness to pay, expectations of opinion makers

1. Introduction

Passenger Road Transportation plays a pivotal role in India in bringing about greater mobility both within and between rural and urban areas. Through increased mobility it also contributes immensely to social and economic development of different regions of the country. In India, as in many other parts of the world, investment in road transport is treated as a part of public provision of services whereby one of the key objectives of this provision has been to meet the social obligations of an affordable, safe and reliable bus service to the people (Transport Research Wing, 2002). Accordingly, the Road Transport Act 1950 enabled States and Central Governments to take initiative to form the Road Transport Corporations. Similarly, the Motor Vehicles Act 1950 was subsequently amended to make special provision for State Transport Undertakings (STUs). This Act was further amended in 1969 for promoting State monopoly in passenger road transport services. Despite its (public bus operations) prime position in the movement of people especially in remote rural areas, these public undertakings are subjected to criticism due to heavy losses incurred by them every year (Sofres Mode 2002, Thomas 2000).

In the state of Karnataka, road transport services are provided by both public sector (operating through Karnataka State Road Transport Corporation, KSRTC) and the private sector. The districts of Karnataka can be clearly delineated into three categories: those where only the KSRTC is allowed to operate (Category I); those where only private operators are allowed to operate (Category II), and those where both private and KSRTC are allowed to operate simultaneously (Category III). The competition between the private and nationalized services is expected to improve the

efficiency and generally work in favor of the passengers. It is expected that the passengers get better service, lower fares and higher reliability because of the competition.

The original KSRTC was divided into four corporations to facilitate operational efficiency. These four public sector corporations providing passenger road transport services in the state of Karnataka are:

(i) Bangalore Metropolitan Transport Corporation (BMTC),

(ii) Karnataka State Road Transport Corporation (KSRTC),

(iii) North West Karnataka Road Transport Corporation (NWKRTC)

(iv) North East Karnataka Road Transport Corporation (NEKRTC).

However, there is no competition among the Public undertakings as the districts of operation in the State are divided among them. BMTC caters exclusively in Bangalore Metropolitan Region.

Karnataka is one of the major states in India and situated on the western edge of the Deccan plateau. It is surrounded by Maharashtra and Goa on the north, Andhra Pradesh on the east, Tamil Nadu and Kerala on the south, and on the west it opens out to the Arabian Sea. It has an area of 191,791 sq km. Bangalore, nicknamed as the Silicon Valley of India, and is the Capital of this southern state. Figure 1 provides the location of the state of Karnataka in India. The map of Karnataka with the administrative details is shown in Figure 2.

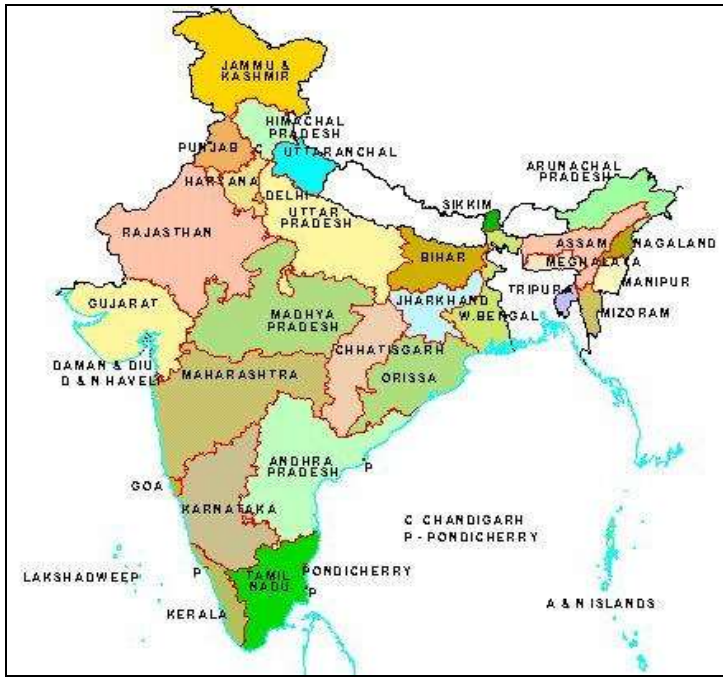


Figure 1 *Map of India Showing the State of Karnataka*



Figure 2 *Map of the State of Karnataka*

The state is divided into 27 districts and is well connected by Roads, Railways, Airways and Waterways. Motorable roads are 150,000 km in length while rail network is about 3500 km. Karnataka is predominantly an agrarian state with about 65% of its working force engaged in agricultural and allied activities, which generate 42% of the state income.

2. Objectives of the Study

The major objectives of the study are:

1. To measure the current level of customer satisfaction with the existing provision of services
2. To measure satisfaction levels of customer segments based on commuters'
   - Geographical Location (Rural/Urban)
   - Educational Qualification
   - Employment Status
   - Income group and

3. To identify the preferences of commuters based on their demographic characteristics.

3. Methodology

To provide a proper representation, a two-stage sample design was adopted. First, districts were selected in each category of operations: These are: Hassan, Dharwad and Gulbarga under Category I; Mangalore and Davanagere under Category II; and Mandya and Kolar in Category III. The second stage included the selection of routes in each district. The routes that were in operation within the district only were considered for the study. A random sample of 10% of the total schedules operated, with a minimum of five operators (in the districts where private operators are allowed) in each district was selected. The sample was selected in such a way that both moffusil and city services were included. For this purpose, certain amount of stratification was done in the sampling procedure. Finally, a minimum of ten commuters on each schedule and two opinion makers from the villages covered in each schedule are randomly selected.

The primary focus of the study was to assess the perception of different stakeholders regarding the operations of different services by public and private operators. Thus various stakeholders such as operators, commuter and travelers, opinion makers and intelligentsia were covered. Data with respect to the extent of services provided by the operators as well as various quality indicators were collected through a structured questionnaire.

4. Sample Profile

4.1 Route Characteristics

The distribution of sample routes based on route length is provided in Table 1.

The data indicates that the information is collected across different route lengths in a district. Table 2 provides the sample routes based on route length and operator.

It may be noted that both types of operations are adequately covered to draw meaningful conclusions.

4.2 Characteristics of Commuters and Opinion Makers

The characteristics of the commuters and the opinion makers with respect to their age, educational qualifications, occupation and income range are presented in Table 3.

Table 1 *Distribution of the Sample Routes Based on Route Length*

District	Upto 10 kms	Over 10 - 25 kms	Over 25 - 50 kms	Over 50 kms	Total
Mandya	7.14%	28.57%	53.57%	10.71%	100%
Kolar	2.44%	24.39%	53.66%	19.51%	100%
Hassan	3.57%	50.00%	35.71%	10.71%	100%
Gulbarga	8.33%	37.50%	50.00%	4.17%	100%
Davangere	10.71%	14.29%	46.43%	28.57%	100%
Dharwad	18.18%	31.82%	40.91%	9.09%	100%
Mangalore	6.67%	30.00%	43.33%	20.00%	100%
Total	7.46%	30.35%	46.77%	15.42%	100%

Table 2 *Distribution of Sample Routes Based on Route Length and Operator*

District	Upto 10 kms	Over 10 - 25 kms	Over 25 - 50 kms	Over 50 kms	Total
Nationalised					
Mandya	15.38	23.08	53.85	7.69	100
Kolar	3.85	26.92	53.85	15.38	100
Hassan	3.57	50.00	35.71	10.71	100
Gulbarga	8.33	37.50	50.00	4.17	100
Dharwad	18.18	31.82	40.91	9.09	100
Total	8.85	35.40	46.02	9.73	100
Private					
Mandya		33.33	53.33	13.33	100
Kolar		20.00	53.33	26.67	100
Davangere	10.71	14.29	46.43	28.57	100
Mangalore	6.67	30.00	43.33	20.00	100
Total	5.68	23.86	47.73	22.73	100

Data was collected from 2000 commuters and 399 opinion makers. The profile of the commuters with respect to their place of residence, age, education, occupation and income are presented in Table 3. Most of the respondents were from the rural areas accounting for 76.2 per cent of the total. Only 11 per cent of the sample respondents belonged to the illiterate category. Those with high school education accounted for almost one-third of the total respondents. Most of the respondents belonged to the age group of 20 – 35 years, accounting for about 50 per cent. The next largest group was between 35 – 50 years of age. These two categories together (i.e., 20 – 50 years of age) accounted for almost 80 per cent of the sample**.**

Table 3 *Sample Profile of the Commuters*

Characteristic	**Commuters**	**Opinion Makers**
Age		
<20 Yrs	166	4
20-35 Yrs	1012	153
35-50 Yrs	576	152
50-65 Yrs	173	76
> 65 Yrs	17	5
No Response	56	9
Residence		
Urban	477	187
Rural	1523	212

Characteristic	Commuters	Opinion Makers
Education		
Illiterate	236	11
Literate	105	12
Primary School	398	49
High School	653	153
Graduate	506	146
PUC/12th Std.	46	15
Diploma/UG	21	1
PG-Professional	2	1
PG-General	1	1
Others	14	6
No Response	18	4
Annual Income		
< Rs.5000	186	12
Rs.5000-12000	867	95
Rs.12000-25000	370	75
Rs.25000	513	212
No Response	64	5
Occupation		
Student	317	0
Agricultural Labour	618	0
Worker	413	0
Business	287	175
Housewife	151	0
Govt. Servant	144	56
Others	52	19
No Response	14	1
Unemployed	4	0
Teacher	0	29
Elected representative	0	40
Village elder	0	79

The most predominant occupation across all the districts was agriculture. Out of a total of 2000 respondents, 618 belonged to the category of agriculture laborers. The unemployed accounted for less than 1 per cent of the total respondents. Considerable number of respondents comes from business.

The predominant income group consisted of those earning between Rs. 5,000 and 12,000 per annum, accounting for almost 44 per cent. At the same time there was fairly large number of respondents belonging to the income group of more than Rs. 25,000. Very few were in the category of less than Rs. 5,000 per annum.

Thus the typical respondent was from rural region in the age group of young or middle age with primary or high school education and having an income level of less than Rs. 12,000, the predominant occupation being agriculture labour or worker.

In addition to the commuters, some of the opinion makers such as village elders, elected representatives, teachers, businessmen etc. were also covered in the study. A total of 399 such persons were surveyed. Most of these persons were in the age group of 20 to 50 years. About 53 percent of those sampled lived in villages. More than 38 percent of them had completed high school and another 36 percent were graduates. There were also few postgraduates. Only 11 out of the 399 were illiterates. The predominant occupation was business. The village elders constituted the second largest group. There were 40 elected representatives and another 56 government servants. More than 50 percent of the respondents had an annual income of above Rs. 25,000 per annum. Another 25 percent had annual income ranging between Rs. 5,000 and 12,000. Only 12 persons had an annual income less than Rs. 5,000. In summary, the sample of the opinion makers consisted of persons who are middle aged and well educated, predominantly businessmen or elected representatives or village elders. They have a fairly high level of average annual income. They are distributed more or less evenly between the rural and urban areas. The composition of the group was such that they could be considered as the opinion makers in the area.

5. Quality of Service

Quality is an abstract entity and subjective in character. It is simply an expression of the extent to which the service provided by an operator fulfils the expectations of the customer concerned. As such, there will be variations in perception of quality of service enjoyed by different customers for the same operation. Most of the commuters filled up the schedules during the course of their journey. As such they might be influenced by the service enjoyed in that trip. The discussions with opinion makers took place at their residences, as such; their perceptions could reflect the overall service provided by the operators in their respective districts.

The term quality may include many components such as

* Comfort and convenience
* Schedule details
* Crew behavior aspects
* Cost and other miscellaneous factors

The perceptions of the stakeholders on each component are colleted on the basis of a number of measurable attributes of that component. Table 4 provides the attributes for different components listed above.

Table 4 *Attributes Considered for Service Quality*

Comfort and Convenience	Schedule and Operations	Crew Behavior	Cost & Others Aspects
Overloading	Notification of schedules	Courteousness with passengers	Notification of fares
Boarding and alighting	Following the schedule	Helping children and old age people	Returning small change
Seating arrangement	Prompt service during break down	Appearance of the crew	Adequacy of fares
Movement within the bus	Maintenance of vehicles	Neatness and professionalism	Reasons for break down
Driving comfort	Cancellation of schedules	Attitude of the crew in general	Charges for luggage
Travel time	Arrival / Departure timings		
First-aid service			
Luggage allowance			
Stopping at the bus stops			

6. Analysis and Results

The levels of service quality had been assessed based on the responses of the stakeholders on various components listed above [Ramanayya et. al. March, 2005, Ramanayya et. al. May, 2005]. Based on their own perceptions of the levels of service quality, the commuters and the opinion makers had expressed their opinions with respect to various aspects of service. Obviously, higher levels of quality will involve additional costs and consequently, the commuters should be willing to pay higher fares in order to enjoy these quality levels. Data was collected on the commuters' willingness to pay higher fare for a higher level of service quality. Their responses are analyzed across different demographic characteristics of the commuters. The patterns of the trips as well as the distribution of commuters across different demographic characteristics showed significant difference between commuters of Urban and Rural areas. It is also known that the requirements as well as expectations of the Urban and Rural commuters are quite different. Consequently, the analysis is presented for the entire demographic characteristic across Urban and Rural commuters.

Table 5 presents the percentages of commuters willing to pay higher fares for various services, based on different age groups. It can be seen from the table that a higher percentage of Urban commuters are willing to pay higher fares for an assured seat where as their rural counterparts prefer more comfortable journey. The comfort of journey becomes more important even for the urban commuters at higher age groups. Similarly, the higher age groups are willing pay more for accommodating luggage as compared to the younger age groups. At the same time luggage appears to be of a higher concern to the rural commuters as compared to their urban counterparts.

Table 5 *Percentage of Commuters Willing to Pay Higher Fares for Various Services – by Age Groups*

Prepared to pay a higher fare	<20 Yrs		20-35 Yrs		35-50 Yrs		50-65 Yrs		> 65 Yrs	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
For assured seat	83	79	82	82	82	76	87	72	100	79
For comfortable journey	63	79	80	83	80	83	87	74	100	79
For fast service	70	78	78	79	78	73	76	70	100	71
To accommodate luggage	53	69	66	71	63	74	54	72	100	79

The education level of the commuters appears to be a very important discriminator. Table 6 presents the percentage of commuters who are prepared to pay higher fare for services based on the educational qualifications. A larger proportion of urban commuters without schooling are willing to pay higher fares for all the four types of services considered. On the other hand, there is very little difference between the proportions of commuters with urban- rural background, when it comes to those with primary or high school level of education. Similarly, the level of education seems to make a major difference for willingness to pay for accommodating luggage.

The occupation of the commuter appears to contribute significantly to the willingness to pay for the services. The percentages of commuters, by occupation, who are willing to pay higher fares for the services, are presented in Table 7. The students, business persons, workers and urban housewives along with government servants in urban areas do not appear to be concerned with accommodating luggage. On the other hand, comfortable journey appears to be the major concern for government servants. Housewives in the urban areas place a higher preference for fast service as compared to their rural counterparts. Among the businesspersons, a higher percentage of those from urban areas are willing to pay more for faster service as compared to those from the rural areas.

Table 6 *Percentage of Commuters Willing to Pay Higher Fares for Various Services – by Level of Education*

Prepared to pay a higher fare	No Schooling		Schooling		College	
	Urban	Rural	Urban	Rural	Urban	Rural
For assured seat	83	71	82	82	84	78
For comfortable journey	81	74	78	83	82	83
For fast service	83	71	74	76	80	80
To accommodate luggage	79	70	61	71	62	72

Table 7 *Percentage of Commuters Willing to Pay Higher Fares for Various Services – by Occupation*

Prepared to pay a higher fare	Student		Labour		Worker		Business		Housewife		Govt. Servant	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
For assured seat	83	79	85	76	76	83	83	82	82	77	85	75
For comfortable journey	77	81	71	80	73	84	85	84	82	84	90	90
For fast service	81	80	73	77	66	75	83	73	82	67	85	78
To accommodate luggage	63	69	65	74	57	69	62	66	68	71	66	72

The income levels do not appear to make much difference when it comes to paying higher fares for an assured seat. On the other hand, as income levels increase, the preference for a more comfortable journey becomes predominant. This is true with both the urban and rural commuters. Similarly, at low-income levels, the accommodation of luggage is not very important, but as the income levels increase, it becomes a matter of concern to the rural commuters. The percentages of commuters, by income group, who are willing to pay higher fares for the services, are presented in Table 8

It is expected that the opinion makers are in a position to gauge the perceptions of the people and provide insights into the transport requirements. Accordingly, their responses are analyzed with respect to the importance of various services in terms of improving the level of service quality. Their perceptions, based on various demographic characteristics, are presented in the following paragraphs. The opinion makers were asked to rate each of the service related attributes on a 3-point scale, namely, most important, important, and less important. In order to crate a single index, their responses (in percentages) are weighted. The weights used are-2 for most important, 1 for important and 0 for less important. The weighted index numbers with respect to each of the service attributes based on various demographic characteristics are analyzed in the following paragraphs.

The attribute such as helping with small luggage, operations in villages and concessional fares do not appear to be of major concern to the opinion makers of younger age group. These attributes have become somewhat important only with the middle aged groups. Comfort and safe journey are of major importance across all age groups. Time and assured services are of a high importance to those from the villages. Interestingly, economical fares appear to be only of moderate concern across all age groups. This coupled with the commuters' willingness to pay for better services indicates that there is enough scope for improving the level of service quality and charge accordingly. The index numbers with respect to the age groups are presented in Table 9.

Table 8 *Percentage of Commuters Willing to Pay Higher Fares for Various Services – by Income Group*

Prepared to pay a higher fare	< Rs.5000		Rs.5000-12000		Rs.12000-25000		> Rs.25000	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
For assured seat	84	86	82	73	80	82	83	87
For comfortable journey	66	79	74	77	79	82	85	90
For fast service	75	77	72	74	84	79	79	79
To accommodate luggage	66	68	56	69	62	73	67	77

Table 9 *Importance (Index Numbers) Expressed by Opinion Makers on Various Service Attributes–by Age Group*

Service Attribute	<20 Yrs		20-35 Yrs		35-50 Yrs		50-65 Yrs		> 65 Yrs	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Time and assured service	0	100	112	120	121	144	138	161	133	0
Travel is comfortable	100	200	120	132	157	107	133	130	50	200
Safe Journey	0	200	136	123	94	124	111	117	200	100
Economical (fare charges is less or cheap)	0	50	109	91	115	80	110	85	100	0
Crew obliges to board/alight	200	0	80	77	105	64	91	67	100	0
Bus crew are well behaved	0	0	29	45	53	70	43	75	100	0
Help extended with luggage	0	0	53	71	39	64	40	36	0	0
Operator runs buses in villages also	0	0	67	42	0	56	67	10	0	0
Extending concession in fare	0	0	25	27	50	41	50	50	0	0

The importance of time and assured service shows a very interesting variation with respect to education levels. The importance reduces as the education levels increase among those opinion makers from the towns. An opposite trend is seen with respect to those from villages. Comfortable travel is an important concern at all levels of education. Similarly, there is a steep drop in the importance with the increase in education level with respect to crew's help in boarding and alighting among those from the village. Similar trend is missing among those from the towns. The index

Table 10 *Importance (Index Numbers) Expressed by Opinion Makers on Various Service Attributes – by Educational Level*

Service Attribute	No Schooling		School		College	
	Urban	Rural	Urban	Rural	Urban	Rural
Time and assured service	150	100	117	140	126	141
Travel is comfortable	140	140	138	136	132	107
Safe Journey	86	175	121	114	117	130
Economical (fare charges is less or cheap)	125	67	110	71	110	100
Crew obliges to board/alight	100	133	89	76	96	38
Bus crew are well behaved	75	0	42	73	50	57
Help extended with luggage	75	50	45	50	32	71
Operator runs buses in villages also	0	0	50	50	23	38
Extending concession in fare	0	0	58	43	33	42

numbers with respect to the education levels of the opinion makers are presented in Table 10.

Interestingly, the concessional fares have become very important to the town elders and government servants. At the same time, this does not appear to be of much importance to people in other occupations, especially the elected representatives. The most important attributes for the elected representatives appear to be time and assured service, comfortable travel, and economical (not concessional) fares. The most important attribute for village elders is time and assured service where as comfortable travel is most important for the town elders. For most of the occupational categories, the important attributes are time and assured service, comfortable travel, safe journey, crew's help and economical fares. Behavior of the crew is only of moderate importance. The index numbers with respect to the occupation of the opinion makers are presented in Table 11.

The importance of time and assured service is coming down as the income levels increase. The reason for this could be that as income levels increase, the dependence on the public transport decreases, especially if the journey is time bound. Interestingly, the concessional fares are of least importance even for the low-income group. At the same time, coverage of villages is of a higher importance with respect to the low-income group belonging to the villages. The crew behavior is of moderate importance, especially at higher income groups. The most important attribute for the high-income group is the comfort in travel. The index numbers with respect to the occupation of the opinion makers are presented in Table 12.

7. Conclusions

The analysis of the perceptions of the commuters and the opinion makers has shown that there is a significant difference between the rural and urban areas. To some extent, such a difference is expected because of the need, service levels, time spent as well as the comfort level of transport services vary widely between the urban and rural areas. In addition, there are significant differences between the expectations

and willingness to pay for better services across different categories of commuters. These differences were captured through different demographic characteristics. One common underlying factor across all the categories of commuters appears to be that they are willing to pay higher fares for improved services. But, the improvements in the quality services required vary from category to category. It is imperative on the part of the service provider to design and develop specific services at an appropriate cost to address the needs of different categories of commuters. The conclusions drawn from the commuters' willingness to pay have been collaborated by the conclusion drawn from the expectations of the opinion makers. One of the major conclusions is that concessional fares are not of a high importance across all categories of opinion makers and the elected representatives are very much alive to this.

Table 11 *Importance (Index Numbers) Expressed by Opinion Makers on Various Service Attributes – by Occupation*

Service Attribute	Business		Teacher		Government servant		Elected representative		Village/Town elder		Others	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Time and assured service	132	114	114	175	104	163	160	162	118	143	100	120
Travel is comfortable	117	121	175	100	88	114	150	131	158	128	167	200
Safe Journey	120	139	100	110	131	105	67	114	110	113	130	140
Economical (fare charges is less or cheap)	107	81	140	133	121	70	114	69	118	94	71	100
Crew obliges to board/alight	92	76	50	50	129	0	80	100	107	89	0	33
Bus crew are well behaved	33	44	50	100	43	75	83	0	40	67	100	0
Help extended with luggage	38	74	40	50	80	67	20	50	43	33	0	57
Operator runs buses in villages also	36	63	0	0	33	50	0	25	60	35	0	67
Extending concession in fare	33	31	0	33	60	67	0	38	200	33	0	0

Table 12 *Importance (Index Numbers) Expressed by Opinion Makers on Various Service Attributes – by Occupation*

	< Rs.5000		Rs.5000-12000		Rs.12000-25000		Rs.25000	
Service Attribute	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Time and assured service	125	167	115	147	139	143	119	128
Travel is comfortable	133	150	133	131	88	120	143	120
Safe Journey	67	150	110	127	106	131	125	117
Economical (fare charges is less or cheap)	0	67	93	75	147	54	106	100
Crew obliges to board/alight	150	0	120	60	55	64	85	75
Bus crew are well behaved	0	0	55	57	40	20	53	91
Help extended with luggage	0	0	44	9	89	100	29	65
Operator runs buses in villages also	0	67	50	56	67	14	28	38
Extending concession in fare	0	0	50	25	50	38	36	48

8. References

1. Kadam, V.A (2002) `Road Passenger Transport in the 20th Century-Issues regarding STUs and Urban Transport', *Indian Journal of Transport Management*, Apr-Jun 2002, pp.271-284.
2. Ramanayya TV, Nagadevara V and Shymal Roy (March 2005) ' A Comparative Study of Public Road Transport Service Providers', International Conference on Services Management, Institute for International Management and Technology (Oxford Brooks University) Gurgaon, India, March 11-12 2005.
3. Ramanayya TV, Nagadevara V and Shymal Roy (May 2005) ' Social Responsibility of Public Transport Undertakings', Proceedings of 9th International Conference on Global Business and Economic Development, Seoul, Korea, May 25-28,2005
4. Sofres Mode, T.N (2002) `Estimating the financial effects of students concessions offered on Karnataka State Transport Corporation Buses', Report prepared for KSRTC, Feb. 2002.
5. Thomas, M.K. (2000) *Public Sector Bus Transport in India in the New Millennium – a historical perspective*, Ebenezer Publishers, Pune.
6. Transport Research Wing (2002) Motor Transport Statistics of India, Ministry of Surface Transport, Government of India, New Delhi.