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# A COMPARATIVE STUDY ONTHE PERFORMANCE OF PUBLIC AND PRIVATE BUS TRANSPORTATION IN KERALA

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## ABSTRACT

*Service quality is being demonstrated towards a constructive outcome on passenger behavioral intention. Providing a good service quality to meet passengers' requirements is crucial to hold the current passengers along with attracting new ones who currently use some other modes of transport. A satisfied traveler is at all times the prime asset of any service industry. Particularly, with the arrival of personalized mode of transport, people are more oriented against the use of public transport. So in order to make them shift to public transport, a decent standard of service quality should be provided to them. Therefore both public and private bus service operators need to improve its services in order to attract passengers. The present study compares the service quality performance of KSRTC and Private Buses in Kerala with the help of Canonical Discriminant Analysis. The study identified that the selected predictor variables of transportation service quality attributes have direct effect in discriminating the level of service quality between the KSRTC and Private Buses in Kerala. Hence it is concluded from the discriminant analysis thatthere is asignificant difference in the transportationservice quality between the KSRTC and Private Buses in Kerala.*

**KEYWORDS:**

*Discriminant Analysis, Transportation Service Quality Attributes, Passenger Satisfaction*

## INTRODUCTION

Road transport is vital to India's economy. India has a road network of over 6,603,293 kilometres as on 31 March 2018, the second largest road network in the world.India's passenger transport for the short and medium distances is essentially bus oriented. Buses are an important means of public transport in India. Due to this social significance, urban bus transport is often owned and operated by public agencies, and most state governments operate bus services through a State Road Transport Corporation. These corporations have proven extremely useful in connecting villages and towns across the country. Buses even compete with the railways by offering night trips in the long distance segment. Buses enjoy a distinct edge over other modes of transport because of their flexibility and accessibility to a large number of villages and towns. Buses per passenger yield higher economy in the use of road space, incur lower fuel consumption and lower cost of operations. Passenger transport in India can be mainly classified into two – rail and road. Out of total passenger movement of the country, 90 per cent is met by road transport while railways carry the remaining 10 per cent at present. The villages arephysically spread throughout the length and breadth of the country, and no mode of transport other than road transport can adequately and effectively meet the demand for transport arising out of the growing economic, social, health, cultural and religious needs of the villagers. Though railway facilities are available, these are mainly confined to certain parts of the district and only limited number of the people can derive benefit from this facility. Among different modes of transport bus transport occupies an important place. About 80 per cent of inter - district trips and 66 per cent of the intra - district trips are made by buses. Hence, road transport has gained its importance over the years despite significant barriers and inefficiencies in inter-state freight and passenger movement compared to railways and air. The government of India considers road network as critical to the country's development, social integration and security needs of the country.

Urbanization is due to increased prosperity, most of which goes in fulfilling the needs of increased mobility. People travel daily for different physical, psychological and economic needs like – work, shopping, leisure, recreational, etc. These travel motives are interdependent among themselves which thus creates multifaceted travel choices like complex set of trip patterns and travel configurations. People are inclined towards using more frequently their individualized motorized transport modes to fulfill their ever-changing mobility demand. In todays' setup, major Indian cities have high percentage of vehicles ownership and specifically the private ownership. This collective outcome of increased population, high percentage of urbanization rate and rapid

growth of private vehicles combined with increasing needs for mobility is a matter of great concern. The existence of any company or provider in service sector is influenced by how well they attend and satisfy their users. A satisfied traveler is at all times the prime asset of any service industry. Particularly, with the arrival of personalized mode of transport, people are more oriented against the use of public transport. So in order to make them shift to public transport, a decent standard of service quality should be provided to them. Therefore both public and private bus service operators need to improve its services in order to attract passengers.

A satisfactory level of service quality in public transportation is still an intangible objective for most of the Indian cities and its commuters. Apart from the modernization of public transportation, it is significant to take care of the quality aspects during service delivery. If the service delivery is not as per the passengers' satisfaction levels and also not well executed, it develops an adverse sensitivity and dissatisfaction towards that service. Usually, in India regulatory authorities have given too much significance to infrastructure development, cost efficiency and cost effectiveness at the expense of service quality levels. But, study of service quality in public transport is becoming meaningfully important, both in research and in day-to-day life. Experts have started showing attentiveness to achieve a high quality service feature, looking towards the commuters' precedence systems and to be demand specific and reasonable. In order to gain effectiveness it becomes imperative for the public and privatebus transport service providers to measure service quality attributes which affects the passenger satisfaction.

## STATEMENT OF THE PROBLEM

In a developing economy like India, road passenger transport deserves a high priority, as it forms the backbone of the passenger mobility system and is the principal carrier across the country. Even after five and a half decades of nationalization, passenger mobility suffers both in volume and quality because the supply of road passenger transport facilities is not keeping pace with the rising demand.

Passenger road transport services having been only partially nationalized in Kerala, that too gradually to the extent of about one-third of the total routes, private bus operators are dominant in the northern and central districts. There is a broad-gauge railway line along the whole length of the state which attracts a good share of the passenger traffic as the fare is lower, apart from the additional advantage of more comfortand speed. Total nationalization of the bus routes in the state is not a possibility in the near future as the Planning Commission and Central Government have been emphasizing on giving priority for improving the efficiency of the existing network of bus services for striking a healthy balance between the operating costs and revenues to keep the public transport undertakings commercially viable. Partial nationalization is assigned to be one of the major causes of dismal economic performance of KSRTC as it has to face competition from other operators in about two-thirds of the total routes in Kerala.

Competition is an important factor which affects the performance and revenues of KSRTC. As nationalization is only partial and as there are other operators, KSRTC faces competition in the routes. Private operators with better fleet and flexibility attract a major share of the passenger traffic even though the fare structure is the same and the number of buses and trips are regulated by the State Transport Authority and the Regional Transport Authority as per the statute. This in turn affects the load factor and revenues of the KSRTC adversely which is stated to be the major reason for their heavy losses in some routes. But from the users' or consumers' point of view, competition is good as it enables them to choose the service which is perceived as comparatively better and which gives the most value to their money and more satisfaction. In fact, competition should help the operators to identify potential opportunities before them and to develop and to offer a better service with the maximum value to the passengers and the operator alike, satisfying the needs and wants of the user/market that it serves.

Passenger Road Transport having been nationalized only partially in Kerala, there is the option of other modes to the travelling public in a large geographic area of the state, to some extent. This presents a competitive market scenario to KSRTC and other bus service operators as well. The studies which were done and recommendations made had centered mostly on the operational aspects of bus services. From the initial exploratory studies it was apparent that the public in the state at large were not satisfied with the services of KSRTC and so they tended to prefer other modes where ever such options are available as in the central and northern districts of Kerala. So this scenario needs to be looked at in a comprehensive manner, taking the KSRTC, its publics, its competitors and external environment into consideration.

Thus the organization's marketing programme needs to be based upon the information about its present and potential future market, the number, type and location of customers involved, the economic, social, competitive and other environmental factors which influence their responses and choice behavior. Viewed in this perspective, the questions that arise are whether a 'marketing approach' or 'market orientation' as is currently being termed would enable KSRTC to respond to the needs and wants of the travelling public and whether it would lead to the development of a management strategy and organizational adaptation aligned with the consumers' needs, and be sensitive to the opportunities and threats posed by the external environment and whether this would help KSRTC to become effective, efficient and commercially viable organization.

## OBJECTIVE OF THE STUDY

- To compare the transportation service quality performance between the KSRTC and Private Buses in Kerala.

## METHODOLOGY OF THE STUDY

Research design constitutes the blue print for the collection, measurement and analysis of data. The study compares the transportation service quality performance between the KSRTC and Private Buses in Kerala. Thus the research design of the study is descriptive as well as empirical in nature. For the purpose of the study, researcher considered five zones of Kerala categorized by the Kerala State Road Transport Corporation. These five zones includes five districts in Kerala such as Thiruvanathapuram, Kollam, Ernakulam, Thrissur and Kozhikode. The sample of the study constitutes the passengers in these districts. For the purpose of selecting the samples from the population, the researcher conveniently selected 100 samples from each district which constitutes a sum total of 500 samples for the study. The researcher circulated the structured questionnaire randomly

to 500 passengers for the purpose of data collection. Out of 500 questionnaires, 468 questionnaires were complete and the same was considered for the analysis of data. Hence the response rate of the survey was about 93.6 percent by eliminating the 32 incomplete questionnaires. Hence the sampling technique adopted for the study is convenient random sampling method.The study is based on the primary data. The researcher collected the primary data from the passengers of bus transit with the help of structured questionnaire andthe Cronbach's alpha for the transportation service quality scale is 0.87 that indicates an acceptable reliability of the questionnaire.The collected data was coded using SPSS package and appropriate statistical tool such as Discriminant analysis is used to compare the transportation service quality performance between the KSRTC and Private Buses in Kerala.

## RESULTS AND DISCUSSION

### Discriminant Analysis

Discriminant Analysis is a statistical technique that satisfies the difference between two or more groups with respect to several variables simultaneously and provides a means of classifying any object or individual into the group with which it is closely associated and to infer the relative importance of each variable used to discriminate between the different groups. Alinear Discriminant function is the linear combination of predictor variables weighted in such a way that it discriminates among groups with least error. In this study, it is used to compare the transportation service quality performance between the KSRTC and Private Buses in Kerala. The predictor variables considered for the study are Transportation Service Facility ($X_1$), Transportation Service Planning and Reliability ($X_2$), Transportation Safety and Affordability ($X_3$),Transportation Network Design ($X_4$),Passenger Comfort ($X_5$),Crew Behaviour ($X_6$). Thus this study formulates the hypothesis as:

*$H_{01}$: There is no difference in the transportation service quality performance between the KSRTC and Private Buses in Kerala.*

**Table No.1: Box's M Test Results for suitability of data**

| Box's M | | 703.840 |
|---|---|---|
| F | Approx. | 19.328 |
| | df1 | 36 |
| | df2 | 1631730.685 |
| | Sig. | .000 |
| Tests null hypothesis of equal population covariance matrices. | | |

*Source: Computed from the Primary Data*

The table 1 shows the Box's M Test Results for suitability of data for the Discriminant analysis, the significant F value .000 indicates the suitability to proceed with the analysis.

**Table No.2: Tests of Equality of Group Means**

| Transportation Service Quality Attributes | Wilks' Lambda | F | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| Transportation Service Facility | .360 | 31.785 | 1 | 760 | .000 |
| Transportation Service Planning and Reliability | .496 | 22.923 | 1 | 760 | .002 |
| Transportation Safety and Affordability | .530 | 23.382 | 1 | 760 | .011 |
| Transportation Network Design | .399 | 12.487 | 1 | 760 | .000 |
| Passenger Comfort | .427 | 10.056 | 1 | 760 | .000 |
| Crew Behaviour | .478 | 17.118 | 1 | 760 | .000 |

*Source: Computed from the Primary Data*

Wilks' lambda is the ratio of the within-groups sum of squares to the total sum of squares. Wilks' lambda is very small for Transportation Service Facility(.360) and Transportation Network Design(.399) which means that there is a strong group difference between the KSRTC and Private Buses in Kerala. The mean values of Transportation Service Facility and Transportation Network Designare significantly different between the two groups. Wilks' Lambda for Passenger Comfort(.427), Crew Behaviour(.478), Transportation Service Planning and Reliability(.496), Transportation Safety and Affordability (.530) is comparatively high because there is no much differencein their mean values between the KSRTC and Private Buses in Kerala. The F statistic is a ratio of 'between-groups variability' to the 'within-groups variability'. The value of F ratio with respect to degrees of freedom is very significant which is indicated in the significance value. The significance value of all six predictor variables of service quality is less than 0.05 indicates that there exists a significant difference in the transportation service quality between the KSRTC and Private Buses in Kerala. The above two facts explain that the present segmentation is right and there exists a significant group difference.

**Table No.3:Eigen value and Canonical Correlation Analysis**

| Eigen value | % of Variance | Cumulative % | Canonical Correlation | Wilks' Lambda | Chi-square | Sig. |
|---|---|---|---|---|---|---|
| 2.315[a] | 100.0 | 100.0 | .816 | .352 | 122.184 | .000 |
| a.First 1 canonical discriminant functions were used in the analysis. | | | | | | |

*Source: Computed from the Primary Data*

The Eigen value is the ratio of 'between-groups sum of squares' and 'within-groups sum of squares'. The largest Eigen value corresponds to the maximum spread of the groups' means. Small Eigen accounts for very little of the total dispersion. The Eigen value for the discriminant function is 2.315 that indicates an evidence for a strong function and explains maximum spread of transportation service quality between the KSRTC and Private Buses in Kerala. For the two groups, one discriminant functionis formed and there will be one canonical correlation. The canonical correlation is a tool used to measure the relationship between discriminant function and the two groups. The canonical correlation between the discriminant function and the two group is very high which is 0.816, indicates that the function have strong relationship with the transportation service quality and the two groups.Wilks' lambda for the overall discriminant function is 0.352 which indicates that the group means of transportation service quality are different between the KSRTC and Private Buses in Kerala. A chi-square transformation of Wilks' lambda is used along with the degrees of freedom to determine the degree of significance. The significance value for the discriminant function is .000 which is less than 0.05 indicates that group means of transportation service quality differ significantly between the KSRTC and Private Buses in Kerala.

**Table No.4:Canonical Discriminant Function Coefficients**

| Transportation Service Quality Attributes | Function |
|---|---|
| | 1 |
| Transportation Service Facility | .495 |
| Transportation Service Planning and Reliability | .071 |
| Transportation Safety and Affordability | .013 |
| Transportation Network Design | .386 |
| Passenger Comfort | .236 |
| Crew Behaviour | .149 |
| (Constant) | 4.813 |
| Unstandardized coefficients | |

*Source: Computed from the Primary Data*

Table 4 shows the Canonical Discriminant Function Coefficients which are estimated to discriminate the transportation service quality between the KSRTC and Private Buses in Kerala and these unstandardized coefficients are used to create the discriminant function in the form of equation like,

$$D = a+b_1X_1+b_2X_2+b_3X_3\ldots\ldots\ldots\ldots\ldots+b_6X_6$$

D = Discriminant Function; a = Constant; b = Unstandardized beta coefficients of each variable and $X_1$, $X_2$, X3.....$X_6$are the six predictor variables of service qualityused in the study. Thus the discriminant function for the transportation service quality between the KSRTC and Private Buses in Kerala is formulated as follows:

**D = 4.813 + (.495 X Transportation Service Facility) + (.071 X Transportation Service Planning and Reliability) + (.013 X Transportation Safety and Affordability) + (.386 X Transportation Network Design) + (.236 X Passenger Comfort) + (.149 X Crew Behaviour)**

Discriminant function coefficient indicates the partial contribution of each variable to the discriminant function. It is used to assess the unique contribution of all six predictor variables of service quality to the discriminant function. It is identified that the unstandardized beta coefficients of each variables of transportation service quality are positive and which explains that all the six predictor variables have direct effect in discriminating the service qualitybetween the KSRTC and Private Buses in Kerala. It also revealed that the Transportation Service Facility (.495) and Transportation Network Design (.386) are the highest factors that discriminate the transportation service quality between the KSRTC and Private Buses in Kerala. The other variables such as Passenger Comfort (.236), Transportation Service Planning and Reliability (.071) and Crew Behaviour (0.149) are the other factors that discriminate the transportation service quality between the KSRTC and Private Buses in Kerala. The least factorthat discriminate the transportation service quality between the KSRTC and Private Buses in Kerala is Transportation Safety and Affordability (.013).Hence the hypothesis is rejectedand it is inferred that there is asignificant difference in the transportation service quality between the KSRTC and Private Buses in Kerala.

## CONCLUSION

It is concluded that the Transportation Service Facility and Transportation Network Design are the highest factors that discriminate the transportation service quality between the KSRTC and Private Buses in Kerala. The other variables such as Passenger Comfort, Transportation Service Planning and Reliability and Crew Behaviour are the other factors that discriminate the transportation service quality between the KSRTC and Private Buses in Kerala. The least factorthat discriminate the transportation service quality

between the KSRTC and Private Buses in Kerala is Transportation Safety and Affordability. Hence, it is inferred that there is asignificant difference in the transportation service quality between the KSRTC and Private Buses in Kerala.

The passengers travelling along a certain route in a bus might be expecting a certain desired level of service to satisfy their needs in terms of the features or attributes of the bus service. This information could be systematically gathered by studying different types of passengers and their needs anddesires and how much importance they attach to each of these service attributes and which of these attributes are determinant or truly decisive in preferring a particular bus service over the others. This information and the passengers' perceptions of the bus service as regards the service features can lead to an assessment of the perceived image and also the service profile of the operators. This would in turn help to evolve the management strategy and approach needed to adapt the service to the needs of the market.

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