

COMPARATIVE EVALUATION OF GENERAL AND SPECIFIC DIMENSIONS OF SERVICE QUALITY IN PUBLIC BUS TRANSPORT: EVIDENCE FROM KERALA

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Abstract: Public transport plays a vital role in promoting sustainable mobility and equitable access, yet service quality often varies significantly across operators. In Kerala, the two primary public transport providers, the state-owned KSRTC and privately owned buses, exhibit differences in service delivery, but comparative studies from the passenger's perspective remain limited. This study addresses the gap by evaluating 12 service quality dimensions, categorised into general service quality (GSQ) – cleanliness, convenience, crew behaviour, empathy, information quality, and reliability – and specific service quality (SSQ) – schedule design, journey comfort, travel safety, grievance redressal, economy, and station ambience. A structured questionnaire was administered to 686 respondents (434 private bus users and 252 KSRTC users). Using descriptive statistics, one-sample t-tests, and Cohen's *d* effect size, the study assessed satisfaction relative to a neutral benchmark. Findings indicate consistent underperformance in key areas such as crew behaviour, information quality, grievance redressal, and station ambience. Notably, no dimension achieved high satisfaction levels, revealing a significant mismatch between passenger expectations and actual service, even in a consumer-aware region. The study highlights the urgent need for both KSRTC and private operators to enhance responsiveness and consistency, offering critical insights for policymakers aiming to improve public transport safety, comfort, and reliability.

Keywords: General Service Quality, Specific Service Quality, Public Transportation, KSRTC, Private Buses, Passenger Perception, Passenger Satisfaction

INTRODUCTION

Public bus transport systems are an influential factor of accessibility, social integration, and economic productivity (especially in developing nations, wherein a significant portion of the population use buses to get to work) (Kumar & Agarwal, 2020). The vast majority of the modes of public transport are the bus services although one is presented with choices such as the state-owned and privately owned buses since they are more accessible and affordable. The levels of services they provide, however, can vary significantly, which affects not only passenger satisfaction but also their future behavioural intentions that include indefinite use, loyalty, and further word-of-mouth recommendations (Gopalan & Venkatesh, 2021). The quality of service in the public transport is generally measured in concrete and abstract terms

such as reliability, responsiveness, assurance, empathy, and physical vehicle and infrastructure conditions (Parasuraman, Zeithaml & Berry, 1988). The ageing fleet of vehicles and other issues related to bureaucracy and lack of innovation in the field of transport lead to the perception of lower quality of the services in such state-owned transport systems (Ravibabu, 2016). On the other hand, on the incentive of profit growth, private operators can provide high quality of amenities and schedules assuming lower standards of travel safety or prices attracting the issue of equity in the services (Suma & Sreeram, 2019).

In developing economies where access to any form of public transport is not an option but a necessity to a large number of citizens, it becomes imperative to comprehend such a pattern of behaviour with the help of which policymakers,

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urban planners, and service providers can enhance ridership and long-term sustainability of the operations. Although this is a crucial problem to be solved, there is a gap in the literature regarding comparative studies, which consider the two forms of bus services in the same social-economic and geographical settings concomitantly.

Although public transport is the backbone of sustainable mobility and ensures access to transport services, the quality of services provided by various operators is uneven. Kerala is one such state where provision of the public transport is the shared responsibility of the private bus operators and the state-owned transport corporation and there is an urgent need to review how their services compare to the expectations of the passengers. Having so few researches that can be analysed comparing with each other, in particular, two groups of service quality dimensions, general service quality (GSQ) and specific service quality (SSQ), this study will help to fill the gap by comparing and contrasting performance between the private and the public bus services according to 12 dimensions (6 GSQ and 6 SSQ) of service quality. The lessons gleaned out of this study are likely to guide the operators and policymakers on the areas that need prompt intervention thus enhancing service delivery in line with the demands of the educated and vigilant commuters' base.

Relevance of the Study: Public transport plays a critical part in third-world countries, especially among the low- and middle-income earners. There are state and private bus services in Kerala, but these services are quite different in terms of efficiency, cost, security, and customer satisfaction. Service quality is also an important factor to evaluate because it determines passenger loyalty, word-of-mouth, and repeat use. In this study, general and SSQ dimensions are compared between public and private buses, and differences are noted to affect passenger perception, passenger demand, and operator earnings. It is hoped that the findings will inform competitive strategies and be used in the formulation of public policy that can enhance availability, sustainability, and user satisfaction in the transport sector.

Research Problem: Amid the changing environment of the public transport systems, quality of service is one of the major determining factors of the commuter satisfaction and efficiency of the system. Although state-owned and private bus services are very crucial in the aspect of regional mobility, few empirical insights exist on how these two spheres work with regard to various dimensions of service provision. Research literature has been selectively studying service quality as a unitary construct without paying attention to the fine grains of distinction between the general service parameters, e.g. cleanliness, crew behaviour, information reliability, and specific service aspects, e.g. journey comfort,

travel safety, network design, and grievance redressal. This void is highly manifested in such states as Kerala where commuters are literate and the state is consumer oriented and hence expectations from the services by the government are also equally high. However, there is no formal comparative study, which compares public with private bus services, in which GSQ and SSQ are differentiated. In the absence of this distinction, policy reactions and service enhancements become generic and ineffective. Thus, a strong urge to explore and do a comparative study of GSQ and SSQ dimensions between bus transport services to the public provided by the Kerala State Road Transport Corporation (KSRTC) and other private bus providers is much admired. This arrangement of categorisation will allow a better picture of sectoral strengths, commuter perception, and significant service shortages, which would in turn allow regional transport services to improve through targeted and evidence-based actions.

REVIEW OF LITERATURE

Customer satisfaction, loyalty, and performance outcomes are typically considered to be central to the quality of services as they may be viewed as the alignment of customer needs and expectations (Lewis, 2015). Although previous studies viewed the quality of service as the static aspect (for example, reliability and responsiveness) recent studies stress the experiential aspect of service quality, which varies according to the customer perceptions and situations (Schembri & Sandberg, 2011). To improve service delivery, organisations must pay attention to not only matching the service with customer expectations but also improving employee satisfaction to boost service delivery (Lewis, 2015). Service quality is another crucial metric being used in the business excellence measurements as a tool of measuring user satisfaction surveys, customers' feedback, or performance benchmarks (Papadopoulos et al., 2023).

In the context of public transport, service quality has been identified as the key determinant of ridership and utilisation of the systems. Some of the important dimensions are reliability, security, speed, and comfort (Fonseca et al., 2010). Measurement of service quality, however, is a complicated issue, considering that it has a direct influence on both customer retention and acquisition. The recent studies also spotlight that the quality of service is context or situation-dependent and multifaceted, and industry-specific models can be more efficient than generic ones (Ramezani Ghotbabadi et al., 2015). Although the SERVQUAL model is still very popular, the generalisability of this model has been a subject of debate, which has resulted in refinements and adaptations to the transport scenario (Gandhi et al., 2017; Chaudhari et al., 2025).

In the Indian context, more recent studies point to customer satisfaction as a crucial factor to determine the success of bus operators (Rajan, 2020). Studies that applied SERVQUAL to passenger-facing buses (public and private) suggest that passenger satisfaction is a rich area of research, with all three dimensions (comfort, safety, and reliability) proving to be decisive (Gowri, 2020). As the recent study suggests, it is also a guideline that transport agencies are expected to conduct systematic and continuous services quality analysis to elicit the areas where performance is deficient and, in general, operate under the expectations of the user (Saxena et al., 2024).

Recent international studies have once again confirmed that such service quality attributes as reliability, assurance, empathy, and tangibles continue to play a key role in influencing passenger satisfaction and behaviour (Sukheswala & Sharma, 2024). Empirical studies identify regional differences: in Seoul, research on the disjunction in service quality revealed the differences between supply and demand as the most modifiable determinants of satisfaction (Lee et al., 2018), and the relationship between the degree of comfort and responsiveness, as the most variable variables, was examined in India (Verma, 2015). These results show that interventions to improve service quality have to be customised to local socio-economic and cultural conditions. On the whole, the literature demonstrates that although frameworks such as SERVQUAL are still used to inform research, there are gaps with regard to developing context-specific frameworks to apply in the context of public transport, particularly in developing countries. Comparative studies are needed that would both extract general and specific dimensions of service quality, and relate directly to behavioural responses including loyalty, word-of-mouth, and operator switching. These gaps should be addressed to have sustainable, efficient, and easily accessible public transport systems.

MATERIALS AND METHODS

The paper reflects on 12 dimensions of the study, which fall into two segments namely six GSQ dimensions such as cleanliness, convenience, crew behaviour, empathy, information quality, and reliability and six SSQ dimensions including schedule design, journey comfort, journey travel safety, grievance redressal, economy, and station ambience. This categorisation is largely realising hierarchical and attribute-based models of service quality suggested by previous research (Brady & Cronin, 2001; Parasuraman, Zeithaml & Berry, 1988).

GSQ can be termed as the perception of the service quality in all the facets of a service or broadly within an organisation or an industry. It is comprehensive and wide because it reflects

the global rating of the service provider by the customer. GSQ focuses on a wider evaluation, which also covers both tangible and intangible properties such as environment, employee behaviour, and reliability and how the customer feels towards the organisation or the industry as a whole (Gronroos, 1984; Brady & Cronin, 2001; Seth, Deshmukh & Vrat, 2005).

SSQ, in its turn, is concerned with service perceptions by the customers as leading to specific areas/touch points of the service. It is limited and measures such aspects of service as punctuality, comfort, or grievance redressal (Dabholkar, 1996; Eboli & Mazzulla, 2007). SSQ assists organisations with particular strengths and weaknesses that can be implemented in training or allocation of resources or redesigning of services (Seth et al., 2005; Nathanail, 2008).

The research procedure that has been used in the study is detailed as follows:

Research Design

The research design used in the study was descriptive and comparative, as it helped to evaluate and examine the perceived relative quality of bus services provided by bus operators (both private and Kerala State Road Transport Corporation [KSRTC]). Such design was regarded as suitable due to the possibility to accumulate data and compare on numerous dimensions of services. The research was meant to capture the subjective experiences of the passengers, and statistically to determine whether there was significant deviance of their views against a neutral reference point, and mean scores as well as one-sample t-tests were to be the major analysis tools.

The main objectives of the study are:

- To determine the perceptions of GSQ dimensions of bus transport system by its passengers.
- To evaluate the passenger perceptions of SSQ dimensions of bus transport system.
- To compare the mean GSQ and SSQ scores between private bus services and KSRTC bus services.

Sampling and Population: The study population was made up of passengers who regularly utilised the services of Kerala public transport system, i.e., passengers that used the services of the Kerala systematic road transport services or KSRTC and also passengers of the Kerala private buses. 686 respondents were utilised as a total sample – 434 of the passengers use private buses and 252 KSRTC buses. The approach used in selecting the sample was a stratified random sampling method, which would make sure that the passengers of different geographical areas (urban, semi-urban, and rural) and routes (short-distance and long-

distance) are well represented. This stratification enabled the researchers to consider the differences of the perceptions of service quality that could be present in varied situations in Kerala.

Data Collection Instrument: Structured questionnaire specifically developed in this study was to be used as the main instrument to collect data. The questionnaire was divided into two parts – section A provided the demographic information of the respondents such as age, gender, occupation, frequency of bus utilisation, and the purpose of travel. Section B included statements with regard to the 12 service quality constructs divided into six general dimensions of service quality and six specific dimensions of service quality. The constructs that were used had three to five items each and the answers were given on a five-point Likert scale of 1–5 (strongly disagree to strongly agree). This scale allowed subjective perceptions to be measured so that it can be statistically analysed. Before the actual survey, the questionnaire was piloted on 30 respondents (15 passengers of private buses and 15 KSRTC passengers) to check the clarity, relevance, and reliability before proceeding to the actual survey. According to the responses of the pilot study, small adjustments were performed to ameliorate the wording of certain items and remove uncertainties.

Reliability and Validity of the Data: Strength of the questionnaire was checked at Cronbach's alpha, where the score was 0.873 showing high internal consistency between the items. The content validity was determined by a review of the items by transport experts and academicians so that they fit the description of each service quality construct. The construct validity was validated through the inter-item correlation and compliance with the theoretical view of service quality in the field of public transportation.

Process of Data Collection: Two months were used in the collection of data both through face-to-face interviews and online surveys. In face-to-face data collection, however, the passengers at bus stations and on journeys in both private and KSRTC buses were approached by their enumerators who were trained. The respondents were informed of the cause of the research and were guaranteed that their answers were going to be kept secret and anonymous. A participant had to agree to participate through informed consent. Google Forms were used to administer online investigations to the passengers who were physically hard to reach. The mixed approach allowed in achieving greater response rates and improvements in the coverage of various sub-groups of the target population.

Data Analysis Techniques: The data collected were codified and captured in SPSS (Statistical Package on Social Sciences) version 26 to be analysed. To analyse the data, the following steps were taken:

- *Descriptive Statistics:* As a part of the statistical analysis, mean and standard deviation were computed in each of the 12 constructs (6 GSQ + 6 SSQ) separately between the private bus passengers and KSRTC passengers. This gave the snapshot of the general degree of satisfaction of various dimensions of service.
- *One-Sample t-Test:* One sample t-test was used to see whether the average of the score of each variable differed significantly with the hypothesised neutral satisfying level of 3 in the Likert's measurement scale. The null hypothesis (H0) of each construct read that the observed mean and the neutral benchmark ($\mu = 3$) are not significantly different. The hypotheses were tested at level of significance (α) 0.05.
- *Comparative Analysis:* To reach the conclusion of the whole research, the means and the deviations of these means of the benchmark were compared with each other according to both GSQ and SSQ constructs to determine which of the service providers is more effective in which area of services.
- *Construct's Reliability Testing:* To verify consistency of the responses recorded in the enlarged dataset, a second reliability test, which used Cronbach's alpha, was conducted after the survey.

Ethical Considerations: The research conducted adhered to ethical research standards in the process. The participation was voluntary and the respondents were told about the right to withdraw at any time during the survey. The collection of all data was anonymous, and it was confidential and private. The research was purely academic and no personal identifiers were noted.

RESULTS AND DISCUSSION

This section investigates and compares the service quality offered by KSRTC and privately owned bus services in Kerala. Schedule design, cleanliness, journey comfort, convenience, travel safety, crew behaviour, grievance redressal system, economy, empathy, information quality, the station's ambience, and reliability are considered as the factors of service quality of bus transportation services in Kerala. Ownership of the bus is taken as the categorical factor for the cross-comparison analysis.

Part A: Demographic Profile of Respondents

The demographic characteristic of the sample size of 686 respondents provides important information about the nature, interests, and behavioural patterns of bus commuters

in Kerala (See Table 1). These results can prove very useful in the management of demand side issues in the public bus transport system to provide services that become aligned to the same.

Table 1: Demographic Profile of Respondents (N = 686)

Variable	Category	Frequency	Per cent (%)
Gender	Male	374	54.5
	Female	312	45.5
Age	21–40	412	60.1
	41–60	233	34.0
	Above 60	41	6.0
Region	Rural	306	44.6
	Semi-urban	248	36.2
	Urban	132	19.2
Education	SSLC and below	85	12.4
	HSC	73	10.6
	Graduate	216	31.5
	Postgraduate	266	38.8
	Others	46	6.7
Occupation	Govt employee	183	26.7
	Private employee	177	25.8
	Business	33	4.8
	Labours/coolie	78	11.4
	Others	142	20.7
	Farmers/agriculture	24	3.5
	Homemaker	49	7.1
Monthly Income (INR)	Below 25,000	328	47.8
	25,001–50,000	173	25.2
	50,001–75,000	88	12.8
	75,001–1,00,000	58	8.5
	Above 1,00,000	39	5.7
Bus Ownership	Privately owned bus	434	63.3
	KSRTC	252	36.7
Purpose of Travel	Personal	183	26.7
	Work related	181	26.4
	Personal and work related	236	34.4
	Education	86	12.5
Distance of Travel	Up to 5 km	54	7.9
	6–20 km	315	45.9
	21–50 km	191	27.8
	Above 50 km	126	18.4
Type of Journey	Within district	496	72.3
	Between districts	169	24.6
	Interstate	21	3.1
Journey Frequency	Daily	360	52.5
	Once a week	173	25.2
	Once every two weeks	48	7.0

Variable	Category	Frequency	Per cent (%)
Type of Buses Used	Monthly	105	15.3
	Ordinary	390	56.9
	Limited stop	125	18.2
	Fast passenger	87	12.7
	Semi-sleeper non-AC	84	12.2

Source: Praveen MV, 2023.

It is male-biased with a user population of 54.5%, with females being almost as proportionate as males (45.5%). This balanced gender population reinforces the need to have gender-sensitive service design such as travel safety, accessibility, and proper seating arrangements. The lack of respondents on the transgender population could reflect under-reported usage of public bus transports, which means that transgender-friendly transit policies are needed. Most of the users (60.1%) are aged between 21 and 40, creating a young population of working age who probably make use of the transport system to commute to work daily.

The representatives of this age group are often sure in the importance of punctuality, high speed, and the digital solution to the problem of ticketing. Another 34% are between the ages of 41 and 60, further underlining the role played by the system to mid-career and late-career practitioners. Senior citizens may indicate the discomfort with available services, especially in respect of journey comfort, ease of boarding, or unreliability of the services (6%).

Geographically, there are 44.6% of rural users, implying that 36.2% and 19.2% of users are semi-urban and urban respectively. Such apportioning is indicative of the practical necessity of public bus transport in the rural mobility, where other means are limited such as metro rail or transport through apps. It also points out that KSRTC could not be strong in the rural areas, but the bus services operated by the private sector could have more chances in the semi-urban and urban areas.

According to the education profile, more than 70% of the respondents are graduates or postgraduates and this reflects that the commuter base is literate and perhaps more quality conscious. Such a customer group will be more critical with regard to factors such as on-time delivery, employee demeanour, and hygiene. Occupation-wise, over half of the respondents work as government and privately salaried people where buses are mainly used at work or during work. Therefore, the reliability of services offered at the peak hours is crucial. This is backed up by the huge proportion of daily commuters (52.5%), and the issue it points to is the consistency and the viability of the bus operations. 63.3% of the total respondents showed preference in using private buses; this could be attributed to bus-type population or

service characteristics such as a higher frequency, faster travel, or attachment to the crew. Nonetheless, the fact that 36.7% travel in KSRTC even with operational and financial limitations implies a high reliance of the people on the service, in particular, long-haul and inter-city transports. Finally, 47.8% of users earn less than INR25,000 per month, which makes it a very affordable factor. Kerala public bus transport is thus, not only mitigating sustainable mobility services, but is also performing a critical social-economic role, providing affordable transportation services to the various demographic levels.

Part B: Evaluation and Comparison of the Extent of Bus Transport Service Quality

This section describes the level of service quality (SQ) provided by the Kerala state transport (KSRTC) and private bus transport services based on a comparative study between state-owned and privately owned bus transport services. A structured framework has also been used to evaluate service quality and this structured framework is composed of GSQ dimensions such as cleanliness, reliability, and crew behaviour and SSQ dimensions, which include network design, journey comfort, and economy. This classification of service attributes into two broad categories will help the study to point out the general and route-specific strengths and weaknesses of each sector. Among the important aspects gained by the analysis is the satisfaction of the commuters and how the services can be improved. A comparison was done to ascertain differences in the general and specific dimensions of service quality between the KSRTC and the privately owned bus services with the aim of determining how the two differ in terms of their performance and this is presented here.

Objective 1: To determine the passengers' perceptions of GSQ dimensions of the bus transport system in Kerala. This objective has been attained using mean, standard deviation, and one sample t-test.

Constructs Selected for the Analysis: The following factors have been chosen to examine the GSQ of bus transportation services in Kerala.

- Cleanliness (GSQ1)
- Convenience (GSQ2)
- Crew behaviour (GSQ3)
- Empathy (GSQ4)
- Information quality (GSQ5)
- Reliability (GSQ6)

Mean score and one sample t-test values of the six dimensions were applied for evaluation of the level of GSQ of private as well as KSRTC services (See Tables 2 and 3).

1a: The extent of GSQ provided by the private bus services in Kerala.

H01: Private bus service in Kerala provides an average-level GSQ to its passengers

Table 2: GSQ Mean Score and One Sample t-Test of Private Bus Service in Kerala

Sr. No.	Dimensions	Mean	SD	Mean Difference	T-Value	P-Value
1	Cleanliness	3.49	0.78	0.49	13.10	<0.001**
2	Convenience	3.35	0.69	0.35	10.51	<0.001**
3	Crew behaviour	3.17	0.88	0.17	4.09	<0.001**
4	Empathy	3.27	0.84	0.27	6.85	<0.001**
5	Information quality	3.18	0.73	0.18	5.10	<0.001**
6	Reliability	3.39	0.78	0.39	10.51	<0.001**

**denotes significance at 1% level.

Source: Praveen MV, 2023.

Given all mean values are larger than 3.0 and all p-values are lower than 0.001, this indicates that the observed service quality is significantly greater than average in all six dimensions of GSQ. Statistically, it was found that the quality of general services provided by the private bus services in Kerala to their passengers is above average. Averages of the ratings given to each of the GSQ dimensions (i.e., cleanliness, reliability, convenience, etc.) are well above the buffer 3.0 benchmark and the differences between the means are reached at the 1% level of significance. This indicates a

moderate favourable attitude on the commuters towards the overall quality of service offered by the private bus transport in the area. However, the rating in all the dimensions was less than 3.5, which indicates that the performance of the private services is just above average only in the GSQ aspects.

1b: The extent of GSQ provided by the state-owned bus services in Kerala.

H02: State-owned bus service (KSRTC) in Kerala provides an average-level GSQ to its passengers.

Table 3: GSQ Mean Score and One-Sample T-Test of KSRTC Bus Service in Kerala

Sr. No.	Dimensions	Mean	SD	Mean Difference	T-Value	P-Value
1	Cleanliness	3.35	0.80	0.35	6.88	<0.001**
2	Convenience	3.44	0.73	0.44	9.54	<0.001**
3	Crew behaviour	3.44	0.80	0.44	8.78	<0.001**
4	Empathy	3.28	0.83	0.28	5.36	<0.001**
5	Information quality	3.07	0.72	0.07	1.59	0.112 ^{NS}
6	Reliability	3.22	0.81	0.22	4.46	<0.001**

**denotes significance at 1% level.

Source: Praveen MV, 2023.

Five dimensions of the GSQ are rated far above the average of 3.0. The only difference is in information quality where p-value = 0.112 (> 0.05); this means that the score mean is not significantly different than the average score. According to the results, it indicates that commuters of KSRTC bus services in Kerala have perceived above-average general quality of services as a whole. The ratings on cleanliness,

convenience, crew behaviour, empathy, and reliability were higher and statistically significant. However, the quality of information was not significantly better than the average, this being a point of weakness. Transport operators can work on enhancing real-time updates, signage, and mediums of communication to enhance this aspect.

Objective 2: To evaluate the passenger perceptions of SSQ dimensions (SSQ) of the bus transport system. This objective has been attained using mean, standard deviation, and one sample t-test.

Constructs Selected for the Analysis: The following factors have been chosen to examine the SSQ of bus transportation services in Kerala.

- Schedule design (SSQ1)
- Journey comfort (SSQ2)
- Travel safety (SSQ3)
- Grievance redressal system (SSQ4)

- Economy (SSQ5)
- Station ambience (SSQ6)

Here too, mean scores and one sample t-test values of the six dimensions were applied for evaluation of the level of SSQ of private as well as KSRTC services (See Tables 4 and 5).

2a: The extent of SSQ provided by the private bus services in Kerala.

H03: Private bus service in Kerala provides an average-level SSQ to its passengers.

Table 4: SSQ Mean Score and one Sample t-Test of Private Bus Service in Kerala

Sr. No.	Dimensions	Mean	SD	Mean Difference	T-Value	P-Value
1	Schedule design	3.52	0.82	0.52	13.25	<0.001**
2	Journey comfort	3.18	0.87	0.18	4.37	<0.001**
3	Travel safety	3.13	0.82	0.13	3.34	0.001
4	Grievance redressal system	3.06	0.88	0.06	1.63	0.103 ^{NS}
5	Economy	3.32	0.74	0.32	9.00	<0.001**
6	Station ambience	2.81	0.95	-0.18	-4.01	<0.001**

**denotes significance at 1% level.

Source: Praveen MV, 2023.

Mean values of 4 out of the 6 dimensions in SSQ (network and time design, journey comfort, travel safety, and economy) are significantly above 3.0, thereby reflecting above-average service quality in these dimensions. Grievance redressal system is 3.06 with $p > 0.05$, which shows no significant difference with the average. Bus station ambience is below average at 3.0 and well below average at 3.0, which appears as a negative perception among customers. The analysis shows that the passengers have rated most of the specific dimensions of service quality of Kerala private bus services as above average particularly in aspects such as network planning, economy, and journey comforts. Grievance

redressal mechanism is however only the station ambience is perceived as poor average, and statistically significant dissatisfaction was shown. This implies that there is relative control on the operational matters but passenger experience in terminal areas and redressal systems must be given specific attention to enhance the level of services' satisfaction.

2b: The extent of SSQ provided by the state-owned bus services in Kerala.

H04: The state-owned KSRTC bus service in Kerala provides an average-level SSQ to its passengers.

Table 5: SSQ Mean Score and One Sample t-Test of KSRTC Bus Service in Kerala

Sr. No.	Dimensions	Mean	SD	Mean Difference	T-Value	P-Value
1	Schedule design	3.26	0.79	0.26	5.27	<0.001**
2	Journey comfort	3.45	0.82	0.45	8.76	<0.001**
3	Travel safety	3.24	0.73	0.24	5.39	<0.001**
4	Grievance redressal system	3.09	0.83	0.09	1.88	0.060 ^{NS}
5	Economy	3.21	0.76	0.21	4.53	<0.001**
6	Station ambience	2.64	0.95	-0.35	-5.88	<0.001**

**denotes significance at 1% level.

Source: Praveen MV, 2023.

SSQ of the KSRTC bus services in Kerala is rated above average in most of the dimensions by the passengers, which include journey comfort, schedule design, travel safety, and economy, all having statistically significant positive t-values and p-values < 0.001. The grievance redressal system however is rated below average with a statistically significant result of mean = 3.09 and p = 0.060 indicating a mediocre or uneven score in attending to complaints and feedback. The station ambience is very low (mean = 2.64, p < 0.001) and there is a serious issue concerning physical infrastructure, maintenance, or passenger comfort in terminals.

Objective 3: To compare the mean GSQ and SSQ scores between private bus services and KSRTC bus services.

For comparison of private vs KSRTC for both GSQ and SSQ dimensions, analysis uses mean, standard deviation (SD), mean difference, t-values, p-values, and Cohen's d to interpret the results (See Table 6 and 7 and Fig. 1 and 2).

3a: Comparison of GSQ scores between private and KSRTC bus services.

H05: There is no significant difference in GSQ scores of private services and KSRTC services.

Table 6: Cohen's d – GSQ Dimensions

Dimension	Private Mean	KSRTC Mean	Private SD	KSRTC SD	Cohen's d	Effect Size
Cleanliness	3.49	3.35	0.78	0.80	0.18	Small
Convenience	3.35	3.44	0.69	0.73	-0.13	Small
Crew behaviour	3.17	3.44	0.88	0.80	-0.32	Small-Medium
Empathy	3.27	3.28	0.84	0.83	-0.01	Negligible
Information quality	3.18	3.07	0.73	0.72	0.15	Small
Reliability	3.39	3.22	0.78	0.81	0.21	Small

The difference among means is so minimal (0.008), and all separate GSQ dimensions are near each other in both services so it is not likely that the difference is crucial. We do not have any exact standard deviations or sample sizes of both services on each dimension so we cannot calculate an exact p-value of the independent samples t-test. However, on the basis of the similarity of means and the above t-values, it can be assumed that the overall GSQ perception of the two services is almost similar. Therefore, we were not able

to reject Ho. As the analysis reveals, nothing significant can be concluded in relation to the overall scores of the GSQ between the evaluation of the services of the private buses and KSRTC services in Kerala. Even though some minor variations (better crew behaviour ratings – KSRTC and cleanliness – private) may be present in individual dimensions, their average scores are almost similar. Thus, the passengers find the services to be quite similar in terms of general quality of services.

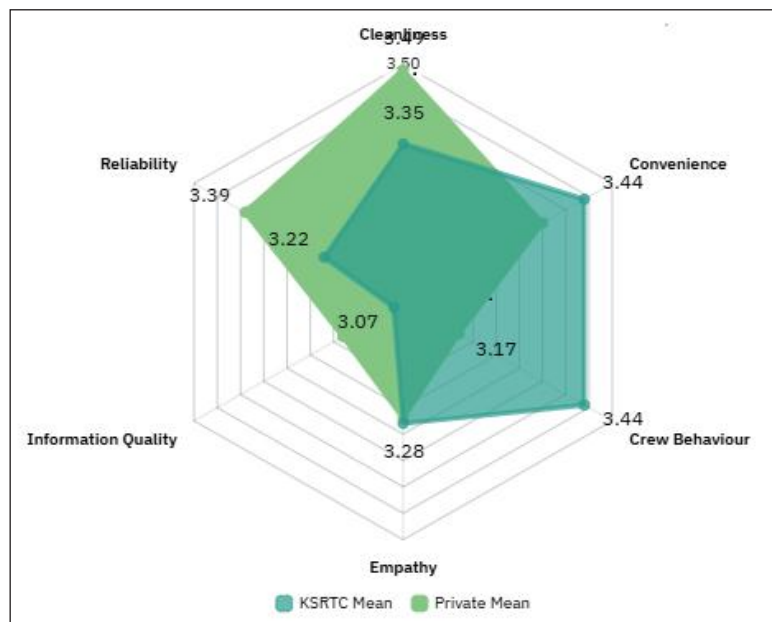


Fig. 1: Comparison of GSQ Scores Between Private and KSRTC Bus Services

3b: Comparison of SSQ scores between private and KSRTC bus services.

H06: There is no significant difference in SSQ scores of private services and KSRTC services.

Table 7: Cohen's d – SSQ Dimensions

Dimension	Private Mean	KSRTC Mean	Private SD	KSRTC SD	Cohen's d	Effect Size
Schedule design	3.52	3.26	0.82	0.79	0.32	Small-Medium
Journey comfort	3.18	3.45	0.87	0.82	-0.32	Small-Medium
Travel safety	3.13	3.24	0.82	0.73	-0.14	Small
Grievance redressal system	3.06	3.09	0.88	0.83	-0.03	Negligible
Economy	3.32	3.21	0.74	0.76	0.15	Small
Station ambience	2.81	2.64	0.95	0.95	0.18	Small

All Cohen d values range between -0.32 and 0.32, which means small to small-medium effects. The maximum distinctions occur in journey comfort (in favour of KSRTC) and schedule design (in favour of private buses). Grievance redressal and ambience difference is either non-existent or not big; both the services perform worse in ambience. In the given case, the null hypothesis was not rejected. The total level of different specific services has no big or important deviation between the private and KSRTC bus services. Although there are minor deviations on a dimension level, they cannot be deemed significant, so it can be concluded that neither of the two services is better in SSQ on the whole. The analysis of the effect size proves that passengers view both types of buses (private and KSRTC) alike regarding

a particular quality of service. Some small strength can be seen such as in KSRTC in journey comfort and security, and in routing efficiency and economy, the private buses perform better. And yet both areas are not dominant and such areas as redressal of grievances and station's ambience are the weakness of both operators. The effect size analysis shows that despite a large proportion of the dimensions of the service quality differences between KSRTC and the services running by the other privately held bus operators being statistically significant, the majority of them represent its practically insignificant level. Most of them are in the area of a small effect (Cohen d 0.1–0.2), which shows that overall passenger experiences do not differ between the two sectors that much, only by minimal perceptual variations.

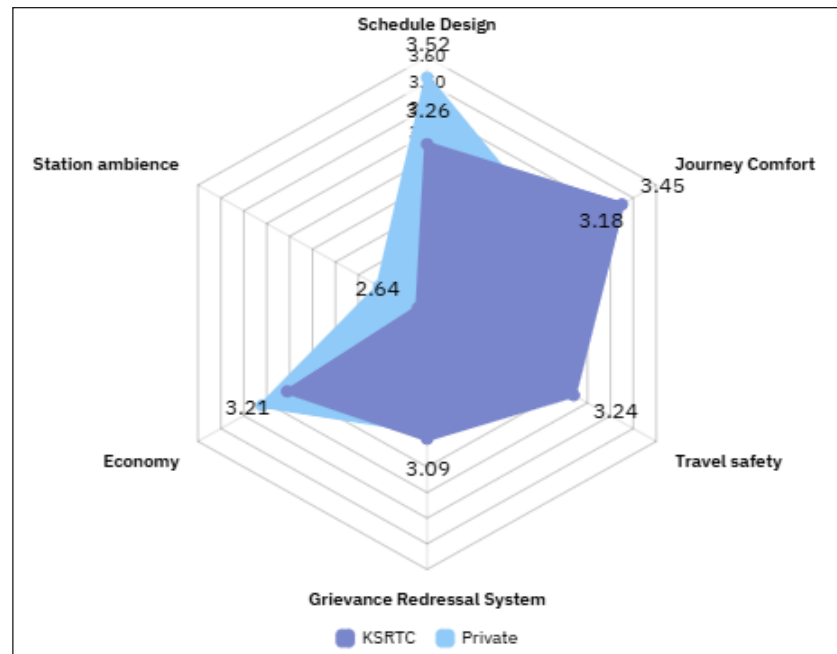


Fig. 2: Comparison of SSQ Scores Between KSRTC and Private Bus Services

Some dimensions, however, demonstrate significant differences. KSRTC has a slight lead in the behaviour of crew and in comfort of the journey, which implies better relations with other people and conditions of the ride, probably thanks to either more ordered crew training or vehicle maintenance procedures. Conversely, the time and network designs of the private buses are relatively superior, potentially due to their flexibility of operations and sensitivity to the needs of those commuting. The gaps are insignificant when it comes to the issue of empathy and redressal of grievance. This is an indication that there is no strong advantage of one sector over the other when it comes to the provision of personalised attention or satisfaction of complaints, which is a weakness that should be addressed at the systemic level. On the whole, the results indicate that the differences between the services may be related to the quality; however, it is rather significant only in several places. KSRTC can be seen as stronger in

people-focused quality, and private services in logistical responsiveness as a result of different priorities in their operations, not general performance differences.

Further Discussion

The present study entails critical analytical comparison regarding the GSQ and the SSQ of the bus transport system in the public and the private sector when set against a region of high literacy trends and massive consumer awareness. Nevertheless, despite such favourable socio-educational conditions, which are generally characterised as having a higher service demand and accountability, it can be concluded that the two industries have an abiding under-performance in various facets of both GSQ and SSQ.

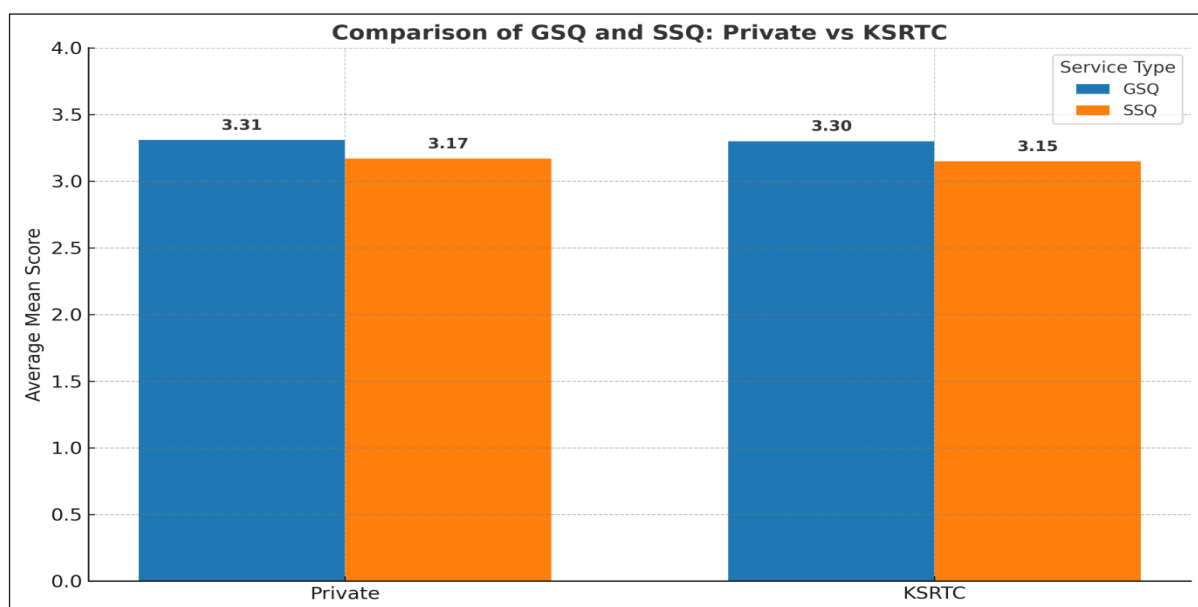


Fig. 3: Comparison of Average GSQ and SSQ Scores Between KSRTC and Private Services

GSQ: Persistent Gaps

It is important to note that the GSQ of the dimension variables of both the private and the public bus services had scores averaging less than 3.5, which means that the general service is below what the passengers desire. The low scores of the information quality and crew behaviour especially in non-state buses are of special concern as are below 3.2, according to the rating. The situation was still worse with public bus services whose quality of information was ranked even worst, at below 3.1. The results raise similar concerns by Ladhari (2009) who asserted that information

and interpersonal interactions are important elements of perceived service quality in the transport environment. In addition, this research is consistent with Parasuraman et al. (1988) whose SERVQUAL model affirmed that service assurance, reliability, and responsiveness, upon which service delivery is closely associated with crew behaviour and distribution of information, are key factors in the development of trust and satisfaction in service delivery. The fact that these dimensions are extremely low even in a socio-economically conscious region implies strategic shortcomings more than single instances of service failures.

SSQ: Contextual Insights

Considering dimensions on SSQ, it was found that the bus station ambience segment was the lowest-rated dimension on the private services with a score below 3.0. On redressal of grievances after purchase, it only managed to score an average of 3.0, journey travel safety was ranked only below 3.2, and journey comfort was also in a similar scale. The same trend was evident in public bus services where the station ambience was rated a sad 2.64 implying that passengers are not satisfied with the bare infrastructural and environmental requirements. In addition, all the SSQ dimensions in public bus services had scores that were below 3.5. The consistency in poor SSQ scores within both industries is remarkable, even though previous literature has argued that certain touch points in the service sector, namely factors such as comfort, presence of cleanliness/hygiene in railway stations, and the redressal systems, have been shown to have a higher bearing on producing a perception in the minds of the commuters with regard to the railway sector rather than the overall quality itself (Tyrinopoulos & Antoniou, 2008). Moreover, Dell Olios et al. (2011) have urged that there is an increase in commuter expectations that have tangible indicators of quality such as redressal, security, and physical environment, which goes along with increased literacy and awareness.

Filling the Research Gap

The majority of past studies on the quality of transport services in India or other developing countries have been either on the metro/urban rail system or general satisfaction measures without resolving the two GSQ and SSQ dimensions (Kumar et al., 2012; Anand & Choudhary, 2018). In comparison, the proposed dimensional analysis of the study does not only differentiate between the general and specific aspects of service but also contrasts between the broad and narrow aspects of service quality within a socio-politically progressive state. This two-level analytical grid provides the much-needed insight on how augmented awareness in the society has affected the perceived service quality expectations and appraisals. Also, as opposed to previous papers where commuters were viewed as passive consumers of service, this paper acknowledges the active part played by consumer awareness in the act of shaping perceptions, in particular, a situation where there is a high literacy level that largely has been overlooked in terms of the existing Indian transport literature. Although there is a statistically significant difference in most dimensions, the implications are practical in most regions. There are just a few dimensions where the perceptions of passengers

can differ significantly (it concerns the dimensions crew behaviour, journey comfort, and network and time design), which indicate the two fundamental strengths – KSRTC's strong focus on people-oriented quality and private operators' strong focus on operational efficiency.

CONCLUSION AND IMPLICATIONS

The comparative analysis of the services, privately run and the state-owned KSRTC, across Kerala, in terms of 12 dimensions of service quality that fall under the categories of general service quality (GSQ) and specific service quality (SSQ), hold some tiny and exclusive facts. The mean GSQ scores are 3.31 in the case of private and 3.30 in the case of KSRTC services; the gap is very thin, which implies parity between the services with respect to overall GSQ. Nonetheless, there was a higher marking of non-KSRTC buses in terms of cleanliness and quality of information and KSRTC buses in the areas of behaviour of the crew and convenience. In the SSQ, the mean was 3.17 and 3.15 of the private buses and KSRTC respectively, indicating a slight difference. On network design, time design, and economy, there were better results on the part of private buses, and on the comfort of the journey and travel safety, KSRTC took the lead. There were certain features that were poor including redressal of grievance and ambience of bus stations in both industries. Cohen d plot regarding the effect size demonstrates that the majority of the differences can be characterised as minor in a practical sense. It is interesting to see that only some of the dimensions, including crew behaviour, journey comfort (KSRTC), and network and time design (private), have rather minor effect sizes, indicating the low level of practical outcomes of such differences. The demands on service delivery, including transport, in a state such as Kerala where high literacy, civic engagement, and social awareness have become expected, and indeed are often touted as hallmarks, are bound to be higher. Although this analysis highlights statistical differences that are minuscule between the services offered privately and by KSRTC buses, it bears potential implication in the minds of the growing commuter population that is increasingly becoming a judicious consumer. Mitigating such shortcomings in the form of infrastructural development, adoption of technology, training of personnel, transparent redressal of grievances, and accountability driven by policies will convert the state of Kerala from being a functional comfort to being truly citizen friendly. Filling in these minor but significant gaps is also not simply a transport issue but a governance requirement in an advanced state that boasts of a progressive public service delivery.

Implications for Policy and Practice

Policy Formulation: The implications presented in the findings are that the government transport bodies along with the privately operated ones should have a common agenda on quality improvement, which should take care of the weakened points such as the mechanisms of redressing grievances and the ambience of the stations.

Resource Allocation: As on the whole most differences are on the statistical level but insignificant on operational level, transport planners ought to focus on the dimensions of middle magnitude when implementing services when there is specific increment (e.g., overall network design in private buses; comfort in KSRTC).

Public Satisfaction Strategies: Provision of enhanced services needs more user-friendly attributes such as empathy, comfort, and reliability that average a much greater influence on the perception of the passengers despite the statistical difference not being very high.

Training and Capacity Building: An investment into crew behavioural training to upgrade the aspects of human interaction can be of interest to KSRTC, whereas working on the level of design and scheduling should have a positive effect on the work of the private operators.

The dimensional structure and theoretical orientation of the research are representative and can be used in the same study in different regions. The empirical results however are contextual and can only be generalised in regions with similar social, infrastructural, and governance conditions. To increase its generalisability, the study can also be used as a reference or baseline to undertake comparative studies concerning other states in India or other transport systems in urban settings.

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